Human Health Risk Assessment, Revision 2

Volume II of Remedial Investigation

Chlor-Alkali (Former) Superfund Site
Berlin, New Hampshire

Remedial Investigation/Feasibility Study
EPA Task Order No. 0013-RI-CO-01BQ

REMEDIAL ACTION CONTRACT
No. EP-S1-06-03

FOR

US Environmental Protection Agency
Region 1

BY

Nobis Engineering, Inc.

Nobis Project No. 80013

January 2014

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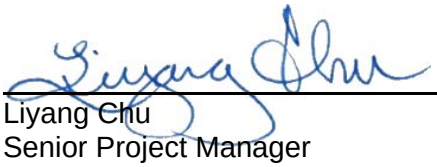

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APPENDICES

ACRONYMS AND ABBREVIATIONS

2,3,7,8-TCDD	2,3,7,8-tetrachloro-dibenzo-p-dioxin
ADAF	Age-Dependent Adjustment Factor
ADC	Average Daily Concentrations
ADD	Average Daily Dose
ALM	Adult Lead Model
ARAR	Applicable or Relevant and Appropriate Regulation
AT	Averaging Time
atm-m^3/mol	atmospheres per mole per cubic meter
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
BCA	Bias – Corrected Accelerated
BHC	benzenehexachloride
CADD	Chronic Average Daily Dose
CHP	Cell House Property
CLT	Central Limit Theorem
cm^2	square centimeters
COPC	Chemical of Potential Concern
CSF	Cancer Slope Factors
CTE	Central Tendency Exposure
DABS	Dermal Absorption Factors
DAD	Dermally Absorbed Dose
DA_{event}	Absorbed Dose per Event
DDD	4,4'- dichlorodiphenyldichloroethane
DDT	4,4'- dichlorodiphenyltrichloroethane
DNAPL	dense non-aqueous phase liquid
ED	Exposure Duration
EFSA	East Facility Study Area
EPA	U.S. Environmental Protection Agency
EPC	Exposure Point Concentration
FSA	Facility Study Area
g/day	grams per day
HEAST	Health Effects Assessment Summary Tables

ACRONYMS AND ABBREVIATIONS (CONT.)

HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
hr	hour
hr/day	hours per day
hr/event	hours per event
IEUBK	Integrated Exposure Uptake and Biokinetic
ILCR	Incremental Lifetime Cancer Risk
IRIS	Integrated Risk Information System
kg	kilogram
kg/g	kilogram per gram
kg/mg	kilogram per milligram
KM	Kaplan-Meier
LADD	Lifetime Average Daily Dose
LOAEL	Lowest-Observed-Adverse-Effect-Level
m^3/kg	cubic meters per kilogram
mg	milligrams
mg/cm^2-event	milligrams per square centimeter per event
mg/day	milligrams per day
mg/kg	milligrams per kilogram
mg/kg-day	milligrams per kilogram per day
mg/m^3	milligrams per cubic meter
MVUE	Minimum Variance Un-biased Estimators
NCEA	National Center for Environmental Assessment
NHANES	National Health and Nutrition Examination Survey
NHDES	New Hampshire Department of Environmental Services
NJDEP	New Jersey Department of Environmental Protection
Nobis	Nobis Engineering, Inc.
NOAEL	No-Observed-Adverse-Effect-Level
NRC	National Research Council
OABS	Oral Absorption Factors
OSRTI	Office of Superfund Remediation and Technology Innovation

ACRONYMS AND ABBREVIATIONS (CONT.)

OSWER	Office of Solid Waste and Emergency Response
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethylene
PCN	polychlorinated naphthalenes
PCN TEQ	PCN 2,3,7,8-TCDD equivalent
PEF	Particulate Emissions Factor
PPRTV	Provisional Peer Reviewed Toxicity Value
RAGS HHEM	Risk Assessment Guidance for Superfund, Human Health Evaluation Manual
RBC	Risk-Based Concentration
REL	Reference Exposure Levels
REP	Relative Experimental Potency
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
RSA	River Study Area
RSL	Regional Screening Levels
SFSA	South Facility Study Area
Site	Chlor-Alkali Industrial Landfill Superfund Site
SQL	Sample Quantitation Limit
SRS	Soil Remediation Standard
SSAF	Soil-to-Skin Adherence Factor
STSC	Superfund Health Risk Technical Support Center
SVOC	semivolatile organic compound
TCE	trichloroethylene
TEF	Toxicity Equivalency Factor
TEQ	Toxicity Equivalent
TRW	Technical Review Work Group for Lead
UCL	95 percent upper confidence limit on the mean
URF	Unit Risk Factor
VISL	vapor intrusion screening levels

ACRONYMS AND ABBREVIATIONS (CONT.)

VOC	Volatile Organic Compound
WHO	World Health Organization
µg/dL	micrograms per deciliter
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
µg/mg	micrograms per milligram

1.0 INTRODUCTION

This document presents the Human Health Risk Assessment (HHRA) of the Chlor-Alkali Facility (Former) Superfund Site (the Site). The HHRA presents a description of the risk assessment methods used to evaluate potential cancer risk and non-cancer health hazards from contaminants in the soil, groundwater, sediment, surface water, and biota at the Site in the absence of any remedial action or institutional controls, such as fish advisories. The results of the HHRA are used in developing remedial alternatives for these media as part of the Feasibility Study and by risk managers in the decision making process.

Concentrations of contaminants in soil, groundwater, sediment, surface water, and biota were used in estimating potential exposures. Individuals who may be exposed to contamination at the Site under current land use include trespassers and individuals using the river for recreation. Under potential future use exposed individuals include residents, industrial/commercial workers, recreational visitors, and trespassers. Exposure and risk was evaluated separately for different areas of the Site as described below.

The HHRA evaluates non-cancer health hazards, cancer risks, and lead exposures through quantitative assessments. The potential for non-carcinogenic health effects is assessed by comparing an exposure estimate (dose) to a reference dose (RfD). Ratios of the intake dose to the RfD below 1.0 indicate that adverse non-carcinogenic effects are unlikely. Risks attributable to exposure to chemical carcinogens are estimated as the probability of an individual developing cancer over a lifetime as a result of potential exposure to a carcinogen. Superfund uses an acceptable cancer risk range of 10^{-6} to 10^{-4}. Potential risks from exposure to lead were evaluated using United States Environmental Protection Agency's (EPA) Integrated Exposure Uptake Biokinetic (IEUBK) model and Adult Lead Methodology (ALM) to estimate the concentration of lead in blood of children and pregnant women and their developing fetus. EPA's risk reduction goal is to limit the probability of a child's blood lead concentration exceeding 10 micrograms per deciliter (µg/dL) to 5 percent or less.

Study Areas

The areas of interest for the Remedial Investigation (RI) encompass the Cell House Property (CHP), the Facility Study Area (FSA), and the River Study Area (RSA), which are depicted in Figures 1-1 and 1-2. The CHP is located on an approximate 4.6-acre parcel situated on the east

bank of the Androscoggin River. The FSA encompasses approximately 38 acres of undeveloped and former industrial property surrounding the CHP. The former chemical plant footprint is located in both the CHP and the FSA. For purposes of the RI, the FSA has been further divided into the East Facility Study Area (EFSA), and the South Facility Study Area (SFSA) (located west of the railroad tracks, excluding the CHP); the former rail line provides the approximate boundary between these two investigation areas. The RSA encompasses the Androscoggin River between Pontook Reservoir in Dummer, New Hampshire and the Shelburne Dam in Shelburne, New Hampshire. The Pontook Reservoir is located 13 miles upstream of the CHP and the FSA, whereas the Shelburne Dam is located 11 miles downstream of the CHP and the FSA. The 24 mile-long RSA does not include Androscoggin River tributaries or the floodplain, but only the river and river bed. Sampling was conducted within the CHP and FSA and along the river during RI activities.

Study Area History

Prior to 1898, the areas that are now the CHP and the FSA were used as a lumber yard. After 1898, the former Brown Company (Berlin Mills Company prior to 1917) operated a chemical plant in the vicinity of the CHP and portions of the FSA. The chemical plant produced chlorine gas and caustic soda (sodium hydroxide) using electrolytic cell houses. Other chemicals, including dry cleaning solvents, carbon tetrachloride, sulfur chlorides, liquid chlorine, and the insecticide/molluscicide, calcium arsenate, were also likely manufactured. During the Remedial Investigation from 2009 to 2012, mercury, in dissolved and elemental form, was discovered within the land filled debris and in bedrock fractures sufficient to indicate that mercury was present in the chemical plant. By 1969, many of the chemical plant structures had been removed, and in 1999 the last remaining building on the CHP was demolished. The demolition debris from the chemical plant was land-filled within what is now the CHP. The bottom of this landfill is unlined and rests on bedrock and glacial till. The landfill cover consists of approximately 1 foot of sand overlain by a 40-mil polyethylene liner and 2 to 3 feet of wood chips, respectively. To further isolate wastes, a slurry wall was constructed in 1999 on the eastern and southern boundaries of the CHP. Currently both the CHP and the FSA are vacant properties with only two unoccupied structures: the penstock gatehouse on the eastern edge of the CHP and a 6-foot diameter wooden pipe that conveys clean water from the penstock to a pulp mill. Various environmental investigations have been performed since 1999. See Section 1 of the RI, Volume I, for further details.

Report Organization

Section 1.0 discusses the purpose of the HHRA, describes the Study Area, and summarizes the Study Area history. Section 2.0 provides an overview of the risk assessment process. Sections 3.0 through 8.0 detail the methodology and results of the HHRA. Appendices A through N present supporting materials for the HHRA. This assessment uses EPA policy and guidance to evaluate current and future potential risks. Tables documenting the Site HHRA were prepared following the standard format in accordance with *Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (RAGS HHEM) Part D* (EPA, 2001). These tables are presented in Appendix A.

2.0 OVERVIEW OF RISK ASSESSMENT PROCESS

EPA uses risk assessment to characterize the contaminants, evaluate the toxicity of the chemicals, assess the potential ways in which an individual may be exposed to the contaminants, and characterize the cancer risks and non-cancer health hazards. A risk assessment framework was first outlined in 1983 by the National Academy of Science, National Research Council (NRC, 1983). Building on that framework, EPA developed *RAGS HHEM Part A* (EPA, 1989), which describes the four main components of risk assessment:

- Data evaluation and identification of chemicals of potential concern (COPCs),
- Exposure assessment,
- Toxicity assessment, and
- Risk characterization.

Actions at Superfund sites are based on an estimate of the reasonable maximum exposure (RME) expected to occur under both current and future conditions at the site. The RME is defined as the highest exposure that is reasonably expected to occur at a site. EPA guidance also recommends that the EPA estimate risks based on central tendency, or average, exposures (CTE) at a site (EPA, 1995 and 2000). The RME and CTE exposures are used to estimate cancer risks and non-cancer health hazards.

For cancer risks and non-cancer health hazards to be present, a complete exposure pathway for chemical contact and intake must exist. A complete pathway requires: a source of

contaminants with toxic characteristics in environmental media; a release of contaminants by either natural processes or by human action; potential exposure points at the source or via migration pathways; and exposure routes (i.e., ingestion, inhalation, dermal absorption). Risk is a function of both toxicity and exposure. If any one of the requirements listed above is absent for a specific site, the exposure pathway is regarded as incomplete and no potential risks will be considered for human receptors.

In the data evaluation component of the HHRA, the nature and extent of contamination is characterized, a risk-based screening is used to select COPCs and EPCs are calculated. Study Area data collected between 2006 and 2011 are considered in developing a list of COPCs. The media/area-specific data are compared to medium-specific concentrations including conservative risk-based screening levels and COPCs are selected for each medium that are representative of the type of expected potential human health exposure. The EPC is a conservative estimate of the average concentration an individual may be exposed to over time. A discussion of the data evaluation process and site-specific issues is contained in Section 3.0.

The exposure assessment identifies potential human exposure pathways (i.e., ingestion, inhalation, and dermal absorption). Exposure routes are identified by medium (i.e., soil, sediment, surface water, biota, groundwater, and indoor air), based on information on Study Area chemical concentrations, chemical release mechanisms, human activity patterns, and other pertinent information, to develop a conceptual site model. A discussion of the exposure assessment is contained in Section 4.0. A summary of the potentially significant exposures identified for quantitative evaluation is provided in Table 2-1 (the same table is also included in Appendix A as Table A-1).

The toxicity assessment presents the available human health dose-response toxicity values for all the selected COPCs. This assessment is contained in Section 5.0. A discussion of health effects and dose-response parameters, such as RfDs, reference concentrations (RfCs), cancer slope factors (CSFs), and inhalation unit risk factors (URFs), is presented.

The risk characterization section (Section 6.0) describes how the estimated intakes are combined with the toxicity information to estimate risks. Uncertainties associated with the risk assessment process are discussed qualitatively in Section 7.0. Section 8.0 summarizes the HHRA for the Study Area.

3.0 DATA EVALUATION

Data evaluation is a site-specific task that uses a variety of information to determine which of the detected chemicals in each medium are most likely to present a risk to potential receptors based on toxicity and detected concentrations. This section presents the approaches for identification of COPCs, distributional analysis of the data, and EPCs.

The end result of this selection process is a list of COPCs and representative EPCs. EPCs are defined as the contaminant concentrations at the point of exposure. The methodology used to identify COPCs for this HHRA is provided in Section 3.1. Section 3.2 presents the identified COPCs for each medium. The methodologies used to determine EPCs for the selected COPCs are presented in Section 3.3.

The media of human health concern selected for the Study Area are as follows:

- Surface Soil,
- Aggregate Soil,
- Sediment,
- Surface Water,
- Fish Tissue,
- Groundwater, and
- Indoor Air.

Soil data were divided by depth (surface soil and aggregate soil). Surface soil data are used to evaluate risks from current and future exposures to soils from activities that do not involve disturbances of deeper soils. Surface soil samples were collected from depths of 0 to 1 feet below ground surface (bgs) and are included in the HHRA evaluation of future residents, recreational visitors, industrial/commercial workers, and trespassers at the CHP, and future residents, recreational visitors, and industrial/commercial workers and current and future trespassers at the FSA assuming current or future use without re-mixing of surface and subsurface soils. The aggregate soil data are used for evaluation of excavation exposures during construction work and hypothetical future scenarios where soil disturbance during construction activities could result in the re-mixing and re-distribution of subsurface soils to the

ground surface, allowing potential human exposures to currently deeper soil contaminants. Aggregate soil samples, were collected from depths of 0 to 10 feet bgs and are included in the HHRA evaluation of potential future residents, future industrial/commercial workers, and current or future construction/utility workers. It is assumed that soil below 10 feet will not be disturbed during construction. Both surface and aggregate soil data were further divided into subsets by exposure area (CHP, SFSA, and EFSA) for purposes of evaluating soil exposures at each of the three exposure areas.

Sediment and surface water samples that were included in the HHRA evaluation were collected from the Androscoggin River adjacent to and downstream of the CHP and represent sediment and surface water that current or future river recreational visitors may be exposed to. Visitors to the river were assumed to visit selective areas of the river; therefore, sediment and surface water data obtained from the various river reaches were divided into the following subsets:

- Stretch 1 includes Reaches 3 through 5, fast flowing sections of the river immediately adjacent to and downstream of the CHP;
- Stretch 2 includes Reaches 6 through 8, fast flowing sections of the river farther downstream; and
- Stretch 3 includes Reach 9, a relatively calm and broader section of the river farthest downstream from the CHP.

Fish tissue samples were collected from the Androscoggin River adjacent to and downstream of the CHP and represent edible fish tissue that current or future river recreational anglers (and their families) may be exposed to. Fishermen were assumed to visit any area of the river and fish were assumed to move between various reaches; therefore, fish tissue data obtained from the various river reaches were not divided into subsets.

Shallow groundwater data were divided into three subsets of data representing the CHP, EFSA, and SFSA for use in the vapor intrusion evaluations to evaluate potential exposures from volatilization of groundwater into future indoor air spaces.

All groundwater data from Study Area monitoring wells regardless of depth were included in an evaluation of potential drinking water exposures. Currently, groundwater at the Study Area is not used as drinking water. All areas of the Study Area are served by municipal water supplies. A

draft New Hampshire Department of Environmental Services (NHDES) Groundwater Use and Value Determination (see RI Volume I, Appendix I) indicates that 16 drinking water supply wells, all bedrock, have been installed within 1 mile of the Study Area since 1984; none of these wells are considered to be potentially impacted by the Study Area based on distance and/or the direction of groundwater flow. The draft determination placed a medium use and value on the groundwater within the review area.

Indoor air data were not collected because there are no current buildings at the CHP, SFSA, or EFSA. As noted above, shallow groundwater data were utilized to evaluate potential indoor air exposures.

Data utilized in this risk assessment consist of validated analytical results of known and sufficient quality for use in quantitative risk calculations. The soil, sediment, surface water, fish tissue, and groundwater data used were validated in accordance with EPA Tier II or higher validation levels (EPA, 1996) and determined to be of adequate quality for use in the risk assessment. Analytical results qualified as rejected, "R," during the data validation process, were not considered because of their potential unreliability. Estimated values (J qualified) were used as the reported value. All U-qualified results represent non-detects for the parameter evaluated. In these instances the concentration was assumed to be present in the sample at the sample quantitation limit (SQL). Blank-qualified results were treated as non-detects. If sample duplicates were collected and analyzed and one was a detection and the other was not, the detected concentration was used. If the results of a duplicate pair were similar (i.e., both detected or both non-detected), the average of the two reported concentrations was used for subsequent calculations unless there was a greater than 50 percent relative percent difference (or greater than 30 percent relative difference for groundwater), in which case the higher of the two concentrations was used.

The available database considered for use in this risk assessment includes:

- Soil data from soil borings, and surface soil samples collected between 2009 and 2011 (described in Section 4 of the RI Volume I);
- Sediment data from samples collected between 2006 and 2010 (described in Section 4 of the RI Volume I);

- Surface water data from samples collected in 2010 (described in Section 4 of the RI Volume I);
- Fish tissue data from samples collected in 2009 and 2011 (described in Section 4 of the RI Volume I); and
- Groundwater data from 2009 through 2011 monitoring well sampling (described in Section 4 of the RI Volume I).

Appendix B provides lists of sample locations included in the HHRA for each medium and exposure point. Sample locations are shown on Figures 3-1 (Study Area soil), 3-2 (background soil), 3-3 (sediment and surface water), and 3-4 (groundwater). Edible fish (smallmouth bass) were collected from the various reaches shown on Figure 3-3. Analytical results for these samples are presented in the RI Volume I, Appendix G. See Section 2 of the RI Volume I for discussion of sample collection and the fixed laboratory analysis by standard EPA methods. See Section 4 of the RI Volume I for discussion of the analytical results.

3.1 Selection of COPCs

The selection of COPCs is a risk-based screening step to identify chemicals that should be included in the quantitative risk assessment. The selection of COPCs was based on chemical substances found at the Site including chemical-specific concentrations, occurrence, distribution, and toxicity. COPCs include only those chemicals with positive detections, and are limited to those chemicals that exceed the selection criterion. The selection criteria (risk-based concentrations) were used to reduce the number of chemicals considered in the risk assessment. Screening levels based on residential exposure assumptions were used for this HHRA as a conservative screening tool to be protective of all potential current and future site uses. Screening levels based on residential exposure assumptions are very conservative for screening soils from undeveloped properties that are unlikely to be developed for residential use, or for screening sediment or surface water. Exposures to sediment or surface water are limited to recreational exposures; however, no screening levels based on recreational exposure assumptions are available.

COPCs were identified on an exposure area basis. A chemical was selected as a COPC if the maximum detected concentration was greater than the associated risk-based concentration

(RBC) or when no RBC was available. Frequency of detection was not considered in COPC selection.

The criteria used to identify COPCs are presented in Appendix A, Tables A-2.1 through A-2.7. Chemicals with maximum concentrations greater than the COPC screening levels are discussed in Section 3.2. Discussions of the criteria used for COPC selection are provided in the remainder of this section.

Criteria for the Selection of COPCs in Soil and Sediment

The following screening criteria were used to identify soil and sediment COPCs:

- **EPA Regional Screening Levels (RSLs) for Soil and Sediment Exposures.** The maximum concentration detected in each medium (surface soil, aggregate soil, and sediment) were compared to EPA RSLs for residential soil (EPA, 2012a) as described below. The EPA RSL Table identifies concentrations of potential concern for nearly 600 chemicals in various media (air, drinking water, and soil) using certain reasonable maximum exposure default assumptions. Residential soil RSLs represent a conservative screen for sediment, since exposures to sediment would be more consistent with recreational land use. RSLs are not available for recreational exposures to sediment.

  The EPA RSL residential soil exposure values were developed by EPA based on the methodology presented in *RAGS HHEM, Part B* (EPA, 1991b) and consider the ingestion, dermal, and inhalation exposure routes. The EPA RSL residential soil exposure values for carcinogens were developed by EPA using an age-adjusted exposure equation, which assumes that a receptor is exposed to soil at a frequency of 350 days per year for a 30-year exposure period (6 years as a child and 24 years as an adult). The EPA RSLs for chemicals with non-cancer effects are based on a child exposed to soil at a frequency of 350 days per year for a 6-year exposure period. For carcinogenic chemicals, the values used for COPC screening are based on a 1×10^{-6} target incremental lifetime cancer risk. EPA RSLs for chemicals with non-cancer effects are developed for target hazard quotient (HQ) of 1.0 and for a target HQ of 0.1. The RSLs for a target HQ of 0.1 was used to select COPCs to avoid omitting chemicals that may contribute to a total hazard index (HI) of greater than 1.0. The estimation of

cumulative target non-cancer risks is described in greater detail in Section 6.0. For contaminants with both carcinogenic effects and non-cancer effects, the lower of the RSL based on non-cancer HQ of 0.1 and the RSL based on 1 x 10^{-6} cancer risk, was used for COPC screening.

This HHRA used EPA RSLs (EPA, 2012a) for COPC selection; however, the EPA RSLs have since been updated, most recently in November 2013. Comparison of the RSLs used in this HHRA against the November 2013 RSLs indicates several values have changed; however, changes impacting soil COPC selection are limited. Di-n-octyl phthalate had no 2012 RSLs, but has 2013 RSLs for soils exceeding the maximum detected concentrations; therefore, di-n-octyl phthalate would not be selected as a COPC based on the 2013 RSLs. See further discussion in Section 7.1.

- **EPA Soil Lead Guidance.** EPA's IEUBK model, predicts that where the average lead in soil concentration is 400 milligrams per kilogram (mg/kg) or less, blood lead levels will meet EPA's risk goal. This level is compared to maximum soil concentrations.

Criteria for the Selection of COPCs in Surface Water

The following screening criteria were used to identify surface water COPCs:

- **EPA RSLs for Tap Water Ingestion.** Surface water concentrations were screened against EPA RSLs for tap water (EPA, 2012a). Tap water RSLs represent a conservative screen for surface water, since Study Area surface water is not used as a potable water source. RSLs are not available for recreational exposures to surface water.

  The EPA RSLs for tap water consider ingestion of drinking water and dermal absorption and inhalation of volatiles during household water use. The EPA RSL tap water values for carcinogens were developed by EPA using an age-adjusted exposure equation, which assumes that a receptor uses a water supply for household purposes at a frequency of 350 days per year for a 30-year exposure period (6 years as a child and 24 years as an adult). The EPA RSL criteria for chemicals with non-cancer effects are based on a 6-year child exposure.

For carcinogenic chemicals, the values used for COPC screening are based on a $1x10^{-6}$ target incremental lifetime cancer risk. The criteria for chemicals with non-cancer effects are based on a target HQ of 0.1. For contaminants with both carcinogenic effects and non-cancer effects, the lower of the adjusted RSL based on non-cancer risk at an HQ of 0.1 and the RSL based on $1x10^{-6}$ cancer risk, was used for COPC screening.

This HHRA used EPA RSLs (EPA, 2012a) for COPC selection; however, the EPA RSLs have since been updated, most recently in November 2013. Comparison of the RSLs used in this HHRA against the November 2013 RSLs indicates several values have changed; however, no changes impact COPC selection in surface water.

- **EPA Lead Guidance.** EPA has not developed risk-based concentrations for lead in tap water. Since lead was detected in surface water at the Study Area, the EPA's Office of Ground Water and Drinking Water drinking water action level of 15 micrograms per liter (µg/L) (EPA, 2009c) was used as the COPC selection criteria for lead.

Criteria for the Selection of COPCs in Groundwater

The following groundwater screening criteria were used to identify COPCs in shallow groundwater for the protection of indoor air:

- **EPA Vapor Intrusion Screening Level Tables.** Groundwater concentrations were screened against EPA's Office of Solid Waste and Emergency Response (OSWER) residential 2012 vapor intrusion screening levels (VISLs) (groundwater concentration screening levels based on residential indoor air risks adjusted to correspond to a HQ of 1 and cancer risks of 1×10^{-6}) (EPA, 2012b).

The following groundwater screening criteria were used to identify COPCs in groundwater for the protection of potential future use of groundwater as drinking water:

- **EPA RSLs for Tap Water Ingestion.** Groundwater concentrations were screened against EPA RSLs for tap water (EPA, 2012a). Tap water RSLs represent a conservative screen for groundwater at the Study Area, since the underlying groundwater is not used as a potable water source.

The EPA RSLs for tap water consider ingestion of drinking water and dermal absorption and inhalation of volatiles during household water use. The EPA RSL tap water values for carcinogens were developed by EPA using an age-adjusted exposure equation, which assumes that a receptor uses a water supply for household purposes at a frequency of 350 days per year for a 30-year exposure period (6 years as a child and 24 years as an adult). The EPA RSL criteria for chemicals with non-cancer effects are based on a 6-year child exposure.

For carcinogenic chemicals, the values used for COPC screening are based on a $1x10^{-6}$ target incremental lifetime cancer risk. The criteria for chemicals with non-cancer effects are based on a target HQ of 0.1. For contaminants with both carcinogenic effects and non-cancer effects, the lower of the adjusted RSL based on non-cancer risk at an HQ of 0.1 and the RSL based on $1x10^{-6}$ cancer risk, was used for COPC screening.

This HHRA used EPA RSLs (EPA, 2012a) for COPC selection; however, the EPA RSLs have since been updated, most recently in November 2013. Comparison of the RSLs used in this HHRA against the November 2013 RSLs indicates several values have changed; however, changes impacting groundwater COPC selection are limited; 1) di-n-octyl phthalate had no 2012 RSLs, but has 2013 RSLs for tapwater exceeding the maximum detected concentrations, therefore di-n-octyl phthalate would not be selected as a groundwater COPC; and 2) the 2013 RSL for bis-2-ethylhexyl phthalate in tapwater increased to a value greater than the 2012 RSL and the maximum detected groundwater concentration, resulting in a change for the maximum detected bis-2-ethylhexyl phthalate concentration from above screening levels to below screening levels and removal of bis-2-ethylhexyl phthalate as a COPC in groundwater based on the 2013 RSLs. See further discussion in Section 7.1.

- **EPA Lead Guidance.** EPA has not developed risk-based concentrations for lead in tap water. Because lead was detected in surface water sampled downstream of the CHP, the EPA's Office of Ground Water and Drinking Water drinking water action level of 15 µg/L (EPA, 2009c) was used as the COPC selection criteria for lead.

Criteria for the Selection of COPCs in Fish Tissue

The following screening criteria were used to identify fish tissue COPCs:

- **EPA Region 3 Fish Tissue Screening Levels.** Fish tissue concentrations were screened against EPA Region 3 RSLs for fish ingestion (EPA, 2012c), adjusted as described below. Fish tissue RSLs represent a conservative screen for recreational angler fish ingestion.

  The EPA RSLs for fish consumption are based on the assumption that an individual ingests 54 grams per day (g/day) of fish for a 30-year exposure period. This assumption is based on a conservative consumption estimate of approximately two 8 ounce fish meals per week. When expressed as an average daily consumption rate, the results is 54 g/day of fish.

  For carcinogenic chemicals, the values used for COPC screening are based on a $1x10^{-6}$ target incremental lifetime cancer risk. The criteria for chemicals with non-cancer effects are based on a target HQ of 0.1. For contaminants with both carcinogenic effects and non-cancer effects, the lower of the adjusted RSL based on non-cancer risk at an HQ of 0.1 and the RSL based on $1x10^{-6}$ cancer risk, was used for COPC screening.

  This HHRA used EPA Region 3 RSLs (EPA, 2012c) for COPC selection; however, the EPA Region 3 RSLs have since been updated, most recently in November 2013. Comparison of the RSLs used in this HHRA against the November 2013 Region 3 RSLs indicates several values have changed; however, no changes impact COPC selection for fish ingestion.

Chemical-Specific Considerations

Data evaluation for dioxins was evaluated through use of dioxin toxicity equivalents (TEQs). The toxicity of one specific dioxin compound, 2,3,7,8-tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD), has been studied more than other known dioxins and furans. The toxicities of all other dioxins and furans are expressed in relation to 2,3,7,8-TCDD (van der Berg et al., 2006). The toxicity equivalency factors (TEFs), presented in Appendix C, were used to convert concentrations of individual dioxin and furan congeners to TEQs of 2,3,7,8-TCDD. Concentrations of individual

dioxins and furans were multiplied by their TEFs to yield 2,3,7,8-TCDD equivalent concentrations. These values were then totaled to yield total dioxin TEQs for each sample. The TEQs were then compared to the screening value for 2,3,7,8-TCDD in the COPC selection step.

For polychlorinated biphenyls (PCBs), total PCB homologues were compared to screening criterion for high risk PCBs. Because a non-cancer based screening value is available for Aroclor 1254, and the adjusted non-cancer based screening value is less than the cancer based screening value for high risk PCBs, the adjusted non-cancer based screening value was used for screening total PCB homologues.

Several PCB congeners are considered to behave similarly to dioxins. These dioxin-like PCB congeners were evaluated through use of a total dioxin-like PCB congeners TEQ, which was compared to the screening value for 2,3,7,8-TCDD in the COPC selection step. The TEFs used to convert concentrations of individual dioxin-like PCB congeners to TEQs of 2,3,7,8-TCDD are presented in Appendix C. Concentrations of individual dioxin-like PCB congeners were multiplied by their TEFs to yield 2,3,7,8-TCDD equivalent concentrations. These values were then totaled to yield total dioxin-like PCB congeners TEQs for each sample.

Contaminants without RSLs, including polychlorinated naphthalenes (PCNs), were retained as COPCs. PCNs were retained as COPCs, but are evaluated qualitatively in the uncertainty section.

The EPA RSL for hexavalent chromium was used as a screening criterion for total chromium to be conservative.

The EPA RSL for elemental mercury was used as a screening criterion for mercury for soils and sediments. In fish, methylmercury generally comprises 90-99 percent of the total mercury present (Bloom, 1992; Wiener and Spry, 1996). For this assessment, it is conservatively assumed that all total mercury detected in fish tissue is methylmercury. The EPA RSL for methylmercury was used as a screening criterion for mercury for fish tissue.

The EPA RSL for vanadium and compounds was used as a screening criterion for vanadium.

For several contaminants for which EPA has little or no information regarding the chemical's toxicity, screening values from similar chemicals (selected based on similarity of molecular structure) were used as surrogate screening values. The EPA RSL values for anthracene, acenaphthene, and naphthalene were used as surrogate screening values for phenanthrene, acenaphthylene, and benzo(g,h,i)perylene, respectively. The EPA RSL value for endrin was used as a surrogate screening values for endrin aldehyde and endrin ketone. The EPA RSL value for endosulfan were used as surrogate screening values for endosulfan I, endosulfan II, and endosulfan sulfate. The surrogate values were used as a qualitative approach for screening purposes only; surrogate toxicity values were not used to calculate risk.

Essential nutrients, including calcium, magnesium, potassium, and sodium, were not selected as COPCs.

Potential Applicable or Relevant and Appropriate Requirements (ARARs)

New Hampshire Department of Environmental Services (NHDES) Soil Remediation Standards (SRSs) (NHDES, 2007) are potential ARARs. These standards are presented in the COPC screening tables for soils and sediment (Appendix A, Tables A-2.1 through A-2.3) for informational purposes. The State of New Hampshire has not developed SRSs for all chemicals detected in RI samples obtained from the Study Area or the Androscoggin River.

Background

Soil and groundwater samples were collected from areas outside the limits of the CHP and FSA during RI activities. Sediment, surface water, and fish tissue samples were collected from upstream locations. The results of these sampling activities are used in discussions of background. Maximum background concentrations for each medium are presented on the COPC selection tables for discussion purposes and are not used to eliminate COPCs. Appendix D presents the background data.

3.2 Identification of COPCs

Appendix A, Tables A-2.1 through A-2.7 identify the COPCs selected for quantitative risk assessment for the Study Area.

3.2.1 Surface Soil COPCs

Appendix A, Table A-2.1 presents the chemicals identified as COPCs in surface soils (depths of 0 to 1 foot bgs) collected from the Study Area exposure areas.

Table 3.2-1 presents a summary of COPCs selected in surface soils for each exposure area.

3.2.2 Aggregate Soil COPCs

Appendix A, Table A-2.2 presents the chemicals identified as COPCs in aggregate soils within the Study Area exposure areas.

Table 3.2-2 presents a summary of COPCs selected in aggregate soils for each exposure area.

3.2.3 Sediment COPCs

Appendix A, Table A-2.3 presents the chemicals identified as COPCs in sediment within the RSA exposure areas.

Table 3.2-3 presents a summary of COPCs selected in sediment for each river exposure area.

3.2.4 Surface Water COPCs

No chemicals were identified as surface water COPCs in the RSA, as shown in Appendix A, Table A-2.4. Therefore, no further quantitative evaluation of surface water exposures is presented.

3.2.5 Groundwater COPCs for the Protection of Indoor Air

Appendix A, Table A-2.5 presents the chemicals identified as COPCs in shallow groundwater for the protection of indoor air at the Study Area exposure areas.

Table 3.2-4 presents a summary of COPCs selected in shallow groundwater for the protection of indoor air for each exposure area.

3.2.6 Groundwater COPCs for the Protection of Drinking Water

The following chemicals were identified as groundwater COPCs for the protection of potential future use of groundwater as drinking water, as shown in Appendix A, Table A-2.6:

- Semi-volatile organic compounds (SVOCs): 2,4,6-trichlorophenol, 4,6-dinitro-2-methylphenol, 4-methylphenol, 4-nitrophenol, bis(2-ethylhexyl)phthalate, benzo(a)anthracene, benzo(a)pyrene, carbazole, dibenzofuran, dimethylphthalate, di-n-octyl phthalate, n-nitroso-di-n-propylamine, n-nitrosodiphenylamine, naphthylene, pentachlorophenol, and phenol;

- Volatile organic compounds (VOCs): 1,1'-biphenyl, 1,3-dichlorobenzene, benzene, carbon disulfide, carbon tetrachloride, chloroform, cis-1,2-dichloroethene, hexachlorobutadiene, hexachloroethane, methylene chloride, tetrachloroethylene (PCE), trichloroethylene (TCE), and vinyl chloride;

- Pesticides: aldrin, alpha-benzenehexachloride (BHC), alpha-chlordane, delta-BHC, dieldrin, gamma-BHC, heptachlor, and heptachlor epoxide;

- Metals: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc;

- Perchlorate;

- PCBs; and

- Dioxin TEQs.

3.2.7 Fish Tissue COPCs

The following chemicals were identified as fish tissue COPCs, as shown in Appendix A, Table A-2.7:

- Indeno(1,2,3-cd)pyrene;
- Metals: arsenic, chromium, lead, and mercury;
- Pesticides: 4,4'- dichlorodiphenyltrichloroethane (DDT), beta-BHC, p,p'-dichlorodiphenyldichloroethane (DDD), and trans-Nonachlor;
- PCBs; and
- Dioxin TEQs.

3.3 Exposure Point Concentrations (EPCs)

Consistent with EPA's Supplemental Guidance to RAGS: Calculating the Concentration Term, (EPA, 1992b) a conservative estimate of the mean concentration is used as the EPC. The EPC represents an average concentration to which a receptor is assumed to be exposed over time while in contact with an environmental medium. The EPC is generally defined as the 95 percent upper confidence limit on the mean (UCL) and is calculated using EPA's ProUCL software (EPA, 2010a). Each COPC per data set was looked at individually and professional judgment was used, guided by both the *ProUCL Technical Guide* (EPA, 2010b) and the *ProUCL User's Guide* (EPA, 2010c).

The following general guidelines were used to determine UCLs and EPCs:

- If fewer than 8 samples were collected, the EPC was the maximum detected concentration.

  If 8 or more samples were collected and the data set contained less than 5 percent detects, the median value was used for the EPC. For purposes of calculating the median, the concentrations for all U-qualified results (non-detects) were assumed to be the SQL. Since the SQL represents the maximum concentration that could be present in the sample and not reported as a positive detection, the assumption that U-qualified results are present at the SQL is a conservative approach to calculating a median value, resulting in the highest possible median concentrations.

- If 8 or more samples were collected and the data set contained more than 5 percent but less than 50 percent detects and at least 4 detects, a nonparametric-based UCL (either Kaplan-Meier (KM) or bootstrapping derived)/EPC, as per ProUCL's non-parametric-

based UCL recommendation for the individual data set, was calculated. For data sets with censored results (i.e., non-detects), UCLs calculated using estimation procedures (e.g., KM, bootstrapping) were considered instead of employing the simple substitution method (e.g., using one-half the SQL for non-detects) in selecting appropriate UCLs/EPCs as guided by the ProUCL supporting documentation. Note that the bootstrapping method was not considered unless there were at least 10 detects. If there were fewer than 4 detects, the EPC was an ad-hoc value (i.e., the median unless the median exceeded the maximum detected concentration, in which case the maximum detected concentration was selected as the EPC). Note that full detection limits were used as values for the non-detected samples in these data sets with fewer than 4 detects.

- If 8 or more samples were collected and the data set contained at least 50 percent detects, the appropriate distribution of the data set was determined and UCLs/EPCs were selected as guided by the ProUCL supporting documentation. Note that for data sets with censored results (i.e., non-detects), UCLs calculated using estimation procedures (e.g., KM, bootstrapping) were considered instead of employing the simple substitution method (e.g., using one-half the SQL for non-detects) in selecting appropriate UCLs/EPCs as guided by the ProUCL supporting documentation.

- If the recommended UCL exceeded the maximum detected concentration, a Chebyshev-based UCL was selected as the EPC if possible. If the Chebyshev-based UCL was still higher than maximum detected concentration, the maximum concentration was selected as the EPC.

Distributions and subsequent summary statistics were calculated using EPA's ProUCL Version 4.00.05 software (EPA, 2010a). ProUCL calculates 95 percent UCLs on the mean using 15 different computation methods, 5 parametric and 10 non-parametric. Parametric methods rely on the estimation of parameters (such as the mean or the standard deviation) describing the distribution of the variable of interest in the population; non-parametric methods do not.

The five parametric UCL computation methods include:

1. Student's-t UCL,
2. Approximate gamma UCL using chi-square approximation,
3. Adjusted gamma UCL (adjusted for level significance),
4. Land's H-UCL, and
5. Chebyshev inequality based UCL (using Minimum Variance Un-biased Estimators (MVUEs) of parameters of a lognormal distribution).

The ten non-parametric methods included in ProUCL are:

1. The central limit theorem (CLT) based UCL,
2. Modified-t statistic (adjusted for skewness) based UCL,
3. Adjusted-CLT (adjusted for skewness) based UCL,
4. Chebyshev inequality based UCL (using sample mean and sample standard deviation),
5. Jackknife method based UCL,
6. UCL based upon standard bootstrap,
7. UCL based upon percentile bootstrap,
8. UCL based upon bias–corrected accelerated (BCA) bootstrap,
9. UCL based upon bootstrap-t, and
10. UCL based upon Hall's bootstrap.

ProUCL provides recommendations on which UCL to use depending upon distributional assumptions and the skewness (as represented by the standard deviation of the data). Distributions are tested for using a number of procedures:

- Graphical test based upon a Q-Q plot.
- Lilliefors test ($\alpha = 0.05$; tests for normality or lognormality for data sets with sample sizes greater than or equal to 50).
- Shapiro-Wilk W test ($\alpha = 0.05$; tests for normality or lognormality for data sets with samples sizes less than 50).
- Anderson Darling test ($\alpha = 0.05$; tests for gamma distribution).
- Kolmogorov-Smirnov test ($\alpha = 0.05$; tests for gamma distribution).

Occasionally, ProUCL recommends two different UCLs. In these instances, the greater of the two is selected as the recommended UCL. Support documentation (output from the ProUCL program) for the calculation of the UCLs is presented in Appendix E. EPCs used in the risk assessment are presented in Appendix A, Tables A-3.1 through A-3.4.

In contrast to the above, maximum concentrations are used as EPCs for evaluation of potential exposures to groundwater as drinking water.

4.0 EXPOSURE ASSESSMENT

The exposure assessment defines and evaluates the exposures that may be experienced by a receptor population. To have an exposure, several factors must be present: there must be a source of contamination, there must be a mechanism through which a receptor can come into contact with the contaminants in that medium, and there must actually or potentially be a receptor present at the point of contact.

The exposure assessment presented consists of several sections that characterize the physical setting and the receptors of concern, identify the potential contaminant migration and exposure pathways, and present the equations used to quantify exposure in terms of contaminant intake (dose). Section 4.1 presents the Study Area exposure setting. Section 4.2 presents the conceptual site model. Section 4.3 presents the equations and parameters for estimating chemical intake.

4.1 Exposure Setting

As discussed in Section 1.0, the Site is located in the City of Berlin, New Hampshire. Areas investigated during the RI included the approximately 43 acre Study Area and 24 miles of river. For the RI, four principal areas were evaluated including the CHP, the SFSA, the EFSA, and the RSA. For the purpose of the RI, the term “Study Area” (depicted in Figure 1-1) is used to describe the area encompassed by the CHP, EFSA, and SFSA, which represents the area occupied by the Brown Company’s former chemical plant and adjoining areas. The RSA is depicted on Figure 1-2. For further discussion of the Study Area history, see Section 1.0 (above) and section 1 of the RI.

4.1.1 Local Land and River Use

Currently the CHP, the SFSA and the EFSA are vacant properties. The CHP is a relatively flat, parcel covered with wood chips and a geotextile cover which overlie a landfill containing demolition debris. The SFSA and EFSA, which together surround the CHP, are currently owned by North American Dismantling Corporation. The SFSA and EFSA contain undeveloped, partially over-grown former industrial property that is accessed by a series of partially-paved and unpaved access roads. Several former building foundations, aboveground tank foundations, and other similar industrial ruins are located along the western portion of the EFSA. The sole remaining structure on the SFSA is located near the penstock canal, which consists of a small brick structure containing the penstock gate that regulates water flow into the penstock. The large underground penstock is located within a 40-foot-wide easement that traverses the SFSA along a north-south axis. A former rail grade is located between the SFSA and EFSA. No rails are present on this grade and it is currently used as an unpaved access road.

The RSA encompasses a 24-mile stretch of the Androscoggin River. The river has a long history of providing power and recreational opportunities to the community. Several dams are present on the Androscoggin River within the RSA. Those are (in order from upstream to downstream) Pontook Dam, Sawmill Dam, Riverside Dam, Smith-Hydro Dam, Cross-Power Dam, Gorham Dam, Androscoggin River Dam, and the Shelburne Dam. These dams further divide the RSA into nine different reaches as depicted on Figure 1-2. Reaches 1 and 2 are upstream of the CHP and FSA. Reach 3, immediately adjacent to the CHP, lies between Sawmill Dam and Riverside Dam. Sawmill Dam is adjacent to the northern end of the CHP. Although a fishing advisory against consumption of fish is posted along the river, fishing is a popular activity.

4.1.2 Local Water Use

Groundwater located beneath the CHP, the SFSA and the EFSA is not currently used as a source of potable water. Receptors are not expected to contact groundwater. However, to be protective of future potential use of groundwater as drinking water all groundwater data from Study Area monitoring wells regardless of depth were included in an evaluation of potential drinking water exposures described in Section 6.1.4. Also, contaminants in shallow groundwater may volatilize into future indoor air spaces at the Study Area. Future human receptors may

potentially be exposed to volatile gases in indoor air. Inhalation of indoor air is evaluated qualitatively in Section 4.2.3.

4.2 Conceptual Site Model for Human Health Risk

This section and Figure 4-1 present the general conceptual site model as it pertains to contaminant exposure and risk to human receptors. A conceptual site model facilitates a consistent and comprehensive evaluation of the risks to human health by creating a framework for identifying the exposure routes or pathways by which human health may be impacted by contaminants predicted to exist at the source areas. A conceptual site model depicts the relationships between the following elements necessary to construct a complete exposure pathway:

- Sources of contamination and potential COPCs,
- Contaminant release mechanisms and transport pathways,
- Exposure mechanisms and exposure routes, and
- Potentially exposed populations.

The conceptual site model was developed to provide the basis for identifying the potential risks to human health. The model considers the current and future conditions within the Study Area, and the actual or potential receptors that might come into contact with the COPCs, and indicates those exposure routes that are carried through the quantitative risk assessment for each receptor. An objective of developing the conceptual site model is to focus attention on those pathways that contribute the most to the potential impacts on human health and to provide the rationale for screening out other exposure pathways that are minor components of the overall risk.

4.2.1 Sources of Contamination and Potential COPCs

The primary source of the contaminated soil, groundwater, sediment, surface water, and biota at the Study Area is chemical plant operations described in Section 1.0.

4.2.2 Contaminant Release Mechanisms and Transport Pathways

Generally, contaminants may be released to onsite soil through direct discharge and released from soil by mechanisms such as stormwater runoff, wind erosion of surface soil, leaching and infiltration to the subsurface, migration through the subsurface soil to the water table, or excavation within areas of contamination. Once released from the source, contaminants are transported to and in media such as groundwater, air, surface water, or sediment. Contaminant fate and transport mechanisms available for contaminants present in the Study Area are discussed in detail in Section 5.0 of the RI Volume I.

4.2.3 Exposure Mechanisms and Exposure Routes

The potential for exposure to the contamination within the Study Area is based on several factors, including current and future land and river uses, human activity patterns, site access controls, and chemical behavior in the environment. Based on these variables, exposure scenarios were developed to characterize the potential for current and future human exposure. The future scenario accounts for possible changes in land use and site characteristics that may alter exposure and/or concentrations of COPCs in a given medium, in addition to the exposures that may result from current uses of the land and river.

The exposure assessment is based on the assumption that, in general, chemical compositions for environmental media are identical under current and future site conditions.

This HHRA defines an exposure route as a generalized description of the behavior that brings a receptor into contact with a contaminated medium. The exposure routes through which receptors may be exposed are:

- incidental ingestion of contaminated soils,
- dermal contact with contaminated soils,
- inhalation of dust and volatiles from soils,
- incidental ingestion of contaminated sediment,
- dermal contact with contaminated sediment,
- incidental ingestion of surface water,
- dermal contact with surface water,

- ingestion of fish tissue,
- ingestion of groundwater used as drinking water,
- dermal contact with groundwater during household water use,
- inhalation of groundwater vapors during showering, and
- inhalation of volatile contaminants in groundwater that may volatilize into future indoor air spaces.

A summary of the potentially significant exposures identified for quantitative evaluation is provided in Table 2-1 (the same table is also included in Appendix A as Table A-1).

4.2.3.1 Direct Contact with Soil and Sediment

Receptors may come into direct contact with soil or sediment contaminated by the release of chemicals from the source areas. During the receptor's period of contact, the individual may be exposed via inadvertent ingestion of a small amount of soil or sediment or via dermal absorption of certain contaminants in the soil or sediment.

Because of the limited guidance available to estimate soil and sediment exposure via dermal contact, dermal risks can be evaluated quantitatively only for contaminants with available soil absorption factors. Several of these chemicals were selected as COPCs for the Study Area, including arsenic, cadmium, several SVOCs, dioxins, and PCBs. Therefore, dermal risks associated with soil and sediment for these COPCs were quantitatively addressed in the risk assessment. Dermal contact with other chemicals detected in the Study Area soil or sediment may or may not result in a significant exposure. It should be noted that organics such as polycyclic aromatic hydrocarbons (PAHs), which were detected frequently in the soil samples and selected as COPCs, tend to strongly adhere to organic matter in soil. For these chemicals to be percutaneously absorbed, they must first desorb from soil and then diffuse through the skin. Various factors affect the rate of dermal absorption, including the amount of soil on the skin surface, soil characteristics (moisture, pH, organic carbon content, etc.), skin characteristics (thickness, temperature, hydration, etc.), volatilization losses, and chemical-specific properties.

4.2.3.2 Inhalation of Fugitive Dust and Vapors from Volatiles in Soil

Receptors may come into contact with soil particulates and vapors contaminated by the release of chemicals from the soil through inhalation of dust and soil vapors, particularly when there is no vegetative cover.

4.2.3.3 Direct Contact with Surface Water

Receptors may come into direct contact with surface water contaminated by overland run off or groundwater discharge of contaminants from the CHP or SFSA. The individual may be exposed via inadvertent ingestion of a small amount of surface water or via dermal absorption of certain contaminants in the surface water. In general ingestion of surface water is only considered when swimming scenarios are considered. River flow rates in Reaches 3 through 8 preclude swimming along much of the river and, therefore, ingestion of surface water is only considered at Reach 9. Because comparison of surface water sample results to conservative screening levels indicates no significant surface water contamination, direct contact exposures to surface water were not quantified.

4.2.3.4 Contact with Groundwater Contaminants in Drinking and Household Water Use

This pathway is based on the assumption that a receptor uses groundwater as the primary drinking water and household water source, contacting contaminants through ingestion of drinking water, dermal contact, and inhalation of vapors during showering. Groundwater at the Study Area is not used as a drinking water source. However, to be conservative, this HHRA presents estimated risks from potential future exposures to groundwater as a primary drinking water source using a simplified ratio approach described in Section 6.1.4.

4.2.3.5 Inhalation of Volatile Contaminants in Indoor Air

This pathway is based on the scenario that as part of daily living, a receptor is surrounded by an airspace that contains volatile organic vapors originating from contaminated media (groundwater) in the source areas. Exposure of the receptor occurs upon inhalation of the indoor air. This potential future exposure was evaluated through OSWER's *Draft Guidance for*

Evaluating the Vapor Intrusion Indoor Air Pathway from Groundwater and Soils (EPA, 2002a). As recommended in this guidance, a tiered approach was used to determine whether the vapor intrusion pathway should be further evaluated.

COPCs for this pathway were identified through comparison of Study Area shallow groundwater data to VISLs (Appendix A, Table A-2.5, as described in Section 3.1). No contaminants were detected in shallow groundwater at the EFSA exceeding VISLs. Appendix F presents the Tier 1 and Tier 2 evaluations of the shallow groundwater data for the selected COPCs for shallow groundwater at the CHP and SFSA. Shallow groundwater data, as opposed to the full groundwater data sets used in the evaluation of potential future use of groundwater as drinking water scenario, are used in the Tier 1 and Tier 2 evaluations of this pathway. The shallow groundwater dataset is comprised of samples collected from the uppermost portions of the water table as represented by the shallowest wells sampled at each location. Because an overburden groundwater aquifer is absent in some portions of the Study Area, in these areas bedrock groundwater wells may represent the shallowest groundwater. Therefore, both overburden groundwater and bedrock groundwater wells are included in the shallow groundwater dataset. Deep groundwater data were not used because they were not considered representative of groundwater available for vapor intrusion.

Tier 1 Evaluation

The Tier 1 evaluation is designed to determine if there are chemicals in shallow groundwater that are both sufficiently toxic and sufficiently volatile to be of potential concern via the vapor intrusion pathway. Chemicals identified as COPCs in groundwater were compared to the list of toxic and volatile chemicals provided on EPA OSWER's 2012 VISL table (EPA, 2012b), which considers a chemical sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 1×10^{-6} or a non-cancer HQ greater than 1, and considers a chemical sufficiently volatile if its Henry's Law Constant is 1×10^{-5} atmospheres per mole per cubic meter (atm-m^3/mol) or greater. For chemicals not listed on EPA OSWER's 2012 VISL table (EPA, 2012b), the Hazardous Substances Database (HSBD, 2011) was checked for Henry's Law Constants and the chemical was considered sufficiently volatile if the Henry's Law Constant was 1×10^{-5} atm-m^3/mol or greater. The Tier 1 evaluation is presented in Appendix F. Tier 1 results for the shallow groundwater data from the CHP indicate six groundwater COPCs detected are both sufficiently toxic by the inhalation pathway and sufficiently volatile. Tier 1

results for the shallow groundwater data from the SFSA indicate that among groundwater COPCs, two groundwater COPCs detected are both sufficiently toxic by the inhalation pathway and sufficiently volatile.

Tier 2 Evaluation

Contaminants identified as sufficiently volatile and sufficiently toxic in the Tier 1 screening step are evaluated in Tier 2. Because indoor air data are not available, for the Tier 2 evaluation, shallow groundwater data were screened against the groundwater target levels provided in EPA OSWER's residential 2012 VISL table (groundwater concentration screening levels based on residential indoor air risks adjusted to correspond to a HQ of 1 and cancer risks of 1×10^{-6}) (EPA, 2012b).

The Tier 2 evaluation is presented on the far right side of the Appendix F tables.

For the CHP, the detected shallow groundwater concentrations of carbon tetrachloride, chloroform, PCE, TCE, vinyl chloride, and mercury exceed the target levels.

- Carbon tetrachloride was detected in just 2 of 36 shallow groundwater samples at the CHP. The maximum carbon tetrachloride concentration is approximately 10 times greater than the screening level.

- Chloroform was detected in 16 of 36 shallow groundwater samples at the CHP. The maximum chloroform concentration is approximately 1,000 times greater than the screening level.

- PCE was detected in 12 of 36 shallow groundwater samples at the CHP. The maximum PCE concentration is approximately 6 times greater than the screening level.

- TCE was detected in 18 of 36 shallow groundwater samples at the CHP. The maximum TCE concentration is approximately 40 times greater than the screening level.

- Vinyl chloride was detected in just 1 of 36 shallow groundwater samples at the CHP. The maximum vinyl chloride concentration is approximately 6 times greater than the screening level.

- Mercury was detected in 44 of 72 shallow groundwater samples at the CHP. The maximum mercury concentration is approximately 10 times greater than the screening level.

For the SFSA, the detected shallow groundwater concentrations of carbon tetrachloride and TCE exceed the target levels.

- Carbon tetrachloride was detected in 1 of 15 shallow groundwater samples at the SFSA. The maximum carbon tetrachloride concentration is approximately equal to the screening level.

- TCE was detected in 2 of 15 shallow groundwater samples at the SFSA. The maximum TCE concentration slightly exceeds the screening level.

Vapor Intrusion Pathway Evaluation Conclusion

The results of the Tier 1 and Tier 2 evaluations show that shallow groundwater concentrations at both the CHP and SFSA exceed the screening values.

Shallow groundwater chloroform and mercury concentrations at the CHP area exceed the screening values. Shallow groundwater carbon tetrachloride and TCE concentrations at the SFSA exceed the screening values.

No contaminants were detected in shallow groundwater at the EFSA exceeding VISLs.

4.2.4 Potentially Exposed Populations

Potentially exposed receptor populations have been identified by analyzing the interaction of current and anticipated future land use practices with the identified sources of contamination.

The receptors included in the current use exposure scenario for the Study Area include trespassers and river recreational visitors. Trespassers at the SFSA or EFSA could potentially contact surface soil. Current trespassers at the CHP were not included because contaminated soils are currently beneath the cap; however, trespassers at the CHP are included under the future scenario. River recreational visitors could potentially contact sediments, surface water, and consume fish caught along the river. As noted above, no significant contamination is present in surface water; therefore, exposures to surface water were not evaluated quantitatively.

The receptors included in the future use exposure scenario for the Study Area vary by exposure area and include residents, industrial/commercial workers, recreational visitors, trespassers, and construction/utility workers. Future trespassers, residents, and recreational visitors at the CHP could potentially contact surface soil. Future residents and industrial/commercial workers at the SFSA or EFSA could potentially contact surface soil. Future construction/utility workers at the SFSA or EFSA could potentially contact subsurface soil during construction work. Future residents at the CHP and future residents and industrial/commercial workers at the SFSA or EFSA could potentially contact subsurface soil brought to the surface during re-development or construction work. Potential future use of the CHP is assumed to be limited to recreational use with soils beneath the cap remaining undisturbed; however, residential scenarios (both exposure to surface soil and exposure to subsurface soil) were evaluated for this area as a conservative approach protective of all potential future uses. The future use of the SFSA and EFSA is unknown; however, future residential use and future industrial/commercial use were considered. A future residential scenario represents the most conservative future use of the Study Area. Future residents and industrial/commercial workers could potentially contact contaminants in shallow groundwater through inhalation of volatiles in indoor air. These exposures are evaluated separately in the vapor intrusion evaluation in Section 4.3.2. Finally, potential contact with groundwater as drinking water was evaluated for future residents within the Study Area through a simplified ratio approach.

For the CHP, the following receptors were evaluated quantitatively:

- future (adolescent) trespassers through soil contact during outdoor activities;
- future residents through soil contact during play or yard work; and
- future recreational visitors through soil contact during outdoor activities.

For the SFSA and EFSA, the following receptors were evaluated quantitatively:

- current and future (adolescent) trespassers through soil contact during outdoor activities;
- future residents through soil contact during play or yard work;
- future industrial/commercial workers through soil contact during work; and
- future construction/utility workers through soil contact during excavation activities.

For the RSA, the following receptors were evaluated quantitatively:

- current and future recreational visitors through sediment contact during river recreational activities such as wading, swimming, or fishing; and
- current and future recreational visitors through ingestion of fish tissue.

Figure 4-1 indicates which receptors/exposure routes are considered for each exposure area. Table 2-1 presents receptors and exposure pathways identified for the Study Area and provides the rationale for the quantitative evaluation of selected exposure pathways.

4.3 Identification of Exposure Equations and Parameters

To estimate the potential risk to human health that may be posed by the presence of COPCs at the Study Area, it is first necessary to estimate the potential Average Daily Dose (ADD) of each COPC. The ADD is estimated for each compound via each exposure pathway by which the receptor is assumed to be exposed. ADD equations combine the estimates of compound concentration in the environmental medium of interest with assumptions regarding the type and magnitude of each receptor's potential exposure to provide a numerical estimate of the exposure dose. The exposure dose is defined as the amount of COPC taken into the receptor and is expressed in units of milligrams of COPC per kilogram of body weight per day (mg/kg-day).

Exposure doses are defined differently for potential carcinogenic and non-carcinogenic effects. The Chronic Average Daily Dose (CADD) is used to estimate a receptor’s potential intake from exposure to a COPC with non-carcinogenic effects. According to EPA guidance (EPA, 1989), the CADD should be calculated by averaging the dose over the period of time for which the

receptor is assumed to be exposed. Therefore, the averaging period is the same as the exposure duration. For COPCs with potential carcinogenic effects, however, the Lifetime Average Daily Dose (LADD) is employed to estimate potential exposures. In accordance with EPA guidance (EPA, 1989), the LADD is calculated by averaging exposure over the receptor's assumed lifetime (70 years). Therefore, the averaging period is the same as the receptor's assumed lifetime. All equations used to estimate potential exposure doses follow EPA guidelines (EPA, 1989).

Exposures depend on the predicted concentrations of chemicals in environmental media at the exposure points, and on scenario-specific assumptions and intake parameters based on local land use practices. Both contaminant concentrations and land use are subject to change over time. This results in a large number of possible combinations of receptors, media, exposure pathways, and concentrations. As mentioned previously, Appendix A, Table A-1 presents a summary of the exposure pathways evaluated in the quantitative risk assessment.

Appendix A presents an evaluation of RME scenarios. The RME scenarios were developed according to EPA guidance (EPA, 1989) using values that represent the upper distribution or "high-end" of population exposure for exposure parameters. The RME scenario is intended to provide an upper bound of the possible risk. The RME is conceptually the "high end" exposure, above the 90th percentile of the population distribution, but not higher than the individual in the population with the highest exposure.

RME exposure model parameters are described in this section and presented in Appendix A, Tables A-4.1 through A-4.13. The standardized intake equations for estimating a receptor's average daily dose, dermally absorbed dose, and average daily concentrations (both lifetime and chronic) are also presented on the tables. The parameters are used in the intake equations, along with the EPCs presented in Appendix A, Tables A-3.1 through A-3.4, to calculate intakes, which in combinations with toxicity values presented in Appendix A, Tables A-5.1, A-5.2, A-6.1, and A-6.2 are used to determine risks. Individual RME chemical intakes for each receptor/exposure route combination are presented in Appendix A, Tables A-7.1 through A-7.4.

Appendix M presents an evaluation of the central tendency exposure (CTE) receptor. The CTE receptor was developed using professional judgment regarding site-specific conditions. The CTE scenario uses the same exposure point concentrations, toxicity values, and equations as

the RME, but uses average values for exposure parameters and represents an “average case” exposure scenario. CTE exposure model parameters are presented in Appendix M, Tables M-4.1 through M-4.13. Individual CTE chemical intakes for each receptor/exposure route combination are presented in Appendix M, Tables M-7.1 through M-7.4.

The exposure model parameters presented in Appendix A, Tables A-4.1 through A-4.13 and Appendix M, Tables M-4.1 through M-4.13 reflect current EPA guidance. The sources for all parameters are referenced in footnotes on each table.

4.3.1 General Exposure Parameter Assumptions

Several parameters are used in multiple scenarios.

- Body weight is the same for each adult (70 kilograms (kg)), child (15 kg), and adolescent (39 kg), irrespective of scenario.

- Averaging Time (AT) is always the years of the exposure duration (ED) times 365 days per year for CADD and 70 years times 365 days per year for LADD.

- Chemical-specific volatilization factors used in evaluations of inhalation of soil vapors were obtained from the EPA RSL table (EPA, 2012a).

- The fraction of soil intake derived from the contaminated source was set at one for all scenarios.

- Oral absorption factors (OABS) are conservatively assumed to be one for all ingestion routes.

- Chemical-specific dermal absorption factors (DABS), presented in *RAGS HHEM, Part E, Supplemental Guidance for Dermal Risk Assessment* (EPA, 2004), were used to estimate exposure doses for soil and sediment exposures. Unfortunately, limited information regarding dermal absorption is available. The DABS values that are available for the COPCs are presented in Appendix G.

- A particulate emission factor (PEF) of 1.4 x 10^9 cubic meters per kilogram (m^3/kg) (EPA, 2002b) was used for all soil dust inhalation scenarios except construction/utility workers.

4.3.2 Scenario-specific RME Exposure Parameter Assumptions

The following subsections present scenario-specific RME exposure assumptions.

4.3.2.1 Future Residents, Exposure to Soil

Hypothetical future residents, potentially exposed to surface soil and aggregate soil via incidental ingestion and dermal contact and inhalation of fugitive dust and soil vapors, were evaluated for the CHP, SFSA, and EFSA. Assumptions used in the evaluations of residential soil exposures apply to both surface soil and aggregate soil exposures.

Non-cancer risks for residents are evaluated separately for adults and children. Cancer risks are evaluated for an age-adjusted resident combining child and adult exposures.

Adult residents were assumed to be exposed to soil 350 days per year for 24 years. Child residents were assumed to be exposed to soil 350 days per year for 6 years. The proposed exposure duration values were based on EPA guidance for RME evaluation (EPA, 1997a and 2002b). Values for small children reflect the entire age span for the receptor evaluated.

Adult residents were assumed to ingest an average of 100 milligrams (mg) of soil per day. Child residents were assumed to ingest an average of 200 mg of soil per day.

Hands, forearms, lower legs, and head were assumed to be available for dermal contact with soil for adults. Hands, forearms, lower legs, feet, and head were assumed to be available for dermal contact with soil for young children. The calculated available skin surface areas for dermal contact with soil for adults and small children (ages 0-6 years) were 5,700 square centimeters (cm^2) and 2,800 cm^2, respectively.

A value of 0.07 milligrams per square centimeter per event (mg/cm^2-event) was used as the soil-to-skin adherence factor (SSAF) for adult exposures. The adult SSAF of 0.07 mg/cm^2-event corresponds to the 50th percentile weighted adherence values for gardeners. A value of 0.2 mg/cm^2-event was used as the SSAF for child exposures. The child SSAF of 0.2 mg/cm^2-

event corresponds to the 50th percentile weighted adherence values for children playing in wet soil (EPA, 2004).

For all residents, inhalation of dust and soil vapor exposures assumed exposure occurs 24 hours per day.

Appendix A, Tables A-4.1 and A-4.2 present the RME exposure parameters for adult and child resident exposures to soil. Appendix A, Table A-4.3 presents the RME exposure parameters for age-adjusted lifetime resident exposures to soil.

4.3.2.2 Future Recreational Visitors, Exposure to Soil

Hypothetical future recreational visitors, potentially exposed to surface soil via incidental ingestion, dermal contact, and inhalation of fugitive dust and vapors, were evaluated for the CHP.

The exposure frequency assumptions for adult and child recreational visitors were 104 days per year (3 days per week during 8 months per year). Adult recreational visitors were assumed to ingest an average of 100 mg of soil per day for 24 years. Child recreational visitors were assumed to ingest an average of 200 mg of soil per day for 6 years. The proposed exposure duration values were based on EPA guidance for RME evaluation of residential exposures (EPA, 1997a and 2002b). Values for small children reflect the entire age span for the receptor evaluated.

Hands, forearms, lower legs, and head were assumed to be available for dermal contact with soil for adults. Hands, forearms, lower legs, feet, and head were assumed to be available for dermal contact with soil for young children. The calculated available skin surface areas for dermal contact with soil for adults and small children (ages 0-6 years) were 5,700 cm^2 and 2,800 cm^2, respectively.

A value of 0.07 mg/cm^2-event was used as the SSAF for adult exposures. The adult SSAF of 0.07 mg/cm^2-event corresponds to the 50^{th} percentile weighted adherence values for gardeners. A value of 0.1 mg/cm^2-event was used as the SSAF for child exposures. The child recreational

SSAF of 0.1 mg/cm^2-event corresponds to the 50th percentile weighted adherence values for Rugby players (EPA, 2004).

For recreational visitors, inhalation of dust and soil vapor exposures assumed exposure occurs 2 hours per day.

Appendix A, Tables A-4.4 and A-4.5 present the RME exposure parameters for future adult and child recreational visitor exposures to surface soil.

4.3.2.3 Future Industrial/Commercial Workers, Exposure to Soil

For purposes of evaluation, the future industrial/commercial worker scenario was defined as indoor/outdoor workers in direct contact with soils on a frequent basis.

Industrial/commercial workers, potentially exposed to COPCs in surface soil via incidental ingestion, dermal contact, and inhalation of fugitive dust and vapors, were evaluated for the SFSA and EFSA, assuming future conditions without re-mixing of soils. In the future, contaminated soils currently located at depth may be brought to the surface through excavation and land development. Therefore, a second industrial/commercial worker, potentially exposed to aggregate soil was also evaluated for these areas. Assumptions used in the evaluations of industrial/commercial worker soil exposures apply to both surface soil and aggregate soil exposures.

Industrial/commercial workers were assumed to be exposed to Study Area soil for 250 days per year for 25 years. These receptors were assumed to ingest an average of 100 mg of soil per day. Head, hands, and forearms were expected to be available for dermal contact with soils. The calculated available skin surface area for these body parts was 3,300 cm^2. A value of 0.2 mg/cm^2-event was used as the SSAF. This value corresponds to the 50th percentile weighted adherence values for heavy equipment operators and utility workers (EPA, 2004).

For all industrial/commercial workers, inhalation of dust and soil vapor exposures assumed exposure to dust occurs 8 hours per day.

Appendix A, Table A-4.6 presents the RME exposure parameters for industrial/commercial worker exposures to soil.

4.3.2.4 Current and Future Trespassers, Exposure to Soil

The trespasser was assumed to be a local resident between the ages of 6 and 16 years old, weighing 39 kilograms. It was assumed that trespassers could contact surface soil via ingestion and dermal contact and dust and soil vapors through inhalation. The trespasser scenario is considered a current and future scenario for the EFSA and SFSA. Current trespassers at the CHP were not included because contaminated soils are currently beneath the cap; however, trespassers at the CHP are included under the future scenario.

The exposure frequency assumptions for trespassers were 78 days per year (2 days per week during 9 months per year). Trespassers were assumed to ingest an average of 100 mg of soil per day for 10 years. The proposed exposure duration value reflects the entire age span for the receptor evaluated.

Hands, forearms, lower legs, and feet were assumed to be available for dermal contact with soil. The calculated available skin surface area for dermal contact with soil was 4,184 cm^2. A value of 0.2 mg/cm^2-event was used as the SSAF. The trespasser SSAF of 0.2 mg/cm^2-event corresponds to the 50^{th} percentile weighted adherence values for children playing in wet soil (EPA, 2004).

Trespassers were assumed to inhale dust and soil vapors from soil for 4 hours per day.

Appendix A, Table A-4.7 presents the RME exposure parameters for trespasser exposures to soil.

4.3.2.5 Future Construction/Utility Workers, Exposure to Soil

Construction/utility workers potentially exposed to aggregate soil through incidental ingestion, dermal contact, and inhalation of fugitive dust and vapors during excavation activities at the SFSA and EFSA were evaluated. Possible exposures of construction/utility workers to site-related contaminants would be through excavation activities during a project lasting no more

than 1 year. The construction/utility worker may be in direct contact with soils as deep as 10 feet bgs.

Construction/utility workers were assumed to be exposed to Study Area soils for 130 days per year (5 days per week during 6 months per year). Exposure durations were set at 1 year. These receptors were assumed to ingest an average of 330 mg of soil per day.

Head, hands, and forearms were expected to be available for dermal contact with soils. The calculated available skin surface area for these body parts was 3,300 cm^2. A value of 0.2 mg/cm^2-event was used as the SSAF for adult construction/utility workers. The value corresponds to the 50^{th} percentile weighted adherence values for heavy equipment operators and utility workers (EPA, 2004).

Construction/utility workers were assumed to inhale dust and vapors from soil for 8 hours per day. A particulate emission factor of 1.4×10^6 m^3/kg, calculated in Appendix H, was used.

Appendix A, Table A-4.8 presents the RME exposure parameters for construction/utility worker exposures to soil and dust.

4.3.2.6 Current and Future River Recreational Visitors, Exposure to Sediment

Recreational visitors, potentially exposed to sediment via incidental ingestion and dermal contact, were evaluated for three stretches of the RSA:

- Stretch 1 includes Reaches 3 through 5, fast flowing sections of the river immediately adjacent to and downstream of the CHP;
- Stretch 2 includes Reaches 6 through 8, fast flowing sections of the river further downstream; and
- Stretch 3 includes Reach 9, a relatively calm and broader section of the river furthest downstream from the CHP.

The exposure frequency assumptions for adult and child recreational visitors were 22 days per year (2 days per week during 11 weeks per year). Adult recreational visitors were assumed to

ingest an average of 100 mg of sediment per day for 24 years. Child recreational visitors were assumed to ingest an average of 200 mg of sediment per day for 6 years. The proposed exposure duration values were based on EPA guidance for RME evaluation of residential exposures (EPA, 1997a and 2002b). Values for small children reflect the entire age span for the receptor evaluated.

Hands, forearms, lower legs, feet, and head were assumed to be available for dermal contact with sediment for both adults and young children. The calculated available skin surface areas for dermal contact with sediment for adults and small children (ages 0-6 years) were 6,900 cm^2 and 2,800 cm^2, respectively.

A value of 0.3 mg/cm^2-event was used as the sediment-to-skin adherence factor for adult exposures. The adult sediment-to-skin adherence factor of 0.3 mg/cm^2-event corresponds to the 50^{th} percentile weighted adherence values for reed gatherers. A value of 0.1 mg/cm^2-event was used as the sediment-to-skin adherence factor for child exposures. The child recreational sediment-to-skin adherence factor of 0.2 mg/cm^2-event corresponds to the 50^{th} percentile weighted adherence values for children playing in wet soil (EPA, 2004).

Appendix A, Tables A-4.9 and A-4.10 present the RME exposure parameters for current and future adult and child recreational visitor's exposures to sediment.

4.3.2.7 Current and Future River Recreational Visitors, Ingestion of Fish Tissue

Recreational visitors, potentially exposed to fish tissue via ingestion, were evaluated for the RSA. Fishermen were assumed to visit all areas of the river and fish were assumed to move between various reaches; therefore, ingestion of fish was evaluated as a single exposure point.

Adult recreational anglers (and adult members of their families) were assumed to ingest an average of 32 grams of fish tissue per day (approximately one 8 ounce fish meal per week) for 24 years. The child recreational anglers (or children of recreational anglers) were assumed to ingest an average of 13 grams of fish tissue per day (approximately one 4 ounce fish meal per week) for 6 years. Fish ingestion rates are based on 90^{th} percentile ingestion rates for all freshwater from a report entitled "*Estimating Consumption of Freshwater Fish among Maine*

Anglers" (Ebert and Harrington, 1993). The adult rate assumes the anglers themselves are the only consumers, the child ingestion rate assumes all household members share the catch.

Appendix A, Tables A-4.11 and A-4.12 present the RME exposure parameters for current and future adult and child recreational angler ingestion of fish. Appendix A, Table A-4.13 presents the RME exposure parameters for age-adjusted lifetime recreational angler ingestion of fish.

4.3.3 Intake Equations

The standardized intake equations for estimating a receptor's average daily dose, dermally absorbed dose, and average daily concentrations (both lifetime and chronic) are presented below.

Incidental Ingestion of Soil and Sediment

For soil, this pathway was evaluated for residents, recreational visitors, industrial/commercial workers, construction/utility workers, and trespassers. For sediment, this pathway was evaluated for river recreational visitors. In general, intakes associated with soil and sediment ingestion were calculated using the following equation from *RAGS HHEM, Part A* (EPA, 1989):

Average Daily Dose (Lifetime and Chronic) Following Ingestion of Soil or Sediment (mg/kg-day):

$$ADD = \frac{CS \times IR \times OABS \times FI \times EF \times ED \times CF}{BW \times AT}$$

where:

ADD	=	Average daily dose of contaminant from soil or sediment (mg/kg-day)
CS	=	Exposure concentration for soil or sediment (mg/kg)
IR	=	Ingestion rate (mg/day)
OABS	=	Oral absorption factor
FI	=	Fraction ingested from contaminated source (decimal fraction)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (year)

CF = Conversion factor (10^{-6} kg/mg)

BW = Body weight (kg)

AT = Averaging time (days);
for non-carcinogens, AT=ED*365 days/year;
for carcinogens, AT=70 year*365 days/year

Dermal Contact with Soil and Sediment

For soil, this pathway was evaluated for residents, recreational visitors, industrial/commercial workers, construction/utility workers, and trespassers. For sediment, this pathway was evaluated for river recreational visitors. The following equations from *RAGS HHEM, Part E, Supplemental Guidance for Dermal Risk Assessment* (EPA, 2004) were used to estimate the average daily dose (lifetime and chronic) and the dermally absorbed dose (DAD) for soil and sediment:

Average Daily Dose (Lifetime and Chronic) Following Dermal Contact with Soil or Sediment (mg/kg-day):

$$ADD = DAD$$

where:

ADD = Average daily dose (mg/kg-day)

DAD = Dermally absorbed dose (mg/kg-day)

Dermally Absorbed Dose (Lifetime and Chronic) Following Dermal Contact with Soil or Sediment (mg/kg-day):

$$DAD = \frac{DA_{event} \text{ x } EF \text{ x } ED \text{ x } EV \text{ x } SA}{BW \text{ x } AT}$$

where:

DAD = Dermally absorbed dose (mg/kg-day)

DA_{event} = Absorbed dose per event (mg/cm^2-event))

EF = Exposure frequency (days/year)
ED = Exposure duration (years)
EV = Event frequency (events/day)
SA = Surface area (cm^2)
BW = Body weight (kg)
AT = Averaging time (days);
for non-carcinogens, AT=ED*365 days/year;
for carcinogens, AT=70 year*365 days/year

The calculation of the dose absorbed per unit area per event (DA_{event}) is as follows:

$$DA_{event} = CS \times SSAF \times DABS \times CF$$

where:

DA_{event} = Absorbed dose per event (mg/cm^2-event)
CS = Exposure concentration for soil or sediment (mg/kg)
SSAF = Soil or sediment-to-skin adherence factor (mg/cm^2-event)
DABS = Dermal absorption fraction (unitless)
CF = Conversion factor (10^{-6} kg/mg)

Estimating Potential Exposure from Inhalation of Fugitive Dust and Soil Vapors

Inhalation of fugitive dust and soil vapors was evaluated for residents, recreational visitors, industrial/commercial workers, construction/utility workers, and trespassers. Inhalation exposures were evaluated using average daily concentrations (ADC) in combination with RfCs or inhalation unit risk factors following EPA guidance (EPA, 2009b).

The following equation from *RAGS HHEM, Part F, Supplemental Guidance for Inhalation Risk Assessment* (EPA, 2009b) was used to calculate potential risks from inhalation of fugitive dust:

Average Daily Concentration (Lifetime and Chronic) Following Inhalation of COPC (mg/kg-day):

$$ADC = \frac{CS \times \frac{1}{PEF} \times ET \times EF \times ED \times CF \times CF2}{AT}$$

where:

ADC = Average daily concentration (micrograms per cubic meter ($\mu g/m^3$))
CS = Exposure concentration for soil (mg/kg soil)
PEF = Particulate emission factor (m^3/kg)
ET = Exposure time (hours per day (hr/day))
EF = Exposure frequency (days/year)
ED = Exposure duration (year)
CF = Conversion factor (10^3 µg/mg)
CF2 = Conversion factor (days/hr)
AT = Averaging time (days)

The following equation from *RAGS HHEM, Part F, Supplemental Guidance for Inhalation Risk Assessment* (EPA, 2009b) was used to calculate potential risks from inhalation of soil vapors:

Average Daily Concentration (Lifetime and Chronic) Following Inhalation of COPC (mg/kg-day):

$$ADC = \frac{CS \times \frac{1}{VF} \times ET \times EF \times ED \times CF \times CF2}{AT}$$

where:

ADC = Average daily concentration ($\mu g/m^3$)
CS = Exposure concentration for soil (mg/kg soil)
VF = Volatilization factor (m^3/kg)
ET = Exposure time (hr/day)
EF = Exposure frequency (days/year)
ED = Exposure duration (year)

CF = Conversion factor (10^3 µg/mg)

CF2 = Conversion factor (days/hr)

AT = Averaging time (days)

Ingestion of Fish

This pathway was evaluated for river recreational visitors (anglers and their families. In general, intakes associated with fish tissue ingestion were calculated using the following equation from *RAGS HHEM, Part A* (EPA, 1989):

Average Daily Dose (Lifetime and Chronic) Following Ingestion of Fish (mg/kg-day):

$$ADD = \frac{CF \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$$

where:

ADD = Average daily dose of contaminant from fish tissue (mg/kg-day)

CF = Exposure concentration for fish tissue (mg/kg)

IR = Ingestion rate (g/day)

FI = Fraction ingested from Androscoggin River (decimal fraction)

EF = Exposure frequency (days/year)

ED = Exposure duration (year)

CF = Conversion factor (10^{-3} kg/g)

BW = Body weight (kg)

AT = Averaging time (days);
for non-carcinogens, AT=ED*365 days/year;
for carcinogens, AT=70 year*365 days/year

5.0 TOXICITY ASSESSMENT

The toxicity assessment for the COPCs examines information concerning the potential human health effects of exposure to COPCs. The goal of the toxicity assessment is to provide, for each COPC, a quantitative estimate of the relationship between the magnitude and type of exposure

and the severity or probability of human health effects. The toxicity values presented in this section are integrated with the exposure assessment (Section 4.0) to characterize the potential for the occurrence of adverse health effects (Section 6.0).

The toxicological evaluation involves a critical review and interpretation of toxicity data from epidemiological, clinical, animal, and in vitro studies. This review of the data ideally determines both the nature of the health effects associated with a particular chemical and the probability that a given quantity of a chemical could result in the referenced effect. This analysis defines the relationship between the dose received and the incidence of an adverse effect for the COPCs.

CSFs and URFs are the dose-response values used to evaluate potential carcinogens. Non-carcinogenic effects, such as organ damage or reproductive effects, are evaluated by RfDs for oral exposure and RfCs for inhalation exposure. The entire toxicological database is used to guide the derivation of these toxicity values. These data may include epidemiological studies, long-term animal bioassays, short-term tests, and evaluations of molecular structure. Data from these sources are reviewed to determine if a chemical is likely to be toxic to humans. Because of the lack of available human studies, however, the majority of the toxicity data used to derive CSFs, URFs, RfDs, and RfCs comes from animal studies.

The EPA's Integrated Risk Information System (IRIS) database (EPA, 2012d) was consulted as the primary source for RfD and RfC values, as well as for CSFs and URFs. EPA intends that IRIS supersedes all other sources of toxicity information for risk assessment. Additional sources for the dose-response values used in the risk assessment were the EPA National Center for Environmental Assessment (NCEA) in Cincinnati, Ohio, and the Health Effects Assessment Summary Tables (HEAST) (EPA, 1997b). The following hierarchy was used for selection for toxicity values (EPA, 2003b):

- Tier 1 – EPA's IRIS;

- Tier 2 – EPA's Provisional Peer Reviewed Toxicity Values (PPRTVs) – The Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center (STSC) develops PPRTVs on a chemical specific basis when requested by EPA's Superfund program; and

- Tier 3 – Other toxicity values – Tier 3 includes additional EPA and non-EPA sources of toxicity information.

The EPA RSLs Table (EPA, 2012a) provides a source of NCEA values. Appendix A, Tables A-5.1 and A-6.1 present oral non-carcinogenic and carcinogenic toxicity values, respectively. Appendix A, Tables A-5.2 and A-6.2 present inhalation non-carcinogenic and carcinogenic toxicity values, respectively. For several COPCs without toxicity values, the toxicity values of similar contaminants were used as surrogates.

Toxicity profiles summarizing the available literature on carcinogenic and non-carcinogenic effects associated with human exposure to specific chemicals are available from EPA or the Agency for Toxic Substances and Disease Registry (ATSDR) at www.epa.gov/iris or www.atsdr.cdc.gov.

5.1 Non-Carcinogenic Effects

For non-carcinogenic effects, it is assumed that there exists a dose below which adverse health effects are unlikely to be seen.

The potential for non-carcinogenic health effects resulting from oral or dermal exposure to chemicals is assessed by comparing an exposure estimate (intake or dose) to an RfD. The RfD is expressed in units of mg/kg-day and represents a daily intake of contaminant per kilogram of body weight below which adverse health effects are unlikely. Chronic RfDs used in this assessment are developed to be protective of long-term exposure.

The potential for non-carcinogenic health effects resulting from inhalation exposure to chemicals is assessed by comparing an exposure concentration in air to an RfC. The RfC is expressed in units of milligrams per cubic meter (mg/m^3).

To derive an RfD or RfC, EPA reviews all relevant human and animal studies for each compound and selects the study (studies) pertinent to the derivation of the specific RfD or RfC. For non-carcinogenic effects, the most appropriate animal model (the species most biologically similar to the human) is identified. Pharmacokinetic data often enter into this determination. In the absence of sufficient data to identify the most appropriate animal model, the most sensitive

species is chosen. The RfD or RfC is generally derived from the most comprehensive toxicology study that characterizes the dose-response relationship for the critical effect of the chemical. Preference is given to studies using the exposure route of concern; in the absence of such data, however, an RfD or RfC for one route of exposure may be extrapolated from data from a study that evaluated a different route of exposure. Such extrapolation must take into account pharmacokinetic and toxicological differences between the routes of exposure.

Each study is evaluated to determine the no-observed-adverse-effect-level (NOAEL) or, if the data are inadequate for such a determination, the lowest-observed-adverse-effect-level (LOAEL). The NOAEL corresponds to the dose (in mg/kg-day) or concentration (in mg/m^3) that can be administered over a lifetime without inducing observable adverse effects. The LOAEL corresponds to the lowest daily dose or concentration that induces an observable adverse effect. The toxic effect characterized by the LOAEL is referred to as the "critical effect."

To derive an RfD or RfC, the NOAEL (or LOAEL) is divided by uncertainty factors to ensure that the RfD or RfC will be protective of human health. Uncertainty factors are applied to account for extrapolation of data from laboratory animals to humans (interspecies extrapolation), variation in human sensitivity to the toxic effects of a compound (intraspecies differences), derivation of a chronic RfD or RfC based on a subchronic rather than a chronic study, or derivation of an RfD or RfC from the LOAEL rather than the NOAEL. In addition to these uncertainty factors, modifying factors between 1 and 10 may be applied to reflect additional qualitative considerations in evaluating the data. For most compounds, the modifying factor is one.

Dermal toxicity factors are based on route-to-route extrapolation (oral to dermal) for systemic effects as described in EPA RAGS E (EPA, 2004). To derive the dermal RfD, the oral RfD (based on an administered dose) is multiplied by the gastrointestinal tract absorption efficiency factor to determine an RfD based on an absorbed dose rather than an administered dose. The resulting dermal RfD is used to evaluate the dermal (absorbed) dose calculated by the dermal exposure algorithms.

Oral RfDs for the COPCs for the Site are presented in Appendix A, Table A-5.1. Dermal RfDs and the absorption efficiencies used in their determination are also included in Appendix A, Table A-5.1. The absorption efficiencies were obtained from EPA's Table 4.1, "Summary of Gastrointestinal Absorption Efficiencies and Recommendations for Adjustment of Oral Slope

Factors for Specific Compounds" in *RAGS HHEM, Part E, Supplemental Guidance for Dermal Risk Assessment* (EPA, 2004). Inhalation RfCs for the COPCs are presented in Appendix A, Table A-5.2. The tables also include the primary target organs affected by each listed chemical, where information is available. This information may be used in the risk characterization (Section 6.0) to segregate risks by target organ effects when the total HI is greater than 1.0.

Chemical-Specific Considerations

For non-carcinogenic risk of PCBs (total PCB homologues), the oral RfD for Aroclor 1254 of 2.00×10^{-5} mg/kg-day was used.

The toxicity and non-cancer risk characterization for dioxins and dioxin-like PCB congeners were evaluated through use of dioxin TEQs and total dioxin-like PCB congeners TEQs both in conjunction with the RfD for 2,3,7,8-TCDD of 7.0×10^{-10} mg/kg-day and the RfC for 2,3,7,8-TCDD of 4.0×10^{-8} mg/m^3 in determining non-cancer risk.

The toxicity and non-cancer risk characterization for total chromium were evaluated through use of hexavalent chromium RfDs and RfCs to be conservative.

The toxicity and non-cancer risk characterization for total mercury in soils and sediments were evaluated through use of elemental mercury RfDs and RfCs; however, mercury in fish tissue was evaluated through use of the methylmercury RfD.

An oral RfD for soluble inorganic vanadium compounds other than vanadium pentoxide (PPRTV – EPA, 2009d) and an inhalation RfC for vanadium pentoxide (ATSDR, 2012) were used for evaluating reported total vanadium concentrations.

Consistent with the Region I approach, copper was not quantitatively evaluated. The provisional oral RfD is based on concentrations needed to protect against a deficiency of the metal, rather than on quantitative estimates related to the hazard posed by overexposure.

5.2 Carcinogenic Effects

The toxicity information considered in the assessment of potential carcinogenic risks includes chemical-specific CSFs, inhalation URFs, and a weight-of-evidence narrative consistent with

Guidelines for Carcinogenic Risk Assessment (EPA, 2005). These revised guidelines use standard narrative descriptors (Carcinogenic to Humans, Likely to Be Carcinogenic to Humans, Suggestive Evidence of Carcinogenic Potential, Inadequate Information to Assess Carcinogenic Potential, and Not Likely to Be Carcinogenic to Humans) to describe the likelihood that a chemical is a human carcinogen and are based on an evaluation of the available data from human and animal studies.

The CSFs and URFs are plausible upper bound estimates of carcinogenic potency used to calculate cancer risk from exposure to carcinogens, by relating estimates of lifetime average chemical intake to the incremental probability of an individual developing cancer over a lifetime.

CSFs and URFs are derived from studies of carcinogenicity in humans and/or laboratory animals. For animal studies, preference is given to studies using the route of exposure of concern, in which normal physiologic function was not impaired, and in which exposure occurred during most of the animal's lifetime. Exposure and pharmacokinetic considerations are used to estimate equivalent human doses for computation of the CSF. CSFs are specific to a chemical and route of exposure and are expressed in units of $(mg/kg\text{-}day)^{-1}$ for oral routes.

In the absence of dermal toxicity values, route-to-route extrapolation is applied to CSFs in evaluation of systemic cancer effects as a result of dermally absorbed contaminants.

Inhalation risks are determined through use of inhalation URFs (EPA, 2009b). An inhalation URF is an upper-bound excess lifetime cancer risk estimated to result from continuous exposure to an agent at a concentration of 1 $\mu g/m^3$ in air.

Oral CSFs for COPCs at the Site are presented in Appendix A, Table A-6.1. Dermal CSFs and the absorption efficiencies used in their determination are also included in Appendix A, Table A-6.1. The absorption efficiencies were obtained from EPA's Table 4.1, "Summary of Gastrointestinal Absorption Efficiencies and Recommendations for Adjustment of Oral Slope Factors for Specific Compounds" in *RAGS HHEM, Part E, Supplemental Guidance for Dermal Risk Assessment* (EPA, 2004). Inhalation URFs for the COPCs are presented in Appendix A, Table A-6.2.

EPA's *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposures to Carcinogens* (EPA, 2005) was followed when assessing carcinogens that act with a mutagenic mode of action. EPA's Age-Dependent Adjustment Factors (ADAFs) were used to assess the increased susceptibility of children to carcinogens (EPA, 2005). Further discussion is provided in Section 6.1.2.

Chemical-Specific Considerations

Risk estimates for PAHs have, in the past, assumed that all carcinogenic PAHs have a potency equal to that for benzo(a)pyrene. Although benzo(a)pyrene was well studied, other carcinogenic PAHs had insufficient data with which to calculate a CSF. EPA has published provisional guidance to assess PAHs (EPA, 1993). Estimated orders of potential potency (rather than a TEF) were developed based on skin painting tests and are rounded to one significant figure (based on an order of magnitude). The values are based on a comparable endpoint (complete carcinogenesis after repeated exposure to mouse skin). The quality of the data does not support any greater precision. The orders of potential potency used in this HHRA are presented in Appendix I. EPA has determined that the oral CSF for benzo(a)pyrene is 7.3 $(mg/kg\text{-}day)^{-1}$. Oral CSFs for other carcinogenic PAHs were determined by multiplying the oral CSF for benzo(a)pyrene by the estimated order of potential potency for the PAH. These oral CSFs for PAHs became the basis for deriving the dermal CSFs used to evaluate dermal risk from PAHs.

For carcinogenic risk of PCBs (total PCB homologues), the oral CSF for high risk and persistent PCB mixtures of 2.00 $(mg/kg\text{-}day)^{-1}$ was used.

The toxicity and cancer risk characterizations for dioxins and dioxin-like PCB congeners were evaluated through use of dioxin TEQs and total dioxin-like PCB congeners TEQs both in conjunction with the CSF for 2,3,7,8-TCDD of $1.3x10^{+5}$ $(mg/kg\text{-}day)^{-1}$ and the inhalation URF for 2,3,7,8-TCDD of $3.8x10^{+1}$ $(\mu g/m^3)^{-1}$ (EPA, 2012a) in determining cancer risk. EPA's dioxin reassessment has been developed and undergone review over many years with the participation of scientific experts in EPA and other federal agencies, as well as scientific experts in the private sector and academia. The reassessment of dioxin cancer effects has not yet been finalized. When the EPA's dioxin reassessment is finalized, the cancer risks may be re-evaluated by EPA.

The toxicity and cancer risk characterizations for total chromium were evaluated through use of hexavalent chromium CSFs and URFs as presented on the EPA RSL table (EPA, 2012a) to be conservative. No speciation data has been collected for chromium; therefore, chromium VI toxicity values were obtained from the EPA RSL tables to be conservative. For inhalation exposure to hexavalent chromium, the RSL table presents an inhalation URF derived from the IRIS Inhalation URF assuming a 1 to 6 ratio of trivalent chromium to hexavalent chromium. The toxicity value for hexavalent chromium is under review by the IRIS program.

PCNs were detected in the Study Area; however, no accepted toxicity values are available for these contaminants. For this reason, PCNs were evaluated qualitatively in the uncertainty section.

6.0 RISK CHARACTERIZATION

This section provides a characterization of the potential human health risks associated with the potential exposure to COPCs in various media within the Study Area and the river. Section 6.1 outlines the methods used to estimate the type and magnitude of health risks and Section 6.2 presents the risk characterization results for the current and potential future land use conditions.

6.1 Risk Characterization Methodology

Potential human health risks resulting from exposure to COPCs were estimated using algorithms established by EPA. The methods are protective of human health and are likely to overestimate (rather than underestimate) risk. The methodology uses specific algorithms to calculate risk as a function of chemical concentration, human exposure parameters, and toxicity.

Risks from hazardous chemicals are calculated for either carcinogenic or non-carcinogenic effects. Some carcinogenic chemicals may also exhibit non-carcinogenic effects, in which case, potential impacts are characterized for both types of health effects.

6.1.1 Non-Cancer Effects

The hazards associated with non-cancer effects of COPCs are evaluated by comparing an ADD to an RfD or an ADC to an RfC. The ratio of the ADD to an RfD or an ADC to an RfC is called the HQ and is defined as follows (EPA, 1989):

$$HQ = \frac{ADD}{RfD} \; or \; \frac{ADC}{RfC}$$

where:

HQ = Hazard Quotient (unitless)
ADD = Average daily dose (mg/kg-day or mg/m^3), a function of exposure and chemical concentration
ADC = Average daily concentration (mg/m^3), a function of exposure and chemical concentration
RfD = Reference dose (mg/kg-day)
RfC = Reference concentration (mg/m^3)

If the ratio of the ADD to the RfD or the ADC to the RfC exceeds 1.0, there exists a potential for non-carcinogenic (toxic) effects to occur. A HI is generated by summing the individual HQs for all COPCs. If the value of the HI exceeds 1.0, there is a potential for non-carcinogenic health effects associated with that particular chemical mixture, and therefore, it is necessary to segregate the HQs by target organ effects. The HQ should not be construed as a probability, but rather as a numerical indicator of the extent to which a predicted intake exceeds or is less than an RfD or RfC.

6.1.2 Carcinogens

Risks attributable to exposure to chemical carcinogens are estimated as the probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen. The incremental lifetime cancer risk (ILCR) is determined as follows (EPA, 1989):

$$ILCR = ADD \times CSF \; or \; ADC \times URF$$

where:

ILCR = Incremental lifetime cancer risk, expressed as a unitless probability
ADD = Average daily dose (mg/kg-day)
ADC = Average daily concentration (µg/m^3)

CSF = Cancer slope factor $(mg/kg\text{-}day)^{-1}$

URF = Unit risk factor $(\mu g/m^3)^{-1}$

Risks below 1×10^{-6} (less than 1 in 1 million) are generally considered to be acceptable by EPA, and risks greater than 1×10^{-4} (1 in 10,000) are generally considered to be unacceptable. Risks between 1×10^{-6} and 1×10^{-4} are generally considered to be within EPA's targeted cancer risk range.

Risks are estimated for all carcinogenic COPCs with available CSFs or URFs, regardless of the narrative descriptors described in Section 5.2.

Carcinogens That Act with a Mutagenic Mode of Action

For carcinogens that act with a mutagenic mode of action for carcinogenesis, ADAFs were applied to the cancer slope factor to address early lifetime exposures and the increased susceptibility of children to carcinogens (EPA, 2005). As presented in the RSL Table (EPA, 2012a), the following COPCs exhibit a mutagenic mode of action for carcinogenesis:

Benzo(a)anthracene	Chrysene
Benzo(a)pyrene	Dibenz(a,h)anthracene
Benzo(b)fluoranthene	Indeno(1,2,3-cd)pyrene
Benzo(k)fluoranthene	Chromium (hexavalent form)

The ADAFs for specific age-groups classes are presented below:

Age (years)	ADAF (unitless)
0 – <2	10
2 – <16	3
≥16	1

Residential and recreational angler lifetime exposure factors were divided into two age groupings: child – 0 to 6 years and adult – 6 to 30 years. Potential risk to an individual resident was assessed using the information presented below.

Age (years)	Exposure Factors	Exposure Duration (years)	ADAF (unitless)
0 – <2	Child	2	10
2 – <6	Child	4	3
6 – <16	Adult	10	3
16 – <30	Adult	14	1

Total Risk for lifetime exposures = $\text{Risk}_{0-<2} + \text{Risk}_{2-<6} + \text{Risk}_{6-<16} + \text{Risk}_{16-<30}$

Potential risk to a recreational child visitor (soil and sediment exposures) was assessed using the information presented below.

Age (years)	Exposure Factors	Exposure Duration (years)	ADAF (unitless)
0 – <2	Child	2	10
2 – <6	Child	4	3

Total Risk for child recreational exposures = $\text{Risk}_{0-<2} + \text{Risk}_{2-<6}$

Potential risk to an adolescent trespasser was assessed using the information presented below.

Age (years)	Exposure Factors	Exposure Duration (years)	ADAF (unitless)
6 – <16	Adult	10	3

Total Risk for an adolescent trespasser exposures = $\text{Risk}_{6-<16}$

Appendix J presents the risk calculations for the COPCs with a mutagenic mode of action for carcinogenesis. These risks are then included in the Appendix A RAGS D tables.

6.1.3 Lead

Risks from lead exposure are not evaluated using the same methodology as other contaminants. The IEUBK Model and the ALM for lead are used to assess exposures to lead. These models estimate blood lead concentrations. Blood lead concentration is the most widely used index of internal lead body burdens associated with potential adverse health effects of lead. Studies indicate that infants and young children are most susceptible to adverse effects from exposure to lead. Considerable behavioral and developmental impairments have been noted in children with elevated blood lead levels. Evaluation of the young child in a residential scenario is considered protective of adults, including pregnant women; adolescents, including trespassers; and children in a less frequent exposure scenario, including recreational visitors. Exposures to lead by industrial/commercial workers are evaluated by use of an approach that focuses on estimating fetal blood lead concentrations in women exposed to lead-contaminated soil in non-residential scenarios. Therefore, the receptor of concern in industrial/commercial worker scenarios is the fetus of the pregnant worker. Evaluation of the fetus of the pregnant worker is considered protective of non-pregnant workers, including those present less frequently than the typical full-time permanent industrial/commercial worker and groundskeeper, such as construction/utility workers. The EPA risk reduction goal for contaminated sites is to limit the probability of a child's blood lead concentration exceeding 10 µg/dL to 5 percent or less.

Potential residential child exposure to lead in surface or aggregate soil was evaluated using EPA's IEUBK model for lead in children (EPA, 1994 and 2007b). The IEUBK Model is designed to estimate blood levels of lead in children (under 7 years of age) based on either default or site-specific input values for air, drinking water, diet, dust, and soil exposure.

Exposures to lead in surface soil or aggregate soil by non-residential adults (industrial/ commercial workers) were evaluated by use of the ALM, a slope-factor approach developed by the EPA Technical Review Work Group for Lead (TRW) (EPA, 2003a). The ALM slope factor approach focuses on estimating fetal blood lead concentrations in women exposed to lead-contaminated soil in non-residential scenarios. The ALM estimates the 95th percentile blood lead concentration among fetuses born to women having site exposures. In June 2009, the TRW updated the baseline blood lead concentration and the geometric standard deviation parameters in the ALM using data from the National Health and Nutrition Examination Survey (NHANES) surveys that were conducted from 1999-2004 (EPA, 2009e). These values are updates to the

parameters based on Phase 1 and 2 of NHANES III that were provided by the TRW in 2002. The TRW recommends that the updated parameter values be used for all applications of the ALM where current and future use scenarios are addressed (EPA, 2009e). Both the 2002 and 2009 parameters are provided in the ALM spreadsheets for comparative purposes.

Concentrations (i.e., blood lead levels) calculated using both approaches are compared to the established blood lead level of concern of 10 µg/dL. An additional step in the process estimates the probability that blood lead levels will exceed 10 µg/dL. EPA's risk reduction goal for lead is that individuals exposed would have no more than a 5 percent probability of exceeding the level of concern of 10 µg/dL.

EPCs, as well as default parameters for some input parameters, were used in the evaluations. Because the output of these models is a range of predicted blood lead concentrations, it is appropriate to input the average soil lead concentration rather than 95 percent UCL on the mean value. Entering a 95 percent UCL on the mean tends to bias the model outputs toward the high end, thus potentially overestimating risk. The EPCs selected for use in this evaluation are the arithmetic average soil lead concentrations for the exposure areas. The full detection limit is substituted for non-detected (U qualified) values in the calculation of the average lead concentrations. The input parameters used, the results of the lead models, and estimated blood lead levels are presented in Appendix K.

The results of the IEUBK model and adult lead exposure evaluations are discussed in Sections 6.2.1 through 6.2.4.

Because of recent scientific evidence that has demonstrated adverse health effects at blood lead concentrations below 10 µg/dL down to 5 µg/dL, and possibly lower, the EPA Office of Superfund Remediation and Technology Innovation (OSRTI) is developing a new soil lead policy to address this new information (EPA, 2009e). When the soil lead policy is finalized, lead risks may be re-evaluated.

6.1.4 Groundwater as a Primary Drinking Water Source

Groundwater at the Study Area is not used as a drinking water source. Groundwater at the Study Area is downgradient of a landfill and flows directly into the Androscoggin River.

However, to be conservative, this HHRA presents estimated risks from potential future residential exposures to groundwater as a primary drinking water source using a simplified ratio approach. This approach follows the example of the RSL calculator (EPA, 2013).

Because exposure is assumed to occur at any location and sample size at any given location is usually not sufficient to calculate a 95%UCL, the maximum concentration is used as the groundwater EPC.

The hazards associated with non-cancer effects of groundwater COPCs are evaluated by comparing the maximum detected Study Area groundwater concentration to the EPA's non-cancer based RSLs for tap water (EPA, 2012a). The ratio of the maximum detected Study Area groundwater concentration to the non-cancer based RSL is equal to the HQ. The HI is generated by summing the individual HQs for all COPCs.

The risks associated with cancer effects of groundwater COPCs are evaluated by comparing the maximum detected Study Area groundwater concentration to the EPA's cancer based RSLs for tap water (EPA, 2012a) and multiplying by $1x10^{-6}$. Total cancer risk is generated by summing the individual cancer risks for all COPCs.

Appendix N-1 presents the estimated residential risks from potential exposure to groundwater as drinking water using this simplified ratio approach. To ensure transparency, all RSL values, toxicity values, and risk equations used in developing the RSLs are provided in Appendix N-2. The results are discussed in Sections 6.2.5.

6.2 Risk Characterization Results

A summary of the quantitative risk assessment of the RME individual is provided in this section.

Table 6.2-1 summarizes the RME non-cancer and cancer results, identifies major contributors to RME cancer risks greater than 1×10^{-6} or hazard indices greater than 1.0, and summarizes the lead evaluation results for the each of the evaluated scenarios at each exposure area. Non-carcinogenic risks are evaluated separately for adult and child residents. Cancer risks for residents are evaluated for lifetime (age-adjusted) exposures.

Details of the RME risk estimates are presented in Appendix A, as follows:

- Appendix A, Tables A-7.1 through A-7.4, present non-cancer and cancer risk estimates for each receptor and exposure area.

- Appendix A, Tables A-9.1 through A-9.4 present summaries of cancer risks and health hazard indices from all applicable media and pathways for each exposure scenario.

- Appendix A, Tables A-10.1 through A-10.4 present summaries of cancer risks and health hazard indices from all applicable media and pathways for each exposure scenario for only the major contributors to risk (individual contaminants with cancer risk greater than 1×10^{-6} or hazard indices greater than one).

Results of the evaluation of estimated lead exposures are presented in Appendix K.

Results of the simplified ratio approach evaluation of risks from potential future residential exposures to groundwater as a primary drinking water source are presented in Appendix N.

The following sections discuss results by exposure area, including hazard indices, cancer risks, and blood lead levels, if applicable.

6.2.1 CHP

Potential receptors include future trespassers, residents, and recreational visitors exposed to surface soil and future residents exposed to aggregate soil.

Non-Carcinogenic Risks

Hazard indices developed for the CHP are as follows:

Receptor (Timeframe)	HI
Adult Resident – surface soil (Future)	126
Child Resident – surface soil (Future)	1023
Adult Recreational Visitor – surface soil (Future)	34
Child Recreational Visitor – surface soil (Future)	300

Receptor (Timeframe)	HI
Trespasser – surface soil (Future)	50
Adult Resident – aggregate soil (Future)	654
Child Resident – aggregate soil (Future)	2158

HIs are greater than 1.0 for all scenarios at the CHP. Estimated HIs indicate potential adverse non-cancer effects for future residents, recreational visitors, or trespassers exposed to CHP soils. Dioxin and furan TEQs, mercury, arsenic, PCBs, pesticides, cobalt, and thallium are the major contributors to hazard indices greater than 1. Target organ-specific HIs exceed 1 for the developmental system, kidney, skin, eyes, immune system, liver, thyroid, and hair.

Carcinogenic Risks

Cancer Risks developed for the CHP are as follows:

Receptor (Timeframe)	Cancer Risk
Age-Adjusted Lifetime Resident – surface soil (Future)	1.3×10^{-2}
Adult Recreational Visitor – surface soil (Future)	1.1×10^{-3}
Child Recreational Visitor – surface soil (Future)	2.6×10^{-3}
Trespasser – surface soil (Future)	7.3×10^{-4}
Age-Adjusted Lifetime Resident – aggregate soil (Future)	2.5×10^{-2}

The cancer risk estimates for all scenarios at the CHP exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). As detailed in Table 6.2-1, the major contributors to cancer risk at the CHP are dioxin and furan toxicity TEQs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, arsenic, chromium, PCBs, and several pesticides (only for future residential exposures to aggregate soil). Individual cancer risk estimates for each of these major contributors are greater than 1×10^{-6} under one or more scenarios.

Exposure to Lead

Lead was identified as a COPC in aggregate soil at the CHP based on the maximum detected concentration. The average lead concentration in the aggregate soil data set was 163 mg/kg. In soil samples collected from 0 to 1 foot bgs at the CHP, lead was not detected at concentrations exceeding the COPC selection criteria of 400 mg/kg, and therefore was not considered a COPC for surface soil. As stated in Section 6.1.3, average lead concentrations are used as EPCs in the lead models.

EPA's IEUBK model estimated that the geometric mean blood lead concentration among future residential children exposed to aggregate soil at the CHP would be 2.4 µg/dL (Appendix K, Table K-1). These estimates are less than EPA's established level of concern of 10 µg/dL. The probability that the child's blood lead concentration exceeds 10 µg/dL is 0.117 percent for future residential children. EPA's target probability is 5 percent or less. In conclusion, exposures to lead in aggregate soil at the CHP do not exceed EPA's target level of concern.

6.2.2 SFSA

Potential receptors include future residents and industrial/commercial workers and current/future trespassers exposed to surface soil and future residents, industrial/commercial workers, and construction/utility workers exposed to aggregate soil.

Non-Carcinogenic Risks

Hazard indices developed for the SFSA are as follows:

Receptor (Timeframe)	HI
Adult Resident – surface soil (Future)	5.6
Child Resident – surface soil (Future)	22
Industrial/Commercial Worker – surface soil (Future)	2.4
Trespasser – surface soil (Current/Future)	1.0
Adult Resident – aggregate soil (Future)	4.8
Child Resident – aggregate soil (Future)	22
Industrial/Commercial Worker – aggregate soil (Future)	2.3
Construction Worker – aggregate soil (Future)	3.9

HIs are at or greater than 1.0 for all scenarios at the SFSA. Estimated HIs indicate potential adverse non-cancer effects for future residents, industrial/commercial workers, or construction workers, or current/future trespassers exposed to SFSA soils. Mercury, vanadium, antimony, arsenic, dioxin and furan TEQs, PCBs, and iron are the major contributors to hazard indices greater than 1. Target organ-specific HIs exceed 1 for nervous system, developmental system, kidney, skin, eyes, immune system, blood, and gastrointestinal system.

Carcinogenic Risks

Cancer Risks developed for the SFSA are as follows:

Receptor (Timeframe)	Cancer Risk
Age-Adjusted Lifetime Resident – surface soil (Future)	4.6×10^{-4}
Industrial/Commercial Worker – surface soil (Future)	6.7×10^{-5}
Trespasser – surface soil (Current/Future)	2.4×10^{-5}
Age-Adjusted Lifetime Resident – aggregate soil (Future)	3.3×10^{-4}
Industrial/Commercial Worker – aggregate soil (Future)	5.5×10^{-5}
Construction Worker – aggregate soil (Future)	5.2×10^{-6}

The cancer risk estimates for residential scenarios at the SFSA exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). As detailed in Table 6.2-1, the major contributors to cancer risk at the SFSA are dioxin and furan TEQs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic, chromium, and PCBs. Individual cancer risk estimates for each of these major contributors are greater than 1×10^{-6} under one or more scenarios. The cancer risk estimates for industrial/commercial workers, construction workers, or trespassers exposed to SFSA soils are within the EPA targeted cancer risk range (10^{-4} to 10^{-6}).

Exposure to Lead

Lead was selected as a COPC for both surface soils and aggregate soils at the SFSA. The average lead concentration in the surface soil data set was 1,068 mg/kg. The average lead

concentration in the aggregate soil data set was 655 mg/kg. As stated in Section 6.1.3, average lead concentrations are used as EPCs in the lead models.

EPA's IEUBK model estimated that the geometric mean blood lead concentration among future residential children exposed to surface soil at the SFSA would be 9.4 µg/dL (Appendix K, Table K-2). EPA's IEUBK model estimated that the geometric mean blood lead concentration among future residential children exposed to aggregate soil at the SFSA would be 6.5 µg/dL (Appendix K, Table K-3). The aggregate soil estimate is less than EPA's established level of concern of 10 µg/dL; however, the surface soil estimate is at the EPA's established level of concern. The probability that the child's blood lead concentration exceeds 10 µg/dL is 44.6 percent for future residential children exposed to surface soil and 17.8 percent for future residential children exposed to aggregate soil. These estimates exceed EPA's target probability of 5 percent or less. In conclusion, exposures to lead in soil at the SFSA exceed EPA's target level of concern for child residents.

The ALM slope-factor approach developed by the EPA TRW estimated that the 95th percentile blood lead concentration among fetuses born to women industrial/commercial workers exposed to surface soil at the SFSA would be 6.0 µg/dL (Appendix K, Table K-6). The ALM slope-factor approach developed by the EPA TRW estimated that the 95th percentile blood lead concentration among fetuses born to women industrial/commercial workers exposed to aggregate soil at the SFSA would be 4.6 µg/dL (Appendix K, Table K-7). These estimates are less than EPA's established level of concern of 10 µg/dL. The probability that the fetal blood lead concentration exceeds 10 µg/dL is 0.6 percent for the future industrial/commercial workers exposed to surface soil and 0.15 percent for the future industrial/commercial workers exposed to aggregate soil. EPA's target probability is 5 percent or less. The results of the ALM indicate that adverse effects are not anticipated for fetuses of pregnant workers exposed to lead in either surface soil or aggregate soil at the SFSA. In conclusion, non-residential exposures to lead in surface soil or aggregate soil at the SFSA do not exceed EPA's target level of concern.

Although the results of the ALM indicate that adverse effects are not anticipated for fetuses of pregnant workers at the SFSA, it should be noted that the maximum lead concentration in surface soils at the SFSA (24,438 mg/kg at FSA-168) is more than ten times the average concentration.

6.2.3 EFSA

Potential receptors include future residents and industrial/commercial workers and current/future trespassers exposed to surface soil and future residents, industrial/commercial workers, and construction/utility workers exposed to aggregate soil.

Non-Carcinogenic Risks

Hazard indices developed for the EFSA are as follows:

Receptor (Timeframe)	HI
Adult Resident – surface soil (Future)	8.4
Child Resident – surface soil (Future)	59
Industrial/Commercial Worker – surface soil (Future)	5.3
Trespasser – surface soil (Current/Future)	2.9
Adult Resident – aggregate soil (Future)	8.9
Child Resident – aggregate soil (Future)	67
Industrial/Commercial Worker – aggregate soil (Future)	5.9
Construction Worker – aggregate soil (Future)	9.5

HIs are greater than 1.0 for all scenarios at the EFSA. Estimated HIs indicate potential adverse non-cancer effects for future residents, industrial/commercial workers, or construction workers, or current/future trespassers exposed to EFSA soils. Dioxin and furan TEQs, mercury, arsenic, and vanadium are the major contributors to HIs greater than 1. Target organ-specific HIs exceed 1 for developmental system, nervous system, kidney, and skin.

Carcinogenic Risks

Cancer Risks developed for the EFSA are as follows:

Receptor (Timeframe)	Cancer Risk
Age-Adjusted Lifetime Resident – surface soil (Future)	1.9×10^{-3}
Industrial/Commercial Worker – surface soil (Future)	2.4×10^{-4}
Trespasser – surface soil (Current/Future)	1.0×10^{-4}
Age-Adjusted Lifetime Resident – aggregate soil (Future)	1.8×10^{-3}
Industrial/Commercial Worker – aggregate soil (Future)	2.5×10^{-4}
Construction Worker – aggregate soil (Future)	1.6×10^{-5}

The cancer risk estimates for all scenarios, except construction workers, at the EFSA exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). As detailed in Table 6.2-1, the major contributors to cancer risk at the EFSA are dioxin and furan TEQs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic, chromium, and PCBs. Individual cancer risk estimates for each of these major contributors are greater than 1×10^{-6} under one or more scenarios. The cancer risk estimates for construction workers exposed to EFSA soils are within the EPA targeted cancer risk range (10^{-4} to 10^{-6}).

Exposure to Lead

Lead was selected as a COPC for both surface soils and aggregate soils at the EFSA. The average lead concentration in the surface soil data set was 137 mg/kg. The average lead concentration in the aggregate soil data set was 116 mg/kg. As stated in Section 6.1.3, average lead concentrations are used as EPCs in the lead models.

EPA's IEUBK model estimated that the geometric mean blood lead concentration among future residential children exposed to surface soil at the EFSA would be 2.15 µg/dL (Appendix K, Table K-4). EPA's IEUBK model estimated that the geometric mean blood lead concentration among future residential children exposed to aggregate soil at the EFSA would be 1.95 µg/dL (Appendix K, Table K-5). These estimates are less than EPA's established level of concern of 10 µg/dL. The probability that the child's blood lead concentration exceeds 10 µg/dL is

0.054 percent for future residential children exposed to surface soil and 0.026 percent for future residential children exposed to aggregate soil. EPA's target probability is 5 percent or less. In conclusion, exposures to lead in soil at the EFSA do not exceed EPA's target level of concern for child residents.

The ALM slope-factor approach developed by the EPA TRW estimated that the 95th percentile blood lead concentration among fetuses born to women industrial/commercial workers exposed to surface soil at the EFSA would be 2.8 µg/dL (Appendix K, Table K-8). The ALM slope-factor approach developed by the EPA TRW estimated that the 95th percentile blood lead concentration among fetuses born to women industrial/commercial workers exposed to aggregate soil at the EFSA would be 2.8 µg/dL (Appendix K, Table K-9). These estimates are less than EPA's established level of concern of 10 µg/dL. The probability that the fetal blood lead concentration exceeds 10 µg/dL is less than 0.01 percent for both the future industrial/commercial workers exposed to surface soil and the future industrial/commercial workers exposed to aggregate soil. EPA's target probability is 5 percent or less. The results of the ALM indicate that adverse effects are not anticipated for fetuses of pregnant workers exposed to lead in either surface soil or aggregate soil at the EFSA. In conclusion, exposures to lead in surface soil or aggregate soil at the EFSA do not exceed EPA's target level of concern.

6.2.4 River Study Area

RSA receptors include current/future recreational visitors exposed to sediment and current/future recreational anglers exposed to fish tissue through ingestion.

Non-Carcinogenic Risks

HIs developed for the RSA are as follows:

Receptor (Timeframe)	HI
Adult Recreational Visitor – sediment Stretch 1 (Current/Future)	0.0078
Child Recreational Visitor – sediment Stretch 1 (Current/Future)	0.071
Adult Recreational Visitor – sediment Stretch 2 (Current/Future)	0.018
Child Recreational Visitor – sediment Stretch 2 (Current/Future)	0.12
Adult Recreational Visitor – sediment Stretch 3 (Current/Future)	0.068
Child Recreational Visitor – sediment Stretch 3 (Current/Future)	0.41

Receptor (Timeframe)	HI
Adult Recreational Angler – fish (Current/Future)	126
Child Recreational Angler – fish (Current/Future)	238

Stretch 1 – Reaches 3 through 5; Stretch 2 – Reaches 6 through 8; Stretch 3 – Reach 9.

HIs are less than 1.0 for sediment exposures at each stretch of the RSA. HIs for each stretch are below 1.0. These results indicate that adverse non-carcinogenic health effects are unlikely for recreational visitors exposed to sediment.

HIs are greater than 1.0 for the recreational angler fish ingestion scenario. Estimated HIs indicate potential adverse non-cancer effects for recreational anglers from exposures to PCBs, mercury, and dioxin and furan TEQ.

Carcinogenic Risks

Cancer Risks developed for the RSA are as follows:

Receptor (Timeframe)	Cancer Risk
Adult Recreational Visitor – sediment Stretch 1 (Current/Future)	3.2×10^{-6}
Child Recreational Visitor – sediment Stretch 1 (Current/Future)	1.7×10^{-5}
Adult Recreational Visitor – sediment Stretch 2 (Current/Future)	2.2×10^{-6}
Child Recreational Visitor – sediment Stretch 2 (Current/Future)	1.0×10^{-5}
Adult Recreational Visitor – sediment Stretch 3 (Current/Future)	5.8×10^{-6}
Child Recreational Visitor – sediment Stretch 3 (Current/Future)	2.0×10^{-5}
Age-Adjusted Lifetime Recreational Angler – fish (Current/Future)	4.0×10^{-3}

Stretch 1 – Reaches 3 through 5; Stretch 2 – Reaches 6 through 8; Stretch 3 – Reach 9.

The cancer risk estimates for sediment exposures at each stretch of the RSA are within the EPA targeted cancer risk range (10^{-4} to 10^{-6}).

The cancer risk estimate for the recreational angler fish ingestion scenario exceeds the EPA targeted cancer risk range (10^{-4} to 10^{-6}). As detailed in Table 6.2-1, the major contributors to cancer risk at the RSA from fish ingestion are PCBs, dioxin and furan TEQs, arsenic, chromium,

DDT, indeno(1,2,3-cd)pyrene, and beta-BHC. Individual cancer risk estimates for each of these major contributors are greater than 1×10^{-6}.

6.2.5 Groundwater as a Primary Drinking Water Source

Potential receptors include future residents exposed to groundwater as a primary drinking water source.

Non-Carcinogenic Risks

Hazard indices developed for groundwater as drinking water are as follows:

Receptor (Timeframe)	HI
Child Resident (Future)	2510

The HI is greater than 1.0. The estimated HI indicates potential adverse non-cancer effects for future residents exposed to groundwater as drinking water. Chloroform, carbon tetrachloride, carbon disulfide, mercury, dioxin and furan TEQs, TCE, manganese, arsenic, iron, aldrin, PCE, hexachloroethane, chromium, vanadium, cobalt, PCBs, antimony, thallium, selenium, hexachlorobutadiene, and heptachlor epoxide are the major contributors to HIs greater than 1.

Carcinogenic Risks

Cancer Risks developed for groundwater as drinking water are as follows:

Receptor (Timeframe)	Cancer Risk
Age-Adjusted Lifetime Resident (Future)	5.8×10^{-1}

The cancer risk estimate for groundwater as drinking water exceeds the EPA targeted cancer risk range (10^{-4} to 10^{-6}). As detailed in Table 6.2-1, the greatest contributors to cancer risk for future residents exposed to groundwater as drinking water are chloroform, carbon tetrachloride, chromium, arsenic, dioxin and furan toxicity TEQs, and aldrin. Individual cancer risk estimates

for each of these contributors are greater than 1×10^{-3}. Individual cancer risk estimates for numerous other contaminants exceed 1×10^{-6}.

7.0 UNCERTAINTY ANALYSIS

There are uncertainties and variability associated with all HHRAs. This section summarizes these uncertainties and provides a qualitative assessment of whether the uncertainties may over or underestimate risks.

Although there are various sources of uncertainty throughout the risk assessments, assumptions were made to provide conservative estimates that are protective of public health such that the risk estimates are unlikely to underestimate potential risks.

Once the risk calculations are complete, the results must be viewed considering the uncertainties inherent in the process. An understanding of the risk assessment and associated uncertainties provides the risk manager with additional information for consideration in the risk management decision.

Consistent with EPA guidance and policy (EPA, 1992a and 1995) exposure and toxicity assumptions from the "high end" and the "central tendency" of their distributions were used. These values correspond to the RME and CTE scenarios. The RME is conceptually the “high end” exposure above the 90th percentile of the population distribution but not higher than the individual in the population with the highest exposure. The CTE reflects the central (average) estimates of exposure. Decisions in the Superfund program are based on the RME risk. CTE risks are presented separately in this HHRA in Appendix M.

Uncertainties within individual components of the HHRA for the Site are discussed below.

7.1 Uncertainty in Data Evaluation

Conservative screening values were used to select COPCs; thus, it is unlikely that any contaminant that may pose a risk was eliminated from the risk assessment calculations. There were chemicals detected for which screening values were not available because little or no information is available regarding the chemical’s toxicity. For these chemicals surrogate screening values were used qualitatively for screening. Based on the qualitative use of

surrogate screening values, the chemicals without toxicity values were either eliminated as COPCs or eliminated from quantitative assessment because of the lack of toxicity values. Surrogate toxicity values were not used to calculate risk. Risks may be underestimated because of the lack of screening values. There are many chemicals that are not part of EPA's list of routine analytes. Therefore, additional chemicals could be present that were not detected in the laboratory analysis that could increase potential risk.

This HHRA used EPA RSLs (EPA, 2012a) and EPA Region 3 RSLs (EPA, 2012c) as the primary sources of screening values for COPC selection. The EPA RSLs and EPA Region 3 RSLs have since been updated, most recently in November 2013. Comparison of the RSLs used in this HHRA against the November 2013 RSLs indicates several values have changed; however, changes impacting COPC selection are limited: 1) di-n-octyl phthalate had no 2012 RSLs, but has 2013 RSLs for soils and groundwater exceeding the maximum detected concentrations; therefore, di-n-octyl phthalate would not be selected as a COPC; and 2) the 2013 RSL for bis-2-ethylhexyl phthalate in tapwater increased to a value greater than the 2012 RSL and the maximum detected concentration, resulting in a change for the maximum detected bis-2-ethylhexyl phthalate concentration from above screening levels to below screening levels and removal of bis-2-ethylhexyl phthalate as a COPC in groundwater. Because di-n-octyl phthalate lacked toxicity values for quantitative risk assessment, its inclusion as a COPC did not contribute to total risk. Bis-2-ethylhexyl phthalate did contribute to total risk from use of groundwater as drinking water; however, its contribution is much less than some of the other risk drivers. Therefore, use of the 2012 RSLs has not significantly impacted the results of the HHRA.

A COPC was selected if the maximum detected concentration in soils, groundwater, sediments, surface water, or fish tissue exceeded its respective risk-based screening criterion. Frequency of detection was not used to eliminate COPCs. Even if the compound was detected at a very low frequency, i.e., less than 5 percent across the entire Study Area, the compound was still retained for evaluation at that parcel or exposure area in the risk assessment if the maximum detected concentration within a parcel or exposure area exceeded the screening criterion. Based on this review of the data, not using frequency of detection as a COPC selection criterion is unlikely to have affected the risk estimates.

Total chromium was selected as a COPC based on screening criteria for the more toxic hexavalent chromium form. The assumption that the measured total chromium represents hexavalent chromium likely overestimates risks from total chromium.

7.2 Uncertainty in the Exposure Assessment

Uncertainty in the exposure assessment arises from the selection of receptors and selection of exposure parameters. Each is discussed below.

7.2.1 Exposure Point Concentrations (EPCs)

Based on the assumption that exposure occurs randomly across an exposure area, the 95 percent UCL of the mean concentration was used as a conservative estimate of the average concentration. Uncertainty arises from calculation of EPCs. The sediment data sets from the various reaches of the RSA consisted of relatively small numbers of samples for all contaminants, except mercury. Sediment data from multiple adjacent reaches were combined to achieve slightly larger datasets (Stretches 1 through 3); however, these datasets remain small. These small datasets make the estimation of the upper 95 percent confidence limit on the mean somewhat uncertain. In cases where the number of samples was fewer than 8 or when the number of positive detections was fewer than 4 and the median value was greater than the maximum detected value, maximum detected concentrations were used as the EPC. Because of the limited number of samples in the sediment datasets, maximum detected concentrations were used to estimate risks for the majority of COPCs. A single detection or small number of detections of a contaminant in small data sets can drive risk calculations. The use of maximum concentrations from infrequently detected contaminants likely results in an overestimate of risks from sediment exposures.

Because recreational anglers may fish from multiple points along the river and fish may migrate downstream, maximum fish tissue concentrations regardless of collection point were selected as EPCs for all identified COPCs in fish tissue. This likely overestimates average fish tissue concentrations and therefore, results in an overestimate of risks from ingestion of fish.

7.2.2 Exposure Scenarios and Receptor Identification

Exposure scenarios were selected for each exposure area to represent a range of current and future potential uses. The scenarios are conservative and likely to overestimate risk to individuals whose exposure occurs randomly across an exposure area.

The ingestion of fish pathway was evaluated quantitatively. However, there is currently a NHDES Fish Consumption Guideline (ARD-EHP-25) in place warning against any ingestion of fish from the Androscoggin River as the result of potential dioxin contamination. Although some anglers may disregard or be unaware of the warning, it is assumed that local anglers are likely ingesting fish at a lower rate than the rate assumed in this HHRA or not ingesting fish at all.

In the future potential residential scenario, risks from exposure to contaminants in soil were conservatively evaluated for both children and adults. Ingestion of home-grown produce in these areas was not evaluated, but is likely minor in comparison to the conservative assumptions for direct contact with soil.

Uncertainty exists in the evaluation of the vapor intrusion pathway scenario. Risks have not been quantified for the vapor intrusion scenario because no occupied buildings are present in the Study Area.

Uncertainty exists in the evaluation of the use of groundwater as drinking water scenario. Risk estimates were developed for the use of groundwater as drinking water using a simplified ratio approach because groundwater is not currently used or expected to be used in the future as a drinking water source.

7.2.3 Selection of Exposure Parameters

Each exposure factor selected for use in this risk assessment has some associated uncertainty. The exposure estimates were obtained by combining estimates of likely “high-end” exposure factors with average factors. The resulting point estimate (or single value) is the reasonable maximum exposure. These RME risks are not likely to underestimate risk, even for the most exposed individual.

Appendix M presents and evaluation of the CTE receptor.

Ingestion and dermal absorption of soil are the most important routes of exposure for the potential site uses. Estimates of soil ingestion rates for both children and adults are based on a limited number of studies and were generally conducted for residential exposures. This limitation may result in an over or underestimate of potential risks.

7.3 Uncertainty in the Toxicological Evaluation

The toxicity values used in the quantitative assessment were those available in EPA databases.

7.3.1 Cancer Slope Factors (CSFs) and Inhalation Unit Risk Factors (URFs)

CSFs and URFs are plausible upper-bound estimates of carcinogenic potency used to calculate cancer risk from exposure to carcinogens by relating estimates of lifetime average chemical intake to the incremental probability of an individual developing cancer over a lifetime as a result of exposure to site contaminants. Because the CSFs and URFs are upper-bound estimates, EPA is reasonably confident that the actual cancer risks are unlikely to be underestimated.

CSFs and URFs were not available for all chemicals. The lack of a CSF or URF may underestimate risk.

The use of hexavalent chromium CSFs and URFs to evaluate risks from exposures to total chromium in the absence of speciation data presents a conservative approach and likely overestimates risks from total chromium.

PCNs were detected in the Study Area; however, no accepted toxicity values are available for these contaminants. For this reason, PCNs were retained as COPCs and are evaluated qualitatively in this uncertainty section. Appendix L presents the evaluation. Section 7.3.5 discusses the results.

7.3.2 Chronic Reference Doses (RfDs) and Chronic Reference Concentrations (RfCs)

The RfD and RfC represent estimates (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime.

Some uncertainty is associated with the RfD and RfC used to evaluate vanadium. Vanadium may be present in a variety of oxidation states, which differ in their relative toxicities. The oral RfD used was based on studies of soluble inorganic vanadium compounds other than vanadium pentoxide (PPRTV – EPA, 2009d). The RfC is based on the assumption that vanadium occurs in a non-metallic form (vanadium pentoxide) (ATSDR, 2012). Since the oxidative state of the measured vanadium concentrations is unknown, the toxicity values available for vanadium may under or overestimate risks.

Non-cancer toxicity values were not available for all chemicals. The lack of an RfD or RfC may underestimate risk.

7.3.3 Subchronic Reference Doses

Subchronic toxicity values are applicable to short-term exposure to construction workers. Chronic toxicity values were used for these exposures which would tend to overestimate risks for these receptors.

7.3.4 Lead

Uncertainty is associated with evaluating exposures to lead. Exposures of residents to lead were evaluated by use of the IEUBK model. This model represents a conservative approach for predicting blood lead levels in children and is designed to overestimate risks. Exposures of industrial/commercial workers to lead are evaluated by use of the EPA TRW ALM. This approach focuses on estimating fetal blood lead concentrations in women exposed to lead-contaminated soils in non-residential scenarios. Uncertainty is associated with estimating maternal blood lead concentrations and with the relationship between maternal blood lead concentrations and fetal blood lead concentrations. Use of these models to predict child, fetal,

and maternal blood lead levels is a conservative approach and is also considered protective of non-pregnant women, men, and adolescents exposed to lead and to child and adult women under scenarios of less frequent exposures, such as the recreational visitor scenario.

Because of recent scientific evidence that has demonstrated adverse health effects at blood lead concentrations below 10 µg/dL, the EPA OSRTI is developing a new soil lead policy to address this new information (EPA, 2009e). When the soil lead policy is finalized lead risks will be re-evaluated.

7.3.5 Polychlorinated Naphthalenes (PCNs)

PCNs were detected in CHP soils and are evaluated qualitatively. No accepted toxicity factors are available for these contaminants. The World Health Organization (WHO) has noted that PCNs may induce dioxin-like effects, but stated that dioxin TEFs could not be established with available data (van den Berg, 2006). Dioxin-like effects are associated with the penta-, hexa-, and hepta-chlorinated naphthalenes. These dioxin-like PCNs were qualitatively evaluated separately from calculations of other COPCs using estimates of dioxin Relative Experimental Potencies (REPs) for PCNs, and 2,3,7,8-TCDD toxicity values. The REP approach similar to the TEF approach in that the concentrations were adjusted by the specific REP values to relate the toxicity of the penta-, hexa-, and hepta-chlorinated naphthalenes to 2,3,7,8-TCDD. In vitro study results estimated REPs for the most potent PCNs of 0.0001 to 0.004 (Blankenship, 2000), but impurities in the test material have not been addressed (van den Berg, 2006). The resulting adjusted values were summed to estimate a total PCN dioxin equivalent (PCN TEQ) for each sample. Given the high level of uncertainty associated with the REP approach, a qualitative simple ratio approach was used to evaluate PCN TEQs in this Uncertainty Section.

The REP factors used for the PCNs in the HHRA were:

- Naphthalenes with four or fewer chlorines and octachlorinated naphthalene were not treated as if they had dioxin-like actions.
- Pentachlorinated naphthalenes have REP factors of approximately 0.0001 suggesting they are on the order of 10,000 times less toxic than 2,3,7,8-TCDD.
- Hexa- and heptachlorinated dioxins have REP factors of approximately 0.003 suggesting they are on the order of 3,000 times less toxic than 2,3,7,8-TCDD.

The REP factors available for PCNs should not be construed as having the same validity as the TEFs discussed previously for the dioxins and furans. The dioxin and furan TEFs are based upon numerous toxicity studies and have been established by consensus of expert panels assembled specifically for that purpose. The REP factors are based on a limited number of cellular studies by only a few research groups. These studies have included fewer than half of the 75 possible PCN compounds (van den Berg, 2006). Additional information is necessary to better predict the toxicological significance of the PCNs. Little data are available on the bioavailability of the PCNs from various environmental matrices or on their body distribution or metabolism in different organisms. As such, there is limited confidence that the approach using the REP data available will prove appropriate in the light of further study. However, there is a not a more defensible alternative available at this time. As such, the total PCN TEQ concentrations and the assumed toxicological similarities to 2,3,7,8-TCDD are considered suspect and should be considered within this context.

A sample was considered detected for the total PCN TEQ if one of the congeners was detected. In the case of non-detects, a value of one-half the detection limit was applied to the REP and included in the summation of the total PCN TEQ. Appendix L, Table L-1 presents a summary of the PCN TEQ results and a comparison to the EPA residential RSL for 2,3,7,8-TCDD. The maximum calculated total PCN TEQ concentrations in both surface and aggregate soils at the CHP were greater than the EPA RSL for 2,3,7,8-TCDD. The total PCN TEQ EPCs for surface soil and aggregate soil at the CHP are also presented on Appendix L, Table L-1. The EPCs were derived following the approach presented in Section 3.3. These EPCs were compared to the EPA residential RSL for 2,3,7,8-TCDD to determine a rough estimate of cancer risks from future residential exposures to the total PCN TEQ through a qualitative simple ratio approach. For the hypothetical future residents exposed to surface soil and aggregate soil scenarios at the CHP, the cancer risks are approximately 7E-06 and 2E-04. As previously discussed, the REP approach that was followed and the subsequent cancer risks are highly uncertain due to limited evidence based on limited studies. Therefore, the cancer risks should be considered within this context.

7.4 Uncertainty Associated with Risk Characterization

The conservative RME assumptions applied in conducting this risk assessment result in estimates that EPA is confident do not underestimate the potential risks.

Cancer risks are added to estimate the total incremental risk as a result of exposure to chemicals at the Site. Summing cancer risks may overestimate total risks. The lack of information on synergistic effects of multiple contaminants may underestimate risks and the lack of information on antagonistic effects may overestimate risks.

Evaluation of potential risks from asbestos was not included in this HHRA. However, bulk asbestos is likely present. Historical information suggests asbestos fire-proofing materials were used at the CHP, and most likely some bulk asbestos is interred under the cap. An asbestos mat, which was most likely part of the electrolytic cells, was found in one test pit during the investigation. As discussed in Section 4.2.9 of the RI Volume I, twenty-one soil samples from the CHP were collected and analyzed for asbestos. One of these soil samples had 0.25 percent asbestos by weight. Despite the lack of asbestos in soil samples, the presence of bulk asbestos indicates potential risks that have not been quantified and should be considered.

8.0 SUMMARY OF HUMAN HEALTH RISK ASSESSMENT

This section and Table 6.2-1 present a summary of the risk assessment findings for the Study Area.

Soil exposures at three exposure areas were evaluated separately. Exposure scenarios varied by area. Sediment, surface water, and fish tissue collected from the Androscoggin River were also evaluated. Table 6.2-1 presents the results. The following summaries focus only on HIs greater than 1.0 with individual contaminant HQs or organ-specific HIs exceeding 1.0, cancer risks exceeding EPA targeted cancer risk range (10^{-4} to 10^{-6}), lead evaluation results with the IEUBK model estimating the probability of a child's blood lead concentration exceeding 10 µg/dL to be 5 percent or greater or the ALM estimating the probability of a fetal blood lead concentration exceeding 10 µg/dL to be 5 percent or greater. Major contributors to cancer risks (exceeding 1×10^{-6}) and hazard indices (exceeding HQ of 1.0) identified for one or more receptors are also listed.

A qualitative evaluation of groundwater exposures through potential vapor intrusion was also conducted and is summarized below in Section 8.5 along with a simplified ratio approach used to estimate risks from potential future use of groundwater as a primary drinking water source.

Section 8.6 presents cumulative risk estimates for residential receptors who may be exposed via multiple pathways.

8.1 CHP

The cancer risk estimates for future residents, recreational visitors, and trespassers exposed to CHP soils exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). The major contributors to cancer risk at the CHP are dioxin TEQs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, arsenic, chromium, polychlorinated biphenyls (PCBs), and several pesticides.

In addition to the above cancer risks from exposures to soils, potential risks from exposures to PCNs may exist. Based on the qualitative evaluation of PCNs in Section 7.3.5, cancer risks from PCNs are likely to be less than those of dioxin and furans; however, they may be significant in CHP aggregate soils.

Evaluation of potential risks from asbestos was not included in this HHRA. However, the presence of bulk asbestos at the CHP indicates potential risks that have not been quantified and should be considered.

Estimated HIs indicated potential adverse non-cancer effects for future residents, recreational visitors, and trespassers exposed to CHP soils. Dioxin and furan TEQs, mercury, arsenic, PCBs, pesticides, cobalt, and thallium are the major contributors to HIs greater than 1. Target organ-specific HIs exceed 1 for the developmental system, kidney, skin, eyes, immune system, liver, thyroid, and hair.

Lead was identified as a chemical of potential concern (COPC) in aggregate soil at the CHP; however, results of the IEUBK model indicate it is not a concern. Lead was not identified as a COPC in surface soil at the CHP.

8.2 SFSA

The cancer risk estimates for future residents exposed to SFSA soils exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). The major contributors to cancer risk at the SFSA are dioxin and furan TEQs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic, chromium, and PCBs. The cancer risk estimates for future industrial/commercial workers and construction workers and current/future trespassers exposed to SFSA soils are within the EPA targeted cancer risk range (10^{-4} to 10^{-6}).

Estimated HIs indicated potential adverse non-cancer effects for future residents, industrial/commercial workers, and construction workers and current/future trespassers exposed to SFSA soils. Mercury, vanadium, antimony, arsenic, dioxin and furan TEQs, PCBs, and iron are the major contributors to HIs greater than 1. Target organ-specific HIs exceed 1 for nervous system, developmental system, kidney, skin, eyes, immune system, blood, and gastrointestinal system.

Lead was identified as a COPC in both surface and aggregate soil at the SFSA. Results of the IEUBK model indicate it is a concern for future child residents; however, results of the adult worker model indicate it is not a concern for future adult workers. Although the results of the adult worker model indicate that lead is not a concern for workers at the SFSA, it should be noted that the maximum lead concentration in surface soils at the SFSA (24,438 mg/kg at FSA-168) is more than ten times the average concentration.

8.3 EFSA

The cancer risk estimates for future residents and industrial/commercial workers and current/future trespassers exposed to EFSA soils exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). The major contributors to cancer risk at the EFSA are dioxin TEQs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic, chromium, and PCBs. The cancer risk estimates for future construction workers exposed to EFSA soils are within the EPA targeted cancer risk range (10^{-4} to 10^{-6}).

Estimated HIs indicated potential adverse non-cancer effects for future residents, industrial/commercial workers, and construction workers and current/future trespassers exposed to EFSA soils. Dioxin and furan TEQs, mercury, arsenic, and vanadium are the major contributors to hazard indices greater than 1. Target organ-specific HIs exceed 1 for developmental system, nervous system, kidney, and skin.

Lead was identified as a COPC in both surface and aggregate soil at the EFSA; however, results of the IEUBK model for future child residents and results of the adult worker model for future adult workers show that exposure to lead in soil would not result in adult or child blood lead levels in excess of EPA's blood lead goals.

8.4 River Study Area

Sediment

River recreational visitor contact with sediment was evaluated separately for three stretches of the river. The cancer risk estimates for each stretch are within the EPA targeted cancer risk range (10^{-4} to 10^{-6}). HIs for each stretch are below 1.0. These results indicate that adverse non-carcinogenic health effects are unlikely for recreational visitors exposed to sediment.

Fish Tissue

The evaluation of risks from consumption of fish was based on the EPC (maximum concentration) fish tissue concentrations from fish collected in Reaches 3 through 9 (adjacent to and downstream of the Cell House Property.

The cancer risk estimates for recreational anglers exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). The major contributors to risk are PCBs, dioxin and furan TEQ, arsenic, chromium, 4,4'-DDT, indeno(1,2,3-cd)pyrene, and beta-BHC.

Estimated HIs indicated potential adverse non-cancer effects for recreational anglers from exposures to PCBs, mercury, and dioxin and furan TEQ.

8.5 Groundwater

Contaminants in shallow groundwater may volatilize into future indoor air spaces at the Study Area. Future human receptors may potentially be exposed to volatiles in indoor air. Exposure to indoor air through vapor intrusion of shallow groundwater contaminants was evaluated qualitatively. Groundwater located beneath the Study Area is not currently used as a source of potable water. Receptors are not expected to contact groundwater. However, to be protective of future potential use of groundwater as drinking water all groundwater data from Study Area monitoring wells regardless of depth were included in a qualitative evaluation of potential drinking water exposures.

Vapor Intrusion

Groundwater exposures were evaluated for potential vapor intrusion into indoor air spaces. This pathway was evaluated for the CHP, the SFSA, and the EFSA through comparison of inhalation risk-based screening criteria to shallow groundwater sampling results. Based on the Tier 1 and Tier 2 evaluations, the vapor intrusion pathway was considered a potential future concern for these currently vacant properties if occupied buildings are constructed.

The vapor intrusion evaluation results indicate presence of several COPCs, including mercury, in shallow groundwater beneath the CHP exceeding VISLs based on cancer risks of $1x10^{-6}$ and/or HQ of 1 (EPA, 2012b). Two COPCs (carbon tetrachloride and TCE) are present in shallow groundwater beneath the SFSA exceeding VISLs based on cancer risks of $1x10^{-6}$ and/or HQ of 1. Because no contaminants were detected in shallow groundwater at the EFSA exceeding VISLs, the vapor intrusion pathway is not a concern at the EFSA. Maximum concentrations in each area were used for this evaluation. There are no buildings currently at the Study Area, therefore this potential pathway only exists if occupied buildings are constructed at the CHP or SFSA in the future. No further quantification of this pathway is planned.

Groundwater as a Drinking Water Source

Comparison of Study Area groundwater to drinking water comparison levels (EPA tapwater RSLs) (EPA, 2012a) based on $1x10^{-6}$ and/or HQ of 1 indicates numerous contaminants in groundwater are present at concentrations exceeding drinking water comparison levels. This HHRA presents estimated risks from potential future residential exposures to groundwater as a

primary drinking water source using a simplified ratio approach following the example of the RSL calculator (EPA, 2013).

The cancer risk estimates for future residents exposed to groundwater as drinking water exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). The greatest contributors to cancer risk for future residents exposed to groundwater as drinking water are chloroform, carbon tetrachloride, chromium, arsenic, dioxin and furan toxicity TEQs, and aldrin. Individual cancer risk estimates for each of these contributors are greater than 1×10^{-3}. Individual cancer risk estimates for numerous other contaminants exceed 1×10^{-6}.

The estimated HI indicates potential adverse non-cancer effects for future residents exposed to groundwater as drinking water. Chloroform, carbon tetrachloride, carbon disulfide, mercury, dioxin and furan TEQs, TCE, manganese, arsenic, iron, aldrin, PCE, hexachloroethane, chromium, vanadium, cobalt, PCBs, antimony, thallium, selenium, hexachlorobutadiene, and heptachlor epoxide are the major contributors to HIs greater than 1.

8.6 Potential Cumulative Risks for Future Resident

As discussed in Section 4.3, the RME is defined as the highest exposure reasonably expected to occur at a site under both current and future uses (EPA, 1989). This definition is consistent with the goals of the Superfund program to design remedies that are protective of all individuals who may be exposed at a site (55 FR 8710, March 8, 1990). The RME assessment includes segments of the population that may be more highly exposed or more susceptible for cancer risks and non-cancer health hazards. If an individual has the highest exposure reasonably expected to occur for multiple exposure pathways, cumulative risks should be considered. The tables below present the cumulative RME risk and hazard assessments for a potential future resident who is the RME individual for exposure to maximum Study Area groundwater concentrations as drinking water, Study Area soil, and maximum fish tissue concentrations from fish collected in Androscoggin River Reaches 3 through 9 through recreational consumption of fish. Risk from exposure to both surface soil and aggregate (subsurface soil) was evaluated for the future resident; the higher of these two risks is used below. The hazard indices are a sum of all non-cancer hazards and have not been separated by target organs because non-cancer hazards clearly exceed EPA's reference concentrations.

Multiple Pathway Lifetime Cancer Risk and HIs for Future Residential Use of the CHP

Exposure Medium (Pathways)	Lifetime Cancer Risk	Hazard Indices
Soil - Aggregate (ingestion, dermal absorption, inhalation)	2.5×10^{-2}	2158
Groundwater – Residential Use (ingestion, dermal absorption, inhalation)	5.8×10^{-1}	2510
Fish (ingestion)	4.0×10^{-3}	238
Sum of RME Cancer Risk and HI	**6.0×10^{-1}**	**4906**

Multiple Pathway Lifetime Cancer Risk and HIs for Future Residential Use of the SFSA

Exposure Medium (Pathways)	Lifetime Cancer Risk	Hazard Indices
Soil - Surface (ingestion, dermal absorption, inhalation)	4.6×10^{-4}	22
Groundwater – Residential Use (ingestion, dermal absorption, inhalation)	5.8×10^{-1}	2510
Fish (ingestion)	4.0×10^{-3}	238
Sum of RME Cancer Risk and HI	**5.8×10^{-1}**	**2770**

Multiple Pathway Lifetime Cancer Risk and HIs for Future Residential Use of the EFSA

Exposure Medium (Pathways)	Lifetime Cancer Risk	Hazard Indices
Soil - Surface (ingestion, dermal absorption, inhalation)	1.9×10^{-3}	67
Groundwater – Residential Use (ingestion, dermal absorption, inhalation)	5.8×10^{-1}	2510
Fish (ingestion)	4.0×10^{-3}	238
Sum of RME Cancer Risk and HI	**5.9×10^{-1}**	**2815**

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TABLES

Table 2-1
Selection of Exposure Pathways
Chlor Alkali Superfund Site
Berlin, New Hampshire

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Androscoggin River	Fish	Fish Stretches* 1, 2, 3	River Recreational Angler	Adult	Ingestion	Quantitative	Adult recreational anglers may be exposed to contaminants through ingestion of fish.
					Child	Ingestion	Quantitative	Child recreational anglers may be exposed to contaminants through ingestion of fish.
		Sediment	Sediment Stretches* 1, 2, 3	River Recreational Visitor	Adult	Ingestion	Quantitative	Adult recreational visitors may be exposed to contaminated sediment through inadvertent contact.
						Dermal	Quantitative	Adult recreational visitors may be exposed to contaminated sediment through inadvertent contact.
					Child	Ingestion	Quantitative	Child recreational visitors may be exposed to contaminated sediment through inadvertent contact.
						Dermal	Quantitative	Child recreational visitors may be exposed to contaminated sediment through inadvertent contact.
		Surface Water	Surface Water Stretches* 1, 2, 3	River Recreational Visitor	Adult	Ingestion	Quantitative	Adult recreational visitors may be exposed to contaminated surface water while swimming at reach 9 only.
						Dermal	Quantitative	Adult recreational visitors may be exposed to contaminated surface water through inadvertent contact.
					Child	Ingestion	Quantitative	Child recreational visitors may be exposed to contaminated surface water while swimming at reach 9 only.
						Dermal	Quantitative	Child recreational visitors may be exposed to contaminated surface water through inadvertent contact.
	FSA Soil	Soil	Surface Soil Exposure Areas B & C**	Trespasser	Adolescent	Ingestion	Quantitative	Trespassers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Trespassers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Trespassers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
Future	Cell House Soil	Soil	Surface Soil Exposure Area A**	Trespasser	Adolescent	Ingestion	Quantitative	Trespassers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Trespassers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Trespassers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
				Resident	Adult	Ingestion	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.

Table 2-1
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Chlor Alkali Superfund Site
Berlin, New Hampshire

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Cell House Soil (cont.)	Soil (cont.)	Surface Soil Exposure Area A** (cont.)	Cell House Property Recreational Visitor	Adult	Ingestion	Quantitative	Adult recreational visitors may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult recreational visitors may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult recreational visitors may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child recreational visitors may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child recreational visitors may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child recreational visitors may be exposed to contaminated soil through contact with fugitive dust and volatiles.
			Aggregate Soil (0-10 ft) Exposure Area A**	Resident	Adult	Ingestion	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
	Groundwater	Indoor air	Indoor air Exposure Area A**	Resident	Adult	Inhalation	Qualitative	Adult residents may be exposed to volatiles in indoor air through vapor intrusion.
					Child	Inhalation	Qualitative	Child residents may be exposed to volatiles in indoor air through vapor intrusion.
	FSA Soil	Soil	Surface Soil Exposure Areas B & C**	Commercial/Industrial Worker	Adult	Ingestion	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
				Resident	Adult	Ingestion	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.

Table 2-1
Selection of Exposure Pathways
Chlor Alkali Superfund Site
Berlin, New Hampshire

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	FSA Soil (cont.)	Soil (cont.)	Aggregate Soil (0-10 ft) Exposure Areas B & C**	Construction/Excavation Worker	Adult	Ingestion	Quantitative	Construction/Excavation Workers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Construction/Excavation Workers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Construction/Excavation Workers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
				Commercial/Industrial Worker	Adult	Ingestion	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
				Resident	Adult	Ingestion	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
	Groundwater	Indoor air	Indoor air Exposure Areas B & C**	Resident	Adult	Inhalation	Qualitative	Adult residents may be exposed to volatiles in indoor air through vapor intrusion.
					Child	Inhalation	Qualitative	Child residents may be exposed to volatiles in indoor air through vapor intrusion.
		Groundwater	Tapwater	Resident	Adult/Child	Ingestion	Ratio approach	Future Residents may be exposed to contaminants in groundwater through ingestion of drinking water.
						Inhalation	Ratio approach	Future Residents may be exposed to contaminants in groundwater through inhalation of vapors during household water use.

* Androscoggin River Stretches: #1=AR reaches 3-5; #2=AR reaches 6-8; and #3=AR reach 9. AR reach 2=background

** Soil and groundwater exposure areas: A=4.6-acre area of Cell House Property; B=south FSA (former railroad tracks and west to river, excludes exposure area A); and C=east FSA (east of former railroad tracks).

Table 3.2-1
Contaminants of Potential Concern (COPCs) – Surface Soil (0-2 ft bgs)
Chlor Alkali Superfund Site
Berlin, New Hampshire

COPC	Risk Area		
	CHP	SFSA	EFSA
PCBs & Dioxins/Furans			
2,3,7,8-TCDD TEQ	√	√	√
Total PCBs (Homologs)	√	√	
PCB Dioxin-Like Congener TEQ	√	√	√
PAHs			
Benzo(a)anthracene	√	√	√
Benzo(a)pyrene	√	√	√
Benzo(b)fluoranthene	√	√	√
Benzo(g,h,i)perylene		√	√
Benzo(k)fluoranthene	√	√	√
Carbazole	√	√	√
Chrysene			√
Dibenz(a,h)anthracene	√	√	√
Indeno(1,2,3-cd)pyrene	√	√	√
Polychlornated Naphthalenes (PCNs)	√		
Metals			
Aluminum		√	√
Antimony	√	√	√
Arsenic	√	√	√
Chromium	√	√	√
Cobalt	√	√	√
Iron	√	√	√
Lead		√	√
Manganese	√	√	√
Mercury	√	√	√
Nickel		√	
Vanadium		√	

Table 3.2-2
Contaminants of Potential Concern (COPCs) – Aggregate Soil (0-10 ft bgs)
Chlor Alkali Superfund Site
Berlin, New Hampshire

COPC	Risk Area		
	CHP	SFSA	EFSA
PCBs & Dioxins/Furans			
2,3,7,8-TCDD TEQ	√	√	√
Total PCBs (Homologs)	√	√	
PCB Dioxin-Like Congener TEQ	√	√	√
Pesticides			
4,4'-DDE	√		
4,4'-DDT	√		
Aldrin	√		
alpha-BHC	√		
delta-BHC	√		
gamma-BHC	√		
Dieldrin	√		
Heptachlor epoxide	√		
SVOCs			
1,1'-Biphenyl	√		
1,3-Dichlorobenzene	√		
Dibenzofuran	√		
Di-n-octyl phthalate	√		
Pentachlorophenol	√		
PAHs			
Benzo(a)anthracene	√	√	√
Benzo(a)pyrene	√	√	√
Benzo(b)fluoranthene	√	√	√
Benzo(g,h,i)perylene	√	√	√
Benzo(k)fluoranthene	√	√	√
Carbazole	√	√	√
Chrysene	√		√
Dibenz(a,h)anthracene	√	√	√
Fluoranthene	√		
Indeno(1,2,3-cd)pyrene	√	√	√
2-Methylnaphthalene	√		
Naphthalene	√		√
Pyrene	√		
Polychlornated Naphthalenes (PCNs)	√		
Metals			
Aluminum	√	√	√
Antimony	√	√	√
Arsenic	√	√	√
Barium		√	
Cadmium	√		
Chromium	√	√	√
Cobalt	√	√	√
Iron	√	√	√
Lead	√	√	√
Manganese	√	√	√
Mercury	√	√	√
Nickel	√	√	
Thallium	√	√	
Vanadium		√	√
Zinc	√		

Table 3.2-3
Contaminants of Potential Concern (COPCs) – Sediment
Chlor Alkali Superfund Site
Berlin, New Hampshire

COPC	Risk Area		
	Area 1	Area 2	Area 3
PCBs & Dioxins/Furans			
2,3,7,8-TCDD TEQ		√	√
Total PCBs (Homologs)		√	√
PAHs			
Benzo(a)anthracene	√	√	√
Benzo(a)pyrene	√	√	√
Benzo(b)fluoranthene	√	√	√
Carbazole	√	√	√
Dibenz(a,h)anthracene	√	√	√
Indeno(1,2,3-cd)pyrene	√	√	√
Pesticides			
o,p'-DDT		√	√
Metals			
Aluminum	√	√	
Arsenic	√	√	√
Chromium	√	√	√
Cobalt	√	√	
Iron	√	√	
Manganese	√	√	
Mercury			√

Table 3.2-4
Contaminants of Potential Concern (COPCs) – Shallow Groundwater
Chlor Alkali Superfund Site
Berlin, New Hampshire

COPC	Risk Area		
	CHP	SFSA	EFSA
VOCs			
1,3-Dichlorobenzene		√	
Carbon tetrachloride	√	√	
Chloroform	√		
cis-1,2-Dichloroethene	√	√	
Hexachlorobutadiene	√		
Tetrachloroethene	√		
Trichloroethene	√	√	
Vinyl Chloride	√		
PAHs			
Naphthalene			
Metals			
Mercury	√		

Table 6.2-1
Summary of Receptor Risks and Hazards
Chlor Alkali Superfund Site
Berlin, New Hampshire

Exposure Area	Scenario/ Receptor	Media	Lead Model Results [1] % with blood lead level greater than 10 µg/dL	RME							
				CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Non-cancer Hazard Index	Organ-specific Hazard Index above 1.0	Major contributors to non-cancer organ-specific Hazard Index above 1.0	Individual COC hazard quotient
CHP	Age-Adjusted Resident	Surface Soil	See child	Yes	1.3E-02	2,3,7,8-TCDD TEQ	1.1E-02	NE	---	---	
						Arsenic	1.5E-03				
						Benzo(a)pyrene	1.0E-04				
						Chromium	5.1E-05				
						Dibenz(a,h)anthracene	3.5E-05				
						Benzo(a)anthracene	1.1E-05				
						Benzo(b)fluoranthene	1.1E-05				
						Indeno(1,2,3-cd)pyrene	5.8E-06				
						PCB Dioxin-like Congener TEQ	5.6E-06				
						Total PCB Homologs	4.8E-06				
						Benzo(k)fluoranthene	1.0E-06				
	Adult Resident	Surface Soil	See child	Yes	NE	---		126	Developmental	2,3,7,8-TCDD TEQ	108
									Nervous system	Mercury	15
									Skin	Arsenic	3.1
	Child Resident	Surface Soil	Not a COPC	Yes	NE	---		1023	Developmental	2,3,7,8-TCDD TEQ	972
										PCB Dioxin-like Congener TEQ	0.5
									Skin	Arsenic	28
									Nervous system	Mercury	21
									Kidney		
	Age-Adjusted Resident	Aggregate Soil	See child	Yes	2.5E-02	2,3,7,8-TCDD TEQ	1.6E-02	NE	---	---	
						Benzo(a)pyrene	5.1E-03				
						Benzo(a)anthracene	7.1E-04				
						Benzo(b)fluoranthene	6.2E-04				
						Arsenic	4.7E-04				
						Aldrin	4.2E-04				
						Dieldrin	2.8E-04				
						Dibenz(a,h)anthracene	2.7E-04				
						PCB Dioxin-like Congener TEQ	2.2E-04				
						Indeno(1,2,3-cd)pyrene	2.1E-04				
						Heptachlor Epoxide	8.8E-05				
						Chromium	4.5E-05				
						Alpha-BHC	2.2E-05				
						Total PCB Homologs	1.5E-05				
						Benzo(k)fluoranthene	1.4E-05				
						4,4'-DDE	1.1E-05				
						Chrysene	6.4E-06				
						Naphthalene	3.7E-06				
						Gamma-BHC	2.7E-06				
						4,4'-DDT	1.8E-06				
	Adult Resident	Aggregate Soil	See child	Yes	NE	---		654	Nervous system	Mercury	488
									Kidney		
									Developmental	2,3,7,8-TCDD TEQ	160
										PCB Dioxin-like Congener TEQ	2.3
									Liver	Aldrin	0.8
										Heptachlor Epoxide	0.7
										Dieldrin	0.3

Table 6.2-1
Summary of Receptor Risks and Hazards
Chlor Alkali Superfund Site
Berlin, New Hampshire

Exposure Area	Scenario/ Receptor	Media	Lead Model Results [1] % with blood lead level greater than 10 µg/dL	RME							
				CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Non-cancer Hazard Index	Organ-specific Hazard Index above 1.0	Major contributors to non-cancer organ-specific Hazard Index above 1.0	Individual COC hazard quotient
CHP, continued	Child Resident	Aggregate Soil	0.12%	Yes	NE	---		2158	Developmental	2,3,7,8-TCDD TEQ	1441
										PCB Dioxin-like Congener TEQ	19
									Nervous system	Mercury	664
									Kidney		
										Fluoranthene	0.2
										Pyrene	0.1
									Skin	Arsenic	8.4
									Liver	Aldrin	6.5
										Heptachlor Epoxide	5.9
										Dieldrin	2.8
									Eyes, Immune	Total PCB Homologs	2.9
									Thyroid	Cobalt	2.6
									Hair	Thallium	1.1
	Adult Recreational Visitor	Surface Soil	See child	Yes	1.1E-03	2,3,7,8-TCDD TEQ	1.0E-03	34	Developmental	2,3,7,8-TCDD TEQ	32
						Arsenic	1.4E-04				
						Benzo(a)pyrene	2.4E-06				
						Chromium	1.1E-06				
	Child Recreational Visitor	Surface Soil	Not a COPC	Yes	2.6E-03	2,3,7,8-TCDD TEQ	2.2E-03	300	Developmental	2,3,7,8-TCDD TEQ	289
						Arsenic	3.2E-04			PCB Dioxin-like Congener TEQ	0.1
						Benzo(a)pyrene	2.5E-05		Skin	Arsenic	8.3
						Chromium	1.3E-05		Kidney	Mercury	2.2
						Dibenz(a,h)anthracene	8.6E-06				
						Benzo(a)anthracene	2.7E-06				
						Benzo(b)fluoranthene	2.7E-06				
						Indeno(1,2,3-cd)pyrene	1.4E-06				
						PCB Dioxin-like Congener TEQ	1.1E-06				
	Adolescent Trespasser	Surface Soil	Not a COPC	Yes	7.3E-04	2,3,7,8-TCDD TEQ	6.3E-04	50	Developmental	2,3,7,8-TCDD TEQ	48
						Arsenic	8.9E-05		Skin	Arsenic	1.4
						Benzo(a)pyrene	5.5E-06				
						Dibenz(a,h)anthracene	1.9E-06				
						Chromium	1.8E-06				
SFSA	Age-Adjusted Resident	Surface Soil	See child	Yes	4.6E-04	Arsenic	1.6E-04	NE	---	---	
						Benzo(a)pyrene	1.2E-04				
						Chromium	7.6E-05				
						Dibenz(a,h)anthracene	3.0E-05				
						2,3,7,8-TCDD TEQ	2.0E-05				
						Benzo(a)anthracene	1.3E-05				
						Benzo(b)fluoranthene	1.3E-05				
						Indeno(1,2,3-cd)pyrene	1.2E-05				
						PCB Dioxin-like Congener TEQ	1.2E-05				
						Total PCB Homologs	7.2E-06				
						Benzo(k)fluoranthene	1.0E-06				
	Adult Resident	Surface Soil	See child	Yes	NE	---		5.6	Nervous system	Mercury	3.7

Table 6.2-1
Summary of Receptor Risks and Hazards
Chlor Alkali Superfund Site
Berlin, New Hampshire

Exposure Area	Scenario/ Receptor	Media	Lead Model Results [1] % with blood lead level greater than 10 µg/dL	RME							
				CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Non-cancer Hazard Index	Organ-specific Hazard Index above 1.0	Major contributors to non-cancer organ-specific Hazard Index above 1.0	Individual COC hazard quotient
SFSA (cont.)	Child Resident	Surface Soil	44.6%	Yes	NE	---		22	Nervous system	Mercury	5.0
									Kidney		
										Vanadium	4.6
									Blood	Antimony	4.0
									Skin	Arsenic	2.9
									Developmental	2,3,7,8-TCDD TEQ	1.8
										PCB Dioxin-like Congener TEQ	1.0
									Eyes, Immune	Total PCB Homologs	1.4
									Gastrointestinal	Iron	1.0
	Age-Adjusted Resident	Aggregate Soil	See child	Yes	3.3E-04	Arsenic	9.5E-05	NE	---	---	
						Chromium	6.1E-05				
						Benzo(a)pyrene	6.0E-05				
						PCB Dioxin-like Congener TEQ	3.4E-05				
						2,3,7,8-TCDD TEQ	2.4E-05				
						Dibenz(a,h)anthracene	2.1E-05				
						Total PCB Homologs	1.8E-05				
						Benzo(b)fluoranthene	8.1E-06				
						Indeno(1,2,3-cd)pyrene	6.3E-06				
						Benzo(a)anthracene	6.2E-06				
	Adult Resident	Aggregate Soil	See child	Yes	NE	---		4.8	Nervous system	Mercury	2.7
	Child Resident	Aggregate Soil	17.8%	Yes	NE	---		22	Kidney	Vanadium	4.3
										Mercury	3.7
									Nervous system		
									Eyes, Immune	Total PCB Homologs	3.6
									Developmental	PCB Dioxin-like Congener TEQ	3.0
										2,3,7,8-TCDD TEQ	2.1
									Blood	Antimony	2.2
									Skin	Arsenic	1.7
	Commercial/Industrial Worker	Surface Soil	0.60%	Yes	6.7E-05	Arsenic	3.9E-05	2.4	No	None	
						Benzo(a)pyrene	8.6E-06				
						2,3,7,8-TCDD TEQ	4.8E-06				
						Chromium	3.9E-06				
						PCB Dioxin-like Congener TEQ	3.6E-06				
						Total PCB Homologs	2.1E-06				
						Dibenz(a,h)anthracene	2.1E-06				
	Commercial/Industrial Worker	Aggregate Soil	0.15%	Yes	5.5E-05	Arsenic	2.3E-05	2.3	No	None	
						PCB Dioxin-like Congener TEQ	1.0E-05				
						2,3,7,8-TCDD TEQ	5.9E-06				
						Total PCB Homologs	5.4E-06				
						Benzo(a)pyrene	4.2E-06				
						Chromium	3.2E-06				
						Dibenz(a,h)anthracene	1.4E-06				
	Construction Worker	Aggregate Soil	0.15%	Yes	5.2E-06	Chromium	2.1E-06	3.9	Nervous system	Manganese	0.6
										Mercury	0.6
						Arsenic	1.6E-06			Arsenic	0.2
	Adolescent Trespasser	Surface Soil	Not a COPC	Yes	2.4E-05	Arsenic	9.1E-06	1.0	No	None	
						Benzo(a)pyrene	6.5E-06				
						Chromium	2.6E-06				
						Dibenz(a,h)anthracene	1.6E-06				
						2,3,7,8-TCDD TEQ	1.1E-06				

Exposure Area	Scenario/ Receptor	Media	Lead Model Results [1] % with blood lead level greater than 10 µg/dL	RME							
				CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Non-cancer Hazard Index	Organ-specific Hazard Index above 1.0	Major contributors to non-cancer organ-specific Hazard Index above 1.0	Individual COC hazard quotient
EFSA	Age-Adjusted Resident	Surface Soil	See child	Yes	1.9E-03	Benzo(a)pyrene	8.7E-04	NE	---	---	
						2,3,7,8-TCDD TEQ	6.1E-04				
						Benzo(a)anthracene	1.2E-04				
						Benzo(b)fluoranthene	7.9E-05				
						Indeno(1,2,3-cd)pyrene	7.8E-05				
						Arsenic	4.7E-05				
						Chromium	4.1E-05				
						Dibenz(a,h)anthracene	1.3E-05				
						Benzo(k)fluoranthene	8.6E-06				
						PCB Dioxin-like Congener TEQ	2.0E-06				
						Chrysene	1.2E-06				
	Adult Resident	Surface Soil	See child	Yes	NE	---		8.4	Developmental	2,3,7,8-TCDD TEQ	6.0
									Nervous system	Mercury	2.2
	Child Resident	Surface Soil	0.05%	Yes	NE	---		59	Developmental	2,3,7,8-TCDD TEQ	54
										PCB Dioxin-like Congener TEQ	0.2
									Nervous system	Mercury	3.0
	Age-Adjusted Resident	Aggregate Soil	See child	Yes	1.8E-03	Benzo(a)pyrene	7.4E-04	NE	---	---	
						2,3,7,8-TCDD TEQ	6.5E-04				
						Benzo(a)anthracene	1.0E-04				
						Dibenz(a,h)anthracene	8.0E-05				
						Benzo(b)fluoranthene	6.0E-05				
						Indeno(1,2,3-cd)pyrene	5.6E-05				
						Arsenic	5.6E-05				
						Chromium	4.8E-05				
						Benzo(k)fluoranthene	7.0E-06				
						PCB Dioxin-like Congener TEQ	2.4E-06				
						Chrysene	1.0E-06				
	Adult Resident	Aggregate Soil	See child	Yes	NE	---		8.9	Developmental	2,3,7,8-TCDD TEQ	6.4
									Nervous system	Mercury	1.9
	Child Resident	Aggregate Soil	0.026%	Yes	NE	---		67	Developmental	2,3,7,8-TCDD TEQ	58
										PCB Dioxin-like Congener TEQ	0.2
									Kidney	Vanadium	4.2
										Mercury	2.5
									Nervous system		
									Skin	Arsenic	1.0
	Commercial/Industrial Worker	Surface Soil	0.0075%	Yes	2.4E-04	2,3,7,8-TCDD TEQ	1.5E-04	5.3	Developmental	2,3,7,8-TCDD TEQ	4.5
						Benzo(a)pyrene	6.1E-05				
						Arsenic	1.2E-05				
						Benzo(a)anthracene	8.3E-06				
						Benzo(b)fluoranthene	5.5E-06				
						Indeno(1,2,3-cd)pyrene	5.5E-06				
						Chromium	2.1E-06				
	Commercial/Industrial Worker	Aggregate Soil	0.0063%	Yes	2.5E-04	2,3,7,8-TCDD TEQ	1.6E-04	5.9	Developmental	2,3,7,8-TCDD TEQ	4.9
						Benzo(a)pyrene	5.2E-05				
						Arsenic	1.4E-05				
						Benzo(a)anthracene	7.0E-06				
						Dibenz(a,h)anthracene	5.6E-06				
						Benzo(b)fluoranthene	4.2E-06				
						Indeno(1,2,3-cd)pyrene	3.9E-06				
						Chromium	2.5E-06				

Exposure Area	Scenario/ Receptor	Media	Lead Model Results [1] % with blood lead level greater than 10 µg/dL	RME							
				CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Non-cancer Hazard Index	Organ-specific Hazard Index above 1.0	Major contributors to non-cancer organ-specific Hazard Index above 1.0	Individual COC hazard quotient
EFSA (cont.)	Construction Worker	Aggregate Soil	0.0063%	Yes	1.6E-05	2,3,7,8-TCDD TEQ	9.8E-06	9.5	Developmental	2,3,7,8-TCDD TEQ	7.4
						Benzo(a)pyrene	2.4E-06		Nervous system	Manganese	0.6
						Chromium	1.7E-06			Mercury	0.3
										Arsenic	0.1
	Adolescent Trespasser	Surface Soil	Not a COPC	Yes	1.0E-04	Benzo(a)pyrene	4.6E-05	2.9	Developmental	2,3,7,8-TCDD TEQ	2.7
						2,3,7,8-TCDD TEQ	3.5E-05				
						Benzo(a)anthracene	6.3E-06				
						Benzo(b)fluoranthene	4.2E-06				
						Indeno(1,2,3-cd)pyrene	4.1E-06				
						Arsenic	2.7E-06				
						Chromium	1.4E-06				
Area 1 Sediment	Adult Recreational Visitor	Sediment	Not a COPC	No	3.2E-06	Benzo(a)pyrene	2.1E-06	0.0078	No	None	
	Child Recreational Visitor	Sediment	Not a COPC	No	1.7E-05	Benzo(a)pyrene	9.9E-06	0.071	No	None	
						Chromium	3.5E-06				
						Benzo(b)fluoranthene	1.5E-06				
						Benzo(a)anthracene	1.0E-06				
Area 2 Sediment	Adult Recreational Visitor	Sediment	Not a COPC	No	2.2E-06	Benzo(a)pyrene	1.2E-06	0.018	No	None	
	Child Recreational Visitor	Sediment	Not a COPC	No	1.0E-05	Benzo(a)pyrene	5.4E-06	0.12	No	None	
						Chromium	2.5E-06				
Area 3 Sediment	Adult Recreational Visitor	Sediment	Not a COPC	No	5.8E-06	Benzo(a)pyrene	2.3E-06	0.068	No	None	
						2,3,7,8-TCDD TEQ	1.8E-06				
	Child Recreational Visitor	Sediment	Not a COPC	No	2.0E-05	Benzo(a)pyrene	1.1E-05	0.41	No	None	
						2,3,7,8-TCDD TEQ	2.8E-06				
						Chromium	2.0E-06				
						Benzo(b)fluoranthene	1.4E-06				
						Dibenz(a,h)anthracene	1.3E-06				
Androscoggin River Fish	Age-Adjusted Recreational Angler	Fish Tissue	Not a COPC	Yes	4.0E-03	PCB Dioxin-like Congener TEQ	2.0E-03	NE	---	---	
						Total PCBs	1.4E-03				
						2,3,7,8-TCDD TEQ	2.0E-04				
						Arsenic	1.8E-04				
						Chromium	1.6E-04				
						4,4'-DDT	1.6E-05				
						Indeno(1,2,3-cd)pyrene	3.4E-06				
						Beta-BHC	1.6E-06				
	Adult Recreational Angler	Fish Tissue	Not a COPC	Yes	NE	---		126	Eyes, Immune	Total PCBs	70
									Developmental	PCB Dioxin-like Congener TEQ	44
										2,3,7,8-TCDD TEQ	4.4
									Kidney	Mercury	5.4
	Child Recreational Angler	Fish Tissue	Not a COPC	Yes	NE	---		238	Eyes, Immune	Total PCBs	133
									Developmental	PCB Dioxin-like Congener TEQ	84
										2,3,7,8-TCDD TEQ	8.3
									Kidney	Mercury	10
									Skin	Arsenic	1.5

Table 6.2-1
Summary of Receptor Risks and Hazards
Chlor Alkali Superfund Site
Berlin, New Hampshire

Exposure Area	Scenario/ Receptor	Media	Lead Model Results [1] % with blood lead level greater than 10 µg/dL	RME							
				CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Non-cancer Hazard Index	Organ-specific Hazard Index above 1.0	Major contributors to non-cancer organ-specific Hazard Index above 1.0	Individual COC hazard quotient
Groundwater as Drinking Water	Age-Adjusted Resident	Groundwater	NE	Yes	5.8E-01	Chloroform	5.3E-01	2510	Liver	Chloroform	1190
						Carbon tetrachloride	4.1E-02			Carbon tetrachloride	400
						Chromium	8.3E-03			Aldrin	12
						Arsenic	3.0E-03			Heptachlor epoxide	1.1
						2,3,7,8-TCDD TEQ	2.7E-03		Developmental	Carbon disulfide	361
						Aldrin	1.4E-03			2,3,7,8-TCDD TEQ	127
						Trichloroethene	3.0E-04		Kidney	Mercury	213
						n-Nitroso-di-n-propylamine	1.4E-04			Hexachloroethane	8.2
						Benzo(a)pyrene	7.9E-05			Vanadium	7.8
						PCB Dioxin-like Congener TEQ	7.2E-05		Immune	Trichloroethene	50
						Vinyl chloride	6.1E-05		Eyes, Immune	Total PCBs	3.4
						Bis-2-ethylhexylphthalate	6.1E-05		Nervous system	Manganese	48
						Hexachloroethane	5.3E-05			Tetrachloroethene	8.9
						Total PCBs	4.3E-05		Skin	Arsenic	29
						Naphthalene	4.2E-05		GI	Iron	16
						Dieldrin	3.5E-05		Thyroid	Cobalt	7.7
						Hexachlorobutadiene	3.2E-05		Blood	Antimony	3
						Tetrachloroethene	3.2E-05		Hair	Thallium	2.3
						Heptachlor epoxide	2.9E-05		none	Chromium	8.1
						Benzo(a)anthracene	2.7E-05			Hexachlorobutadiene	1.8
						Alpha-chlordane	2.6E-05			Selenium	1.5
						Alpha-BHC	1.6E-05				
						Benzene	1.2E-05				
						n-Nitrosodiphenylamine	9.0E-06				
						Heptachlor	8.9E-06				
						Gamma-BHC	8.1E-06				
						Pentachlorophenol	7.6E-06				
						Methylene chloride	7.1E-06				
						2,4,6-Trichlorophenol	1.5E-06				

Notes:

NE	Not Evaluated
RME	Reasonable Maximum Exposure
CR	Cancer risk
HI	Hazard Index
HQ	Hazard Quotient
1	Lead evaluation is performed only where lead is a COPC and only for child residents (IEUBK Model) and industrial/commercial workers or construction workers (Adult Lead Model)
	Cancer Risks are above 1E-04 or Hazard Indices are above 1.
	Cancer risks fall in the range of 10^{-6} to 10^{-4}.
	Lead Results indicate a concern

FIGURES

N

Legend

- Elevation Contour (feet above Mean Sea Level)
- Former Railroad
- Approximate Dam Locations
- Approximate Limit of the Cell House Property
- Approximate Limit of the Facility Study Area
- Approximate Limit of the Former Chemical Plant Structure Footprints (approx. 1928)

APPROXIMATE SCALE

200 100 0 200 Feet

NOTES:

1. Aerial ortho-photo flown in October 2009 and was provided by York Land Services under contract to Nobis Engineering, Inc.
2. Ground surface survey conducted by York Land Services, under contract with Nobis Engineering, Inc. using aerial methods with ground truthing (Fall 2009).
3. Approximate site boundary and limit of cap provided by Weston Solutions, February 2005, Final Site Investigation Report; Former Chlor Alkali Facility.
4. Limit of Facility Study Area was provided by the Enlarged Investigation Area Plan; Prepared for North American Dismantling Corp., by York Land Services, September 2008.

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FIGURE 1-1

CELL HOUSE PROPERTY AND FACILITY STUDY AREA
CHLOR-ALKALI FACILITY (FORMER)
BERLIN, NH

PREPARED BY: DFM	CHECKED BY: LC
PROJECT NO. 80013	DATE: JANUARY 2013

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ARI RIVER REACHES

AR1 AR2 AR3 AR4 AR5 AR6 AR7 AR8 AR-9

N

Pontook Dam
Pontook Reservoir
Dummer
Berlin
Gorham
Gorham Dam (Brookfield)
SEE INSET AT BOTTOM RIGHT
Cascade Dam
Cross Power Dam
Smith Hydro Dam
Riverside Dam
Sawmill Dam
Milan
Androscoggin River Dam (PSNH)
Shelburne Dam
Shelburne
Success
NEW HAMPSHIRE
MAINE

AR7 AR6 AR5 AR4 AR3 AR2
Cascade Dam
Cross Power Dam
Smith Hydro Dam
Riverside Dam
Sawmill Dam

Legend

- Street
- Stream
- Town Boundary
- Dam
- River Study Area
- Eastern and Southern Facility Study Area
- Cell House Property

APPROXIMATE SCALE

8,500 4,250 0 8,500 Feet

NOTES:

1. Stream/river location and transportation data provided by NH GRANIT (accessed in 2007).
2. Approximate CHP Boundary based on Weston Solutions, February 2005, Final Site Investigation Report; Former Chlor Alkali Facility.
3. Limit of Facility Study Area based on the Enlarged Investigation Area Plan; Prepared for North American Dismantling Corp., by York Land Services, September 2008.
4. Gorham Dam (Brookfield) and Androscoggin River Dam (PSNH) are from One Stop Web Geographic Information Systems/New Hampshire Department of Environmental Services, Accessed December 2013.

AR1-Above Pontook Dam
AR2-Between Pontook Dam and Sawmill Dam
AR3-Between Sawmill Dam and Riverside Dam
AR4-Between Riverside Dam and Smith Hydro Dam
AR5-Between Smith Hydro Dam and Cross Power Dam
AR6-Between Cross Power Dam and Cascade Dam
AR7-Between Cascade Dam and Gorham Dam (Brookfield)
AR8-Between Gorham Dam (Brookfield) and Androscoggin River Dam (PSNH)
AR9-Between Gorham Dam and Shelburne Dam

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FIGURE 1-2

RIVER STUDY AREA PLAN
CHLOR-ALKALI FACILITY (FORMER SITE)
BERLIN, NH

PREPARED BY: DFM	CHECKED BY: LC
PROJECT NO. 80013	DATE: DECEMBER 2013

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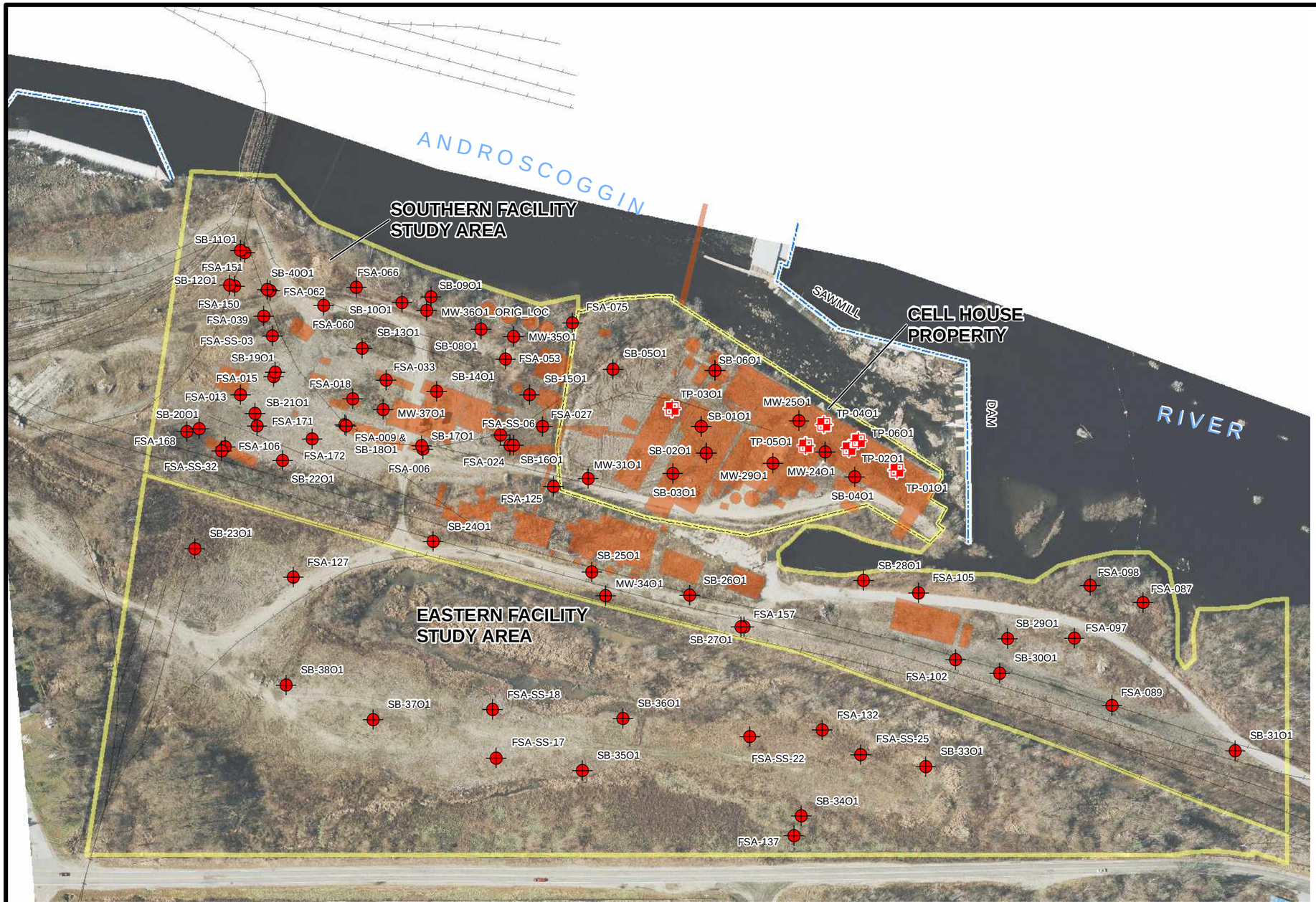

Legend

- Soil Boring Sample Location
- Test Pit Sample Location
- Former Railroad
- Approximate Dam Locations
- Approximate Limit of the Former Chemical Plant Structure Footprints (Circa 1928)
- Approximate Limit of the Cell House Property
- Approximate Limit of the Facility Study Area

0 100 200 400
Feet

NOTES:

1. Aerial ortho-photo flown in October 2009 and was provided by York Land Services under contract to Nobis Engineering, Inc.
2. Approximate limit of the Cell House Property based on Weston Solutions, February 2005, Final Site Investigation Report; Former Chlor-Alkali Facility.
3. Limit of Facility Study Area was provided by the Enlarged Investigation Area Plan; Prepared for North American Dismantling Corp., by York Land Services, September 2008.
4. Soil sampling locations surveyed by York Land Services of Berlin, in October 2009 and November 2010.

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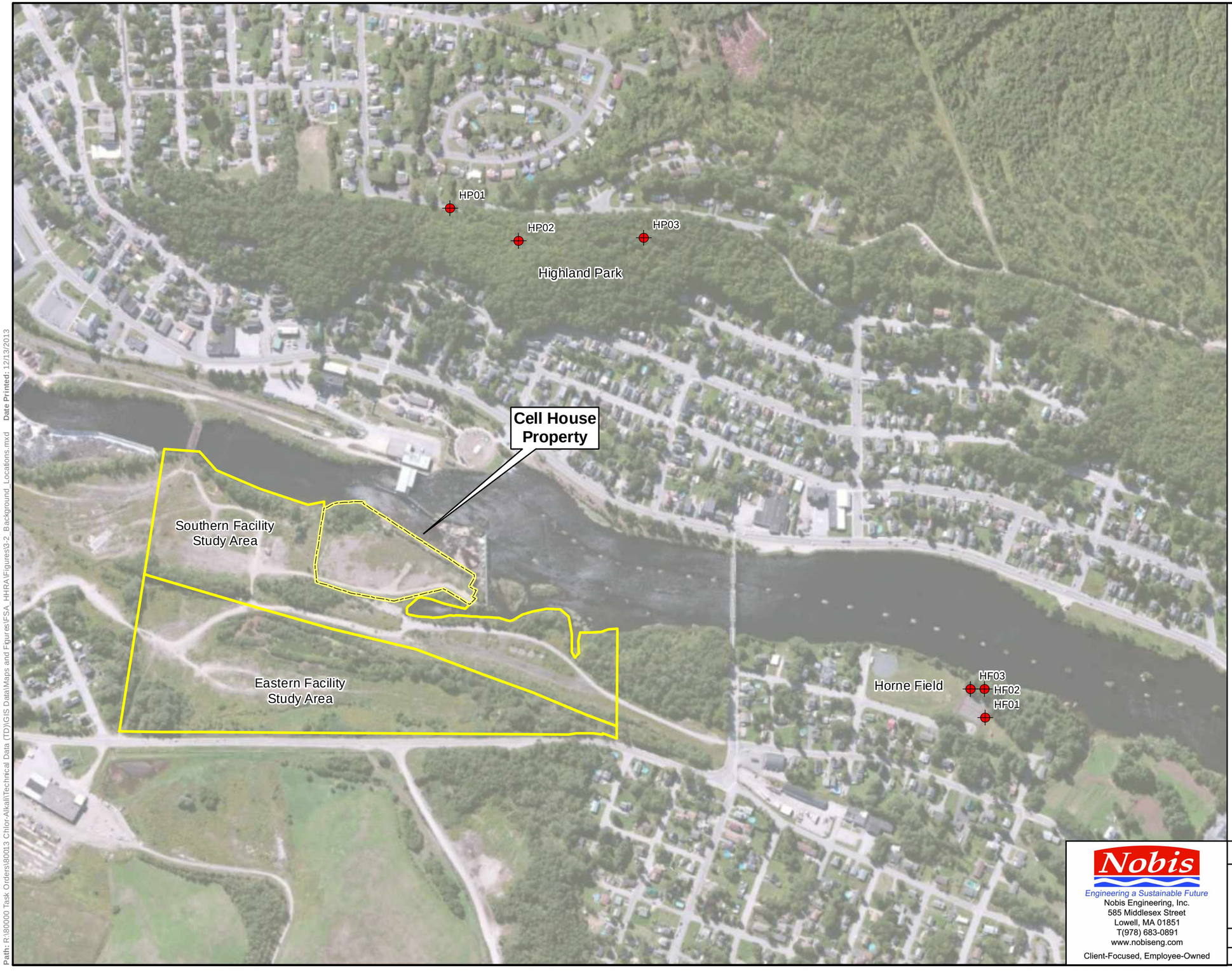
FIGURE 3-1

SOIL SAMPLING LOCATIONS
CHLOR-ALKALI FACILITY (FORMER SITE)
BERLIN, NH

PREPARED BY: JH	CHECKED BY: LC
PROJECT NO. 80013	DATE: DEC 2013

Path: R:\80000 Task Orders\80013 Chlor-Alkali\Technical Data (TD)\GIS Data\Maps and Figures\FSA_HHRA\Figures\3-1_Soil_Sampling_Locations_JS.mxd Date Printed: 12/16/2013



Legend

- Background Soil Borings
- Approximate Limit of the Cell House Property
- Approximate Limit of Facility Study Area

N

0 300 600 1,200

Feet

1 inch = 600 feet

Notes:
Location of all features is approximate. Map is for reference purposes only. Nobis Engineering, Inc. makes no claims, warranties, representations, expressed or implied, relating to the completeness, accuracy, or reliability of the data shown.

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FIGURE 3-2

BACKGROUND SOIL
SAMPLE LOCATIONS
CHLOR-ALKALI FACILITY (FORMER)
BERLIN, NEW HAMPSHIRE

PREPARED BY: JH	CHECKED BY: LC
PROJECT NO. 80013	DATE: JANUARY 2013

Path: R:\80000 Task Orders\80013 Chlor-Alkali\Technical Data (TD)\GIS Data\Maps and Figures\FSA_HHRA\Figures\3-2_Background_Locations.mxd **Date Printed:** 12/13/2013

Randolph
Gorham
Berlin
Milan
Dummer
Cambridge
Shelburne
Success
SEE INSET
RHD01
AR8SW
AR7-1
AR8-4
AR8-5
AR8-3SED
AR7-2
DPWD01
DPWD02
AR8-1SED
Brown Co. Dam
AR8-2SED
Gorham Dam
AR9-6
AR9SW
AR9-4SED
AR9-3SED
AR9-2SED
AR9-1SED
AR9-7
AR9-5
Shelburne Dam
AR2SW
AR2-1SED
AR2-4
AR2-5
AR2-2SED
AR2-3SED
0 0.5 1 2
Miles
N
AR6-1SED
MD01
AR6-3
AR6-2
AR5-2
SH2
AR4-1
AR3SW
BH01
BH02
AR5-1
AR4SW
SH1
AR4-2
BG01
BG02
BG03
0 0.25 0.5 1
Miles
N

Legend

- AR Field Sampling Locations
- Location sampled in 2006, prior to Remedial Investigation field sampling events
- Roads
- Rail
- Cell House Property
- Facility Study Area
- Town Boundary
- Streams

ARI River Reaches

- AR1
- AR2
- AR3
- AR4
- AR5
- AR6
- AR7
- AR8
- AR9

Notes:
Location of all features is approximate. Map is for reference purposes only. Nobis Engineering, Inc. makes no claims, warranties, representations, expressed or implied, relating to the completeness, accuracy, or reliability of the data shown.

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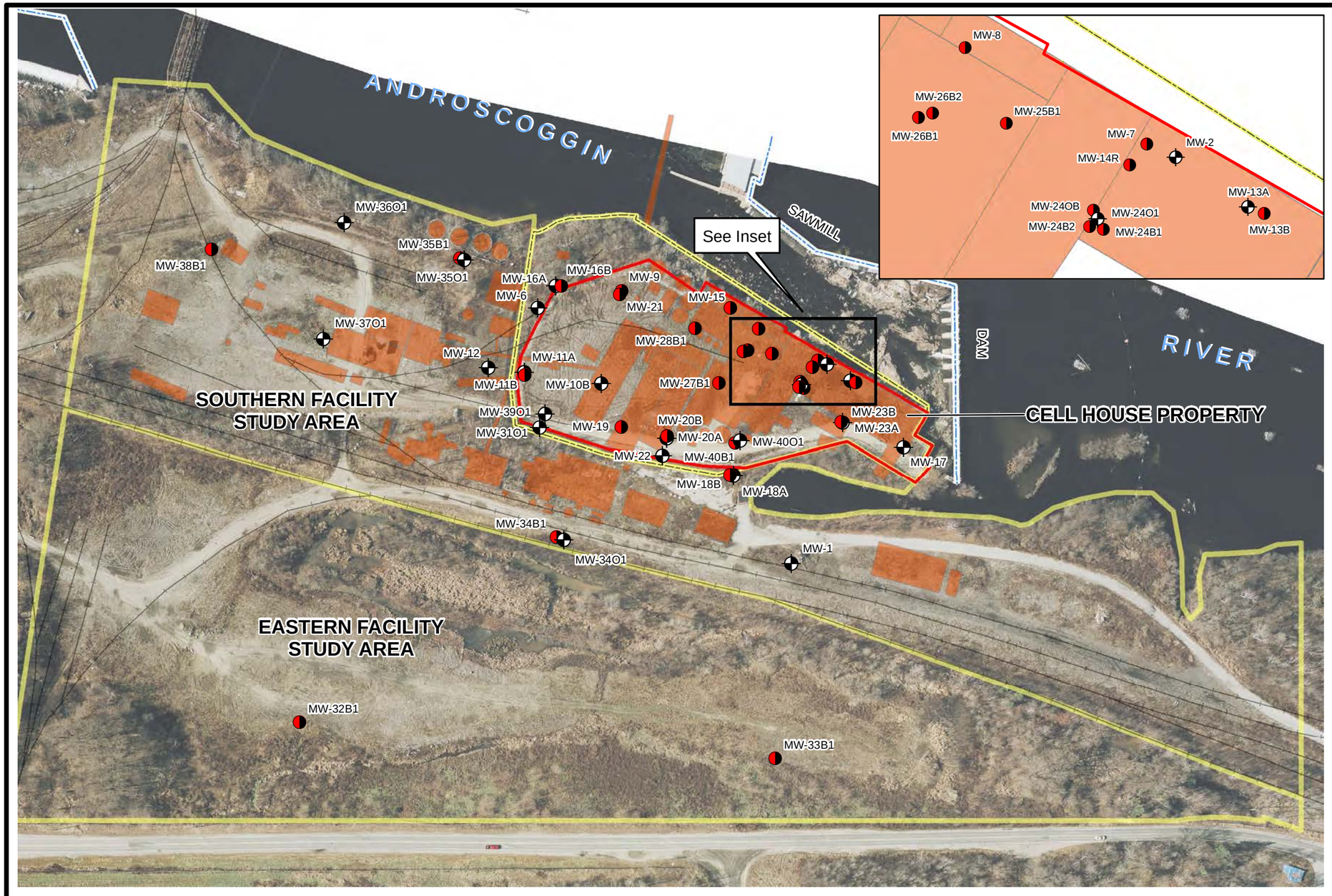
FIGURE 3-3

SURFACE WATER AND SEDIMENT LOCATIONS
CHLOR-ALKALI FACILITY (FORMER)
BERLIN, NEW HAMPSHIRE

PREPARED BY: JH	CHECKED BY: LC
PROJECT NO. 80013	DATE: JANUARY 2013



Legend

- Bedrock Monitorig Well/ Bedrock Borehole Location
- Overburden Monitoring Well
- Approximate Dam Locations
- Former Railroad
- Approximate Limit of the Cell House Property
- Approximate Limit of the Facility Study Area
- Approximate Limit of HDPE Cap
- Approximate Limit of the Former Chemical Plant Structure Footprints (approx. 1928)

APPROXIMATE SCALE

200 100 0 200 Feet

INSET SCALE

60 30 0 60 Feet

NOTES:

1. Aerial ortho-photo flown in October 2009 and was provided by York Land Services under contract to Nobis Engineering, Inc.
2. Approximate site boundary and limit of cap provided by Weston Solutions, February 2005, Final Site Investigation Report; Former Chlor Alkali Facility.
3. Former building locations are approximate, and were derived from a 1928 Sanborn Fire Insurance Map
4. Limit of Facility Study Area was provided by the Enlarged Investigation Area Plan; Prepared for North American Dismantling Corp., by York Land Services, September 2008.
5. Monitoring well/borehole locations surveyed by York Land Services of Berlin, in October 2009 and November 2010.

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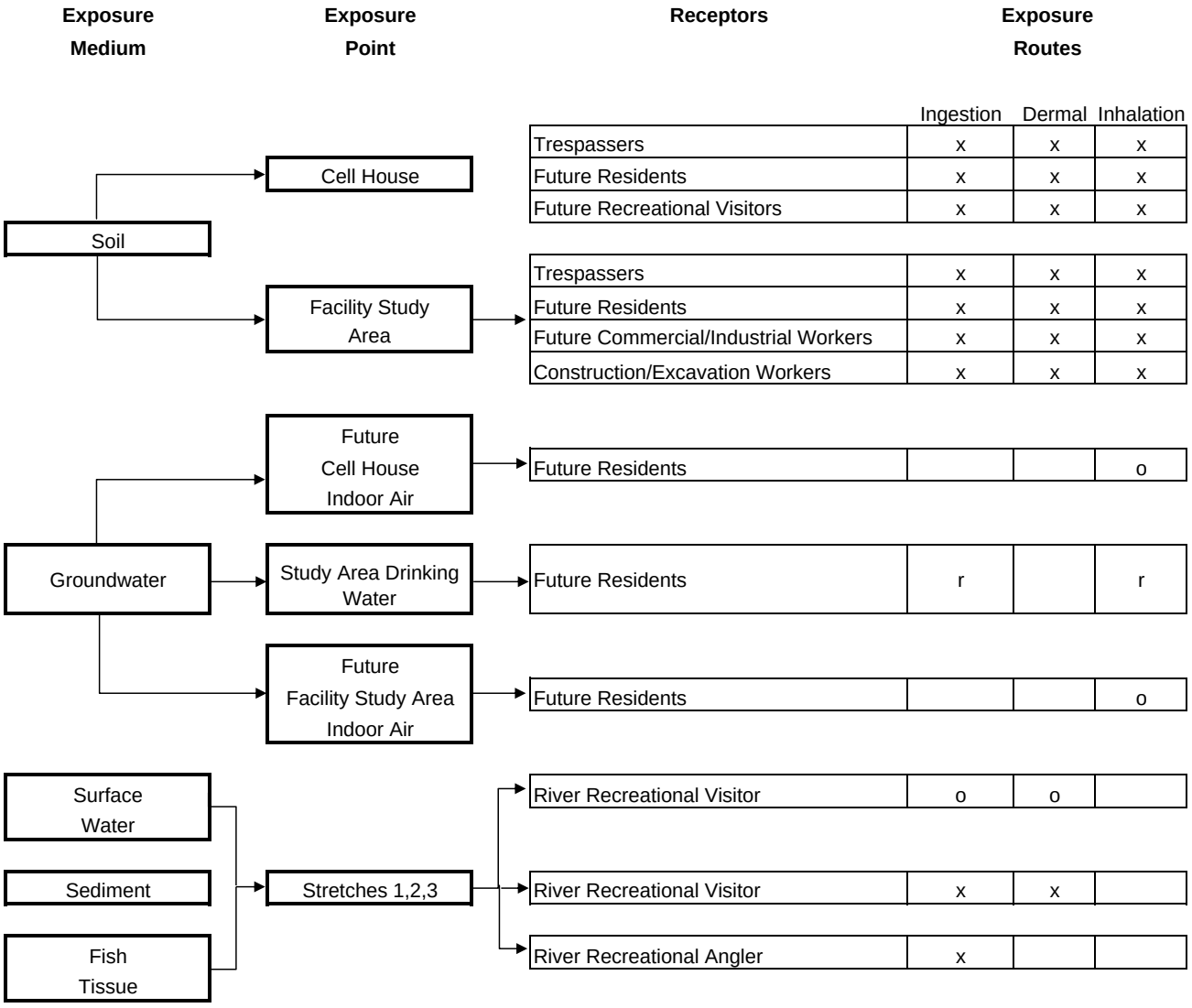
FIGURE 3-4

GROUNDWATER SAMPLING LOCATIONS
CHLOR-ALKALI FACILITY (FORMER)
BERLIN, NH

PREPARED BY: JH	CHECKED BY: LC
PROJECT NO. 80013	DATE: JANUARY 2013

R:\80000 Task Orders\80013 Chlor-Alkali\Technical Data (TD)\GIS Data\Maps and Figures\FSA_HHRA\Figures\3-4_Monitoring_Well_Locations_JS.mxd

FIGURE 4-1
HUMAN HEALTH RECEPTOR EXPOSURES
CHLOR-ALKALI FACILITY (FORMER) SUPERFUND SITE
BERLIN, NEW HAMPSHIRE



Notes:
x = Quantitative analysis.
o = Qualitative analysis.
r = simplified ratio approach

APPENDIX A

APPENDIX A

RAGS TABLES 1-10

TABLE A-1
SELECTION OF EXPOSURE PATHWAYS
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Androscoggin River	Fish	Fish Stretches* 1, 2, 3	River Recreational Angler	Adult	Ingestion	Quantitative	Adult recreational anglers may be exposed to contaminants through ingestion of fish.
					Child	Ingestion	Quantitative	Child recreational anglers may be exposed to contaminants through ingestion of fish.
		Sediment	Sediment Stretches* 1, 2, 3	River Recreational Visitor	Adult	Ingestion	Quantitative	Adult recreational visitors may be exposed to contaminated sediment through inadvertent contact.
						Dermal	Quantitative	Adult recreational visitors may be exposed to contaminated sediment through inadvertent contact.
					Child	Ingestion	Quantitative	Child recreational visitors may be exposed to contaminated sediment through inadvertent contact.
						Dermal	Quantitative	Child recreational visitors may be exposed to contaminated sediment through inadvertent contact.
		Surface Water	Surface Water Stretches* 1, 2, 3	River Recreational Visitor	Adult	Ingestion	Quantitative	Adult recreational visitors may be exposed to contaminated surface water while swimming at reach 9 only.
						Dermal	Quantitative	Adult recreational visitors may be exposed to contaminated surface water through inadvertent contact.
					Child	Ingestion	Quantitative	Child recreational visitors may be exposed to contaminated surface water while swimming at reach 9 only.
						Dermal	Quantitative	Child recreational visitors may be exposed to contaminated surface water through inadvertent contact.
	FSA Soil	Soil	Surface Soil Exposure Areas B & C**	Trespasser	Adolescent	Ingestion	Quantitative	Trespassers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Trespassers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Trespassers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
Future	Cell House Soil	Soil	Surface Soil Exposure Area A**	Trespasser	Adolescent	Ingestion	Quantitative	Trespassers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Trespassers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Trespassers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
				Resident	Adult	Ingestion	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
				Cell House Property Recreational Visitor	Adult	Ingestion	Quantitative	Adult recreational visitors may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult recreational visitors may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult recreational visitors may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child recreational visitors may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child recreational visitors may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child recreational visitors may be exposed to contaminated soil through contact with fugitive dust and volatiles.
			Aggregate Soil (0-10 ft) Exposure Area A**	Resident	Adult	Ingestion	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
	Groundwater	Indoor air	Indoor air Exposure Area A**	Resident	Adult	Inhalation	Qualitative	Adult residents may be exposed to volatiles in indoor air through vapor intrusion.
					Child	Inhalation	Qualitative	Child residents may be exposed to volatiles in indoor air through vapor intrusion.

TABLE A-1
SELECTION OF EXPOSURE PATHWAYS
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	FSA Soil	Soil	Surface Soil Exposure Areas B & C**	Commercial/Industrial Worker	Adult	Ingestion	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
				Resident	Adult	Ingestion	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
			Aggregate Soil (0-10 ft) Exposure Areas B & C**	Construction/Excavation Worker	Adult	Ingestion	Quantitative	Construction/Excavation Workers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Construction/Excavation Workers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Construction/Excavation Workers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
				Commercial/Industrial Worker	Adult	Ingestion	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Commercial/Industrial Workers may be exposed to contaminated soil through contact with fugitive dust and volatiles.
				Resident	Adult	Ingestion	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Adult Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Adult Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
					Child	Ingestion	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Dermal	Quantitative	Child Residents may be exposed to contaminated soil through inadvertent contact.
						Inhalation	Quantitative	Child Residents may be exposed to contaminated soil through contact with fugitive dust and volatiles.
	Groundwater	Indoor air	Indoor air Exposure Areas B & C**	Resident	Adult	Inhalation	Qualitative	Adult residents may be exposed to volatiles in indoor air through vapor intrusion.
					Child	Inhalation	Qualitative	Child residents may be exposed to volatiles in indoor air through vapor intrusion.
		Groundwater	Tapwater	Resident	Adult/Child	Ingestion	Ratio approach	Future Residents may be exposed to contaminants in groundwater through ingestion of drinking water.
						Inhalation	Ratio approach	Future Residents may be exposed to contaminants in groundwater through inhalation of vapors during household water use.

*Androscoggin River Stretches: #1=AR reaches 3-5; #2=AR reaches 6-8; and #3=AR reach 9. AR reach 2=background
Soil and groundwater exposure areas: A=4.6-acre area of Cell House Property; B=south FSA (former railroad tracks and west to river, excludes exposure area A); and C=east FSA (east of former railroad tracks).

TABLE A-2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface soil 0-1 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
CHP Surface Soil	92524	1,1'-Biphenyl	0.01	0.01	mg/kg	MW-31O1-0811-1535	1/9	0.18-0.22	0.01	NA	5.1	NC	174	NH SRS	NO	BSL
	87616	1,2,3-Trichlorobenzene	0.0043	0.0043	mg/kg	SB-01O1-0812-1215	1/10	0.0043-0.0076	0.0043	NA	4.9	NC	NBA		NO	BSL
	120821	1,2,4-Trichlorobenzene	0.0037	0.0037	mg/kg	SB-01O1-0812-1215	1/10	0.0043-0.0076	0.0037	0.011	6.2	NC	19	NH SRS	NO	BSL
	67641	Acetone	0.0039	0.12	mg/kg	SB-03O1-0813-0835	8/10	0.01-0.014	0.12	0.04	6100	NC	75	NH SRS	NO	BSL
	100527	Benzaldehyde	0.15	0.15	mg/kg	SB-01O1-0812-1215	1/9	0.18-0.22	0.15	0.25	780	NC	NBA		NO	BSL
	67663	Chloroform	0.016	0.026	mg/kg	MW-31O1-0811-1535	2/10	0.0043-0.0068	0.026	NA	0.29	C	3	NH SRS	NO	BSL
	74873	Chloromethane	0.0091	0.0091	mg/kg	SB-06O1-0810-1520	1/10	0.0043-0.0076	0.0091	0.0036	12	NC	3	NH SRS	NO	BSL
	79209	Methyl acetate	0.0061	0.01	mg/kg	MW-29O1-0811-0915	2/10	0.0043-0.0076	0.01	NA	7800	NC	NBA		NO	BSL
	85687	Butylbenzylphthalate	1.5	1.5	mg/kg	SB-01O1-0812-1215	1/9	0.18-0.22	1.5	NA	260	C	NBA		NO	BSL
	132649	Dibenzofuran	0.028	0.11	mg/kg	MW-24O1-0805-1300	3/9	0.19-0.22	0.11	NA	7.8	NC	NBA		NO	BSL
	84742	Di-n-butyl phthalate	0.55	0.55	mg/kg	MW-31O1-0811-1535	1/9	0.18-0.22	0.55	0.053	610	NC	2600	NH SRS	NO	BSL
	91576	2-Methylnaphthalene	0.012	0.046	mg/kg	MW-31O1-0811-1535	2/9	0.19-0.22	0.046	NA	23	NC	96	NH SRS	NO	BSL
	83329	Acenaphthene	0.039	0.18	mg/kg	MW-24O1-0805-1300	5/9	0.19-0.22	0.18	NA	340	NC	340	NH SRS	NO	BSL
	208968	Acenaphthylene	0.031	0.36	mg/kg	MW-31O1-0811-1535	4/9	0.19-0.22	0.36	0.061	340	NC	490	NH SRS	NO	BSL
	120127	Anthracene	0.063	0.41	mg/kg	MW-24O1-0805-1300	8/9	0.19-0.2	0.41	0.093	1700	NC	1000	NH SRS	NO	BSL
	56553	Benzo(a)anthracene	0.25	2.4	mg/kg	MW-29O1-0811-0915	8/9	0.19-0.2	2.4	0.9	0.15	C	1	NH SRS	YES	ASL
	50328	Benzo(a)pyrene	0.31	2.3	mg/kg	MW-29O1-0811-0915	8/9	0.19-0.2	2.3	0.7	0.015	C	0.7	NH SRS	YES	ASL
	205992	Benzo(b)fluoranthene	0.25	2.5	mg/kg	MW-31O1-0811-1535	7/9	0.19-0.2	2.5	0.83	0.15	C	1	NH SRS	YES	ASL
	191242	Benzo(g,h,i)perylene	0.043	1.2	mg/kg	MW-25O1-0805-1415	8/9	0.19-0.19	1.2	0.5	3.6	C	960	NH SRS	NO	BSL
	207089	Benzo(k)fluoranthene	0.26	2.7	mg/kg	MW-29O1-0811-0915	7/9	0.19-0.2	2.7	0.61	1.5	C	12	NH SRS	YES	ASL
	86748	Carbazole	0.034	0.17	mg/kg	MW-24O1-0805-1300	8/9	0.19-0.2	0.17	0.081	NBA		NBA		YES	NBA
	218019	Chrysene	0.33	2.9	mg/kg	MW-29O1-0811-0915	8/9	0.19-0.2	2.9	0.86	15	C	120	NH SRS	NO	BSL
	53703	Dibenz(a,h)anthracene	0.056	0.58	mg/kg	MW-31O1-0811-1535	9/9	0.19-0.19	0.58	0.15	0.015	C	0.7	NH SRS	YES	ASL
	206440	Fluoranthene	0.32	4.7	mg/kg	MW-31O1-0811-1535	8/9	0.19-0.19	4.7	1.8	230	NC	960	NH SRS	NO	BSL
	86737	Fluorene	0.042	0.16	mg/kg	MW-24O1-0805-1300	6/9	0.19-0.22	0.16	NA	230	NC	77	NH SRS	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.2	1.2	mg/kg	MW-29O1-0811-0915	7/9	0.19-0.2	1.2	0.81	0.2	C	1	NH SRS	YES	ASL
	91203	Naphthalene	0.023	0.1	mg/kg	MW-24O1-0805-1300	5/9	0.19-0.22	0.1	NA	3.6	C	5	NH SRS	NO	BSL
	85018	Phenanthrene	0.033	1.7	mg/kg	MW-24O1-0805-1300	9/9	-	1.7	0.62	1700	NC	960	NH SRS	NO	BSL
	129000	Pyrene	0.25	3.7	mg/kg	MW-31O1-0811-1535	8/9	0.19-0.19	3.7	1.6	170	NC	720	NH SRS	NO	BSL
	28699889	Dichloronaphthalene, total	0.035	0.41	mg/kg	MW-25O1-0805-1415	2/9	0.085-0.96	0.41	NA	NBA		NBA		YES	NBA
	1321648	Pentachloronaphthalene, total	0.23	0.93	mg/kg	MW-25O1-0805-1415	3/9	0.085-0.96	0.93	NA	NBA		NBA		YES	NBA
	1335882	Tetrachloronaphthalene, total	0.29	2.5	mg/kg	MW-25O1-0805-1415	3/9	0.085-0.96	2.5	NA	NBA		NBA		YES	NBA
	1321659	Trichloronaphthalene, total	0.15	0.76	mg/kg	MW-25O1-0805-1415	3/9	0.085-0.96	0.76	NA	NBA		NBA		YES	NBA
	---	2,3,7,8-TCDD TEQ	0.000085	0.061	mg/kg	MW-25O1-0805-1415	9/9	-	0.061	0.0000020	0.0000045	C	0.001	NH SRS	YES	ASL
	---	Total PCB Homologs	0.038	1.84	mg/kg	MW-31O1-0811-1535	9/9	-	1.84	0.017	0.11	NC	1	NH SRS	YES	ASL
	---	PCB Dioxin-like Congener TEQ	0.0000015	0.000028	mg/kg	MW-31O1-0811-1535	9/9	-	0.000028	0.00000082	0.0000045	C	0.001	NH SRS	YES	ASL
	14797730	Perchlorate	0.00029	0.001	mg/kg	SB-04O1-0813-1120	3/9	0.00053-0.00061	0.001	NA	5.5	NC	NBA		NO	BSL
	7429905	Aluminum	3230	6470	mg/Kg	SB-06O1-0810-1520	10/10	-	6470	16300	7700	NC	NBA		NO	BSL
	7440360	Antimony	1.4	3.3	mg/Kg	MW-31O1-0811-1535	6/10	5.1-6.3	3.3	NA	3.1	NC	9	NH SRS	YES	ASL
	7440382	Arsenic	1.5	828	mg/Kg	SB-02O1-0807-0830	10/10	-	828	4.9	0.39	C	11	NH SRS	YES	ASL
	7440393	Barium	27.3	254	mg/Kg	MW-25O1-0805-1415	10/10	-	254	41.9	1500	NC	1000	NH SRS	NO	BSL

TABLE A-2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface soil 0-1 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
CHP Surface Soil (Cont'd)	7440417	Beryllium	0.19	0.48	mg/Kg	MW-25O1-0805-1415	10/10	-	0.48	0.68	16	NC	1	NH SRS	NO	BSL
	7440439	Cadmium	0.13	1.3	mg/Kg	MW-31O1-0811-1535	7/10	0.49-0.58	1.3	0.49	7	NC	33	NH SRS	NO	BSL
	7440702	Calcium	1100	26700	mg/Kg	SB-02O1-0807-0830	10/10	-	26700	1830	NUT		NBA		NO	NUT
	7440473	Chromium	5.9	29.7	mg/Kg	MW-31O1-0811-1535	10/10	-	29.7	17.7	0.29	C	130	NH SRS	YES	ASL
	7440484	Cobalt	4.3	18.5	mg/Kg	MW-24O1-0805-1300	10/10	-	18.5	3.6	2.3	NC	NBA		YES	ASL
	7440508	Copper	15.5	130	mg/Kg	MW-31O1-0811-1535	10/10	-	130	23.4	310	NC	NBA		NO	See Text
	7439896	Iron	8460	39100	mg/Kg	MW-31O1-0811-1535	10/10	-	39100	19900	5500	NC	NBA		YES	ASL
	7439921	Lead	21.3	382	mg/Kg	MW-31O1-0811-1535	10/10	-	382	82.2	400		400	NH SRS	NO	BSL
	7439954	Magnesium	1130	2830	mg/Kg	SB-06O1-0810-1520	10/10	-	2830	1380	NUT		NBA		NO	NUT
	7439965	Manganese	120	271	mg/Kg	SB-03O1-0813-0835	10/10	-	271	144	180	NC	5200	NH SRS	YES	ASL
	7439976	Mercury	0.71	147	mg/Kg	MW-DUP02-0811-0920A	10/10	-	147	0.37	1	NC	6	NH SRS	YES	ASL
	7440020	Nickel	5.2	75.9	mg/Kg	SB-05O1-0812-1105	10/10	-	75.9	10.7	150	NC	400	NH SRS	NO	BSL
	7440097	Potassium	610	1620	mg/Kg	SB-06O1-0810-1520	10/10	-	1620	741	NUT		NBA		NO	NUT
	7782492	Selenium	0.52	2.1	mg/Kg	MW-24O1-0805-1300	5/10	3-4	2.1	NA	39	NC	180	NH SRS	NO	BSL
	7440224	Silver	0.11	2.4	mg/Kg	MW-29O1-0811-0915	4/10	0.98-1.2	2.4	NA	39	NC	89	NH SRS	NO	BSL
	7440235	Sodium	137	964	mg/Kg	MW-25O1-0805-1415	8/8	-	964	NA	NUT		NBA		NO	NUT
	7440622	Vanadium	11.5	20.9	mg/Kg	MW-DUP02-0811-0920A	10/10	-	20.9	52.7	39	NC	NBA		NO	BSL
	7440666	Zinc	30.8	315	mg/Kg	SB-06O1-0810-1520	10/10	-	315	51.4	2300	NC	1000	NH SRS	NO	BSL
SFSA Surface Soil	95501	1,2-Dichlorobenzene	0.0052	0.0052	mg/kg	FSA-SB-10O1-0001-092110	1/30	0.0047-0.014	0.0052	NA	190	NC	88	NH SRS	NO	BSL
	106467	1,4-Dichlorobenzene	0.0049	0.0049	mg/kg	FSA-SB-10O1-0001-092110	1/30	0.0047-0.014	0.0049	NA	2.4	C	7	NH SRS	NO	BSL
	78933	2-Butanone	0.015	0.1	mg/kg	FSA-SB-27O1-0001-091410	2/31	0.0094-0.029	0.1	NA	2800	NC	51	NH SRS	NO	BSL
	67641	Acetone	0.006	0.24	mg/kg	FSA-SB-DUP03-0001-092210	8/31	0.0094-0.037	0.24	0.04	6100	NC	75	NH SRS	NO	BSL
	56235	Carbon tetrachloride	0.047	0.047	mg/kg	FSA-SB-25O1-0001-091310	1/31	0.0047-0.014	0.047	NA	0.61	C	12	NH SRS	NO	BSL
	108907	Chlorobenzene	0.013	0.013	mg/kg	FSA-SB-10O1-0001-092110	1/31	0.0047-0.014	0.013	NA	29	NC	6	NH SRS	NO	BSL
	67663	Chloroform	0.0054	0.28	mg/kg	FSA-SB-25O1-0001-091310	8/31	0.0047-0.014	0.28	NA	0.29	C	3	NH SRS	NO	BSL
	179601231	m,p-Xylene	0.0048	0.0048	mg/kg	FSA-SB-40O1-0001-092110	1/31	0.0047-0.014	0.0048	NA	63	NC	500	NH SRS	NO	BSL
	79209	Methyl acetate	0.004	0.028	mg/kg	FSA-SB-18O1-0001-091610	3/31	0.0047-0.012	0.028	NA	7800	NC	NBA		NO	BSL
	75092	Methylene chloride	0.003	0.059	mg/kg	FSA-SB-31O1-0001-091510	2/31	0.0047-0.02	0.059	0.0019	36	NC	0.1	NH SRS	NO	BSL
	127184	Tetrachloroethene	0.0046	0.0068	mg/kg	FSA-SB-16O1-0001-092210	2/31	0.0047-0.014	0.0068	NA	8.6	NC	2	NH SRS	NO	BSL
	108883	Toluene	0.0024	0.014	mg/kg	FSA-MW-37O1-0001-092210	8/31	0.0047-0.026	0.014	NA	500	NC	100	NH SRS	NO	BSL
	105679	2,4-Dimethylphenol	0.085	0.085	mg/kg	FSA-SB-20O1-0001-091510	1/31	0.18-0.27	0.085	NA	120	NC	4	NH SRS	NO	BSL
	117817	Bis(2-ethylhexyl)phthalate	0.052	2.6	mg/kg	FSA-SB-27O1-0001-091410	7/31	0.18-0.26	2.6	0.056	35	C	72	NH SRS	NO	BSL
	132649	Dibenzofuran	0.05	0.6	mg/kg	FSA-SB-26O1-0001-091410	5/31	0.18-0.26	0.6	NA	8	NC	NBA		NO	BSL
	84742	Di-n-butyl phthalate	0.072	0.39	mg/kg	FSA-SB-17O1-0001-091710	14/31	0.18-0.27	0.39	0.053	610	NC	2600	NH SRS	NO	BSL
	91576	2-Methylnaphthalene	0.043	0.44	mg/kg	FSA-SB-26O1-0001-091410	7/31	0.18-0.26	0.44	NA	23	NC	96	NH SRS	NO	BSL
	83329	Acenaphthene	0.049	1.1	mg/kg	FSA-SB-26O1-0001-091410	6/31	0.18-0.26	1.1	NA	340	NC	340	NH SRS	NO	BSL
	208968	Acenaphthylene	0.095	0.49	mg/kg	FSA-SB-31O1-0001-091510	10/31	0.18-0.26	0.49	0.061	340	NC	490	NH SRS	NO	BSL
	120127	Anthracene	0.075	2.2	mg/kg	FSA-SB-26O1-0001-091410	20/31	0.18-0.22	2.2	0.093	1700	NC	1000	NH SRS	NO	BSL
	56553	Benzo(a)anthracene	0.089	5	mg/kg	FSA-SB-26O1-0001-091410	29/31	0.19-0.2	5	0.9	0.15	C	1	NH SRS	YES	ASL
	50328	Benzo(a)pyrene	0.098	4.3	mg/kg	FSA-SB-26O1-0001-091410	29/31	0.19-0.2	4.3	0.7	0.015	C	0.7	NH SRS	YES	ASL
	205992	Benzo(b)fluoranthene	0.1	4.5	mg/kg	FSA-SB-26O1-0001-091410	28/31	0.19-0.21	4.5	0.83	0.15	C	1	NH SRS	YES	ASL
	191242	Benzo(g,h,i)perylene	0.083	3.7	mg/kg	FSA-SB-26O1-0001-091410	29/31	0.19-0.21	3.7	0.5	3.6	C	960	NH SRS	YES	ASL

TABLE A-2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface soil 0-1 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
SFSA Surface Soil (Cont'd)	207089	Benzo(k)fluoranthene	0.099	3.5	mg/kg	FSA-SB-26O1-0001-091410	29/31	0.19-0.2	3.5	0.61	1.5	C	12	NH SRS	YES	ASL
	86748	Carbazole	0.054	1.2	mg/kg	FSA-SB-26O1-0001-091410	11/31	0.18-0.26	1.2	0.081	NBA		NBA		YES	NBA
	218019	Chrysene	0.11	4.5	mg/kg	FSA-SB-26O1-0001-091410	28/31	0.19-0.37	4.5	0.86	15	C	120	NH SRS	NO	BSL
	53703	Dibenz(a,h)anthracene	0.1	1.6	mg/kg	FSA-SB-26O1-0001-091410	19/31	0.18-0.26	1.6	0.15	0.015	C	0.7	NH SRS	YES	ASL
	206440	Fluoranthene	0.13	9.9	mg/kg	FSA-SB-26O1-0001-091410	29/31	0.19-0.2	9.9	1.8	230	NC	960	NH SRS	NO	BSL
	86737	Fluorene	0.086	1.1	mg/kg	FSA-SB-26O1-0001-091410	5/31	0.18-0.26	1.1	NA	230	NC	77	NH SRS	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.087	3.5	mg/kg	FSA-SB-26O1-0001-091410	28/31	0.19-0.21	3.5	0.81	0.15	C	1	NH SRS	YES	ASL
	91203	Naphthalene	0.056	0.88	mg/kg	FSA-SB-26O1-0001-091410	6/31	0.18-0.26	0.88	NA	3.6	C	5	NH SRS	NO	BSL
	85018	Phenanthrene	0.089	7.7	mg/kg	FSA-SB-26O1-0001-091410	26/31	0.19-0.21	7.7	0.62	1700	NC	960	NH SRS	NO	BSL
	129000	Pyrene	0.13	7.4	mg/kg	FSA-SB-26O1-0001-091410	29/31	0.19-0.2	7.4	1.6	170	NC	720	NH SRS	NO	BSL
	---	2,3,7,8-TCDD TEQ	0.00000081	0.00047	mg/kg	FSA-SB-31O1-0001-091510	31/31	-	0.00047	0.0000020	0.0000045	C	0.001	NH SRS	YES	ASL
	72548	4,4'-DDD	0.034	0.034	mg/kg	FSA-SS-03-091510	1/31	0.0035-0.0052	0.034	NA	2	C	6	NH SRS	NO	BSL
	50293	4,4'-DDT	0.0036	0.054	mg/kg	FSA-SS-06-091510	8/31	0.0035-0.0051	0.054	NA	1.7	C	4	NH SRS	NO	BSL
	319857	beta-BHC	0.003	0.003	mg/kg	FSA-SB-21O1-0001-092010	1/31	0.0018-0.0027	0.003	NA	0.27	C	0.06	NH SRS	NO	BSL
	60571	Dieldrin	0.0071	0.014	mg/kg	FSA-SS-03-091510	4/31	0.0036-0.0052	0.014	NA	0.03	C	0.06	NH SRS	NO	BSL
	33213659	Endosulfan II	0.015	0.03	mg/kg	FSA-SS-03-091510	2/31	0.0035-0.0052	0.03	NA	37	NC	45	NH SRS	NO	BSL
	72208	Endrin	0.0074	0.0074	mg/kg	FSA-SB-13O1-0001-092210	1/31	0.0035-0.0052	0.0074	NA	1.8	NC	8	NH SRS	NO	BSL
	7421934	Endrin aldehyde	0.0099	0.05	mg/kg	FSA-SS-03-091510	3/31	0.0036-0.0052	0.05	NA	1.8	NC	8	NH SRS	NO	BSL
	53494705	Endrin ketone	0.053	0.053	mg/kg	FSA-SS-03-091510	1/31	0.0035-0.0052	0.053	NA	1.8	NC	8	NH SRS	NO	BSL
	1024573	Heptachlor epoxide	0.0045	0.0045	mg/kg	FSA-SS-06-091510	1/31	0.0018-0.0027	0.0045	NA	0.053	C	0.1	NH SRS	NO	BSL
	---	Total PCB Homologs	0.000672	4.8	mg/kg	FSA-MW-35O1-0001-091710	31/31	-	4.8	0.017	0.11	NC	1	NH SRS	YES	ASL
	---	PCB Dioxin-like Congener TEQ	1.86684E-07	0.00018	mg/kg	FSA-SS-06-091510	31/31	-	0.00018	0.00000082	0.0000045	C	0.001	NH SRS	YES	ASL
	7429905	Aluminum	843	7822	mg/Kg	FSA-MW-34O1-0001-091310	45/45	-	7822	16300	7700	NC	NBA		YES	ASL
	7440360	Antimony	0.46	580	mg/Kg	FSA-151-0001-0-081910	29/45	6-7.8	580	NA	3.1	NC	9	NH SRS	YES	ASL
	7440382	Arsenic	2.2	281	mg/Kg	FSA-102-0001-0-081810	44/45	1.2-1.2	281	4.9	0.39	C	11	NH SRS	YES	ASL
	7440393	Barium	32.8	1443	mg/Kg	FSA-106-0001-0-081810	45/45	-	1443	41.9	1500	NC	1000	NH SRS	NO	BSL
	7440417	Beryllium	0.078	0.73	mg/Kg	FSA-SB-21O1-0001-092010	36/45	0.53-0.67	0.73	0.68	16	NC	1	NH SRS	NO	BSL
	7440439	Cadmium	0.074	4.2	mg/Kg	FSA-106-0001-0-081810	23/45	0.5-2.4	4.2	0.49	7	NC	33	NH SRS	NO	BSL
	7440702	Calcium	338	4526	mg/Kg	FSA-SS-03-091510	45/45	-	4526	1830	NUT		NBA		NO	NUT
	7440473	Chromium	3.9	54.3	mg/Kg	FSA-106-0001-0-081810	45/45	-	54.3	17.7	0.29	C	130	NH SRS	YES	ASL
	7440484	Cobalt	3.6	29.7	mg/Kg	FSA-SB-21O1-0001-092010	45/45	-	29.7	3.6	2.3	NC	NBA		YES	ASL
	7440508	Copper	13.5	1890	mg/Kg	FSA-168-0001-0-082310	45/45	-	1890	23.4	310	NC	NBA		NO	See Text
	7439896	Iron	4325	235011	mg/Kg	FSA-171-0001-0-082310	45/45	-	235011	19900	5500	NC	NBA		YES	ASL
	7439921	Lead	7.4	24438	mg/Kg	FSA-168-0001-0-082310	45/45	-	24438	82.2	400		400	NH SRS	YES	ASL
	7439954	Magnesium	188	3645	mg/Kg	FSA-151-0001-0-081910	45/45	-	3645	1380	NUT		NBA		NO	NUT
	7439965	Manganese	59.8	780	mg/Kg	FSA-SB-21O1-0001-092010	45/45	-	780	144	180	NC	5200	NH SRS	YES	ASL
	7439976	Mercury	0.055	125	mg/Kg	FSA-SB-DUP02-0001-092110	44/45	3.3-3.3	125	0.37	1	NC	6	NH SRS	YES	ASL
	7440020	Nickel	4.1	342	mg/Kg	FSA-075-0001-0-082510	45/45	-	342	10.7	150	NC	400	NH SRS	YES	ASL
	7440097	Potassium	260	3045	mg/Kg	FSA-151-0001-0-081910	45/45	-	3045	741	NUT		NBA		NO	NUT
	7782492	Selenium	0.18	5.9	mg/Kg	FSA-SB-22O1-0001-091710	41/45	4.1-4.7	5.9	NA	39	NC	180	NH SRS	NO	BSL
	7440224	Silver	0.14	5.5	mg/Kg	FSA-SB-DUP02-0001-092110	7/45	1-1.4	5.5	NA	39	NC	89	NH SRS	NO	BSL
	7440235	Sodium	33.7	218	mg/Kg	FSA-SB-28O1-0001-091510	33/43	500-597	218	NA	NUT		NBA		NO	NUT
	7440622	Vanadium	11.6	72.7	mg/Kg	FSA-171-0001-0-082310	45/45	-	72.7	52.7	39	NC	NBA		YES	ASL
	7440666	Zinc	31.4	839	mg/Kg	FSA-171-0001-0-082310	45/45	-	839	51.4	2300	NC	1000	NH SRS	NO	BSL

TABLE A-2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface soil 0-1 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
EFSA Surface Soil	78933	2-Butanone	0.046	0.046	mg/kg	FSA-SS-18-091510	1/11	0.0084-0.022	0.046	NA	2800	NC	51	NH SRS	NO	BSL
	67641	Acetone	0.11	0.26	mg/kg	FSA-SB-35O1-0001-091610	3/11	0.0084-0.022	0.26	0.04	6100	NC	75	NH SRS	NO	BSL
	74839	Bromomethane	0.0037	0.0037	mg/kg	FSA-SB-34O1-0001-091610	1/11	0.0042-0.015	0.0037	0.0036	0.73	NC	0.3	NH SRS	NO	BSL
	74873	Chloromethane	0.013	0.013	mg/kg	FSA-SS-18-091510	1/11	0.0042-0.011	0.013	0.0036	12	NC	3	NH SRS	NO	BSL
	79209	Methyl acetate	0.0071	0.048	mg/kg	FSA-SB-38O1-0001-091610	3/11	0.0042-0.015	0.048	NA	7800	NC	NBA		NO	BSL
	75092	Methylene chloride	0.0076	0.014	mg/kg	FSA-SS-18-091510	2/11	0.0042-0.013	0.014	0.0019	36	NC	0.1	NH SRS	NO	BSL
	108883	Toluene	0.029	0.029	mg/kg	FSA-SS-18-091510	1/11	0.0042-0.011	0.029	NA	500	NC	100	NH SRS	NO	BSL
	117817	Bis(2-ethylhexyl)phthalate	0.099	0.14	mg/kg	FSA-SS-18-091510	2/11	0.18-6.5	0.14	0.056	35	C	72	NH SRS	NO	BSL
	132649	Dibenzofuran	0.31	0.31	mg/kg	FSA-SB-38O1-0001-091610	1/11	0.18-6.5	0.31	NA	7.8	NC	NBA		NO	BSL
	84742	Di-n-butyl phthalate	0.077	0.099	mg/kg	FSA-SB-36O1-0001-091610	3/11	0.18-6.5	0.099	0.053	610	NC	2600	NH SRS	NO	BSL
	86306	n-Nitrosodiphenylamine	0.076	0.076	mg/kg	FSA-SB-38O1-0001-091610	1/11	0.18-6.5	0.076	NA	99	C	NBA		NO	BSL
	91576	2-Methylnaphthalene	0.49	0.49	mg/kg	FSA-SB-38O1-0001-091610	1/11	0.18-6.5	0.49	NA	23	NC	96	NH SRS	NO	BSL
	83329	Acenaphthene	0.25	3	mg/kg	FSA-SS-DUP01-091510	2/11	0.18-2.3	3	NA	340	NC	340	NH SRS	NO	BSL
	208968	Acenaphthylene	0.37	1.5	mg/kg	FSA-SB-38O1-0001-091610	3/11	0.18-6.5	1.5	0.061	340	NC	490	NH SRS	NO	BSL
	120127	Anthracene	0.22	8.9	mg/kg	FSA-SS-25-091510	5/11	0.18-0.4	8.9	0.093	1700	NC	1000	NH SRS	NO	BSL
	56553	Benzo(a)anthracene	0.037	37	mg/kg	FSA-SS-25-091510	8/11	0.18-0.19	37	0.9	0.15	C	1	NH SRS	YES	ASL
	50328	Benzo(a)pyrene	0.048	27	mg/kg	FSA-SS-25-091510	8/11	0.18-0.19	27	0.7	0.015	C	0.7	NH SRS	YES	ASL
	205992	Benzo(b)fluoranthene	0.056	23	mg/kg	FSA-SS-25-091510	8/11	0.18-0.19	23	0.83	0.15	C	1	NH SRS	YES	ASL
	191242	Benzo(g,h,i)perylene	0.12	16	mg/kg	FSA-SS-25-091510	8/11	0.18-0.19	16	0.5	3.6	C	960	NH SRS	YES	ASL
	207089	Benzo(k)fluoranthene	0.04	25	mg/kg	FSA-SS-25-091510	8/11	0.18-0.19	25	0.61	1.5	C	12	NH SRS	YES	ASL
	86748	Carbazole	0.49	1.7	mg/kg	FSA-SS-25-091510	2/11	0.18-6.5	1.7	0.081	NBA		NBA		YES	NBA
	218019	Chrysene	0.048	36	mg/kg	FSA-SS-25-091510	8/11	0.18-0.19	36	0.86	15	C	120	NH SRS	YES	ASL
	53703	Dibenz(a,h)anthracene	0.2	4.9	mg/kg	FSA-SS-DUP01-091510	3/11	0.18-0.4	4.9	0.15	0.015	C	0.7	NH SRS	YES	ASL
	206440	Fluoranthene	0.075	47	mg/kg	FSA-SS-25-091510	10/11	0.18-0.19	47	1.8	230	NC	960	NH SRS	NO	BSL
	86737	Fluorene	0.11	2.2	mg/kg	FSA-SS-25-091510	3/11	0.18-0.4	2.2	NA	230	NC	77	NH SRS	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.07	25	mg/kg	FSA-SS-25-091510	8/11	0.18-0.19	25	0.81	0.15	C	1	NH SRS	YES	ASL
	91203	Naphthalene	0.42	0.42	mg/kg	FSA-SB-38O1-0001-091610	1/11	0.18-6.5	0.42	NA	3.6	C	5	NH SRS	NO	BSL
	85018	Phenanthrene	0.042	35	mg/kg	FSA-SS-25-091510	7/11	0.18-0.4	35	0.62	1700	NC	960	NH SRS	NO	BSL
	129000	Pyrene	0.083	58	mg/kg	FSA-SS-DUP01-091510	9/11	0.18-0.19	58	1.6	170	NC	720	NH SRS	NO	BSL
	---	2,3,7,8-TCDD TEQ	0.00000049	0.0027	mg/kg	FSA-SB-34O1-0001-091610	11/11	-	0.0027	0.0000020	0.0000045	C	0.001	NH SRS	YES	ASL
	72548	4,4'-DDD	0.037	0.048	mg/kg	FSA-SS-DUP01-091510	1/11	0.0034-0.0077	0.048	NA	2	C	6	NH SRS	NO	BSL
	50293	4,4'-DDT	0.0056	0.0056	mg/kg	FSA-SB-37O1-0001-091510	1/11	0.0034-0.0077	0.0056	NA	1.7	C	4	NH SRS	NO	BSL
	319846	alpha-BHC	0.0041	0.0059	mg/kg	FSA-SS-DUP01-091510	1/11	0.0018-0.004	0.0059	NA	0.077	C	0.06	NH SRS	NO	BSL
	319857	beta-BHC	0.0047	0.0047	mg/kg	FSA-SB-34O1-0001-091610	1/11	0.0018-0.004	0.0047	NA	0.27	C	0.06	NH SRS	NO	BSL
	7421934	Endrin aldehyde	0.049	0.049	mg/kg	FSA-SS-DUP01-091510	1/11	0.0034-0.0077	0.049	NA	1.8	NC	8	NH SRS	NO	BSL
	53494705	Endrin ketone	0.055	0.055	mg/kg	FSA-SS-DUP01-091510	1/11	0.0034-0.0077	0.055	NA	1.8	NC	8	NH SRS	NO	BSL
	76448	Heptachlor	0.018	0.019	mg/kg	FSA-SS-DUP01-091510	1/11	0.0018-0.004	0.019	NA	0.11	C	0.2	NH SRS	NO	BSL
	---	Total PCB Homologs	0.00010	0.0887	mg/kg	FSA-SS-25-091510	11/11	-	0.0887	0.017	0.11	NC	1	NH SRS	NO	BSL
	---	PCB Dioxin-like Congener TEQ	0.00000014	0.000020	mg/kg	FSA-SB-35O1-0001-091610	11/11	-	0.000020	0.00000082	0.0000045	C	0.001	NH SRS	YES	ASL
	7429905	Aluminum	1307	10774	mg/Kg	FSA-SB-36O1-0001-091610	12/12	-	10774	16300	7700	NC	NBA		YES	ASL
	7440360	Antimony	0.45	16.5	mg/Kg	FSA-SS-25-091510	7/12	6-13.3	16.5	NA	3.1	NC	9	NH SRS	YES	ASL
	7440382	Arsenic	1.8	38.7	mg/Kg	FSA-SB-35O1-0001-091610	12/12	-	38.7	4.9	0.39	C	11	NH SRS	YES	ASL
	7440393	Barium	40.4	724	mg/Kg	FSA-SB-34O1-0001-091610	12/12	-	724	41.9	1500	NC	1000	NH SRS	NO	BSL
	7440417	Beryllium	0.2	0.42	mg/Kg	FSA-SB-36O1-0001-091610	8/12	0.5-0.57	0.42	0.68	16	NC	1	NH SRS	NO	BSL

TABLE A-2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface soil 0-1 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
EFSA Surface Soil (Cont'd)	7440439	Cadmium	0.15	1.1	mg/Kg	FSA-SS-25-091510	8/12	0.5-0.5	1.1	0.49	7	NC	33	NH SRS	NO	BSL
	7440702	Calcium	1275	8630	mg/Kg	FSA-SS-18-091510	12/12	-	8630	1830	NUT		NBA		NO	NUT
	7440473	Chromium	6.7	20.2	mg/Kg	FSA-SB-35O1-0001-091610	12/12	-	20.2	17.7	0.29	C	130	NH SRS	YES	ASL
	7440484	Cobalt	3.7	8.5	mg/Kg	FSA-SB-36O1-0001-091610	12/12	-	9	3.6	2.3	NC	NBA		YES	ASL
	7440508	Copper	14.6	194	mg/Kg	FSA-SS-25-091510	12/12	-	194	23.4	310	NC	NBA		NO	See Text
	7439896	Iron	7051	18552	mg/Kg	FSA-SB-35O1-0001-091610	12/12	-	18552	19900	5500	NC	NBA		YES	ASL
	7439921	Lead	10.1	1177	mg/Kg	FSA-SS-25-091510	12/12	-	1177	82.2	400		400	NH SRS	YES	ASL
	7439954	Magnesium	181	4304	mg/Kg	FSA-SB-36O1-0001-091610	12/12	-	4304	1380	NUT		NBA		NO	NUT
	7439965	Manganese	107	716	mg/Kg	FSA-SS-18-091510	12/12	-	716	144	180	NC	5200	NH SRS	YES	ASL
	7439976	Mercury	0.075	34.4	mg/Kg	FSA-137-0001-0-082610	10/12	0.11-0.12	34.4	0.37	1	NC	6	NH SRS	YES	ASL
	7440020	Nickel	4.8	28.5	mg/Kg	FSA-SB-37O1-0001-091510	12/12	-	28.5	10.7	150	NC	400	NH SRS	NO	BSL
	7440097	Potassium	287	2297	mg/Kg	FSA-SB-36O1-0001-091610	12/12	-	2297	741	NUT		NBA		NO	NUT
	7782492	Selenium	0.49	2.1	mg/Kg	FSA-SB-23O1-0001-091610	8/12	3.8-4.3	2.1	NA	39	NC	180	NH SRS	NO	BSL
	7440224	Silver	1.2	1.2	mg/Kg	FSA-137-0001-0-082610	1/12	1.1-2.2	1.2	NA	39	NC	89	NH SRS	NO	BSL
	7440235	Sodium	18.3	127	mg/Kg	FSA-SB-36O1-0001-091610	12/12	-	127	NA	NUT		NBA		NO	NUT
	7440622	Vanadium	12.8	30.8	mg/Kg	FSA-SB-36O1-0001-091610	12/12	-	30.8	52.7	39	NC	NBA		NO	BSL
	7440666	Zinc	28.9	487	mg/Kg	FSA-SS-25-091510	12/12	-	487	51.4	2300	NC	1000	NH SRS	NO	BSL

Notes/sources:

(1) Maximum detected concentration used for screening.

(2) Background soil value based on maximum detected concentration.

(3) Risk-based residential soil concentrations obtained from the Regional Screening Level (RSL) Table (May, 2012).

Surrogate screening values used:

- Endosulfan value used for Endosulfan II.
- Endrin value used for Endrin aldehyde and Endrin ketone.
- Acenaphthene value used for acenaphthylene.
- Naphthene value used for benzo(g,h,i)perylene.
- Anthracene value used for phenanthrene.

ASL = above screening level.
BSL = below screening level.
C = Cancer based screening value set at a target risk of 1E-06.
CHP = Cell House Property.
EFSA = Eastern Facility Study Area.
ft bgs = Feet below ground surface.
mg/kg = Milligrams per kilogram.
NA = Not Available.
NBA = no screening benchmark available.
NC = Noncancer based screening value set at a target hazard quotient of 0.1.
NUT = Essential nutrient.
NH SRS = New Hampshire Soil Remediation Standard.
SFSA = Southern Facility Study Area.

TABLE A-2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Aggregate soil 0-10 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
CHP Aggregate Soil	92524	1,1'-Biphenyl	0.010	19	mg/kg	TP-06-0909-1111	3/34	0.18-0.73	19	NA	5.1	NC	174	NH SRS	YES	ASL
	87616	1,2,3-Trichlorobenzene	0.0021	0.021	mg/kg	SB-05O1-0812-1115	4/33	0.0039-0.028	0.021	NA	4.9	NC	NBA		NO	BSL
	120821	1,2,4-Trichlorobenzene	0.0018	0.020	mg/kg	MW-25O1-0810-1140	4/34	0.0039-0.028	0.020	0.011	6.2	NC	19	NH SRS	NO	BSL
	541731	1,3-Dichlorobenzene	0.0014	0.0082	mg/kg	MW-25O1-0810-1140	3/34	0.0039-0.028	0.0082	NA	NBA		150	NH SRS	YES	NBA
	106467	1,4-Dichlorobenzene	0.0097	0.0097	mg/kg	SB-04O1-0813-1155	1/34	0.0039-0.028	0.0097	NA	2.4	C	7	NH SRS	NO	BSL
	78933	2-Butanone	0.081	0.083	mg/kg	SB-01O1-0812-1300	2/35	0.006-0.026	0.083	NA	2800	NC	51	NH SRS	NO	BSL
	67641	Acetone	0.0039	0.45	mg/kg	SB-01O1-0812-1300	20/35	0.0077-0.038	0.45	0.099	6100	NC	75	NH SRS	NO	BSL
	98862	Acetophenone	0.10	0.73	mg/kg	TP-06-0909-1111	2/34	0.18-0.73	0.73	NA	780	NC	NBA		NO	BSL
	100527	Benzaldehyde	0.15	0.15	mg/kg	SB-01O1-0812-1215	1/34	0.18-5	0.15	0.25	780	NC	NBA		NO	BSL
	74839	Bromomethane	0.0080	0.0080	mg/kg	SB-04O1-0813-1155	1/36	0.0039-0.013	0.0080	0.0036	0.73	NC	0.3	NH SRS	NO	BSL
	75150	Carbon disulfide	0.026	0.026	mg/kg	SB-01O1-0812-1300	1/35	0.0039-0.013	0.026	NA	82	NC	460	NH SRS	NO	BSL
	56235	Carbon tetrachloride	0.013	0.013	mg/kg	MW-31O1-0811-1540	1/35	0.0039-0.013	0.013	NA	0.61	C	12	NH SRS	NO	BSL
	67663	Chloroform	0.0070	0.16	mg/kg	MW-31O1-0811-1540	10/35	0.0039-0.013	0.16	NA	0.29	C	3	NH SRS	NO	BSL
	74873	Chloromethane	0.0091	0.0091	mg/kg	SB-06O1-0810-1520	1/35	0.0039-0.013	0.0091	0.0046	12	NC	3	NH SRS	NO	BSL
	156592	cis-1,2-Dichloroethene	0.0055	0.0077	mg/kg	MW-25O1-0810-1140	2/35	0.0039-0.013	0.0077	NA	16	NC	2	NH SRS	NO	BSL
	110827	Cyclohexane	0.0039	0.0063	mg/kg	TP-02O1-0729-1215	3/35	0.0042-0.013	0.0063	NA	700	NC	NBA		NO	BSL
	124481	Dibromochloromethane	0.0048	0.0048	mg/kg	TP-01O1-0728-1415	1/35	0.0039-0.013	0.0048	NA	0.68	C	1	NH SRS	NO	BSL
	75718	Dichlorodifluoromethane	0.0048	0.0048	mg/kg	TP-01O1-0728-1415	1/35	0.0042-0.15	0.0048	NA	9.4	NC	1000	NH SRS	NO	BSL
	100414	Ethylbenzene	0.0041	0.0068	mg/kg	TP-02O1-0729-1330	3/36	0.0039-0.013	0.0068	NA	5.4	C	140	NH SRS	NO	BSL
	87683	Hexachlorobutadiene	0.53	0.53	mg/kg	TP-06-0909-1111	1/34	0.087-0.27	0.53	NA	6.1	NC	7	NH SRS	NO	BSL
	67721	Hexachloroethane	0.68	0.68	mg/kg	TP-06-0909-1111	1/34	0.18-0.73	0.68	NA	4.3	NC	0.7	NH SRS	NO	BSL
	98828	Isopropylbenzene	0.0048	0.0048	mg/kg	TP-01O1-0728-1415	1/35	0.0039-0.013	0.0048	NA	210	NC	330	NH SRS	NO	BSL
	179601231	m,p-Xylene	0.010	0.011	mg/kg	SB-04O1-0813-1155	2/36	0.0039-0.019	0.011	NA	63	NC	500	NH SRS	NO	BSL
	79209	Methyl acetate	0.0061	0.12	mg/kg	SB-01O1-0812-1300	4/35	0.0039-0.013	0.12	0.0067	7800	NC	NBA		NO	BSL
	75092	Methylene chloride	0.0028	0.0050	mg/kg	TP-04-0606-1111	5/36	0.0039-0.018	0.0050	0.0055	36	NC	0.1	NH SRS	NO	BSL
	95476	o-Xylene	0.0051	0.0051	mg/kg	TP-02O1-0729-1330	1/35	0.0039-0.013	0.0051	NA	69	NC	500	NH SRS	NO	BSL
	100425	Styrene	0.0039	0.0063	mg/kg	TP-02O1-0729-1215	3/35	0.0042-0.013	0.0063	NA	630	NC	17	NH SRS	NO	BSL
	127184	Tetrachloroethene	0.0013	0.063	mg/kg	MW-25O1-0810-1140	13/36	0.0043-0.013	0.063	NA	8.6	NC	2	NH SRS	NO	BSL
	108883	Toluene	0.0047	0.020	mg/kg	SB-04O1-0813-1155	2/36	0.0039-0.013	0.020	NA	500	NC	100	NH SRS	NO	BSL
	79016	Trichloroethene	0.0058	0.013	mg/kg	MW-25O1-0810-1140	3/35	0.0039-0.013	0.013	0.0016	0.44	NC	0.8	NH SRS	NO	BSL
	75014	Vinyl chloride	0.0039	0.0063	mg/kg	TP-02O1-0729-1215	3/35	0.0042-0.013	0.0063	NA	0.06	C	1	NH SRS	NO	BSL
	95943	1,2,4,5-Tetrachlorobenzene	0.42	0.42	mg/kg	TP-06-0909-1111	1/34	0.18-0.73	0.42	NA	1.8	NC	NBA		NO	BSL
	88062	2,4,6-Trichlorophenol	2.0	2.0	mg/kg	TP-06-0909-1111	1/34	0.18-0.73	2.0	NA	6.1	NC	0.7	NH SRS	NO	BSL
	105679	2,4-Dimethylphenol	1.0	1.0	mg/kg	TP-06-0909-1111	1/34	0.18-0.73	1.0	NA	120	NC	4	NH SRS	NO	BSL
	95487	2-Methylphenol	0.66	0.66	mg/kg	TP-06-0909-1111	1/34	0.18-0.73	0.66	NA	310	NC	0.9	NH SRS	NO	BSL
	106445	4-Methylphenol	2.6	2.6	mg/kg	TP-06-0909-1111	1/34	0.18-0.73	2.6	NA	610	NC	0.7	NH SRS	NO	BSL
	1912249	Atrazine	0.43	0.46	mg/kg	TP-05-0809-1111	3/27	0.18-5	0.46	NA	2.1	C	0.09	NH SRS	NO	BSL
	117817	Bis(2-ethylhexyl)phthalate	0.047	0.57	mg/kg	SB-01O1-0812-1300	7/34	0.18-10	0.57	0.056	35	C	72	NH SRS	NO	BSL
	85687	Butylbenzylphthalate	0.41	1.5	mg/kg	SB-01O1-0812-1215	3/34	0.18-5	1.5	NA	260	C	NBA		NO	BSL
	132649	Dibenzofuran	0.028	120	mg/kg	TP-06-0909-1111	11/34	0.18-0.73	120	NA	7.8	NC	NBA		YES	ASL
	84742	Di-n-butyl phthalate	0.05	0.55	mg/kg	MW-31O1-0811-1535	2/33	0.18-5	0.55	0.053	610	NC	2600	NH SRS	NO	BSL
	117840	Di-n-octyl phthalate	0.024	0.024	mg/kg	MW-29O1-0811-0950	1/33	0.18-5	0.024	NA	NBA		NBA		YES	NBA
	87865	Pentachlorophenol	2.7	2.7	mg/kg	TP-06-0909-1111	1/34	0.34-0.73	2.7	NA	0.89	C	3	NH SRS	YES	ASL

TABLE A-2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Aggregate soil 0-10 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
CHP Aggregate Soil (Cont'd)	108952	Phenol	1.7	1.7	mg/kg	TP-06-0909-1111	1/34	0.087-0.27	1.7	0.26	1800	NC	56	NH SRS	NO	BSL
	91587	2-Chloronaphthalene	9.7	9.7	mg/kg	TP-06-0909-1111	1/34	0.087-0.27	9.7	NA	630	NC	NBA		NO	BSL
	91576	2-Methylnaphthalene	0.012	41	mg/kg	TP-06-0909-1111	8/34	0.091-0.27	41	NA	23	NC	96	NH SRS	YES	ASL
	83329	Acenaphthene	0.029	9.3	mg/kg	TP-06-0909-1111	16/34	0.091-0.27	9.3	NA	340	NC	340	NH SRS	NO	BSL
	208968	Acenaphthylene	0.021	59	mg/kg	TP-06-0909-1111	9/34	0.087-0.27	59	0.061	340	NC	490	NH SRS	NO	BSL
	120127	Anthracene	0.019	98	mg/kg	TP-06-0909-1111	24/34	0.091-0.27	98	0.093	1700	NC	1000	NH SRS	NO	BSL
	56553	Benzo(a)anthracene	0.018	320	mg/kg	TP-06-0909-1111	23/34	0.091-0.27	320	0.90	0.15	C	1	NH SRS	YES	ASL
	50328	Benzo(a)pyrene	0.16	230	mg/kg	TP-06-0909-1111	22/34	0.087-0.27	230	0.70	0.015	C	0.7	NH SRS	YES	ASL
	205992	Benzo(b)fluoranthene	0.014	280	mg/kg	TP-06-0909-1111	22/34	0.091-0.27	280	0.83	0.15	C	1	NH SRS	YES	ASL
	191242	Benzo(g,h,i)perylene	0.043	93	mg/kg	TP-06-0909-1111	27/34	0.087-0.26	93	0.50	3.6	C	960	NH SRS	YES	ASL
	207089	Benzo(k)fluoranthene	0.099	58	mg/kg	TP-06-0909-1111	21/34	0.087-0.27	58	0.61	1.5	C	12	NH SRS	YES	ASL
	86748	Carbazole	0.020	26	mg/kg	TP-06-0909-1111	18/34	0.091-0.27	26	0.081	NBA		NBA		YES	NBA
	218019	Chrysene	0.012	290	mg/kg	TP-06-0909-1111	23/34	0.091-0.27	290	0.86	15	C	120	NH SRS	YES	ASL
	53703	Dibenz(a,h)anthracene	0.029	17	mg/kg	TP-06-0909-1111	20/34	0.087-0.27	17	0.15	0.015	C	0.7	NH SRS	YES	ASL
	206440	Fluoranthene	0.074	1000	mg/kg	TP-06-0909-1111	25/33	0.091-0.27	1000	1.8	230	NC	960	NH SRS	YES	ASL
	86737	Fluorene	0.025	62	mg/kg	TP-06-0909-1111	15/34	0.091-0.27	62	NA	230	NC	77	NH SRS	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.10	92	mg/kg	TP-06-0909-1111	21/34	0.087-0.27	92	0.81	0.15	C	1	NH SRS	YES	ASL
	91203	Naphthalene	0.023	40	mg/kg	TP-06-0909-1111	12/34	0.091-0.27	40	NA	3.6	C	5	NH SRS	YES	ASL
	85018	Phenanthrene	0.033	1300	mg/kg	TP-06-0909-1111	29/34	0.091-0.26	1300	0.62	1700	NC	960	NH SRS	NO	BSL
	129000	Pyrene	0.061	680	mg/kg	TP-06-0909-1111	24/34	0.091-0.27	680	1.6	170	NC	720	NH SRS	YES	ASL
	28699889	Dichloronaphthalene, total	0.035	0.41	mg/kg	MW-25O1-0805-1415	5/29	0.083-0.96	0.41	NA	NBA		NBA		YES	NBA
	32241080	Heptachloronaphthalene, total	0.048	0.21	mg/kg	MW-25O1-0810-1140	3/29	0.083-0.96	0.21	NA	NBA		NBA		YES	NBA
	1335871	Hexachloronaphthalene, total	0.11	0.11	mg/kg	SB-02O1-0807-0900	1/29	0.083-0.96	0.11	NA	NBA		NBA		YES	NBA
	90131	Monochloronaphthalene, total	0.058	0.058	mg/kg	MW-25O1-0810-1220	1/29	0.083-0.96	0.058	NA	NBA		NBA		YES	NBA
	1321648	Pentachloronaphthalene, total	0.20	0.93	mg/kg	MW-25O1-0805-1415	8/29	0.083-0.96	0.93	NA	NBA		NBA		YES	NBA
	1335882	Tetrachloronaphthalene, total	0.034	2.5	mg/kg	MW-25O1-0805-1415	11/29	0.083-0.96	2.5	NA	NBA		NBA		YES	NBA
	1321659	Trichloronaphthalene, total	0.048	0.76	mg/kg	MW-25O1-0805-1415	8/29	0.083-0.96	0.76	NA	NBA		NBA		YES	NBA
	---	2,3,7,8-TCDD TEQ	0.0000022	0.29	mg/kg	TP-06-0909-1111	34/34	-	0.29	0.0000020	0.0000045	C	0.001	NH SRS	YES	ASL
	72548	4,4'-DDD	0.0088	0.0088	mg/kg	TP-04-0304-1111	1/5	0.0022-1.3	0.0088	NA	2	C	6	NH SRS	NO	BSL
	72559	4,4'-DDE	0.0046	16	mg/kg	TP-06-0909-1111	2/5	0.0022-0.0024	16	NA	1.4	C	4	NH SRS	YES	ASL
	50293	4,4'-DDT	0.00067	3.1	mg/kg	TP-06-0909-1111	2/5	0.0019-0.0024	3.1	NA	1.7	C	4	NH SRS	YES	ASL
	309002	Aldrin	0.021	12	mg/kg	TP-06-0909-1111	2/5	0.0022-0.0024	12	NA	0.029	C	0.09	NH SRS	YES	ASL
	319846	alpha-BHC	0.0033	1.7	mg/kg	TP-06-0909-1111	2/5	0.0019-0.0024	1.7	NA	0.077	C	0.06	NH SRS	YES	ASL
	319868	delta-BHC	0.00055	2.7	mg/kg	TP-06-0909-1111	2/5	0.0019-0.0024	2.7	NA	NBA		NBA		YES	NBA
	60571	Dieldrin	8.5	8.5	mg/kg	TP-06-0909-1111	1/5	0.0019-0.0024	8.5	NA	0.03	C	0.06	NH SRS	YES	ASL
	959988	Endosulfan I	1.3	1.3	mg/kg	TP-06-0909-1111	1/5	0.0019-0.0024	1.3	NA	37	NC	45	NH SRS	NO	BSL
	33213659	Endosulfan II	1.8	1.8	mg/kg	TP-06-0909-1111	1/5	0.0019-0.0024	1.8	NA	37	NC	45	NH SRS	NO	BSL
	1031078	Endosulfan Sulfate	0.0021	0.0021	mg/kg	TP-04-0304-1111	1/5	0.0022-1.3	0.0021	NA	37	NC	45	NH SRS	NO	BSL
	72208	Endrin	0.0046	0.0046	mg/kg	TP-04-0304-1111	1/5	0.0022-1.3	0.0046	NA	1.8	NC	8	NH SRS	NO	BSL
	58899	gamma-BHC	0.00063	1.4	mg/kg	TP-06-0909-1111	5/5	0.0023-0.0023	1.4	NA	0.52	C	0.09	NH SRS	YES	ASL
	1024573	Heptachlor epoxide	0.0059	4.7	mg/kg	TP-06-0909-1111	2/5	0.0022-0.0024	4.7	NA	0.053	C	0.1	NH SRS	YES	ASL

TABLE A-2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Aggregate soil 0-10 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
CHP Aggregate Soil (Cont'd)	72435	Methoxychlor	0.019	0.54	mg/kg	TP-06-0909-1111	2/5	0.0043-0.0046	0.54	NA	31	NC	130	NH SRS	NO	BSL
	---	Total PCB Homologs	0.000066	12.1	mg/kg	TP-01O1-0728-1515	33/34	0.00459-0.00459	12.1	0.017	0.11	NC	1	NH SRS	YES	ASL
	---	PCB Dioxin-like Congener TEQ	0.00000014	0.0023	mg/kg	TP-06-0909-1111	33/34	00003215196-0.000000321	0.0023	0.00000082	0.0000045	C	0.001	NH SRS	YES	ASL
	14797730	Perchlorate	0.00029	0.0064	mg/kg	MW-29O1-0811-0950	7/29	0.00051-0.00071	0.0064	NA	5.5	NC	NBA		NO	BSL
	7429905	Aluminum	1700	12000	mg/Kg	TP-04-0606-1111	36/36	-	12000	23900	7700	NC	NBA		YES	ASL
	7440360	Antimony	0.50	5.8	mg/Kg	TP-02O1-0729-1300	24/36	5-7.8	5.8	NA	3.1	NC	9	NH SRS	YES	ASL
	7440382	Arsenic	0.90	828	mg/Kg	SB-02O1-0807-0830	35/36	0.8-0.8	828	4.9	0.39	C	11	NH SRS	YES	ASL
	7440393	Barium	16	442	mg/Kg	SB-01O1-0812-1300	36/36	-	442	41.9	1500	NC	1000	NH SRS	NO	BSL
	7440417	Beryllium	0.078	2.7	mg/Kg	TP-04-0606-1111	36/36	-	2.7	0.68	16	NC	1	NH SRS	NO	BSL
	7440439	Cadmium	0.094	20	mg/Kg	TP-02O1-0729-1300	25/36	0.41-0.76	20	0.49	7	NC	33	NH SRS	YES	ASL
	7440702	Calcium	590	41500	mg/Kg	MW-25O1-0810-1220	36/36	-	41500	1830	NUT		NBA		NO	NUT
	7440473	Chromium	5.3	29.7	mg/Kg	MW-31O1-0811-1535	36/36	-	29.7	17.7	0.29	C	130	NH SRS	YES	ASL
	7440484	Cobalt	2.5	327	mg/Kg	TP-02O1-0729-1300	36/36	-	327	5.9	2.3	NC	NBA		YES	ASL
	7440508	Copper	11	1600	mg/Kg	TP-02O1-0729-1300	36/36	-	1600	23.4	310	NC	NBA		NO	See Text
	7439896	Iron	8130	210000	mg/Kg	TP-02O1-0729-1300	36/36	-	210000	19900	5500	NC	NBA		YES	ASL
	7439921	Lead	4.3	1010	mg/Kg	TP-01O1-0728-1515	36/36	-	1010	82.2	400		400	NH SRS	YES	ASL
	7439954	Magnesium	130	17000	mg/Kg	TP-06-0909-1111	36/36	-	17000	2470	NUT		NBA		NO	NUT
	7439965	Manganese	72.8	603	mg/Kg	SB-01O1-0812-1320	36/36	-	603	295	180	NC	5200	NH SRS	YES	ASL
	7439976	Mercury	0.22	15000	mg/Kg	TP-06-0909-1111	35/36	0.1-0.1	15000	0.37	1	NC	6	NH SRS	YES	ASL
	7440020	Nickel	4.0	177	mg/Kg	SB-05O1-0812-1115	36/36	-	177	10.7	150	NC	400	NH SRS	YES	ASL
	7440097	Potassium	110	1620	mg/Kg	SB-06O1-0810-1520	36/36	-	1620	1540	NUT		NBA		NO	NUT
	7782492	Selenium	0.51	3.7	mg/Kg	TP-02O1-0729-1330	17/36	0.62-5.3	3.7	NA	39	NC	180	NH SRS	NO	BSL
	7782492	Selenium	0.51	3.7	mg/Kg	TP-02O1-0729-1330	17/36	0.62-5.3	3.7	NA	39	NC	180	NH SRS	NO	BSL
	7440224	Silver	0.11	35.7	mg/Kg	MW-29O1-0811-0950	24/36	0.61-560	35.7	NA	39	NC	89	NH SRS	NO	BSL
	7440235	Sodium	136	8880	mg/Kg	MW-25O1-0810-1220	29/29	580-580	8880	NA	NUT		NBA		NO	NUT
	7440280	Thallium	0.70	0.88	mg/Kg	TP-05-0809-1111	3/36	1.2-3.8	0.88	NA	0.078	NC	10	NH SRS	YES	ASL
	7440622	Vanadium	4.3	37	mg/Kg	TP-05-0606-1111	36/36	-	37	52.7	39	NC	NBA		NO	BSL
	7440666	Zinc	14.6	3820	mg/Kg	TP-02O1-0729-1300	36/36	-	3820	51.4	2300	NC	1000	NH SRS	YES	ASL
SFSA Aggregate Soil	95501	1,2-Dichlorobenzene	0.0052	0.0052	mg/kg	FSA-SB-10O1-0001-092110	1/54	0.0041-0.02	0.0052	NA	190	NC	88	NH SRS	NO	BSL
	106467	1,4-Dichlorobenzene	0.0049	0.0049	mg/kg	FSA-SB-10O1-0001-092110	1/54	0.0041-0.02	0.0049	NA	2.4	C	7	NH SRS	NO	BSL
	78933	2-Butanone	0.015	0.10	mg/kg	FSA-SB-27O1-0001-091410	5/56	0.0082-0.04	0.10	NA	2800	NC	51	NH SRS	NO	BSL
	67641	Acetone	0.0060	0.35	mg/kg	FSA-SB-16O1-0406-092210	20/56	0.0094-0.16	0.35	0.099	6100	NC	75	NH SRS	NO	BSL
	75150	Carbon disulfide	0.015	0.015	mg/kg	FSA-SB-16O1-0406-092210	1/56	0.0041-0.02	0.015	NA	82	NC	460	NH SRS	NO	BSL
	56235	Carbon tetrachloride	0.047	0.047	mg/kg	FSA-SB-25O1-0001-091310	1/56	0.0041-0.02	0.047	NA	0.61	C	12	NH SRS	NO	BSL
	108907	Chlorobenzene	0.013	0.013	mg/kg	FSA-SB-10O1-0001-092110	1/56	0.0041-0.02	0.013	NA	29	NC	6	NH SRS	NO	BSL
	67663	Chloroform	0.0054	0.28	mg/kg	FSA-SB-25O1-0001-091310	10/56	0.0041-0.014	0.28	NA	0.29	C	3	NH SRS	NO	BSL
	179601231	m,p-Xylene	0.0048	0.0048	mg/kg	FSA-SB-40O1-0001-092110	1/56	0.0041-0.02	0.0048	NA	63	NC	500	NH SRS	NO	BSL
	79209	Methyl acetate	0.0040	0.028	mg/kg	FSA-SB-18O1-0001-091610	4/56	0.0041-0.02	0.028	0.0067	7800	NC	NBA		NO	BSL
	75092	Methylene chloride	0.0030	0.059	mg/kg	FSA-SB-31O1-0001-091510	3/56	0.0041-0.031	0.059	0.0055	36	NC	0.1	NH SRS	NO	BSL
	127184	Tetrachloroethene	0.0046	0.0068	mg/kg	FSA-SB-16O1-0001-092210	3/56	0.0041-0.02	0.0068	NA	8.6	NC	2	NH SRS	NO	BSL
	108883	Toluene	0.0024	0.014	mg/kg	FSA-MW-37O1-0608-092210	10/56	0.0041-0.026	0.014	NA	500	NC	100	NH SRS	NO	BSL
	105679	2,4-Dimethylphenol	0.085	0.085	mg/kg	FSA-SB-20O1-0001-091510	1/57	0.18-0.47	0.085	NA	120	NC	4	NH SRS	NO	BSL
	117817	Bis(2-ethylhexyl)phthalate	0.052	2.6	mg/kg	FSA-SB-27O1-0001-091410	11/57	0.18-0.47	2.6	0.056	35	C	72	NH SRS	NO	BSL

TABLE A-2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Aggregate soil 0-10 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
SFSA Aggregate Soil (Cont'd)	132649	Dibenzofuran	0.050	0.60	mg/kg	FSA-SB-26O1-0001-091410	7/57	0.18-0.47	0.60	NA	7.8	NC	NBA		NO	BSL
	84742	Di-n-butyl phthalate	0.072	0.39	mg/kg	FSA-SB-17O1-0001-091710	24/57	0.18-0.47	0.39	0.053	610	NC	2600	NH SRS	NO	BSL
	91576	2-Methylnaphthalene	0.043	0.44	mg/kg	FSA-SB-26O1-0001-091410	8/57	0.18-0.47	0.44	NA	23	NC	96	NH SRS	NO	BSL
	83329	Acenaphthene	0.049	1.1	mg/kg	FSA-SB-26O1-0001-091410	8/57	0.18-0.47	1.1	NA	340	NC	340	NH SRS	NO	BSL
	208968	Acenaphthylene	0.095	0.49	mg/kg	FSA-SB-31O1-0001-091510	11/57	0.18-0.47	0.49	0.061	340	NC	490	NH SRS	NO	BSL
	120127	Anthracene	0.075	2.2	mg/kg	FSA-SB-26O1-0001-091410	24/57	0.18-0.26	2.2	0.093	1700	NC	1000	NH SRS	NO	BSL
	56553	Benzo(a)anthracene	0.09	5.0	mg/kg	FSA-SB-26O1-0001-091410	38/57	0.18-0.23	5.0	0.90	0.15	C	1	NH SRS	YES	ASL
	50328	Benzo(a)pyrene	0.10	4.3	mg/kg	FSA-SB-26O1-0001-091410	38/57	0.18-0.23	4.3	0.7	0.015	C	0.7	NH SRS	YES	ASL
	205992	Benzo(b)fluoranthene	0.070	4.5	mg/kg	FSA-SB-26O1-0001-091410	39/57	0.18-0.21	4.5	0.83	0.15	C	1	NH SRS	YES	ASL
	191242	Benzo(g,h,i)perylene	0.083	3.7	mg/kg	FSA-SB-26O1-0001-091410	37/57	0.18-0.24	3.7	0.5	3.6	C	960	NH SRS	YES	ASL
	207089	Benzo(k)fluoranthene	0.066	3.5	mg/kg	FSA-SB-26O1-0001-091410	39/57	0.18-0.23	3.5	0.61	1.5	C	12	NH SRS	YES	ASL
	86748	Carbazole	0.054	1.2	mg/kg	FSA-SB-26O1-0001-091410	13/57	0.18-0.47	1.2	0.081	NBA		NBA		YES	NBA
	218019	Chrysene	0.08	4.5	mg/kg	FSA-SB-17O1-0001-091710	38/57	0.18-0.37	4.5	0.86	15	C	120	NH SRS	NO	BSL
	53703	Dibenz(a,h)anthracene	0.08	1.6	mg/kg	FSA-SB-26O1-0001-091410	24/57	0.18-0.26	1.6	0.15	0.015	C	0.7	NH SRS	YES	ASL
	206440	Fluoranthene	0.073	9.9	mg/kg	FSA-SB-26O1-0001-091410	42/57	0.18-0.21	9.9	1.8	230	NC	960	NH SRS	NO	BSL
	86737	Fluorene	0.086	1.1	mg/kg	FSA-SB-26O1-0001-091410	7/57	0.18-0.47	1.1	NA	230	NC	77	NH SRS	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.087	3.5	mg/kg	FSA-SB-26O1-0001-091410	36/57	0.18-0.24	3.5	0.81	0.15	C	1	NH SRS	YES	ASL
	91203	Naphthalene	0.056	0.88	mg/kg	FSA-SB-26O1-0001-091410	8/57	0.18-0.47	0.88	NA	3.6	C	5	NH SRS	NO	BSL
	85018	Phenanthrene	0.063	7.7	mg/kg	FSA-SB-26O1-0001-091410	34/57	0.18-0.26	7.7	0.62	1700	NC	960	NH SRS	NO	BSL
	129000	Pyrene	0.088	7.4	mg/kg	FSA-SB-26O1-0001-091410	41/57	0.18-0.23	7.4	1.6	170	NC	720	NH SRS	NO	BSL
	---	2,3,7,8-TCDD TEQ	0.00000056	0.00047	mg/kg	FSA-SB-31O1-0001-091510	53/54	00009588606-0.000000958	0.00047	0.0000020	0.0000045	C	0.001	NH SRS	YES	ASL
	72548	4,4'-DDD	0.034	0.034	mg/kg	FSA-SS-03-091510	1/57	0.0035-0.0091	0.034	NA	2	C	6	NH SRS	NO	BSL
	50293	4,4'-DDT	0.0024	0.054	mg/kg	FSA-SS-06-091510	11/57	0.0035-0.0051	0.054	NA	1.7	C	4	NH SRS	NO	BSL
	319857	beta-BHC	0.0030	0.0030	mg/kg	FSA-SB-21O1-0001-092010	1/57	0.0018-0.0047	0.0030	NA	0.27	C	0.06	NH SRS	NO	BSL
	60571	Dieldrin	0.0071	0.014	mg/kg	FSA-SS-03-091510	4/57	0.0035-0.0091	0.014	NA	0.03	C	0.06	NH SRS	NO	BSL
	33213659	Endosulfan II	0.015	0.030	mg/kg	FSA-SS-03-091510	2/57	0.0035-0.0091	0.030	NA	37	NC	45	NH SRS	NO	BSL
	72208	Endrin	0.0074	0.0074	mg/kg	FSA-SB-13O1-0001-092210	1/57	0.0035-0.0091	0.0074	NA	1.8	NC	8	NH SRS	NO	BSL
	7421934	Endrin aldehyde	0.010	0.050	mg/kg	FSA-SS-03-091510	3/57	0.0035-0.0091	0.050	NA	1.8	NC	8	NH SRS	NO	BSL
	53494705	Endrin ketone	0.053	0.053	mg/kg	FSA-SS-03-091510	1/57	0.0035-0.0091	0.053	NA	1.8	NC	8	NH SRS	NO	BSL
	1024573	Heptachlor epoxide	0.0045	0.0045	mg/kg	FSA-SS-06-091510	1/57	0.0018-0.0047	0.0045	NA	0.053	C	0.1	NH SRS	NO	BSL
	---	Total PCB Homologs	0.000039	15.8	mg/kg	FSA-MW-35O1-0204-091710	53/54	0.000254-0.000254	15.8	0.017	0.11	NC	1	NH SRS	YES	ASL
	---	PCB Dioxin-like Congener TEQ	0.00000006	0.00045	mg/kg	FSA-MW-35O1-0204-091710	52/54	000002231738-0.000000244	0.00045	0.00000082	0.0000045	C	0.001	NH SRS	YES	ASL
	7429905	Aluminum	843	12813	mg/Kg	FSA-157-0304-0-082010	87/87	-	12813	23900	7700	NC	NBA		YES	ASL
	7440360	Antimony	0.45	580	mg/Kg	FSA-151-0001-0-081910	52/87	6-18.7	580	NA	3.1	NC	9	NH SRS	YES	ASL
	7440382	Arsenic	0.93	281	mg/Kg	FSA-102-0001-0-081810	84/87	1.2-3.1	281	4.9	0.39	C	11	NH SRS	YES	ASL
	7440393	Barium	20.8	2243	mg/Kg	FSA-097-0102-0-081810	87/87	-	2243	41.9	1500	NC	1000	NH SRS	YES	ASL
	7440417	Beryllium	0.035	0.73	mg/Kg	FSA-SB-21O1-0001-092010	62/87	0.53-1.56	0.73	0.68	16	NC	1	NH SRS	NO	BSL
	7440439	Cadmium	0.074	4.2	mg/Kg	FSA-106-0001-0-081810	45/87	0.5-2.4	4.2	0.49	7	NC	33	NH SRS	NO	BSL
	7440702	Calcium	338	59467	mg/Kg	FSA-097-0102-0-081810	87/87	-	59467	1830	NUT		NBA		NO	NUT
	7440473	Chromium	2.4	59.1	mg/Kg	FSA-FD02-0001-2-082310	87/87	-	59.1	17.7	0.29	C	130	NH SRS	YES	ASL
	7440484	Cobalt	1.2	29.7	mg/Kg	FSA-SB-21O1-0001-092010	87/87	-	29.7	5.9	2.3	NC	NBA		YES	ASL
	7440508	Copper	4.6	1890	mg/Kg	FSA-168-0001-0-082310	87/87	-	1890	23.4	310	NC	NBA		NO	See Text
	7439896	Iron	2108	235011	mg/Kg	FSA-171-0001-0-082310	87/87	-	235011	19900	5500	NC	NBA		YES	ASL

TABLE A-2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Aggregate soil 0-10 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
SFSA Aggregate Soil (Cont'd)	7439921	Lead	3.4	24438	mg/Kg	FSA-168-0001-0-082310	86/87	21.3-21.3	24438	82.2	400		400	NH SRS	YES	ASL
	7439954	Magnesium	84.8	5593	mg/Kg	FSA-SB-40O1-0406-092110	87/87	-	5593	2470	NUT		NBA		NO	NUT
	7439965	Manganese	59.8	1675	mg/Kg	FSA-SB-08O1-0204-091710	87/87	-	1675	295	180	NC	5200	NH SRS	YES	ASL
	7439976	Mercury	0.055	125	mg/Kg	FSA-SB-DUP02-0001-092110	77/87	0.11-3.3	125	0.37	1	NC	6	NH SRS	YES	ASL
	7440020	Nickel	2.5	427	mg/Kg	FSA-SB-16O1-0406-092210	87/87	-	427	10.7	150	NC	400	NH SRS	YES	ASL
	7440097	Potassium	115	3045	mg/Kg	FSA-151-0001-0-081910	86/87	1558-1558	3045	1540	NUT		NBA		NO	NUT
	7782492	Selenium	0.18	5.9	mg/Kg	FSA-SB-22O1-0001-091710	79/87	3.9-10.9	5.9	NA	39	NC	180	NH SRS	NO	BSL
	7440224	Silver	0.080	5.5	mg/Kg	FSA-SB-DUP02-0001-092110	10/87	1-3.1	5.5	NA	39	NC	89	NH SRS	NO	BSL
	7440235	Sodium	33.7	1159	mg/Kg	FSA-097-0102-0-081810	66/80	500-608	1159	NA	NUT		NBA		NO	NUT
	7440280	Thallium	0.18	0.18	mg/Kg	FSA-009-0304-1-081610	1/87	2.6-7.8	0.18	NA	0.078	NC	10	NH SRS	YES	ASL
	7440622	Vanadium	3.3	72.7	mg/Kg	FSA-171-0001-0-082310	87/87	-	72.7	52.7	39	NC	NBA		YES	ASL
	7440666	Zinc	14.5	987	mg/Kg	FSA-FD02-0001-2-082310	87/87	-	987	51.4	2300	NC	1000	NH SRS	NO	BSL
EFSA Aggregate Soil	92524	1,1'-Biphenyl	1	1	mg/kg	FSA-SB-34O1-0204-091610	1/17	0.18-6.5	1.0	NA	5.1	NC	174	NH SRS	NO	BSL
	78933	2-Butanone	0.046	0.38	mg/kg	FSA-SB-36O1-0406-091610	2/16	0.0084-0.022	0.38	NA	2800	NC	51	NH SRS	NO	BSL
	67641	Acetone	0.018	1.3	mg/kg	FSA-SB-36O1-0406-091610	9/17	0.0084-0.022	1.3	0.099	6100	NC	75	NH SRS	NO	BSL
	74839	Bromomethane	0.0037	0.0037	mg/kg	FSA-SB-34O1-0001-091610	1/16	0.0042-0.016	0.0037	0.0036	0.73	NC	0.3	NH SRS	NO	BSL
	74873	Chloromethane	0.013	0.013	mg/kg	FSA-SS-18-091510	1/16	0.0042-0.016	0.013	0.0046	12	NC	3	NH SRS	NO	BSL
	79209	Methyl acetate	0.0071	0.048	mg/kg	FSA-SB-38O1-0001-091610	3/16	0.0042-0.016	0.048	0.0067	7800	NC	NBA		NO	BSL
	75092	Methylene chloride	0.0076	0.017	mg/kg	FSA-SB-35O1-0406-091610	3/17	0.0042-0.016	0.017	0.0055	36	NC	0.1	NH SRS	NO	BSL
	108883	Toluene	0.029	0.029	mg/kg	FSA-SS-18-091510	1/16	0.0042-0.016	0.029	NA	500	NC	100	NH SRS	NO	BSL
	117817	Bis(2-ethylhexyl)phthalate	0.099	0.18	mg/kg	FSA-SB-35O1-0406-091610	3/17	0.18-6.5	0.18	0.056	35	C	72	NH SRS	NO	BSL
	132649	Dibenzofuran	0.082	1.0	mg/kg	FSA-SB-34O1-0204-091610	4/17	0.18-6.5	1.0	NA	7.8	NC	NBA		NO	BSL
	84742	Di-n-butyl phthalate	0.077	0.14	mg/kg	FSA-SB-33O1-0204-091610	4/17	0.18-6.5	0.14	0.053	610	NC	2600	NH SRS	NO	BSL
	86306	N-nitrosodiphenylamine	0.076	0.076	mg/kg	FSA-SB-38O1-0001-091610	1/17	0.18-6.5	0.076	NA	99	C	NBA		NO	BSL
	91576	2-Methylnaphthalene	0.29	6.8	mg/kg	FSA-SB-34O1-0204-091610	3/17	0.18-6.5	6.8	NA	23	NC	96	NH SRS	NO	BSL
	83329	Acenaphthene	0.25	9.0	mg/kg	FSA-SB-34O1-0204-091610	6/17	0.18-2.3	9.0	NA	340	NC	340	NH SRS	NO	BSL
	208968	Acenaphthylene	0.28	1.5	mg/kg	FSA-SB-38O1-0001-091610	5/17	0.18-6.5	1.5	0.061	340	NC	490	NH SRS	NO	BSL
	120127	Anthracene	0.22	19	mg/kg	FSA-SB-34O1-0204-091610	9/17	0.18-0.4	19	0.093	1700	NC	1000	NH SRS	NO	BSL
	56553	Benzo(a)anthracene	0.037	37	mg/kg	FSA-SS-25-091510	14/17	0.18-0.19	37	0.9	0.15	C	1	NH SRS	YES	ASL
	50328	Benzo(a)pyrene	0.048	27	mg/kg	FSA-SS-25-091510	14/17	0.18-0.19	27	0.70	0.015	C	0.7	NH SRS	YES	ASL
	205992	Benzo(b)fluoranthene	0.056	23	mg/kg	FSA-SS-25-091510	13/17	0.18-0.35	23	0.83	0.15	C	1	NH SRS	YES	ASL
	191242	Benzo(g,h,i)perylene	0.12	16	mg/kg	FSA-SS-25-091510	13/17	0.18-0.35	16	0.50	3.6	C	960	NH SRS	YES	ASL
	207089	Benzo(k)fluoranthene	0.040	25	mg/kg	FSA-SS-25-091510	13/17	0.18-0.35	25	0.61	1.5	C	12	NH SRS	YES	ASL
	86748	Carbazole	0.16	1.7	mg/kg	FSA-SS-25-091510	6/17	0.18-6.5	1.7	0.081	NBA		NBA		YES	NBA
	218019	Chrysene	0.048	36	mg/kg	FSA-SS-25-091510	14/17	0.18-0.19	36	0.86	15	C	120	NH SRS	YES	ASL
	53703	Dibenz(a,h)anthracene	0.100	4.9	mg/kg	FSA-SS-DUP01-091510	8/17	0.18-0.4	4.9	0.15	0.015	C	0.7	NH SRS	YES	ASL
	206440	Fluoranthene	0.075	47	mg/kg	FSA-SS-25-091510	16/17	0.18-0.19	47	1.8	230	NC	960	NH SRS	NO	BSL
	86737	Fluorene	0.11	8.9	mg/kg	FSA-SB-34O1-0204-091610	7/17	0.18-0.4	8.9	NA	230	NC	77	NH SRS	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.070	25	mg/kg	FSA-SS-25-091510	13/17	0.18-0.35	25	0.81	0.15	C	1	NH SRS	YES	ASL
	91203	Naphthalene	0.086	4.5	mg/kg	FSA-SB-34O1-0204-091610	4/17	0.18-6.5	4.5	NA	3.6	C	5	NH SRS	YES	ASL
	85018	Phenanthrene	0.042	67	mg/kg	FSA-SB-34O1-0204-091610	12/17	0.18-0.4	67	0.62	1700	NC	960	NH SRS	NO	BSL
	129000	Pyrene	0.083	58	mg/kg	FSA-SS-DUP01-091510	15/17	0.18-0.19	58	1.6	170	NC	720	NH SRS	NO	BSL

TABLE A-2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Aggregate soil 0-10 ft bgs

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
EFSA Aggregate Soil (Cont'd)	---	2,3,7,8-TCDD TEQ	0.00000049	0.0034	mg/kg	FSA-SB-34O1-0204-091610	17/17	-	0.0034	0.0000020	0.0000045	C	0.001	NH SRS	YES	ASL
	72548	4,4'-DDD	0.037	0.048	mg/kg	FSA-SS-DUP01-091510	1/17	0.0034-0.0097	0.048	NA	2	C	6	NH SRS	NO	BSL
	50293	4,4'-DDT	0.0056	0.0056	mg/kg	FSA-SB-37O1-0001-091510	1/17	0.0034-0.0097	0.0056	NA	1.7	C	4	NH SRS	NO	BSL
	319846	alpha-BHC	0.0041	0.0059	mg/kg	FSA-SS-DUP01-091510	1/17	0.0018-0.005	0.0059	NA	0.077	C	0.06	NH SRS	NO	BSL
	319857	beta-BHC	0.0047	0.0047	mg/kg	FSA-SB-34O1-0001-091610	1/17	0.0018-0.005	0.0047	NA	0.27	C	0.06	NH SRS	NO	BSL
	7421934	Endrin aldehyde	0.049	0.049	mg/kg	FSA-SS-DUP01-091510	1/17	0.0034-0.0097	0.049	NA	1.8	NC	8	NH SRS	NO	BSL
	53494705	Endrin ketone	0.055	0.055	mg/kg	FSA-SS-DUP01-091510	1/17	0.0034-0.0097	0.055	NA	1.8	NC	8	NH SRS	NO	BSL
	76448	Heptachlor	0.018	0.019	mg/kg	FSA-SS-DUP01-091510	1/17	0.0018-0.005	0.019	0.0058	0.11	C	0.2	NH SRS	NO	BSL
	---	Total PCB Homologs	0.00010	0.0915	mg/kg	FSA-SB-35O1-0406-091610	17/17	-	0.0915	0.017	0.11	NC	1	NH SRS	NO	BSL
	---	PCB Dioxin-like Congener TEQ	0.00000014	0.00002	mg/kg	FSA-SB-35O1-0001-091610	17/17	-	0.00002	0.00000082	0.0000045	C	0.001	NH SRS	YES	ASL
	7429905	Aluminum	834	10774	mg/Kg	FSA-SB-36O1-0001-091610	20/20	-	10774	23900	7700	NC	NBA		YES	ASL
	7440360	Antimony	0.45	16.5	mg/Kg	FSA-SS-25-091510	13/20	6-13.3	16.5	NA	3.1	NC	9	NH SRS	YES	ASL
	7440382	Arsenic	1.3	54.7	mg/Kg	FSA-132-0304-0-082610	20/20	-	54.7	4.9	0.39	C	11	NH SRS	YES	ASL
	7440393	Barium	40.4	724	mg/Kg	FSA-SB-34O1-0001-091610	20/20	-	724	41.9	1500	NC	1000	NH SRS	NO	BSL
	7440417	Beryllium	0.19	0.91	mg/Kg	FSA-127-0304-0-081910	14/20	0.5-0.67	0.91	0.68	16	NC	1	NH SRS	NO	BSL
	7440439	Cadmium	0.15	1.4	mg/Kg	FSA-SB-36O1-0406-091610	13/20	0.5-0.62	1.4	0.49	7	NC	33	NH SRS	NO	BSL
	7440702	Calcium	1275	20919	mg/Kg	FSA-SB-36O1-0406-091610	20/20	-	20919	1830	NUT		NBA		NO	NUT
	7440473	Chromium	6.7	27.6	mg/Kg	FSA-SB-38O1-0204-091610	20/20	-	27.6	17.7	0.29	C	130	NH SRS	YES	ASL
	7440484	Cobalt	2.8	12.6	mg/Kg	FSA-SB-35O1-0406-091610	20/20	-	12.6	5.9	2.3	NC	NBA		YES	ASL
	7440508	Copper	14.6	236	mg/Kg	FSA-SB-37O1-0204-091510	20/20	-	236	23.4	310	NC	NBA		NO	See Text
	7439896	Iron	5689	36816	mg/Kg	FSA-SB-36O1-0406-091610	20/20	-	36816	19900	5500	NC	NBA		YES	ASL
	7439921	Lead	9.4	1177	mg/Kg	FSA-SS-25-091510	20/20	-	1177	82.2	400		400	NH SRS	YES	ASL
	7439954	Magnesium	124	4304	mg/Kg	FSA-SB-36O1-0001-091610	20/20	-	4304	2470	NUT		NBA		NO	NUT
	7439965	Manganese	97.8	716	mg/Kg	FSA-SS-18-091510	20/20	-	716	295	180	NC	5200	NH SRS	YES	ASL
	7439976	Mercury	0.075	34.4	mg/Kg	FSA-137-0001-0-082610	17/20	0.11-0.13	34.4	0.37	1	NC	6	NH SRS	YES	ASL
	7440020	Nickel	4.8	47.5	mg/Kg	FSA-SB-37O1-0204-091510	20/20	-	47.5	10.7	150	NC	400	NH SRS	NO	BSL
	7440097	Potassium	158	2297	mg/Kg	FSA-SB-36O1-0001-091610	20/20	-	2297	1540	NUT		NBA		NO	NUT
	7782492	Selenium	0.43	2.1	mg/Kg	FSA-SB-23O1-0001-091610	15/20	3.8-4.7	2.1	NA	39	NC	180	NH SRS	NO	BSL
	7440224	Silver	1.2	1.2	mg/Kg	FSA-137-0001-0-082610	1/20	1.1-2.2	1.2	NA	39	NC	89	NH SRS	NO	BSL
	7440235	Sodium	18.3	176	mg/Kg	FSA-SB-33O1-0204-091610	20/20	-	176	NA	NUT		NBA		NO	NUT
	7440622	Vanadium	10.1	39.2	mg/Kg	FSA-127-0304-0-081910	20/20	-	39.2	52.7	39	NC	NBA		YES	ASL
	7440666	Zinc	28.9	1150	mg/Kg	FSA-SB-36O1-0406-091610	20/20	-	1150	51.4	2300	NC	1000	NH SRS	NO	BSL

Notes/sources:

(1) Maximum detected concentration used for screening.

(2) Background soil value based on maximum detected concentration.

(3) Risk-based residential soil concentrations obtained from the Regional Screening Level (RSL) Table (May, 2012).

Surrogate screening values used:

- Endosulfan value used for Endosulfan I, Endosulfan II, and Endosulfan sulfate.
- Endrin value used for Endrin aldehyde and Endrin ketone.
- Acenaphthene value used for acenaphthylene.
- Naphthene value used for benzo(g,h,i)perylene.
- Anthracene value used for phenanthrene.

ASL = above screening level.
BSL = below screening level.
C = Cancer based screening value set at a target risk of 1E-06.
CHP = Cell House Property.
EFSA = Eastern Facility Study Area.
ft bgs = Feet below ground surface.
mg/kg = Milligrams per kilogram.
NA = Not Available.
NBA = no screening benchmark available.
NC = Noncancer based screening value set at a target hazard quotient of 0.1.
NUT = Essential nutrient.
NH SRS = New Hampshire Soil Remediation Standard.
SFSA = Southern Facility Study Area.

TABLE A-2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SEDIMENT
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
Area 1 Sediment	98862	Acetophenone	0.015	0.027	mg/kg	AR4-00-SDCH0002-0-091008	2/5	0.79-1.3	0.027	0.10	780	NC	NBA		NO	BSL
	65850	Benzoic acid	1.3	1.3	mg/kg	SH2-0-SD-20060918	1/3	0.79-0.93	1.3	NA	24000	NC	350	NH SRS	NO	BSL
	117817	Bis(2-ethylhexyl)phthalate	0.0083	0.0083	mg/kg	AR4-00-SDCH0002-0-091008	1/5	0.0055-1.3	0.0083	0.013	35	C	72	NH SRS	NO	BSL
	132649	Dibenzofuran	0.0095	0.0096	mg/kg	AR4-00-SDCH0002-0-091008	2/5	0.79-1.3	0.0096	NA	7.8	NC	NBA		NO	BSL
	108952	Phenol	0.0021	0.0021	mg/kg	AR4-00-SDCH0001-0-091008	1/5	0.017-1.3	0.0021	NA	1800	NC	56	NH SRS	NO	BSL
	91576	2-Methylnaphthalene	0.0029	0.0031	mg/kg	AR4-00-SDCH0001-0-091008	2/5	0.79-1.3	0.0031	NA	23	NC	96	NH SRS	NO	BSL
	83329	Acenaphthene	0.012	0.015	mg/kg	AR4-00-SDCH0002-0-091008	2/5	0.79-1.3	0.015	NA	340	NC	340	NH SRS	NO	BSL
	208968	Acenaphthylene	0.026	0.029	mg/kg	AR4-00-SDCH0001-0-091008	2/5	0.79-1.3	0.029	0.0061	340	NC	490	NH SRS	NO	BSL
	120127	Anthracene	0.070	0.071	mg/kg	AR4-00-SDCH0001-0-091008	2/5	0.79-1.3	0.071	0.0042	1700	NC	1000	NH SRS	NO	BSL
	56553	Benzo(a)anthracene	0.38	2.8	mg/kg	SH1-0-SD-20060918	3/5	0.79-1.3	2.8	0.013	0.15	C	1	NH SRS	YES	ASL
	50328	Benzo(a)pyrene	0.44	2.7	mg/kg	SH1-0-SD-20060918	3/5	0.79-1.3	2.7	0.015	0.015	C	0.7	NH SRS	YES	ASL
	205992	Benzo(b)fluoranthene	0.67	4.1	mg/kg	SH1-0-SD-20060918	3/5	0.79-1.3	4.1	0.020	0.15	C	1	NH SRS	YES	ASL
	191242	Benzo(g,h,i)perylene	0.29	1.6	mg/kg	SH1-0-SD-20060918	3/5	0.79-1.3	1.6	0.013	3.6	C	960	NH SRS	NO	BSL
	207089	Benzo(k)fluoranthene	0.17	1.4	mg/kg	SH1-0-SD-20060918	3/5	0.79-1.3	1.4	0.0077	1.5	C	12	NH SRS	NO	BSL
	86748	Carbazole	0.021	0.028	mg/kg	AR4-00-SDCH0002-0-091008	2/5	0.79-1.3	0.028	0.0022	NBA		NBA		YES	NBA
	218019	Chrysene	0.43	3.2	mg/kg	SH1-0-SD-20060918	3/5	0.79-1.3	3.2	0.020	15	C	120	NH SRS	NO	BSL
	53703	Dibenz(a,h)anthracene	0.068	0.075	mg/kg	AR4-00-SDCH0001-0-091008	2/5	0.79-1.3	0.075	NA	0.015	C	0.7	NH SRS	YES	ASL
	206440	Fluoranthene	0.62	5.9	mg/kg	SH1-0-SD-20060918	4/5	0.79-0.79	5.9	0.026	230	NC	960	NH SRS	NO	BSL
	86737	Fluorene	0.017	0.018	mg/kg	AR4-00-SDCH0002-0-091008	2/5	0.79-1.3	0.018	0.0014	230	NC	77	NH SRS	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.34	1.7	mg/kg	SH1-0-SD-20060918	3/5	0.79-1.3	1.7	0.015	0.15	C	1	NH SRS	YES	ASL
	91203	Naphthalene	0.0047	0.011	mg/kg	AR4-00-SDCH0001-0-091008	2/5	0.79-1.3	0.011	NA	3.6	C	5	NH SRS	NO	BSL
	85018	Phenanthrene	0.22	2.6	mg/kg	SH1-0-SD-20060918	3/5	0.79-1.3	2.6	0.013	1700	NC	960	NH SRS	NO	BSL
	129000	Pyrene	0.65	5.4	mg/kg	SH1-0-SD-20060918	4/5	0.79-0.79	5.4	0.030	170	NC	720	NH SRS	NO	BSL
	---	2,3,7,8-TCDD TEQ	0.0000025	0.0000029	mg/kg	AR4-00-SDCH0002-0-091008	2/2	-	0.0000029	0.0000012	0.0000045	C	0.001	NH SRS	NO	BSL
	50293	4,4'-DDT	0.0013	0.0013	mg/kg	AR4-00-SDCH0001-0-091008	1/2	0.0028-0.0028	0.0013	NA	1.7	C	4	NH SRS	NO	BSL
	---	Total PCB Homologs	0.011	0.035	mg/kg	AR4-00-SDCH0001-0-091008	2/2	-	0.035	0.0013	0.11	NC	1	NH SRS	NO	BSL
	---	PCB Dioxin-like Congener TEQ	0.0000000063	0.00000011	mg/kg	AR4-00-SDCH0001-0-091008	2/2	-	0.00000011	0.0000000020	0.0000045	C	0.001	NH SRS	NO	BSL
	7429905	Aluminum	3600	12000	mg/kg	SH2-0-SD-20060918	4/4	-	12000	5800	7700	NC	NBA		YES	ASL
	7440382	Arsenic	0.99	0.99	mg/kg	AR4-00-SDCH0001-0-091008	1/6	1-20	0.99	2.5	0.39	C	11	NH SRS	YES	ASL
	7440393	Barium	13	59	mg/kg	SH2-0-SD-20060918	4/4	-	59	19	1500	NC	1000	NH SRS	NO	BSL
	7440417	Beryllium	0.12	0.14	mg/kg	AR4-00-SDCH0001-0-091008	2/6	0.93-0.98	0.14	0.37	16	NC	1	NH SRS	NO	BSL
	7440439	Cadmium	0.078	0.091	mg/kg	AR4-00-SDCH0002-0-091008	2/6	2.8-2.9	0.091	0.77	7	NC	33	NH SRS	NO	BSL
	7440702	Calcium	900	2200	mg/kg	SH2-0-SD-20060918	4/4	-	2200	1100	NUT		NBA		NO	NUT
	7440473	Chromium	4.7	19	mg/kg	SH2-0-SD-20060918	6/6	-	19	14.9	0.29	C	130	NH SRS	YES	ASL
	7440484	Cobalt	3.6	11	mg/kg	SH2-0-SD-20060918	4/4	-	11	5.5	2.3	NC	NBA		YES	ASL
	7440508	Copper	3.9	18	mg/kg	SH2-0-SD-20060918	6/6	-	18	11.7	310	NC	NBA		NO	See Text
	7439896	Iron	7600	17000	mg/kg	SH2-0-SD-20060918	4/4	-	17000	12000	5500	NC	NBA		YES	ASL
	7439921	Lead	5.6	21	mg/kg	SH2-0-SD-20060918	3/6	19-20	21	9.4	400		400	NH SRS	NO	BSL
	7439954	Magnesium	1900	4100	mg/kg	SH2-0-SD-20060918	4/4	-	4100	3400	NUT		NBA		NO	NUT
	7439965	Manganese	110	380	mg/kg	SH2-0-SD-20060918	4/4	-	380	420	180	NC	5200	NH SRS	YES	ASL
	7439976	Mercury	0.022	0.66	mg/kg	AR5-2 FD3	22/22	-	0.66	0.038	1	NC	6	NH SRS	NO	BSL
	22967926	Methylmercury	0.00024	0.0014	mg/kg	AR5-2 N	4/4	-	0.0014	0.00047	0.78	NC	3	NH SRS	NO	BSL
	7440020	Nickel	3.9	16	mg/kg	SH2-0-SD-20060918	3/6	11-12	16	15.2	150	NC	400	NH SRS	NO	BSL

TABLE A-2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SEDIMENT
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
Area 1 Sediment (Cont'd)	7440097	Potassium	640	1300	mg/kg	SH2-0-SD-20060918	3/4	490-490	1300	800	NUT		NBA		NO	NUT
	7440246	Strontium	2.2	2.8	mg/kg	AR4-00-SDCH0002-0-091008	2/2	-	2.8	6.7	4700	NC	NBA		NO	BSL
	7440622	Vanadium	8.8	30	mg/kg	SH2-0-SD-20060918	6/6	-	30	27	39	NC	NBA		NO	BSL
	7440666	Zinc	22	75	mg/kg	SH2-0-SD-20060918	6/6	-	75	65.9	2300	NC	1000	NH SRS	NO	BSL
Area 2 Sediment	92524	1,1'-Biphenyl	0.0022	0.0037	mg/kg	AR8-00-SDCH0001-0-090918	3/4	0.089-0.089	0.0037	NA	5.1	NC	174	NH SRS	NO	BSL
	98862	Acetophenone	0.015	0.016	mg/kg	AR8-00-SDCH0002-0-090918	3/8	0.23-1.3	0.016	0.10	780	NC	NBA		NO	BSL
	100527	Benzaldehyde	0.0087	0.0095	mg/kg	AR8-00-SDCH0002-0-090918	2/4	0.016-0.089	0.0095	0.028	780	NC	NBA		NO	BSL
	118741	Hexachlorobenzene	0.0013	0.0013	mg/kg	AR8-00-SDCH0002-0-090918	1/8	0.0039-1.3	0.0013	NA	0.3	C	0.8	NH SRS	NO	BSL
	117817	Bis(2-ethylhexyl)phthalate	0.021	0.036	mg/kg	AR8-00-SDCH0001-0-090918	3/8	0.045-1.3	0.036	0.013	35	C	72	NH SRS	NO	BSL
	132649	Dibenzofuran	0.012	0.027	mg/kg	AR8-00-SDCH0001-0-090918	4/8	0.78-1.3	0.027	NA	7.8	NC	NBA		NO	BSL
	84662	Diethylphthalate	0.0016	0.0016	mg/kg	AR8-00-SDCH0003-0-090918	1/8	0.0077-1.3	0.0016	0.0016	4900	NC	1000	NH SRS	NO	BSL
	84742	Di-n-butyl phthalate	0.0079	0.013	mg/kg	AR8-00-SDCH0001-0-090918	3/8	0.089-1.3	0.013	0.0095	610	NC	2600	NH SRS	NO	BSL
	108952	Phenol	0.0065	0.010	mg/kg	AR8-00-SDCH0001-0-090918	3/8	0.14-1.3	0.010	NA	1800	NC	56	NH SRS	NO	BSL
	91576	2-Methylnaphthalene	0.0052	0.010	mg/kg	AR8-00-SDCH0001-0-090918	3/8	0.045-1.3	0.010	NA	23	NC	96	NH SRS	NO	BSL
	83329	Acenaphthene	0.027	0.054	mg/kg	AR8-00-SDCH0003-0-090918	4/8	0.78-1.3	0.054	NA	340	NC	340	NH SRS	NO	BSL
	208968	Acenaphthylene	0.028	0.046	mg/kg	AR8-00-SDCH0001-0-090918	4/8	0.78-1.3	0.046	0.0061	340	NC	490	NH SRS	NO	BSL
	120127	Anthracene	0.13	0.26	mg/kg	AR8-00-SDCH0003-0-090918	4/8	0.78-1.3	0.26	0.0042	1700	NC	1000	NH SRS	NO	BSL
	56553	Benzo(a)anthracene	0.79	2.0	mg/kg	DPWD02-SD-20060919	6/8	0.78-1.3	2.0	0.013	0.15	C	1	NH SRS	YES	ASL
	50328	Benzo(a)pyrene	0.80	2.0	mg/kg	DPWD02-SD-20060919	7/8	1.2-1.3	2.0	0.015	0.015	C	0.7	NH SRS	YES	ASL
	205992	Benzo(b)fluoranthene	0.93	2.7	mg/kg	DPWD02-SD-20060919	7/8	1.2-1.3	2.7	0.020	0.15	C	1	NH SRS	YES	ASL
	191242	Benzo(g,h,i)perylene	0.46	1.1	mg/kg	DPWD02-SD-20060919	5/8	0.78-1.3	1.1	0.013	3.6	C	960	NH SRS	NO	BSL
	207089	Benzo(k)fluoranthene	0.40	0.67	mg/kg	AR8-00-SDCH0003-0-090918	4/8	0.78-1.3	0.67	0.0077	1.5	C	12	NH SRS	NO	BSL
	86748	Carbazole	0.040	0.088	mg/kg	AR8-00-SDCH0003-0-090918	4/8	0.78-1.3	0.088	0.0022	NBA		NBA		YES	NBA
	218019	Chrysene	0.82	2.0	mg/kg	DPWD02-SD-20060919	6/8	0.78-1.3	2.0	0.020	15	C	120	NH SRS	NO	BSL
	53703	Dibenz(a,h)anthracene	0.038	0.066	mg/kg	AR8-00-SDCH0001-0-090918	4/8	0.78-1.3	0.066	NA	0.015	C	0.7	NH SRS	YES	ASL
	206440	Fluoranthene	0.86	2.7	mg/kg	DPWD02-SD-20060919	7/8	1.2-1.3	2.7	0.026	230	NC	960	NH SRS	NO	BSL
	86737	Fluorene	0.032	0.060	mg/kg	AR8-00-SDCH0003-0-090918	4/8	0.78-1.3	0.060	0.0014	230	NC	77	NH SRS	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.49	1.1	mg/kg	DPWD02-SD-20060919	5/8	0.78-1.3	1.1	0.015	0.15	C	1	NH SRS	YES	ASL
	91203	Naphthalene	0.010	0.017	mg/kg	AR8-00-SDCH0003-0-090918	3/8	0.045-1.3	0.017	NA	3.6	C	5	NH SRS	NO	BSL
	85018	Phenanthrene	0.53	1.4	mg/kg	RHD01-SD-20060919	6/8	0.78-1.3	1.4	0.013	1700	NC	960	NH SRS	NO	BSL
	129000	Pyrene	1.0	3.0	mg/kg	DPWD02-SD-20060919	8/8	1.3-1.3	3.0	0.030	170	NC	720	NH SRS	NO	BSL
	---	2,3,7,8-TCDD TEQ	0.000016	0.000034	mg/kg	AR8-00-SDCH0002-0-090918	4/4	-	0.000034	0.0000012	0.0000045	C	0.001	NH SRS	YES	ASL
	789026	o,p'-DDT	0.00051	0.0044	mg/kg	AR8-00-SDCH0003-0-090918	2/4	0.0039-0.0045	0.0044	NA	NBA		NBA		YES	NBA
	---	Total PCB Homologs	0.013	0.20	mg/kg	AR6-00-SDCH0001-0-090918	4/4	-	0.20	0.0013	0.11	NC	1	NH SRS	YES	ASL
	---	PCB Dioxin-like Congener TEQ	0.000000013	0.00000022	mg/kg	AR6-00-SDCH0001-0-090918	4/4	-	0.00000022	0.0000000020	0.0000045	C	0.001	NH SRS	NO	BSL
	7429905	Aluminum	3700	9000	mg/kg	DPWD02-SD-20060919	4/4	-	9000	5800	7700	NC	NBA		YES	ASL
	7440382	Arsenic	1.7	3.6	mg/kg	AR8-00-SDCH0002-0-090918	4/8	17-19	3.6	2.5	0.39	C	11	NH SRS	YES	ASL
	7440393	Barium	22	48	mg/kg	DPWD02-SD-20060919	4/4	-	48	19	1500	NC	1000	NH SRS	NO	BSL
	7440417	Beryllium	0.30	0.35	mg/kg	AR8-00-SDCH0001-0-090918	4/8	0.86-0.95	0.35	0.37	16	NC	1	NH SRS	NO	BSL
	7440439	Cadmium	0.53	0.59	mg/kg	AR6-00-SDCH0001-0-090918	4/8	2.6-2.8	0.59	0.77	7	NC	33	NH SRS	NO	BSL
	7440702	Calcium	770	1900	mg/kg	DPWD02-SD-20060919	4/4	-	1900	1100	NUT		NBA		NO	NUT

TABLE A-2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SEDIMENT
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
Area 2 Sediment (Cont'd)	7440473	Chromium	5.9	16	mg/kg	DPWD02-SD-20060919	8/8	-	16	14.9	0.29	C	130	NH SRS	YES	ASL
	7440484	Cobalt	3.9	9.4	mg/kg	DPWD02-SD-20060919	4/4	-	9.4	5.5	2.3	NC	NBA		YES	ASL
	7440508	Copper	8.9	19	mg/kg	DPWD02-SD-20060919	8/8	-	19	11.7	310	NC	NBA		NO	See Text
	7439896	Iron	7900	15000	mg/kg	DPWD02-SD-20060919	4/4	-	15000	12000	5500	NC	NBA		YES	ASL
	7439921	Lead	11	16.6	mg/kg	AR8-00-SDCH0003-0-090918	4/8	17-19	16.6	9.4	400		400	NH SRS	NO	BSL
	7439954	Magnesium	1700	3500	mg/kg	DPWD02-SD-20060919	4/4	-	3500	3400	NUT		NBA		NO	NUT
	7439965	Manganese	170	330	mg/kg	DPWD01-SD-20060919	4/4	-	330	420	180	NC	5200	NH SRS	YES	ASL
	7439976	Mercury	0.058	0.36	mg/kg	AR7-1 FD2	30/32	0.1-0.11	0.36	0.038	1	NC	6	NH SRS	NO	BSL
	22967926	Methylmercury	0.00028	0.0017	mg/kg	AR6-3 N	10/10	-	0.0017	0.00047	0.78	NC	3	NH SRS	NO	BSL
	7440020	Nickel	8.7	12	mg/kg	DPWD02-SD-20060919	5/8	10-11	12	15.2	150	NC	400	NH SRS	NO	BSL
	7440097	Potassium	540	1200	mg/kg	DPWD02-SD-20060919	4/4	-	1200	800	NUT		NBA		NO	NUT
	7782492	Selenium	0.54	0.65	mg/kg	AR8-00-SDCH0003-0-090918	4/8	8.6-9.5	0.65	0.75	39	NC	180	NH SRS	NO	BSL
	7440246	Strontium	5.4	5.8	mg/kg	AR8-00-SDCH0001-0-090918	4/4	-	5.8	6.7	4700	NC	NBA		NO	BSL
	7440622	Vanadium	12	25	mg/kg	DPWD02-SD-20060919	8/8	-	25	27	39	NC	NBA		NO	BSL
	7440666	Zinc	26	76	mg/kg	DPWD02-SD-20060919	8/8	-	76	65.9	2300	NC	1000	NH SRS	NO	BSL
Area 3 Sediment	98862	Acetophenone	0.038	0.038	mg/kg	AR9-00-SDCH0001-0-090917	1/4	0.19-0.49	0.038	0.10	780	NC	NBA		NO	BSL
	100527	Benzaldehyde	0.011	0.011	mg/kg	AR9-00-SDCH0001-0-090917	1/4	0.076-0.2	0.011	0.028	780	NC	NBA		NO	BSL
	106445	4-Methylphenol	0.0076	0.0076	mg/kg	AR9-00-SDCH0001-0-090917	1/4	0.038-0.098	0.0076	NA	610	NC	0.7	NH SRS	NO	BSL
	117817	Bis(2-ethylhexyl)phthalate	0.023	0.023	mg/kg	AR9-00-SDCH0001-0-090917	1/4	0.038-0.098	0.023	0.013	35	C	72	NH SRS	NO	BSL
	132649	Dibenzofuran	0.0087	0.070	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.070	NA	7.8	NC	NBA		NO	BSL
	108952	Phenol	0.0088	0.0088	mg/kg	AR9-00-SDCH0001-0-090917	1/4	0.12-0.3	0.0088	NA	1800	NC	56	NH SRS	NO	BSL
	91576	2-Methylnaphthalene	0.0045	0.033	mg/kg	AR9-00-SDCH0003-0-090917	3/4	0.044-0.073	0.033	NA	23	NC	96	NH SRS	NO	BSL
	83329	Acenaphthene	0.018	0.14	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.14	NA	340	NC	340	NH SRS	NO	BSL
	208968	Acenaphthylene	0.020	0.055	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.055	0.0061	340	NC	490	NH SRS	NO	BSL
	120127	Anthracene	0.092	0.43	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.43	0.0042	1700	NC	1000	NH SRS	NO	BSL
	56553	Benzo(a)anthracene	0.59	2.4	mg/kg	AR9-00-SDCH0002-1-090917	4/4	-	2.4	0.013	0.15	C	1	NH SRS	YES	ASL
	50328	Benzo(a)pyrene	0.60	2.9	mg/kg	AR9-00-SDCH0002-1-090917	4/4	-	2.9	0.015	0.015	C	0.7	NH SRS	YES	ASL
	205992	Benzo(b)fluoranthene	0.78	3.8	mg/kg	AR9-00-SDCH0002-1-090917	4/4	-	3.8	0.020	0.15	C	1	NH SRS	YES	ASL
	191242	Benzo(g,h,i)perylene	0.37	2.3	mg/kg	AR9-00-SDCH0002-1-090917	4/4	-	2.3	0.013	3.6	C	960	NH SRS	NO	BSL
	207089	Benzo(k)fluoranthene	0.35	1.4	mg/kg	AR9-00-SDCH0002-1-090917	4/4	-	1.4	0.0077	1.5	C	12	NH SRS	NO	BSL
	86748	Carbazole	0.025	0.14	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.14	0.0022	NBA		NBA		YES	NBA
	218019	Chrysene	0.62	2.7	mg/kg	AR9-00-SDCH0002-1-090917	4/4	-	2.7	0.020	15	C	120	NH SRS	NO	BSL
	53703	Dibenz(a,h)anthracene	0.030	0.35	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.35	NA	0.015	C	0.7	NH SRS	YES	ASL
	206440	Fluoranthene	0.81	3.8	mg/kg	AR9-00-SDCH0002-1-090917	4/4	-	3.8	0.026	230	NC	960	NH SRS	NO	BSL
	86737	Fluorene	0.021	0.15	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.15	0.0014	230	NC	77	NH SRS	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.38	1.6	mg/kg	AR9-00-SDCH0002-1-090917	4/4	-	1.6	0.015	0.15	C	1	NH SRS	YES	ASL
	91203	Naphthalene	0.010	0.050	mg/kg	AR9-00-SDCH0003-0-090917	3/4	0.044-0.073	0.050	NA	3.6	C	5	NH SRS	NO	BSL
	85018	Phenanthrene	0.31	1.7	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	1.7	0.013	1700	NC	960	NH SRS	NO	BSL
	129000	Pyrene	0.86	3.4	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	3.4	0.030	170	NC	720	NH SRS	NO	BSL
	---	2,3,7,8-TCDD TEQ	0.0000094	0.00029	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.00029	0.0000012	0.0000045	C	0.001	NH SRS	YES	ASL
	58899	gamma-BHC	0.00057	0.0012	mg/kg	AR9-00-SDCH0003-0-090917	2/4	0.0036-0.0044	0.0012	NA	0.52	C	0.09	NH SRS	NO	BSL
	789026	o,p'-DDT	0.0014	0.0031	mg/kg	AR9-00-SDCH0004-0-090917	3/4	0.0036-0.0044	0.0031	NA	NBA		NBA		YES	NBA

TABLE A-2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SEDIMENT
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
Area 3 Sediment (Cont'd)	---	Total PCB Homologs	0.016	0.31	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.31	0.0013	0.11	NC	1	NH SRS	YES	ASL
	---	PCB Dioxin-like Congener TEQ	0.000000014	0.0000012	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.0000012	0.0000000020	0.0000045	C	0.001	NH SRS	NO	BSL
	7440382	Arsenic	1.3	7.3	mg/kg	AR9-00-SDCH0002-1-090917	4/4	1-1	7.3	2.5	0.39	C	11	NH SRS	YES	ASL
	7440417	Beryllium	0.25	0.35	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.35	0.37	16	NC	1	NH SRS	NO	BSL
	7440439	Cadmium	0.37	0.56	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	0.56	0.77	7	NC	33	NH SRS	NO	BSL
	7440473	Chromium	6.9	10.7	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	10.7	14.9	0.29	C	130	NH SRS	YES	ASL
	7440508	Copper	8.5	28.9	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	28.9	11.7	310	NC	NBA		NO	See Text
	7439921	Lead	6.6	14.7	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	14.7	9.4	400		400	NH SRS	NO	BSL
	7439976	Mercury	0.023	7.9	mg/kg	AR9-00-SDCH0002-0-090917	13/16	0.1-0.1	7.9	0.038	1	NC	6	NH SRS	YES	ASL
	---	Mercury, divalent	0.00012	0.00012	mg/kg	AR9-00-SDCH0002-0-090917	1/4	0.00045-0.00045	0.00012	0.00033	2.3	NC	NBA		NO	BSL
	22967926	Methylmercury	0.00022	0.0020	mg/kg	AR9-00-SDCH0004-0-090917	7/7	-	0.0020	0.00047	0.78	NC	3	NH SRS	NO	BSL
	7440020	Nickel	5.2	8.1	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	8.1	15.2	150	NC	400	NH SRS	NO	BSL
	7782492	Selenium	0.53	1.1	mg/kg	AR9-00-SDCH0003-0-090917	4/4	3.5-3.5	1.1	0.75	39	NC	180	NH SRS	NO	BSL
	7440246	Strontium	4.0	8.0	mg/kg	AR9-00-SDCH0004-0-090917	4/4	-	8.0	6.7	4700	NC	NBA		NO	BSL
	7440622	Vanadium	10.7	15.5	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	15.5	27	39	NC	NBA		NO	BSL
	7440666	Zinc	37.4	53.6	mg/kg	AR9-00-SDCH0003-0-090917	4/4	-	53.6	65.9	2300	NC	1000	NH SRS	NO	BSL

Notes/sources:

(1) Maximum detected concentration used for screening.

(2) Background sediment value based on maximum detected concentration.

(3) Risk-based residential soil concentrations obtained from the Regional Screening Level (RSL) Table (May, 2012).

Surrogate screening values used:

- Acenaphthene value used for acenaphthylene.
- Naphthene value used for benzo(g,h,i)perylene.
- Anthracene value used for phenanthrene.

ASL = above screening level.

BSL = below screening level.

C = Cancer based screening value set at a target risk of 1E-06.

mg/kg = Milligrams per kilogram.

NA = Not Available.

NBA = no screening benchmark available.

NC = Noncancer based screening value set at a target hazard quotient of 0.1.

NUT = Essential nutrient.

NH SRS = New Hampshire Soil Remediation Standard.

TABLE A-2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - SURFACE WATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
Area 1 Surface Water	7439976	Mercury	0.0010	0.0010	µg/L	AR3-00-SWCHUF01-0-090915	2/2	-	0.0010	0.001	0.063	NC	2	NH WQS	NO	BSL
	---	Mercury, divalent	0.000040	0.000060	µg/L	AR3-00-SWCHUF01-0-090915	2/2	-	0.000060	0.000070	0.43	NC	NBA		NO	BSL
	22967926	Methylmercury	0.000050	0.000050	µg/L	AR4-00-SWCHUF01-0-090915	1/2	0.0001-0.0001	0.000050	0.000050	0.16	NC	NBA		NO	BSL
	7440246	Strontium	15.2	15.5	ug/L	AR4-00-SWCHUF01-0-090915	2/2	-	15.5	15.6	930	NC	NBA		NO	BSL
Area 2 Surface Water	7439976	Mercury	0.0022	0.0022	µg/L	AR8-00-SWCHUF01-0-090914	1/1	-	0.0022	0.0010	0.063	NC	2	NH WQS	NO	BSL
	---	Mercury, divalent	0.000060	0.000060	µg/L	AR8-00-SWCHUF01-0-090914	1/1	-	0.000060	0.000070	0.43	NC	NBA		NO	BSL
	7440246	Strontium	16.7	16.7	ug/L	AR8-00-SWCHUF01-0-090914	1/1	-	16.7	15.6	930	NC	NBA		NO	BSL
Area 3 Surface Water	7439976	Mercury	0.00044	0.00067	µg/L	AR9-00-SWCHUF01-1-090914	1/1	-	0.00067	0.0010	0.063	NC	2	NH WQS	NO	BSL
	---	Mercury, divalent	0.000070	0.000070	µg/L	AR9-00-SWCHUF01-1-090914	1/1	0.00008-0.00008	0.000070	0.000070	0.43	NC	NBA		NO	BSL
	22967926	Methylmercury	0.000050	0.000060	µg/L	AR9-00-SWCHUF01-0-090914	1/1	-	0.000060	0.000050	0.16	NC	NBA		NO	BSL
	7440246	Strontium	16.5	17.1	ug/L	AR9-00-SWCHUF01-0-090914	1/1	-	17.1	15.6	930	NC	NBA		NO	BSL

Notes/sources:

(1) Maximum detected concentration used for screening.

(2) Background surface water value based on maximum detected concentration.

(3) Risk-based residential tapwater concentrations obtained from the Regional Screening Level (RSL) Table (May, 2012).

Surrogate screening values used:

- Mercuric chloride value used for divalent mercury.

BSL = below screening level.

µg/L = Micrograms per liter.

NBA = no screening benchmark available.

NC = Noncancer based screening value set at a target hazard quotient of 0.1.

NH WQS = New Hampshire Water Quality Standard.

TABLE A-2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - VAPOR INTRUSION EXPOSURE PATHWAY - SHALLOW GROUNDWATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (N/C) (2)	COPC Flag (Y/N)	Rationale for Selection or Deletion
Area A - Groundwater	92524	1,1'-Biphenyl	0.17	0.32	µg/L	MW-02-1110-01A	4/36	5-5	0.3	NA	33	NO	BSL
	75354	1,1-Dichloroethene	1.4	1.4	µg/L	MW-11A-1110-01A	1/36	5-5	1.4	NA	196	NO	BSL
	75150	Carbon disulfide	0.66	5.1	µg/L	MW-28B1-1110-01A	3/36	5-5	5.1	NA	1240	NO	BSL
	56235	Carbon tetrachloride	4.4	6.0	µg/L	MW-11A-1005-1610	2/36	5-5	6.0	NA	0.36	YES	ASL
	67663	Chloroform	1.3	1000	µg/L	MW-10B-1006-1355	16/36	5-5	1000	NA	0.71	YES	ASL
	156592	cis-1,2-Dichloroethene	0.17	5.0	µg/L	MW-6-1006-1010	15/36	5-5	5.0	NA	NBA	YES	NBA
	100414	Ethylbenzene	0.11	0.1	µg/L	MW-02-1110-01A	2/36	5-5	0.1	NA	3.0	NO	BSL
	87683	Hexachlorobutadiene	0.29	3.7	µg/L	MW-26B1-1009-0830	6/36	5-5	3.7	NA	NBA	YES	NBA
	179601231	m,p-Xylene	0.41	0.4	µg/L	DUP-1110-01C	2/36	5-5	0.4	NA	493	NO	BSL
	75092	Methylene chloride	58	58	µg/L	MW-10B-1006-1355	1/36	5-5	58	NA	723	NO	BSL
	95476	o-Xylene	0.19	0.2	µg/L	MW-13A-1110-01A	2/36	5-5	0.2	NA	493	NO	BSL
	127184	Tetrachloroethene	0.10	73	µg/L	MW-26B1-1009-0830	12/36	5-5	73	NA	13	YES	ASL
	108883	Toluene	0.34	1.1	µg/L	MW-15-1007-1600	4/36	5-5	1.1	NA	19212	NO	BSL
	156605	trans-1,2-Dichloroethene	0.19	3.5	µg/L	MW-28B1-1110-01A	5/36	5-5	3.5	NA	375	NO	BSL
	79016	Trichloroethene	0.10	41	µg/L	MW-26B1-1009-0830	18/36	5-5	41	NA	1.1	YES	ASL
	75014	Vinyl Chloride	0.91	0.91	µg/L	MW-6-1006-1010	1/36	5-5	0.9	NA	0.14	YES	ASL
	91203	Naphthalene	0.16	2.6	µg/L	MW-2-1008-1445	10/36	1.5-5	2.6	NA	4.0	NO	BSL
	7439976	Mercury	0.095	114	µg/L	MW-26B1-1009-0830	44/72	0.2-0.2	114	NA	0.67	YES	ASL
Area B - Groundwater	541731	1,3-Dichlorobenzene	1.2	1.2	µg/L	MW-35O1-1110-01A	1/15	5-5	1.2	NA	NBA	YES	NBA
	106467	1,4-Dichlorobenzene	0.22	0.2	µg/L	MW-35O1-1110-01A	1/15	5-5	0.2	NA	2.2	NO	BSL
	56235	Carbon tetrachloride	0.36	0.36	µg/L	MW-35O1-1110-01A	1/15	5-5	0.4	NA	0.36	YES	ASL
	156592	cis-1,2-Dichloroethene	0.70	1.2	µg/L	MW-12-1005-1600	2/15	5-5	1.2	NA	NBA	YES	NBA
	127184	Tetrachloroethene	1.2	2.8	µg/L	MW-35O1-1110-01A	2/15	5-5	2.8	NA	12.9	NO	BSL
	156605	trans-1,2-Dichloroethene	0.63	0.63	µg/L	MW-35O1-1110-01A	1/15	5-5	0.6	NA	375	NO	BSL
	79016	Trichloroethene	0.89	1.7	µg/L	MW-35O1-1110-01A	2/15	5-5	1.7	NA	1.1	YES	ASL
	7439976	Mercury	0.11	0.11	µg/L	MW-18A-1008-1535	1/30	0.2-0.2	0.11	NA	0.67	NO	BSL
Area C - Groundwater	71432	Benzene	1.0	1.0	µg/L	MW-32B1-1110-01A	1/3	5-5	1.0	NA	1.4	NO	BSL

Notes/sources:

(1) Maximum detected concentration used for screening.

(2) EPA Residential Vapor Intrusion Screening Levels (VISLs) (May, 2012).

ASL = above screening level.

BSL = below screening level.

C = Cancer based screening value set at a target risk of 1E-06.

NA = Not Available.

NBA = no screening benchmark available.

NC = Noncancer based screening value set at a target hazard quotient of 1.0.

TABLE A-2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - GROUNDWATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	Potential TBC Value	Potential TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
Groundwater	92524	1,1'-Biphenyl	0.17	0.49	µg/L	MW-8-1007-1600	7/135	5-5	0.49	NA	0.083	NC	350	NH WQS	NBA		YES	ASL
	75354	1,1-Dichloroethene	1.4	1.4	µg/L	MW-11A-1110-01A	1/133	5-500	1.4	NA	26	NC	7	NH WQS	7	MCL	NO	BSL
	541731	1,3-Dichlorobenzene	1.2	1.2	µg/L	MW-35O1-1110-01A	1/132	5-500	1.2	NA	NBA		600	NH WQS	NBA		YES	NBA
	106467	1,4-Dichlorobenzene	0.22	0.2	µg/L	MW-35O1-1110-01A	1/132	5-500	0.2	NA	0.42	C	75	NH WQS	75	MCL	NO	BSL
	78933	2-Butanone	5.4	33	µg/L	MW-24B2-1007-1510	11/137	10-1000	33	NA	490	NC	4000	NH WQS	NBA		NO	BSL
	67641	Acetone	12	73	µg/L	MW-25B1-0611-02A	14/137	10-1000	73	NA	1200	NC	6000	NH WQS	NBA		NO	BSL
	71432	Benzene	0.85	4.6	µg/L	MW-35B1-1110-01A	3/132	5-500	4.6	NA	0.39	C	5	NH WQS	5	MCL	YES	ASL
	75252	Bromoform	2.2	2.2	µg/L	MW-21-0611-01A	1/126	5-500	2.2	NA	7.9	C	4	NH WQS	80	MCL	NO	BSL
	75150	Carbon disulfide	0.44	260000	µg/L	MW-34B1-1110-02A	23/137	5-5	260000	NA	72	NC	70	NH WQS	NBA		YES	ASL
	56235	Carbon tetrachloride	0.36	16000	µg/L	MW-34B1-1110-02A	15/137	5-250	16000	NA	0.39	C	5	NH WQS	5	MCL	YES	ASL
	67663	Chloroform	1.1	100000	µg/L	MW-34B1-1110-02A	78/137	5-5.8	100000	NA	0.19	C	70	NH WQS	80	MCL	YES	ASL
	156592	cis-1,2-Dichloroethene	0.15	11	µg/L	MW-11B-1006-0945	32/137	5-500	11	NA	2.8	NC	70	NH WQS	70	MCL	YES	ASL
	100414	Ethylbenzene	0.11	0.1	µg/L	DUP-1110-01C	2/132	5-500	0.1	NA	1.3	C	700	NH WQS	700	MCL	NO	BSL
	87683	Hexachlorobutadiene	0.16	8.4	µg/L	MW-8-1007-1600	24/135	5-5	8.4	NA	0.26	C	0.5	NH WQS	NBA		YES	ASL
	67721	Hexachloroethane	2.4	42	µg/L	MW-34B1-1110-02A	4/135	5-5	42	NA	0.51	NC	1	NH WQS	NBA		YES	ASL
	98828	Isopropylbenzene	5.5	5.5	µg/L	MW-20B-1007-1305	1/132	5-500	5.5	NA	39	NC	800	NH WQS	NBA		NO	BSL
	179601231	m,p-Xylene	0.10	0.4	µg/L	DUP-1110-01C	5/132	5-500	0.4	NA	19	NC	10000	NH WQS	10000	MCL	NO	BSL
	75092	Methylene chloride	0.82	70	µg/L	MW-35B1-0611-02A	8/137	5-500	70	NA	8.4	NC	5	NH WQS	5	MCL	YES	ASL
	95476	o-Xylene	0.19	0.2	µg/L	MW-13A-1110-01A	2/132	5-500	0.2	NA	19	NC	10000	NH WQS	NBA		NO	BSL
	127184	Tetrachloroethene	0.10	310	µg/L	MW-8-1007-1600	51/137	5-500	310	NA	3.5	NC	5	NH WQS	5	MCL	YES	ASL
	108883	Toluene	0.34	24	µg/L	MW-24B2-1007-1510	17/132	5-500	24	NA	86	NC	1000	NH WQS	1000	MCL	NO	BSL
	156605	trans-1,2-Dichloroethene	0.12	3.6	µg/L	MW-28B1-1110-02A	22/137	5-500	3.6	NA	8.6	NC	100	NH WQS	100	MCL	NO	BSL
	79016	Trichloroethene	0.10	130	µg/L	MW-8-1007-1600	60/137	5-500	130	NA	0.26	NC	5	NH WQS	5	MCL	YES	ASL
	75014	Vinyl chloride	0.91	0.91	µg/L	MW-6-1006-1010	1/137	5-500	0.91	NA	0.015	C	2	NH WQS	2	MCL	YES	ASL
	58902	2,3,4,6-Tetrachlorophenol	0.18	0.18	µg/L	MW-24B2-1008-1450	1/135	5-5	0.18	NA	17	NC	200	NH WQS	NBA		NO	BSL
	95954	2,4,5-Trichlorophenol	0.17	0.17	µg/L	MW-24B1-1110-01A	1/135	5-5	0.17	NA	89	NC	700	NH WQS	NBA		NO	BSL
	88062	2,4,6-Trichlorophenol	0.16	5.2	µg/L	MW-14R-0611-01A	10/135	5-5	5.2	NA	0.9	NC	5	NH WQS	NBA		YES	ASL
	120832	2,4-Dichlorophenol	1.4	1.4	µg/L	MW-14R-0611-01A	1/135	5-5	1.4	NA	3.5	NC	21	NH WQS	NBA		NO	BSL
	105679	2,4-Dimethylphenol	0.85	0.85	µg/L	MW-20B-1007-1205	1/135	5-5	0.85	NA	27	NC	140	NH WQS	NBA		NO	BSL
	95578	2-Chlorophenol	0.16	2.0	µg/L	MW-14R-0611-01A	20/135	5-5	2.0	NA	7.1	NC	35	NH WQS	NBA		NO	BSL
	95487	2-Methylphenol	0.15	1.2	µg/L	MW-20B-1007-1205	10/135	5-5	1.2	NA	72	NC	40	NH WQS	NBA		NO	BSL
	534521	4,6-Dinitro-2-methylphenol	0.17	0.17	µg/L	MW-33B1-1110-02A	1/135	10-10	0.17	NA	0.12	NC	NBA		NBA		YES	ASL
	59507	4-Chloro-3-methylphenol	0.34	1.7	µg/L	MW-40B1-0611-03A	8/135	5-5	1.7	NA	110	NC	NBA		NBA		NO	BSL
	106445	4-Methylphenol	0.20	890	µg/L	MW-20B-1007-1205	53/135	5-5	890	NA	140	NC	40	NH WQS	NBA		YES	ASL
	100027	4-Nitrophenol	0.16	0.16	µg/L	MW-33B1-1110-02A	1/133	10-10	0.16	NA	NBA		NBA		NBA		YES	NBA
	117817	Bis(2-ethylhexyl)phthalate	0.15	4.3	µg/L	MW-18B-0611-01A	38/135	5-5	4.3	NA	0.071	C	6	NH WQS	6	MCL	YES	ASL
	85687	Butylbenzylphthalate	1.1	1.1	µg/L	MW-36O1-0611-01A	1/135	5-5	1.1	NA	14	C	NBA		NBA		NO	BSL
	105602	Caprolactam	0.19	320	µg/L	MW-26B2-0611-02A	55/135	5-5	320	NA	770	NC	NBA		NBA		NO	BSL
	132649	Dibenzofuran	0.16	1.6	µg/L	MW-08-1110-01A	28/135	5-5	1.6	NA	0.58	NC	NBA		NBA		YES	ASL

TABLE A-2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - GROUNDWATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	Potential TBC Value	Potential TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
Groundwater	84662	Diethylphthalate	0.17	0.53	µg/L	MW-34B1-1110-02A	2/135	5-5	0.53	NA	1100	NC	NBA		NBA		NO	BSL
(continued)	131113	Dimethylphthalate	1.4	5.4	µg/L	MW-34B1-1110-02A	4/135	5-5	5.4	NA	NBA		50000	NH WQS	NBA		YES	NBA
	84742	Di-n-butyl phthalate	0.19	2.7	µg/L	MW-34B1-1110-02A	7/135	1.5-5	2.7	NA	67	NC	800	NH WQS	NBA		NO	BSL
	117840	Di-n-octyl phthalate	0.35	0.35	µg/L	MW-33B1-1110-02A	1/135	5-5	0.35	NA	NBA		NBA		NBA		YES	NBA
	621647	n-Nitroso-di-n-propylamine	0.52	1.3	µg/L	MW-33B1-1110-02A	2/135	5-5	1.3	NA	0.0093	C	NBA		NBA		YES	ASL
	86306	n-Nitrosodiphenylamine	0.16	90	µg/L	MW-26B1-1012-1130	15/135	5-5	90	NA	10	C	NBA		NBA		YES	ASL
	87865	Pentachlorophenol	0.16	1.3	µg/L	MW-08-1110-01A	12/135	0.3-10	1.3	NA	0.17	C	1	NH WQS	1	MCL	YES	ASL
	108952	Phenol	0.19	780	µg/L	MW-20B-1007-1205	38/135	5-9.6	780	NA	450	NC	4000	NH WQS	NBA		YES	ASL
	91587	2-Chloronaphthalene	0.25	0.41	µg/L	MW-2-1008-1445	2/135	5-5	0.41	NA	55	NC	NBA		NBA		NO	BSL
	91576	2-Methylnaphthalene	0.17	1.6	µg/L	MW-08-1110-01A	25/135	5-5	1.6	NA	2.7	NC	280	NH WQS	NBA		NO	BSL
	83329	Acenaphthene	0.15	2.4	µg/L	MW-33B1-0611-02A	21/135	5-5	2.4	NA	40	NC	420	NH WQS	NBA		NO	BSL
	208968	Acenaphthylene	0.16	0.23	µg/L	DUP-02-1008-1055A	2/135	5-5	0.23	NA	40	NC	420	NH WQS	NBA		NO	BSL
	120127	Anthracene	0.16	0.7	µg/L	DUP-02-1008-1055A	11/135	5-5	0.7	NA	130	NC	2100	NH WQS	NBA		NO	BSL
	56553	Benzo(a)anthracene	0.15	0.78	µg/L	MW-06-1110-01A	5/135	5-5	0.78	NA	0.029	C	0.1	NH WQS	NBA		YES	ASL
	50328	Benzo(a)pyrene	0.16	0.23	µg/L	MW-16B-1006-1155	3/135	5-5	0.23	NA	0.0029	C	0.2	NH WQS	0.2	MCL	YES	ASL
	207089	Benzo(k)fluoranthene	0.16	0.22	µg/L	MW-2-1008-1445	3/135	5-5	0.22	NA	0.29	C	0.5	NH WQS	NBA		NO	BSL
	86748	Carbazole	0.15	1.2	µg/L	MW-2-1008-1445	23/135	5-5	1.2	NA	NBA		NBA		NBA		YES	NBA
	218019	Chrysene	0.16	0.58	µg/L	MW-06-1110-01A	3/135	5-5	0.58	NA	2.9	C	5	NH WQS	NBA		NO	BSL
	206440	Fluoranthene	0.17	2.8	µg/L	DUP-02-1008-1055A	17/135	5-5	2.8	NA	63	NC	280	NH WQS	NBA		NO	BSL
	86737	Fluorene	0.16	4.1	µg/L	DUP-02-1008-1055A	19/135	5-5	4.1	NA	22	NC	280	NH WQS	NBA		NO	BSL
	91203	Naphthalene	0.16	5.9	µg/L	MW-08-1110-01A	40/135	1.5-5	5.9	NA	0.14	C	20	NH WQS	NBA		YES	ASL
	85018	Phenanthrene	0.15	3.5	µg/L	MW-02-1110-01A	46/135	2.2-5	3.5	NA	130	NC	210	NH WQS	NBA		NO	BSL
	129000	Pyrene	0.16	1.5	µg/L	DUP-02-1008-1055A	23/135	5-5	1.5	NA	8.7	NC	210	NH WQS	NBA		NO	BSL
	---	2,3,7,8-TCDD TEQ	0.00000062	0.0014	µg/L	MW-24OB-1013-1125	76/116	0.00000036-0.0000093	0.0014	NA	0.00000052	C	NBA		0.00003	MCL	YES	ASL
	72559	4,4'-DDE	0.0026	0.12	µg/L	MW-24OB-1110-01A	4/100	0.1-0.1	0.12	NA	0.2	C	0.1	NH WQS	NBA		NO	BSL
	50293	4,4'-DDT	0.0031	0.17	µg/L	MW-24OB-1110-01A	4/100	0.1-0.1	0.17	NA	0.2	C	0.1	NH WQS	NBA		NO	BSL
	309002	Aldrin	0.0064	0.29	µg/L	MW-34B1-0611-01A	11/99	0.05-0.05	0.29	NA	0.00021	C	0.1	NH WQS	NBA		YES	ASL
	319846	alpha-BHC	0.00031	0.10	µg/L	MW-13A-1110-01A	9/100	0.05-0.05	0.10	NA	0.0062	C	0.1	NH WQS	NBA		YES	ASL
	5103719	alpha-Chlordane	0.0018	0.69	µg/L	MW-34B1-0611-02A	2/99	0.05-0.05	0.69	NA	0.027	C	2	NH WQS	2	MCL	YES	ASL
	319857	beta-BHC	0.0033	0.019	µg/L	MW-13A-1110-01A	13/98	0.05-0.05	0.019	NA	0.022	C	0.1	NH WQS	NBA		NO	BSL
	319868	delta-BHC	0.0057	0.021	µg/L	MW-08-1110-01A	2/99	0.05-0.05	0.021	NA	NBA		NBA		NBA		YES	NBA
	60571	Dieldrin	0.0012	0.053	µg/L	MW-34B1-1110-01A	11/99	0.1-0.1	0.053	NA	0.0015	C	0.1	NH WQS	NBA		YES	ASL
	959988	Endosulfan I	0.00070	0.041	µg/L	MW-40B1-0611-01A	5/99	0.033-0.05	0.041	NA	7.8	NC	42	NH WQS	NBA		NO	BSL
	72208	Endrin	0.029	0.029	µg/L	MW-11B-1110-01A	1/100	0.1-0.1	0.029	NA	0.17	NC	2	NH WQS	2	MCL	NO	BSL
	7421934	Endrin aldehyde	0.0061	0.0080	µg/L	MW-26B2-1110-01A	2/100	0.1-0.1	0.0080	NA	0.17	NC	2	NH WQS	2	MCL	NO	BSL
	58899	gamma-BHC	0.012	0.29	µg/L	MW-34B1-0611-01A	2/99	0.05-0.05	0.29	NA	0.036	C	0.2	NH WQS	0.2	MCL	YES	ASL
	5103742	gamma-Chlordane	0.0034	0.0068	µg/L	MW-11B-1110-01A	2/96	0.05-0.05	0.0068	NA	0.027	C	2	NH WQS	2	MCL	NO	BSL
	76448	Heptachlor	0.0019	0.016	µg/L	MW-11B-1110-01A	8/98	0.05-0.05	0.016	NA	0.0018	C	0.4	NH WQS	0.4	MCL	YES	ASL
	1024573	Heptachlor Epoxide	0.0011	0.097	µg/L	MW-24OB-0611-01A	22/99	0.029-0.068	0.097	NA	0.0033	C	0.2	NH WQS	0.2	MCL	YES	ASL
	---	Total PCB Homologs	0.0000026	7.36	µg/L	MW-24OB-1013-1125	94/112	0.000503-0.0148	7.36	NA	0.17	C	0.5	NH WQS	0.5	MCL	YES	ASL
	---	PCB Dioxin-like Congener TEQ	0.0000000017	0.000037	µg/L	MW-24OB-1013-1125	81/115	0.0000000017-0.000000085	0.000037	NA	0.00000052	C	NBA		0.00003	MCL	YES	ASL
	14797730	Perchlorate	0.015	7.9	µg/L	MW-24B2-1008-1450	20/37	0.05-5	7.9	NA	1.1	NC	NBA		15	MCL	YES	ASL
	7429905	Aluminum	37.1	14500	µg/L	MW-24OB-1013-1125	118/272	200-2000	14500	NA	1600	NC	NBA		NBA		YES	ASL
	7440360	Antimony	2.0	17.9	µg/L	MW-7-1008-1205	50/251	1-4.3	17.9	NA	0.6	NC	6	NH WQS	6	MCL	YES	ASL

TABLE A-2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - GROUNDWATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	Potential TBC Value	Potential TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
	7440382	Arsenic	2.1	135	µg/L	MW-14R-0611-01A	141/270	10-100	135	NA	0.045	C	10	NH WQS	10	MCL	YES	ASL
	7440393	Barium	5.1	1410	µg/L	MW-40B1-0611-01A	266/274	200-200	1410	NA	290	NC	2000	NH WQS	2000	MCL	YES	ASL
	7440417	Beryllium	0.015	2.8	µg/L	MW-20B-1007-1305	75/274	1-2	2.8	NA	1.6	NC	4	NH WQS	4	MCL	YES	ASL
	7440439	Cadmium	0.16	5.0	µg/L	MW-14R-0611-01A	85/261	5-50	5.0	NA	0.69	NC	5	NH WQS	5	MCL	YES	ASL
	7440702	Calcium	1540	615000	µg/L	MW-40B1-0611-01A	272/274	5-5000	615000	NA	NUT		NBA		NBA		NO	NUT
	7440473	Chromium	0.30	251	µg/L	MW-20B-1007-1305	134/274	10-100	251	NA	0.031	C	100	NH WQS	NBA		YES	ASL
	7440484	Cobalt	0.28	36	µg/L	MW-24B1-1006-1600	67/274	50-500	36	NA	0.47	NC	NBA		NBA		YES	ASL
	7440508	Copper	0.64	430	µg/L	MW-28B1-1110-03A	129/274	25-250	430	NA	62	NC	1300	NH WQS	1300	MCL	NO	See Text
	7439896	Iron	56.7	176000	µg/L	MW-34B1-0611-01A	263/274	100-1200	176000	NA	1100	NC	NBA		NBA		YES	ASL
	7439921	Lead	1.2	156	µg/L	MW-24OB-1013-1125	121/272	10-100	156	NA	NBA		15	NH WQS	15	MCL	YES	NBA
	7439954	Magnesium	52.6	46450	µg/L	MW-34B1-1110-01A	204/274	5000-50000	46450	NA	NUT		NBA		NBA		NO	NUT
	7439965	Manganese	2.3	15400	µg/L	MW-34B1-0611-02A	265/274	15-150	15400	NA	32	NC	840	NH WQS	NBA		YES	ASL
	7439976	Mercury	0.028	134	µg/L	MW-08-1110-01A	152/274	0.2-0.2	134	NA	0.063	NC	2	NH WQS	2	MCL	YES	ASL
	7440020	Nickel	0.56	198	µg/L	MW-20B-1007-1305	124/274	40-400	198	NA	30	NC	100	NH WQS	NBA		YES	ASL
	7440097	Potassium	941	60900	µg/L	MW-24B2-1007-1510	261/274	5000-9400	60900	NA	NUT		35000	NH WQS	NBA		NO	NUT
	7782492	Selenium	1.1	114	µg/L	MW-14R-0611-01A	90/274	35-350	114	NA	7.8	NC	50	NH WQS	50	MCL	YES	ASL
	7440224	Silver	0.33	13.8	µg/L	MW-26B1-1110-02A	106/205	10-100	13.8	NA	7.1	NC	100	NH WQS	NBA		YES	ASL
	7440235	Sodium	2660	13900000	µg/L	MW-14R-0611-01A	274/274	-	13900000	NA	NUT		NBA		NBA		NO	NUT
Groundwater	7440280	Thallium	0.082	0.4	µg/L	MW-24OB-1013-1125	7/274	1-2	0.4	NA	0.016	NC	2	NH WQS	2	MCL	YES	ASL
(continued)	7440622	Vanadium	0.75	607	µg/L	MW-20B-1007-1305	169/274	50-50	607	NA	7.8	NC	NBA		NBA		YES	ASL
	7440666	Zinc	0.97	1803	µg/L	MW-34B1-1110-02A	131/268	60-600	1803	NA	470	NC	NBA		NBA		YES	ASL

Notes/sources:

(1) Maximum detected concentration used for screening.

(2) Risk-based groundwater concentrations obtained from the Regional Screening Level (RSL) Table vales for tapwater (May, 2012).

Surrogate screening values used:

- Endosulfan value used for Endosulfan I.
- Endrin value used for Endrin aldehyde.
- Acenaphthene value used for acenaphthylene.
- Anthracene value used for phenanthrene.
- Chlordane value used for alpha-chlordane and gamma-chlordane.
- Mercuric chloride value used for divalent mercury.

ASL = above screening level.
BSL = below screening level.
C = Cancer based screening value set at a target risk of 1E-06.
MCL = Maximum Contaminant Level.
NA = Not Available.
NBA = no screening benchmark available.
NC = Noncancer based screening value set at a target hazard quotient of 0.1.
NUT = Essential nutrient.
NH WQS = New Hampshire Water Quality Standard.

TABLE A-2.7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CONTAMINANTS OF POTENTIAL CONCERN - FISH TISSUE
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Fish
Exposure Medium: Fish Tissue

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)		COPC Flag (Y/N)	Rationale for Selection or Deletion
Androscoggin River	118741	Hexachlorobenzene	0.0010	0.0010	mg/kg	AR4-00-FFSBSO01-0-090826	1/20	0.00094-0.002	0.0010	NA	0.0020	C	NO	BSL
	105602	Caprolactam	0.18	0.43	mg/kg	AR9-00-FFSBSO06-0-090825	5/20	0.092-0.1	0.43	NA	68	NC	NO	BSL
	108952	Phenol	0.047	0.047	mg/kg	AR9-00-FFSBSO02-0-090825	1/20	0.046-0.05	0.047	NA	41	NC	NO	BSL
	91576	2-Methylnaphthalene	0.0043	0.0051	mg/kg	AR7-00-FFSBSO03-0-090827	2/20	0.019-0.02	0.0051	NA	0.54	NC	NO	BSL
	83329	Acenaphthene	0.0019	0.0031	mg/kg	AR9-00-FFSBSO02-0-090825	4/20	0.019-0.02	0.0031	NA	8.1	NC	NO	BSL
	191242	Benzo(g,h,i)perylene	0.0051	0.0051	mg/kg	AR3-00-FFSBSO02-0-090827	1/20	0.019-0.02	0.0051	NA	2.7	NC	NO	BSL
	86737	Fluorene	0.0025	0.0048	mg/kg	AR9-00-FFSBSO04-1-090825	6/20	0.019-0.02	0.0048	NA	5.4	NC	NO	BSL
	193395	Indeno(1,2,3-cd)pyrene	0.0072	0.0072	mg/kg	AR3-00-FFSBSO02-0-090827	1/20	0.019-0.02	0.0072	NA	0.0043	C	YES	ASL
	91203	Naphthalene	0.0051	0.0082	mg/kg	AR7-00-FFSBSO03-0-090827	3/20	0.019-0.02	0.0082	NA	2.7	NC	NO	BSL
	85018	Phenanthrene	0.0027	0.011	mg/kg	AR9-00-FFSBSO02-0-090825	15/20	0.02-0.02	0.011	NA	41	NC	NO	BSL
	---	2,3,7,8-TCDD TEQ	0.00000055	0.0000070	mg/kg	AR8-00-FFSBSO01-0-090826	20/20	-	0.0000070	0.00000093	0.000000024	C	YES	ASL
	72559	4,4'-DDE	0.0020	0.0079	mg/kg	AR9-00-FFSBSO02-0-090825	13/20	0.00099-0.002	0.0079	0.0032	0.0093	C	NO	BSL
	50293	4,4'-DDT	0.0017	0.21	mg/kg	AR4-00-FFSBSO01-0-090826	17/20	0.0066-0.013	0.21	NA	0.0093	C	YES	ASL
	319857	beta-BHC	0.00083	0.0039	mg/kg	AR9-00-FFSBSO02-0-090825	5/20	0.00096-0.002	0.0039	NA	0.0018	C	YES	ASL
	959988	Endosulfan I	0.00034	0.00053	mg/kg	AR4-00-FFSBSO01-0-090826	2/20	0.00094-0.002	0.00053	NA	0.81	NC	NO	BSL
	33213659	Endosulfan II	0.00038	0.0016	mg/kg	AR8-00-FFSBSO01-0-090826	11/20	0.00099-0.0027	0.0016	NA	0.81	NC	NO	BSL
	5103742	gamma-Chlordane	0.00051	0.0058	mg/kg	AR8-00-FFSBSO01-0-090826	14/20	0.0017-0.002	0.0058	NA	0.0090	C	NO	BSL
	53190	o,p'-DDD	0.0012	0.056	mg/kg	AR4-00-FFSBSO01-0-090826	12/20	0.00099-0.002	0.056	NA	NBA		YES	NBA
	39765805	trans-Nonachlor	0.00097	0.0013	mg/kg	AR9-00-FFSBSO02-0-090825	2/20	0.00094-0.002	0.0013	NA	NBA		YES	NBA
	---	PCB Dioxin-like Congener TEQ	0.00000099	0.000071	mg/kg	AR4-00-FFSBSO01-0-090826	20/20	-	0.000071	0.00000083	0.000000024	C	YES	ASL
	---	Total PCBs	0.019	3.2	mg/kg	AR4-00-FFSBSO01-0-090826	20/20	-	3.2	0.012	0.0016	C	YES	ASL
	7440382	Arsenic	0.017	0.55	mg/kg	AR7-00-FFSBSR04-0-090827	22/22	-	0.55	0.12	0.0021	C	YES	ASL
	7440417	Beryllium	0.0047	0.0047	mg/kg	AR9-00-FFSBSR05-0-090825	1/22	0.0035-0.0047	0.0047	NA	0.27	NC	NO	BSL
	7440439	Cadmium	0.0014	0.0025	mg/kg	AR3-00-FFSBSR05-0-090827	3/22	0.0035-0.0047	0.0025	0.0014	0.14	NC	NO	BSL
	7440473	Chromium	0.029	0.49	mg/kg	AR7-00-FFSBSR04-0-090827	16/22	0.035-0.118	0.49	0.089	0.0063	C	YES	ASL
	7440508	Copper	0.16	0.35	mg/kg	AR9-00-FFSBSR08-0-090825	22/22	-	0.35	0.24	5.4	NC	NO	See Text
	7439921	Lead	0.0010	0.010	mg/kg	AR7-00-FFSBSR02-0-090827	15/22	0.0035-0.0045	0.010	0.047	NBA		YES	NBA
	7439976	Mercury	0.25	1.2	mg/kg	AR7-0-FFSMBSR01	37/37	-	1.2	0.56	0.014	NC	YES	ASL
	7440020	Nickel	0.0050	0.14	mg/kg	AR9-00-FFSBSR05-0-090825	19/22	0.035-0.043	0.14	0.048	2.7	NC	NO	BSL
	7782492	Selenium	0.18	0.52	mg/kg	AR3-00-FFSBSR05-0-090827	22/22	-	0.52	0.30	0.68	NC	NO	BSL
	7440246	Strontium	0.069	9.9	mg/kg	AR9-00-FFSBSR05-0-090825	22/22	-	9.9	1.1	81	NC	NO	BSL
	7440622	Vanadium	0.012	0.055	mg/kg	AR8-00-FFSBSR02-0-090826	22/22	-	0.055	0.021	0.68	NC	NO	BSL
	7440666	Zinc	3.1	5.6	mg/kg	AR9-00-FFSBSR05-0-090825	22/22	-	5.6	4.1	41	NC	NO	BSL

Notes/sources:

(1) Maximum detected concentration used for screening.

(2) Background fish tissue value based on maximum detected concentration.

(3) Risk-based fish tissue concentrations obtained from the Region 3 Fish Tissue Screening Levels Table (May, 2012).

Surrogate screening values used:

- Endosulfan value used for Endosulfan I and Endosulfan II.
- Chlordane value used for gamma-chlordane.
- Naphthene value used for benzo(g,h,i)perylene.
- Anthracene value used for phenanthrene.
- Methylmercury value used for mercury.

ASL = above screening level.

BSL = below screening level.

C = Cancer based screening value set at a target risk of 1E-06.

mg/kg = Milligrams per kilogram.

NA = Not Available.

NBA = no screening benchmark available.

NC = Noncancer based screening value set at a target hazard quotient of 0.1.

TABLE A-3.1
EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface soil 0-1 ft bgs

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
CHP Surface soil	Benzo(a)anthracene	mg/kg	1.2	1.671 (N)	2.4	1.7	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Benzo(a)pyrene	mg/kg	1.1	1.526 (N)	2.3	1.5	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Benzo(b)fluoranthene	mg/kg	1.0	1.649 (N)	2.5	1.6	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Benzo(k)fluoranthene	mg/kg	1.0	1.529 (N)	2.7	1.5	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Carbazole	mg/kg	0.10	0.121 (N)	0.17	0.12	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Dibenz(a,h)anthracene	mg/kg	0.28	0.414 (N)	0.58	0.41	mg/kg	95% Student's-t UCL	ProUCL Recommendation
	Indeno(1,2,3-cd)pyrene	mg/kg	0.62	0.863 (N)	1.2	0.86	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Dichloronaphthalene, Total	mg/kg	0.38	Not Determined	0.41	0.41	mg/kg	Maximum	See footnote.
	Pentachloronaphthalene, Total	mg/kg	0.41	Not Determined	0.93	0.30	mg/kg	Median	At least 8 samples but less than 4 detected samples
	Tetrachloronaphthalene, Total	mg/kg	0.63	Not Determined	2.5	0.47	mg/kg	Median	At least 8 samples but less than 4 detected samples
	Trichloronaphthalene, Total	mg/kg	0.37	Not Determined	0.76	0.17	mg/kg	Median	At least 8 samples but less than 4 detected samples
	2,3,7,8-TCDD TEQ	mg/kg	0.0074	0.0491 (ND)	0.061	0.049	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Total PCB Homologs	mg/kg	0.70	1.057 (N)	1.84	1.1	mg/kg	95% Student's-t UCL	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.000014	0.00001902 (N)	0.000028	0.000019	mg/kg	95% Student's-t UCL	ProUCL Recommendation
	Antimony	mg/Kg	3.8	2.948 (N)	3.3	2.9	mg/Kg	95% KM (t) UCL	ProUCL Recommendation
	Arsenic	mg/Kg	91	602.5 (ND)	828	602.5	mg/Kg	97.5% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Chromium	mg/Kg	11	15.31 (ND)	29.7	15	mg/Kg	95% Modified-t UCL	ProUCL Recommendation
	Cobalt	mg/Kg	8.6	12.03 (G)	18.5	12	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Iron	mg/Kg	16286	21476 (G)	39100	21476	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Manganese	mg/Kg	190	219.4 (N)	271	219	mg/Kg	95% Student's-t UCL	ProUCL Recommendation
	Mercury	mg/Kg	31	144.9 (ND)	147	145	mg/Kg	97.5% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
SFSA Surface Soil	Benzo(a)anthracene	mg/kg	1.0	1.921 (G)	5	1.9	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(a)pyrene	mg/kg	1.0	1.819 (G)	4.3	1.8	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(b)fluoranthene	mg/kg	1.0	1.856 (G)	4.5	1.9	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(g,h,i)perylene	mg/kg	0.74	1.456 (G)	3.7	1.5	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(k)fluoranthene	mg/kg	0.86	1.545 (G)	3.5	1.5	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Carbazole	mg/kg	0.22	0.234 (ND)	1.2	0.23	mg/kg	95% KM (% Bootstrap) UCL	ProUCL Recommendation
	Dibenz(a,h)anthracene	mg/kg	0.35	0.437 (L)	1.6	0.44	mg/kg	95% KM (BCA) UCL	ProUCL Recommendation
	Indeno(1,2,3-cd)pyrene	mg/kg	0.75	1.723 (L)	3.5	1.7	mg/kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	2,3,7,8-TCDD TEQ	mg/kg	0.000057	0.00008842 (G)	0.00047	0.000088	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Total PCB Homologs	mg/kg	0.92	1.586 (G)	4.8	1.6	mg/kg	95% Adjusted Gamma UCL	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.000025	0.00004099 (G)	0.00018	0.000041	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Aluminum	mg/Kg	4543.5	4932 (N)	7822	4932	mg/Kg	95% Student's-t UCL	ProUCL Recommendation
	Antimony	mg/Kg	31	125.9 (ND)	580	126	mg/Kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Arsenic	mg/Kg	29	61.85 (ND)	281	62	mg/Kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Chromium	mg/Kg	15	22.52 (ND)	54.3	23	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Cobalt	mg/Kg	6.7	7.844 (ND)	29.7	7.8	mg/Kg	95% Modified-t UCL	ProUCL Recommendation
	Iron	mg/Kg	28259	55194 (ND)	235011	55194	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation

TABLE A-3.1
EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface soil 0-1 ft bgs

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
SFSA Surface soil (continued)	Lead	mg/Kg	1068	3502 (ND)	24438	3502	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Manganese	mg/Kg	286	328.5 (G)	780	329	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Mercury	mg/Kg	11	34.95 (L)	125	35	mg/Kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Nickel	mg/Kg	26	59.75 (ND)	342	60	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Vanadium	mg/Kg	23	25.16 (G)	72.7	25	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
EFSA Surface soil	Benzo(a)anthracene	mg/kg	3.9	17.53 (G)	37	18	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(a)pyrene	mg/kg	3.0	12.85 (G)	27	13	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(b)fluoranthene	mg/kg	2.8	11.61 (G)	23	12	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(g,h,i)perylene	mg/kg	1.9	7.793 (G)	16	7.8	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(k)fluoranthene	mg/kg	2.9	12.74 (G)	25	13	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Carbazole	mg/kg	0.58	Not Determined	1.7	0.21	mg/kg	Median	At least 8 samples but less than 4 detected samples
	Chrysene	mg/kg	3.9	17.13 (G)	36	17	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Dibenz(a,h)anthracene	mg/kg	0.66	Not Determined	4.9	0.2	mg/kg	Median	At least 8 samples but less than 4 detected samples
	Indeno(1,2,3-cd)pyrene	mg/kg	2.7	11.53 (G)	25	12	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	2,3,7,8-TCDD TEQ	mg/kg	0.00039	0.00642 (L)	0.0027	0.0027	mg/kg	Maximum	See footnote.
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000027	0.00000668 (G)	0.000020	0.000007	mg/kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Aluminum	mg/Kg	5495	6975 (N)	10774	6975	mg/Kg	95% Student's-t UCL	ProUCL Recommendation
	Antimony	mg/Kg	5.2	10.67 (ND)	16.5	10.7	mg/Kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Arsenic	mg/Kg	10.0	18.32 (G)	38.7	18	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Chromium	mg/Kg	10.3	12.26 (G)	20.2	12	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Cobalt	mg/Kg	5.9	6.668 (N)	8.5	6.7	mg/Kg	95% Student's-t UCL	ProUCL Recommendation
	Iron	mg/Kg	11622	13517 (N)	18552	13517	mg/Kg	95% Student's-t UCL	ProUCL Recommendation
	Lead	mg/Kg	137	553 (ND)	1177	553	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Manganese	mg/Kg	294	379.4 (G)	716	379	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Mercury	mg/Kg	6.8	21.2 (G)	34.4	21	mg/Kg	95% KM (Chebyshev) UCL	ProUCL Recommendation

Note: Maximum detected concentration used as the EPC in instances where n < 8 or detects < 4 and the median value exceeded the maximum detected concentration.

G = Gamma distribution.

L = Lognormal distribution.

N = Normal distribution.

ND = Data distribution is not discernable.

TABLE A-3.2
EXPOSURE POINT CONCENTRATION SUMMARY - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Aggregate soil 0-10 ft bgs

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
CHP Aggregate soil	1,1'-Biphenyl	mg/kg	0.79	Not Determined	19	0.19	mg/kg	Median	At least 8 samples but less than 4 detected samples
	1,3-Dichlorobenzene	mg/kg	0.0069	Not Determined	0.0082	0.0050	mg/kg	Median	At least 8 samples but less than 4 detected samples
	Dibenzofuran	mg/kg	3.7	39.87 (ND)	120	40	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Di-N-Octyl Phthalate	mg/kg	0.38	Not Determined	0.024	0.024	mg/kg	Maximum	See footnote.
	Pentachlorophenol	mg/kg	0.48	Not Determined	2.7	0.37	mg/kg	Median	At least 8 samples but less than 4 detected samples
	2-Methylnaphthalene	mg/kg	1.4	13.88 (L)	41	14	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(a)anthracene	mg/kg	10.9	104.9 (L)	320	105	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(a)pyrene	mg/kg	7.9	75.49 (ND)	230	75	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(b)fluoranthene	mg/kg	9.5	91.83 (L)	280	92	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(g,h,i)perylene	mg/kg	3.5	30.72 (ND)	93	31	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(k)fluoranthene	mg/kg	2.9	20.12 (L)	58	20	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Carbazole	mg/kg	0.94	8.564 (ND)	26	8.6	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Chrysene	mg/kg	10.1	95.21 (L)	290	95	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Dibenz(a,h)anthracene	mg/kg	0.82	5.815 (L)	17	5.8	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Fluoranthene	mg/kg	33.3	335.6 (L)	1000	336	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Indeno(1,2,3-cd)pyrene	mg/kg	3.5	30.53 (ND)	92	31	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Naphthalene	mg/kg	1.4	13.29 (ND)	40	13	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Pyrene	mg/kg	22.2	222 (L)	680	222	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Dichloronaphthalene, Total	mg/kg	0.31	0.142 (N)	0.41	0.14	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Heptachloronaphthalene, Total	mg/kg	0.32	Not Determined	0.21	0.13	mg/kg	Median	At least 8 samples but less than 4 detected samples
	Hexachloronaphthalene, Total	mg/kg	0.33	Not Determined	0.11	0.11	mg/kg	Maximum	See footnote.
	Monochloronaphthalene, Total	mg/kg	0.33	Not Determined	0.058	0.058	mg/kg	Maximum	See footnote.
	Pentachloronaphthalene, Total	mg/kg	0.31	0.305 (ND)	0.93	0.31	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Tetrachloronaphthalene, Total	mg/kg	0.41	0.421 (G)	2.5	0.42	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Trichloronaphthalene, Total	mg/kg	0.30	0.184 (G)	0.76	0.18	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	2,3,7,8-TCDD TEQ	mg/kg	0.015	0.0728 (L)	0.29	0.073	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	4,4'-DDE	mg/kg	3.2	Not Determined	16	16	mg/kg	Maximum	See footnote.
	4,4'-DDT	mg/kg	0.62	Not Determined	3.1	3.1	mg/kg	Maximum	See footnote.
	Aldrin	mg/kg	2.4	Not Determined	12	12	mg/kg	Maximum	See footnote.
	Alpha-BHC	mg/kg	0.34	Not Determined	1.7	1.7	mg/kg	Maximum	See footnote.
	Delta-BHC	mg/kg	0.54	Not Determined	2.7	2.7	mg/kg	Maximum	See footnote.
	Dieldrin	mg/kg	1.7	Not Determined	8.5	8.5	mg/kg	Maximum	See footnote.
	Gamma-BHC (Lindane)	mg/kg	0.28	Not Determined	1.4	1.4	mg/kg	Maximum	See footnote.
	Heptachlor Epoxide	mg/kg	0.94	Not Determined	4.7	4.7	mg/kg	Maximum	See footnote.
	Total PCB Homologs	mg/kg	1.2	3.257 (G)	12.1	3.3	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.000082	0.0007565 (L)	0.0023	0.00076	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Aluminum	mg/Kg	5116	5851 (G)	12000	5851	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation

TABLE A-3.2
EXPOSURE POINT CONCENTRATION SUMMARY - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Aggregate soil 0-10 ft bgs

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
CHP Aggregate soil (continued)	Antimony	mg/Kg	3.5	2.602 (G)	5.8	2.6	mg/Kg	95% KM (Percentile Bootstrap) UCL	ProUCL Recommendation
	Arsenic	mg/Kg	35.9	181.2 (ND)	828	181	mg/Kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Cadmium	mg/Kg	1.4	4.76 (L)	20	4.8	mg/Kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Chromium	mg/Kg	11.6	13.24 (ND)	29.7	13	mg/Kg	95% Modified-t UCL	ProUCL Recommendation
	Cobalt	mg/Kg	21	60.19 (ND)	327	60	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Iron	mg/Kg	25977	51548 (ND)	210000	51548	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Lead	mg/Kg	163	288.2 (L)	1010	288	mg/Kg	95% H-UCL	ProUCL Recommendation
	Manganese	mg/Kg	197	230.3 (ND)	603	230	mg/Kg	95% Modified-t UCL	ProUCL Recommendation
	Mercury	mg/Kg	493	4637 (L)	15000	4637	mg/Kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	Nickel	mg/Kg	23	75.68 (L)	177	76	mg/Kg	99% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Thallium	mg/Kg	2.4	Not Determined	0.88	0.88	mg/Kg	Maximum	See footnote.
	Zinc	mg/Kg	282	1341 (L)	3820	1341	mg/Kg	99% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
SFSA Aggregate Soil	Benzo(a)anthracene	mg/kg	0.71	0.915 (G)	5.0	0.9	mg/kg	95% KM (Percentile Bootstrap) UCL	ProUCL Recommendation
	Benzo(a)pyrene	mg/kg	0.70	0.889 (G)	4.3	0.89	mg/kg	95% KM (Percentile Bootstrap) UCL	ProUCL Recommendation
	Benzo(b)fluoranthene	mg/kg	0.69	1.199 (L)	4.5	1.2	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(g,h,i)perylene	mg/kg	0.54	0.945 (ND)	3.7	0.9	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(k)fluoranthene	mg/kg	0.62	0.77 (G)	3.5	0.77	mg/kg	95% KM (Percentile Bootstrap) UCL	ProUCL Recommendation
	Carbazole	mg/kg	0.23	0.195 (ND)	1.2	0.20	mg/kg	95% KM (% Bootstrap) UCL	ProUCL Recommendation
	Dibenz(a,h)anthracene	mg/kg	0.29	0.305 (L)	1.6	0.31	mg/kg	95% KM (% Bootstrap) UCL	ProUCL Recommendation
	Indeno(1,2,3-cd)pyrene	mg/kg	0.54	0.929 (ND)	3.5	0.9	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	2,3,7,8-TCDD TEQ	mg/kg	0.000039	0.0001085 (L)	0.00047	0.0001085	mg/kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Total PCB Homologs	mg/kg	0.85	4.024 (ND)	15.8	4.0	mg/kg	99% KM (Chebyshev) UCL	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.000024	0.0001162 (L)	0.00045	0.000116	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Aluminum	mg/Kg	5114	5560 (N)	12813	5560	mg/Kg	95% Student's-t UCL	ProUCL Recommendation
	Antimony	mg/Kg	19	67.27 (ND)	580	67	mg/Kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Arsenic	mg/Kg	19	37.05 (ND)	281	37	mg/Kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Barium	mg/Kg	171	318.8 (ND)	2243	319	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Chromium	mg/Kg	13	18.12 (ND)	59.1	18	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Cobalt	mg/Kg	6.7	8.56 (ND)	29.7	8.6	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Iron	mg/Kg	24809	42715 (ND)	235011	42715	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Lead	mg/Kg	655	2512 (ND)	24438	2512	mg/Kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Manganese	mg/Kg	290	325.7 (G)	1675	326	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Mercury	mg/Kg	9.8	25.54 (L)	125	26	mg/Kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation
	Nickel	mg/Kg	32.1	64.57 (ND)	427	65	mg/Kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Thallium	mg/Kg	3.1	Not Determined	0.18	0.18	mg/Kg	Maximum	See footnote.
	Vanadium	mg/Kg	21.5	23.39 (L)	72.7	23	mg/Kg	95% Modified-t UCL	ProUCL Recommendation
EFSA Aggregate Soil	Benzo(a)anthracene	mg/kg	4.8	14.71 (G)	37	15	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(a)pyrene	mg/kg	3.8	10.91 (G)	27	10.9	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation

TABLE A-3.2
EXPOSURE POINT CONCENTRATION SUMMARY - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Aggregate soil 0-10 ft bgs

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
EFSA Aggregate Soil	Benzo(b)fluoranthene	mg/kg	3.0	8.858 (G)	23	8.9	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
(continued)	Benzo(g,h,i)perylene	mg/kg	1.9	5.639 (G)	16	5.6	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Benzo(k)fluoranthene	mg/kg	3.5	10.35 (G)	25	10.4	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Carbazole	mg/kg	0.51	0.535 (N)	1.7	0.54	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Chrysene	mg/kg	5.2	15.12 (G)	36	15	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Dibenz(a,h)anthracene	mg/kg	0.71	1.176 (G)	4.9	1.18	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Indeno(1,2,3-cd)pyrene	mg/kg	2.6	8.279 (G)	25	8.3	mg/kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Naphthalene	mg/kg	1.01	0.954 (G)	4.5	0.95	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	2,3,7,8-TCDD TEQ	mg/kg	0.00046	0.00293 (L)	0.0034	0.0029	mg/kg	99% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	PCB Dioxin-like Congener TEQ	mg/kg	0.000003	0.000008108 (L)	0.00002	0.00001	mg/kg	95% Chebyshev (Mean, Sd) UCL	ProUCL Recommendation
	Aluminum	mg/Kg	4890	5956 (N)	10774	5956	mg/Kg	95% Student's-t UCL	ProUCL Recommendation
	Antimony	mg/Kg	4.6	7.653 (L)	16.5	7.7	mg/Kg	97.5% KM (% Bootstrap) UCL	ProUCL Recommendation
	Arsenic	mg/Kg	13.6	21.71 (G)	54.7	22	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Chromium	mg/Kg	11.8	14.16 (ND)	27.6	14	mg/Kg	95% Modified-t UCL	ProUCL Recommendation
	Cobalt	mg/Kg	5.9	6.732 (G)	12.6	6.7	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Iron	mg/Kg	12409	14820 (G)	36816	14820	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Lead	mg/Kg	116	367.9 (L)	1177	368	mg/Kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Manganese	mg/Kg	277	340.5 (G)	716	341	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation
	Mercury	mg/Kg	6.6	17.4 (G)	34.4	17	mg/Kg	95% KM (Chebyshev) UCL	ProUCL Recommendation
	Vanadium	mg/Kg	20.0	22.75 (G)	39.2	23	mg/Kg	95% Approximate Gamma UCL	ProUCL Recommendation

Note: Maximum detected concentration used as the EPC in instances where n < 8 or detects < 4 and the median value exceeded the maximum detected concentration.

G = Gamma distribution.

L = Lognormal distribution.

N = Normal distribution.

ND = Data distribution is not discernable.

TABLE A-3.3
EXPOSURE POINT CONCENTRATION SUMMARY - SEDIMENT
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Area 1 Sediment	Benzo(a)anthracene	mg/kg	1.1	Not Determined	2.8	2.8	mg/kg	Maximum	See footnote.
	Benzo(a)pyrene	mg/kg	1.2	Not Determined	2.7	2.7	mg/kg	Maximum	See footnote.
	Benzo(b)fluoranthene	mg/kg	1.5	Not Determined	4.1	4.1	mg/kg	Maximum	See footnote.
	Carbazole	mg/kg	0.61	Not Determined	0.028	0.028	mg/kg	Maximum	See footnote.
	Dibenz(a,h)anthracene	mg/kg	0.63	Not Determined	0.075	0.075	mg/kg	Maximum	See footnote.
	Indeno(1,2,3-cd)pyrene	mg/kg	0.92	Not Determined	1.7	1.7	mg/kg	Maximum	See footnote.
	Aluminum	mg/kg	6050	Not Determined	12000	12000	mg/kg	Maximum	See footnote.
	Arsenic	mg/kg	13.3	Not Determined	0.99	0.99	mg/kg	Maximum	See footnote.
	Chromium	mg/kg	8.4	Not Determined	19	19	mg/kg	Maximum	See footnote.
	Cobalt	mg/kg	5.7	Not Determined	11	11	mg/kg	Maximum	See footnote.
	Iron	mg/kg	10125	Not Determined	17000	17000	mg/kg	Maximum	See footnote.
	Manganese	mg/kg	215	Not Determined	380	380	mg/kg	Maximum	See footnote.
Area 2 Sediment	Benzo(a)anthracene	mg/kg	1.2	1.495 (N)	2.0	1.5	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Benzo(a)pyrene	mg/kg	1.2	1.464 (N)	2.0	1.5	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Benzo(b)fluoranthene	mg/kg	1.5	1.963 (N)	2.7	2.0	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Carbazole	mg/kg	0.57	0.0894 (N)	0.088	0.088	mg/kg	Maximum	See footnote.
	Dibenz(a,h)anthracene	mg/kg	0.56	0.0655 (N)	0.066	0.066	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Indeno(1,2,3-cd)pyrene	mg/kg	0.88	0.945 (N)	1.1	0.95	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	2,3,7,8-TCDD TEQ	mg/kg	0.000023	Not Determined	0.000034	0.000034	mg/kg	Maximum	See footnote.
	o,p'-DDT	mg/kg	0.0033	Not Determined	0.0044	0.0044	mg/kg	Maximum	See footnote.
	Total PCB Homologs	mg/kg	0.0631	Not Determined	0.20	0.20	mg/kg	Maximum	See footnote.
	Aluminum	mg/kg	5863	Not Determined	9000	9000	mg/kg	Maximum	See footnote.
	Arsenic	mg/kg	10	3.108 (ND)	3.6	3.1	mg/kg	95% KM (t) UCL	ProUCL Recommendation
	Chromium	mg/kg	11	13.48 (N)	16	13	mg/kg	95% Student's-t UCL	ProUCL Recommendation
	Cobalt	mg/kg	6.1	Not Determined	9.4	9.4	mg/kg	Maximum	See footnote.
	Iron	mg/kg	10525	Not Determined	15000	15000	mg/kg	Maximum	See footnote.
	Manganese	mg/kg	269	Not Determined	330	330	mg/kg	Maximum	See footnote.
Area 3 Sediment	Benzo(a)anthracene	mg/kg	1.6	Not Determined	2.4	2.4	mg/kg	Maximum	See footnote.
	Benzo(a)pyrene	mg/kg	1.7	Not Determined	2.9	2.9	mg/kg	Maximum	See footnote.
	Benzo(b)fluoranthene	mg/kg	2.2	Not Determined	3.8	3.8	mg/kg	Maximum	See footnote.
	Carbazole	mg/kg	0.079	Not Determined	0.14	0.14	mg/kg	Maximum	See footnote.
	Dibenz(a,h)anthracene	mg/kg	0.15	Not Determined	0.35	0.35	mg/kg	Maximum	See footnote.
	Indeno(1,2,3-cd)pyrene	mg/kg	1.1	Not Determined	1.6	1.6	mg/kg	Maximum	See footnote.
	2,3,7,8-TCDD TEQ	mg/kg	0.000090	Not Determined	0.00029	0.00029	mg/kg	Maximum	See footnote.
	o,p'-DDT	mg/kg	0.0029	Not Determined	0.0031	0.0031	mg/kg	Maximum	See footnote.

TABLE A-3.3
EXPOSURE POINT CONCENTRATION SUMMARY - SEDIMENT
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Area 3 Sediment	Total PCB Homologs	mg/kg	0.093	Not Determined	0.31	0.31	mg/kg	Maximum	See footnote.
(continued)	Arsenic	mg/kg	2.9	Not Determined	7.3	7.3	mg/kg	Maximum	See footnote.
	Chromium	mg/kg	8.7	Not Determined	11	11	mg/kg	Maximum	See footnote.
	Mercury	mg/kg	0.60	3.659 (ND)	7.9	3.7	mg/kg	97.5% KM (Chebyshev) UCL	ProUCL Recommendation

Note: Maximum detected concentration used as the EPC in instances where n < 8 or detects < 4 and the median value exceeded the maximum detected concentration.

G = Gamma distribution.

L = Lognormal distribution.

N = Normal distribution.

ND = Data distribution is not discernable.

TABLE A-3.4
EXPOSURE POINT CONCENTRATION SUMMARY - FISH
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future
Medium: Fish
Exposure Medium: Fish Tissue

Exposure Point	Contaminant of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Androscoggin River	Indeno(1,2,3-cd)pyrene	mg/kg	0.019	Not Determined	0.0072	0.0072	mg/kg	Maximum	See Text
	2,3,7,8-TCDD TEQ	mg/kg	0.0000020	Not Determined	0.0000070	0.0000070	mg/kg	Maximum	See Text
	4,4'-DDT	mg/kg	0.019	Not Determined	0.21	0.21	mg/kg	Maximum	See Text
	beta-BHC	mg/kg	0.0015	Not Determined	0.0039	0.0039	mg/kg	Maximum	See Text
	o,p'-DDD	mg/kg	0.0050	Not Determined	0.056	0.056	mg/kg	Maximum	See Text
	trans-Nonachlor	mg/kg	0.0013	Not Determined	0.0013	0.0013	mg/kg	Maximum	See Text
	PCB Dioxin-like Congener TEQ	mg/kg	0.0000079	Not Determined	0.000071	0.000071	mg/kg	Maximum	See Text
	Total PCBs	mg/kg	0.34	Not Determined	3.2	3.2	mg/kg	Maximum	See Text
	Arsenic	mg/kg	0.095	Not Determined	0.55	0.55	mg/kg	Maximum	See Text
	Chromium	mg/kg	0.12	Not Determined	0.49	0.49	mg/kg	Maximum	See Text
	Lead	mg/kg	0.0050	Not Determined	0.010	0.010	mg/kg	Maximum	See Text
	Mercury	mg/kg	0.58	Not Determined	1.2	1.2	mg/kg	Maximum	See Text

Note: Maximum detected concentration used as the EPC in instances where n < 8 or detects < 4 and the median value exceeded the maximum detected concentration.

G = Gamma distribution.

L = Lognormal distribution.

N = Normal distribution.

ND = Data distribution is not discernable.

TABLE A-4.1
VALUES USED FOR DAILY INTAKE CALCULATIONS - ADULT RESIDENT CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil/Aggregate Soil
Exposure Point: Cell House - EA A, FSA - EAs B & C
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	100	EPA, 2002b	CS x IR-S x FI x EF x ED x CF1/(BW x AT-N)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	24	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-N	Averaging Time (Non-Cancer)	days	8760	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	5700	(a)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT-N)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.07	(b)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	24	EPA, 2002b	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-N	Averaging Time (Non-Cancer)	days	8760	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT-N
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	24	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	350	EPA, 2002b	or
	ED	Exposure Duration	years	24	EPA, 2002b	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-N	Averaging Time (Non-Cancer)	days	8760	ED x 365 days/year	

(a) Surface area for adults represented by hands, head, forearms, and lower legs. EPA, 2004.

(b) Adult Soil to Skin Adherence Factor consistent with 50th percentile gardener. EPA, 2004.

TABLE A-4.2
VALUES USED FOR DAILY INTAKE CALCULATIONS - CHILD RESIDENT CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil/Aggregate Soil
Exposure Point: Cell House - EA A, FSA - EAs B & C
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	200	EPA, 2002b	CS x IR-S x FI x EF x ED x CF1/(BW x AT-N)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	6	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	15	EPA, 2008	
	AT-N	Averaging Time (Non-Cancer)	days	2190	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	2800	(a)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT-N)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.2	(b)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	6	EPA, 2002b	
	BW	Body Weight	kg	15	EPA, 2008	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-N	Averaging Time (Non-Cancer)	days	2190	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT-N
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	24	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	350	EPA, 2002b	or
	ED	Exposure Duration	years	6	EPA, 2002b	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-N	Averaging Time (Non-Cancer)	days	2190	ED x 365 days/year	

(a) Surface area represented by hands, head, feet, forearms, and lower legs of child (age 1-6). EPA, 2004.

(b) Child Soil to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE A-4.3
VALUES USED FOR DAILY INTAKE CALCULATIONS - LIFETIME RESIDENT CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil/Aggregate Soil
Exposure Point: Cell House - EA A, FSA - EAs B & C
Receptor Population: Resident
Receptor Age: Adult/Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Intake (mg/kg-day) =
	IFSadj	Age-Adjusted Soil Ingestion Factor	mg-y/kg-day	114	Calculated	
	IRSa	Soil Ingestion Rate - adult	mg/day	100	EPA, 2002b	$CS \times IFS_{adj} \times CF \times FI \times EF \times 1/AT\text{-}C$
	IRSc	Soil Ingestion Rate - child	mg/day	200	EPA, 2002b	
	FI	Fraction Ingested	--	1	Professional judgment	Where
	EF	Exposure Frequency	days/year	350	EPA, 2002b	$IFS_{adj} = (IRS_c \times ED_c \times 1/BW_c) + (IRS_a \times ED_a \times 1/BW_a)$
	EDa	Exposure Duration - adult	years	24	EPA, 2002b	
	EDc	Exposure Duration - child	years	6	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BWa	Body Weight - adult	kg	70	EPA, 2002b	
	BWc	Body Weight - child	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SFSadj	Age-Adjusted Soil Contact Factor	mg-y/kg-event	361	Calculated	
	SAa	Surface Area - adult	cm^2	5700	(a)	$CS \times SFSadj \times DABS \times EV \times EF \times CF1 \times 1/AT\text{-}C$
	SAc	Surface Area - child	cm^2	2800	(b)	
	SSAFa	Soil-to-Skin Adherence Factor - adult	mg/cm^2-event	0.07	(c)	Where
	SSAFc	Soil-to-Skin Adherence Factor - child	mg/cm^2-event	0.2	(d)	$SFS_{adj} = (SA_c \times SSAFc \times ED_c \times 1/BW_c) + (SAa \times SSAFa \times ED_a \times 1/BW_a)$
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	EDa	Exposure Duration - adult	years	24	EPA, 2002b	
	EDc	Exposure Duration - child	years	6	EPA, 2002b	
	BWa	Body Weight - adult	kg	70	EPA, 2002b	
	BWc	Body Weight - child	kg	15	EPA, 2008	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT-C
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	24	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	350	EPA, 2002b	or
	ED	Exposure Duration - adult & child	years	30	EPA, 1989	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	

(a) Surface area for adults represented by hands, head, forearms, and lower legs. EPA, 2004.
(b) Surface area represented by hands, head, feet, forearms, and lower legs of child (age 1-6). EPA, 2004.
(c) Adult Soil to Skin Adherence Factor consistent with 50th percentile gardener. EPA, 2004.
(d) Child Soil to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE A-4.4
VALUES USED FOR DAILY INTAKE CALCULATIONS - ADULT RECREATIONAL VISITOR CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Cell House - EA A
Receptor Population: Recreational Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	100	EPA, 2002b	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	104	(a)	
	ED	Exposure Duration	years	24	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	5700	(b)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.07	(c)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	(a)	
	EF	Exposure Frequency	days/year	104	(a)	
	ED	Exposure Duration	years	24	EPA, 2002b	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	2	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	104	(a)	or
	ED	Exposure Duration	years	24	EPA, 2002b	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	ED x 365 days/year	

(a) Professional judgment. EF assumes RME 3 day/week, 8 months/year.
(b) Surface area for adults represented by hands, head, forearms, and lower legs. EPA, 2004.
(c) Adult Soil to Skin Adherence Factor consistent with 50th percentile gardener. EPA, 2004.

TABLE A-4.5
VALUES USED FOR DAILY INTAKE CALCULATIONS - CHILD RECREATIONAL VISITOR CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Cell House - EA A
Receptor Population: Recreational Visitor
Receptor Age: Child (0-6 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	200	EPA, 2002b	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	104	(a)	
	ED	Exposure Duration	years	6	Professional judgment	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	2,800	(b)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.2	(c)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	104	(a)	
	ED	Exposure Duration	years	6	Professional judgment	
	BW	Body Weight	kg	15	EPA, 2008	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	2	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	104	(a)	or
	ED	Exposure Duration	years	6	Professional judgment	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	ED x 365 days/year	

(a) Professional judgment. EF assumes RME 3 day/week, 8 months/year.

(b) Surface area represented by hands, head, feet, forearms, and lower legs of child (age 1-6). EPA, 2004.

(c) Child Soil to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE A-4.6
VALUES USED FOR DAILY INTAKE CALCULATIONS - COMMERCIAL/INDUSTRIAL WORKER CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface/Aggregate Soil
Exposure Point: FSA - EAs B & C
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1 and A-3.2	Intake (mg/kg-day) =
	IR-S	Ingestion Rate of Soil	mg/day	100	EPA, 2002b	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	250	EPA, 2002b	
	ED	Exposure Duration	years	25	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9125	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1 and A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	3300	(a)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.2	(b)	
	DABS	(Solid)	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	250	EPA, 2002b	
	ED	Exposure Duration	years	25	EPA, 2002b	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9125	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1 and A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-specific	Calculated	where:
	ET	Exposure Time	hours/day	8	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	250	EPA, 2002b	or
	ED	Exposure Duration	years	25	EPA, 2002b	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9125	ED x 365 days/year	

(a) Surface area for adult workers represented by hands, head, and forearms. EPA, 2004.

(b) Adult Soil to Skin Adherence Factor consistent with 50th percentile utility worker. EPA, 2004.

TABLE A-4.7
VALUES USED FOR DAILY INTAKE CALCULATIONS - TRESPASSER CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/ Future or Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Cell House - EA A, FSA - EAs B, C
Receptor Population: Trespasser
Receptor Age: Adolescent (6-16 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	100	EPA, 2002b	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	78	(a)	
	ED	Exposure Duration	years	10	Professional judgment	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	39	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3650	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	4184	(b)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.2	(c)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	78	(a)	
	ED	Exposure Duration	years	10	Professional judgment	
	BW	Body Weight	kg	39	EPA, 2008	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3650	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	4	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	78	(a)	or
	ED	Exposure Duration	years	10	Professional judgment	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3650	ED x 365 days/year	

(a) Professional judgment. EF assumes RME 2 day/week, 9 months/year..

(b) Surface area represented by hands, head, forearms, and lower legs. EPA, 2004.

(c) Soil to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE A-4.8
VALUES USED FOR DAILY INTAKE CALCULATIONS - CONSTRUCTION WORKER CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Aggregate Soil
Exposure Point: FSA - EAs B & C
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.2	Intake (mg/kg-day) =
	IR-S	Ingestion Rate of Soil	mg/day	330	EPA, 2002b	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	130	(a)	
	ED	Exposure Duration	years	1	Professional judgment	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	3300	(b)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.2	(c)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	130	(a)	
	ED	Exposure Duration	years	1	Professional judgment	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	1.4E+06	Table H-1	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-specific	Calculated	where:
	ET	Exposure Time	hours/day	8	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	130	(a)	or
	ED	Exposure Duration	years	1	Professional judgment	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	ED x 365 days/year	

(a) Professional judgment. EF assumes RME 5 day/week, 6 months/year.
(b) Surface area for adult workers represented by hands, head, and forearms. EPA, 2004.
(c) Adult Soil to Skin Adherence Factor consistent with 50th percentile utility worker. EPA, 2004.

TABLE A-4.9
VALUES USED FOR DAILY INTAKE CALCULATIONS - ADULT RIVER RECREATIONAL VISITOR CONTACT WITH SEDIMENT
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Androscoggin River Stretches 1, 2, 3*
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_{Sed}	Concentration in Sediment	mg/kg	COPC-Specific	Table A-3.3	Intake (mg/kg-day) =
	IR-SD	Sediment Ingestion Rate	mg/day	100	EPA, 2002b	C_{Sed} x IR-Sd x FI x EF x ED x CF/(BW x AT)
	FI	Fraction Ingested From Contaminated Source	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	22	(a)	
	ED	Exposure Duration	years	24	Professional judgment	
	CF1	Conversion Factor	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	ED x 365 days/year	
Dermal	C_{Sed}	Concentration in Sediment	mg/kg	COPC-Specific	Table A-3.3	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	6900	(b)	C_{Sed} x SA x SSAF x DABS x EV x EF x ED x CF/(BW x AT)
	SSAF	Sediment-to-Skin Adherence Factor	mg/cm^2-event	0.3	(c)	
	DABS	Dermal Absorption Factor (Solid)	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	22	(a)	
	ED	Exposure Duration	years	24	Professional judgment	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	ED x 365 days/year	

*Androscoggin River Stretches: #1=AR reaches 3-5; #2=AR reaches 6-8; and #3=AR reach 9. AR reach 2=background

(a) Professional judgment. EF assumes RME 2 day/week, 11 weeks/year.

(b) Surface area represented by hands, head, feet, forearms, and lower legs of adult. EPA, 2004.

(c) Sediment to Skin Adherence Factor consistent with 50th percentile reed gatherer. EPA, 2004.

TABLE A-4.10
VALUES USED FOR DAILY INTAKE CALCULATIONS - CHILD RIVER RECREATIONAL VISITOR CONTACT WITH SEDIMENT
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Androscoggin River Stretches 1, 2, 3*
Receptor Population: River Recreational Visitor
Receptor Age: Child (0-6 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_{Sed}	Concentration in Sediment	mg/kg	COPC-Specific	Table A-3.3	Intake (mg/kg-day) =
	IR-SD	Sediment Ingestion Rate	mg/day	200	EPA, 2002b	C_{Sed} x IR-Sd x FI x EF x ED x CF/(BW x AT)
	FI	Fraction Ingested From Contaminated Source	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	22	(a)	
	ED	Exposure Duration	years	6	Professional judgment	
	CF1	Conversion Factor	kg/mg	1E-06	--	
	BW	Body Weight	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	ED x 365 days/year	
Dermal	C_{Sed}	Concentration in Sediment	mg/kg	COPC-Specific	Table A-3.3	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	2,800	(b)	C_{Sed} x SA x SSAF x DABS x EV x EF x ED x CF/(BW x AT)
	SSAF	Sediment-to-Skin Adherence Factor	mg/cm^2-event	0.2	(c)	
	DABS	Dermal Absorption Factor (Solid)	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	22	(a)	
	ED	Exposure Duration	years	6	Professional judgment	
	BW	Body Weight	kg	15	EPA, 2008	
	CF1	Conversion Factor	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	ED x 365 days/year	

*Androscoggin River Reaches: #1=AR 3-5; #2=AR 6-8; and #3=AR 9. AR2=background
(a) Professional judgment. EF assumes RME 2 day/week, 11 weeks/year.
(b) Surface area represented by hands, head, feet, forearms, and lower legs of child (age 1-6). EPA, 2004.
(c) Child Sediment to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE A-4.11
VALUES USED FOR DAILY INTAKE CALCULATIONS - ADULT RECREATIONAL ANGLER CONTACT WITH FISH
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Fish
Exposure Medium: Fish
Exposure Point: Androscoggin River Reaches 3-9
Receptor Population: Recreational Angler
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_f	Concentration in Fish	mg/kg	COPC-Specific	Table A-3.4	Intake (mg/kg-day) =
	IR-Fa	Fish Ingestion Rate	g/day	32	All Waters - Ebert, 1993	C_f x IR-F x FI x EF x ED x CF/(BW x AT)
	FI	Fraction of Ingested Fish from Androscoggin River	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	24	EPA, 2002b	
	CF	Conversion Factor	kg/g	1.00E-03	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	ED x 365 days/year	

TABLE A-4.12
VALUES USED FOR DAILY INTAKE CALCULATIONS - CHILD RECREATIONAL ANGLER CONTACT WITH FISH
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Fish
Exposure Medium: Fish
Exposure Point: Androscoggin River Reaches 3-9
Receptor Population: Recreational Angler
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_f	Concentration in Fish	mg/kg	COPC-Specific	Table A-3.4	Intake (mg/kg-day) =
	IR-Fc	Fish Ingestion Rate	g/day	13	All Waters - Ebert, 1993	C_f x IR-F x FI x EF x ED x CF/(BW x AT)
	FI	Fraction of Ingested Fish from Androscoggin River	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	6	EPA, 2002b	
	CF	Conversion Factor	kg/g	1.00E-03	--	
	BW	Body Weight	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	ED x 365 days/year	

TABLE A-4.13
VALUES USED FOR DAILY INTAKE CALCULATIONS - LIFETIME RECREATIONAL CONTACT WITH FISH
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Fish
Exposure Medium: Fish
Exposure Point: Androscoggin River Reaches 3-9
Receptor Population: Recreational Angler
Receptor Age: Adult/Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_f	Concentration in Fish	mg/kg	COPC-Specific	Table A-3.4	Intake (mg/kg-day) =
	IFF_{adj}	Age-Adjusted Fish Ingestion Factor	g-y/kg-day	16	All Waters - Calculated	$C_f \times IFF_{adj} \times CF \times FI \times EF \times 1/AT\text{-}C$
	IR-Fa	Fish Ingestion Rate - adult	g/day	32	All Waters - Ebert, 1993	Where
	IR-Fc	Fish Ingestion Rate - child	g/day	13	All Waters - Ebert, 1993	$IFF_{adj} = (IR\text{-}F_c \times ED_c \times 1/BW_c) + (IR\text{-}F_a \times ED_a \times 1/BW_a)$
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	EDa	Exposure Duration - adult	years	24	EPA, 2002b	
	EDc	Exposure Duration - child	years	6	EPA, 2002b	
	CF	Conversion Factor	kg/g	1.00E-03	--	
	BWa	Body Weight - adult	kg	70	EPA, 2002b	
	BWc	Body Weight - child	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	

TABLE A-5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Contaminant of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD: Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Dates (2)
Aldrin	Chronic	3.00E-05	(mg/kg-day)	1.0	3.00E-05	(mg/kg-day)	Liver	1000	IRIS	11/8/2012
Alpha-BHC	Chronic	8.00E-03	(mg/kg-day)	1.0	8.00E-03	(mg/kg-day)	Liver	100	ATSDR	2012 RSL Table
Beta-BHC	---	NA	---	---	NA	---	---	---	---	---
Delta-BHC	---	NA	---	---	NA	---	---	---	---	---
Gamma-BHC (Lindane)	Chronic	3.00E-04	(mg/kg-day)	1.0	3.00E-04	(mg/kg-day)	Liver and kidney	1000	IRIS	11/8/2012
1,1'-Biphenyl	Chronic	5.00E-02	(mg/kg-day)	1.0	5.00E-02	(mg/kg-day)	Kidney	100	IRIS	11/8/2012
Bis(2-ethylhexyl)phthalate	Chronic	2.00E-02	(mg/kg-day)	1.0	2.00E-02	(mg/kg-day)	Liver	1,000	IRIS	12/12/2012
1,3-Dichlorobenzene	---	NA	---	---	NA	---	---	---	---	---
4,4'-DDE	---	NA	---	---	NA	---	---	---	---	---
4,4'-DDT	Chronic	5.00E-04	(mg/kg-day)	1.0	5.00E-04	(mg/kg-day)	Liver	100	IRIS	11/8/2012
o,p'-DDD	---	NA	---	---	NA	---	---	---	---	---
o,p'-DDT	---	NA	---	---	NA	---	---	---	---	---
Dibenzofuran	Chronic	1.00E-03	(mg/kg-day)	1.0	1.00E-03	(mg/kg-day)	Body and organ weight	10,000	PPRTV Appendix	2012 RSL Table
Dieldrin	Chronic	5.00E-05	(mg/kg-day)	1.0	5.00E-05	(mg/kg-day)	Liver	100	IRIS	12/12/2012
Di-n-octyl phthalate	---	NA	---	---	NA	---	---			
trans-Nonachlor	---	NA	---	---	NA	---	---	---	---	---
Pentachlorophenol	Chronic	5.00E-03	(mg/kg-day)	1.0	5.00E-03	(mg/kg-day)	Liver	300	IRIS	11/8/2012
2,3,7,8-TCDD TEQ	Chronic	7.00E-10	(mg/kg-day)	1.0	7.00E-10	(mg/kg-day)	Developmental	30	IRIS	11/8/2012
PCB Dioxin-like Congener TEQ[3]	Chronic	7.00E-10	(mg/kg-day)	1.0	7.00E-10	(mg/kg-day)	Developmental	30	IRIS	11/8/2012
Heptachlor Epoxide	Chronic	1.30E-05	(mg/kg-day)	1.0	1.30E-05	(mg/kg-day)	Liver	1,000	IRIS	12/12/2012
Benzo(a)anthracene	---	NA	---	---	NA	---	---	---	---	---
Benzo(a)pyrene	---	NA	---	---	NA	---	---	---	---	---
Benzo(b)fluoranthene	---	NA	---	---	NA	---	---	---	---	---
Benzo(g,h,i)perylene	---	NA	---	---	NA	---	---	---	---	---
Benzo(k)fluoranthene	---	NA	---	---	NA	---	---	---	---	---
Carbazole	---	NA	---	---	NA	---	---	---	---	---
Chrysene	---	NA	---	---	NA	---	---	---	---	---
Dibenz(a,h)anthracene	---	NA	---	---	NA	---	---	---	---	---
Fluoranthene	Chronic	4.00E-02	(mg/kg-day)	1.0	4.00E-02	(mg/kg-day)	Liver, Kidney, Blood	3,000	IRIS	12/12/2012
Indeno(1,2,3-cd)pyrene	---	NA	---	---	NA	---	---	---	---	---
2-Methylnaphthalene	Chronic	4.00E-03	(mg/kg-day)	1.0	4.00E-03	(mg/kg-day)	Respiratory	1,000	IRIS	11/8/2012
Naphthalene	Chronic	2.00E-02	(mg/kg-day)	1.0	2.00E-02	(mg/kg-day)	Body weight	3,000	IRIS	12/12/2012
Pyrene	Chronic	3.00E-02	(mg/kg-day)	1.0	3.00E-02	(mg/kg-day)	Kidney	3,000	IRIS	12/12/2012
Monochloronaphthalene, Total	---	NA	---	---	NA	---	---	---	---	---
Dichloronaphthalene, Total	---	NA	---	---	NA	---	---	---	---	---
Trichloronaphthalene, Total	---	NA	---	---	NA	---	---	---	---	---
Tetrachloronaphthalene, Total	---	NA	---	---	NA	---	---	---	---	---
Pentachloronaphthalene, Total	---	NA	---	---	NA	---	---	---	---	---

TABLE A-5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Contaminant of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD: Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Dates (2)
Hexachloronaphthalene, Total	---	NA	---	---	NA	---	---	---	---	---
Heptachloronaphthalene, Total	---	NA	---	---	NA	---	---	---	---	---
Total PCB Homologs[4]	Chronic	2.00E-05	(mg/kg-day)	1.0	2.00E-05	(mg/kg-day)	Eyes, Immune system	300	IRIS	12/12/2012
Total PCBs[4]	Chronic	2.00E-05	(mg/kg-day)	1.0	2.00E-05	(mg/kg-day)	Eyes, Immune system	300	IRIS	12/12/2012
Aluminum	Chronic	1.00E+00	(mg/kg-day)	1.0	1.00E+00	(mg/kg-day)	Nervous system	100	PPRTV	10/23/2006
Antimony	Chronic	4.00E-04	(mg/kg-day)	0.15	6.00E-05	(mg/kg-day)	Blood	1,000	IRIS	12/12/2012
Arsenic	Chronic	3.00E-04	(mg/kg-day)	1.0	3.00E-04	(mg/kg-day)	Skin	3	IRIS	12/12/2012
Barium	Chronic	2.00E-01	(mg/kg-day)	0.07	1.40E-02	(mg/kg-day)	Kidney	300	IRIS	12/12/2012
Cadmium-diet	Chronic	1.00E-03	(mg/kg-day)	0.025	2.50E-05	(mg/kg-day)	Kidney	10	IRIS	12/12/2012
Chromium, Total[5]	Chronic	3.00E-03	(mg/kg-day)	0.025	7.50E-05	(mg/kg-day)	None observed	900	IRIS	12/12/2012
Cobalt	Chronic	3.00E-04	(mg/kg-day)	1.0	3.00E-04	(mg/kg-day)	Thyroid	3,000	PPRTV	8/25/2008
Iron	Chronic	7.00E-01	(mg/kg-day)	1.0	7.00E-01	(mg/kg-day)	Gastrointestinal	1.5	PPRTV	9/11/2006
Lead	---	NA	---	---	NA	---	---	---	---	---
Manganese-diet	Chronic	7.00E-02	(mg/kg-day)	1.0	7.00E-02	(mg/kg-day)	Nervous system	1	IRIS	12/12/2012
Mercury[6]	Chronic	3.00E-04	(mg/kg-day)	0.07	2.10E-05	(mg/kg-day)	Kidney	1,000	IRIS	12/12/2012
Methylmercury[7]	Chronic	1.00E-04	(mg/kg-day)	---	---	---	Nervous system	10	IRIS	12/12/2012
Nickel	Chronic	2.00E-02	(mg/kg-day)	0.04	8.00E-04	(mg/kg-day)	Body weight	300	IRIS	12/12/2012
Thallium	Chronic	1.00E-05	(mg/kg-day)	1.0	1.00E-05	(mg/kg-day)	Hair	3,000	PPRTV Appendix	2012 RSL Table
Vanadium	Chronic	7.00E-05	(mg/kg-day)	0.026	1.82E-06	(mg/kg-day)	Kidney	3,000	PPRTV	9/30/2009
Zinc	Chronic	3.00E-01	(mg/kg-day)	1.0	3.00E-01	(mg/kg-day)	Blood	3	IRIS	12/12/2012

(1) Source: RAGS Part E Guidance

(2) Represents date source was searched.

(3) 2,3,7,8-TCDD TEQ value used.

(4) Aroclor 1254 toxicity value used.

(5) Chromium VI value used due to the absence of chromium speciation data.

(6) Mercuric chloride.

(7) Methylmercury used for fish ingestion.

Definitions:

ATSDR=Agency for Toxic Substances and Disease Registry

CalEPA=California Environmental Protection Agency

HEAST=Health Effects Assessment Summary Tables

IRIS=Integrated Risk Information System

OEHHA=California Office of Environmental Health Hazard Assessment

NA=Not available

PPRTV = Provisional Peer-Reviewed Toxicity Value

TABLE A-5.2
NON-CANCER TOXICITY DATA -- INHALATION
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Contaminant of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC: Target Organ(s)	
		Value	Units			Source(s)	Dates (1)
Aldrin	---	NA	---	---	---	---	---
Alpha-BHC	---	NA	---	---	---	---	---
Delta-BHC	---	NA	---	---	---	---	---
Gamma-BHC (Lindane)	---	NA	---	---	---	---	---
1,1'-Biphenyl	Chronic	4.00E-04	mg/m^3	Respiratory tract	3,000	PPRTV Appendix	2012 RSL Table
Bis(2-ethylhexyl)phthalate	---	NA	---	---	---	---	---
1,3-Dichlorobenzene	---	NA	---	---	---	---	---
4,4'-DDE	---	NA	---	---	---	---	---
4,4'-DDT	---	NA	---	---	---	---	---
o,p'-DDT	---	NA	---	---	---	---	---
Dibenzofuran	---	NA	---	---	---	---	---
Dieldrin	---	NA	---	---	---	---	---
Di-n-octyl phthalate	---	NA	---	---	---	---	---
Pentachlorophenol	---	NA	---	---	---	---	---
2,3,7,8-TCDD TEQ	Chronic	4.00E-08	mg/m^3	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	100	CalEPA-OEHHA	2012 RSL Table
PCB Dioxin-like Congener TEQ[2]	Chronic	4.00E-08	mg/m^3	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	100	CalEPA-OEHHA	2012 RSL Table
Heptachlor Epoxide	---	NA	---	---	---	---	---
Benzo(a)anthracene	---	NA	---	---	---	---	---
Benzo(a)pyrene	---	NA	---	---	---	---	---
Benzo(b)fluoranthene	---	NA	---	---	---	---	---
Benzo(g,h,i)perylene	---	NA	---	---	---	---	---
Benzo(k)fluoranthene	---	NA	---	---	---	---	---
Carbazole	---	NA	---	---	---	---	---
Chrysene	---	NA	---	---	---	---	---
Dibenz[a,h]anthracene	---	NA	---	---	---	---	---
Fluoranthene	---	NA	---	---	---	---	---
Indeno[1,2,3-cd]pyrene	---	NA	---	---	---	---	---
2-Methylnaphthalene	---	NA	---	---	---	---	---
Naphthalene	Chronic	3.00E-03	mg/m^3	Respiratory tract	3,000	IRIS	12/12/2012
Pyrene	---	NA	---	---	---	---	---
Monochloronaphthalene, Total	---	NA	---	---	---	---	---
Dichloronaphthalene, Total	---	NA	---	---	---	---	---
Trichloronaphthalene, Total	---	NA	---	---	---	---	---
Tetrachloronaphthalene, Total	---	NA	---	---	---	---	---
Pentachloronaphthalene, Total	---	NA	---	---	---	---	---
Hexachloronaphthalene, Total	---	NA	---	---	---	---	---
Heptachloronaphthalene, Total	---	NA	---	---	---	---	---

TABLE A-5.2
NON-CANCER TOXICITY DATA -- INHALATION
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Contaminant of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC: Target Organ(s)	
		Value	Units			Source(s)	Dates (1)
Total PCB Homologs	---	NA	---	---	---	---	---
Aluminum	Chronic	5.00E-03	mg/m^3	Nervous system	300	PPRTV	10/23/2006
Antimony	---	NA	---	---	---	---	---
Arsenic	Chronic	1.50E-05	mg/m^3	Developmental, Cardiovascular system, Nervous system, Lung, Skin	30	CalEPA-OEHHA	Dec 2008 REL Table
Barium	Chronic	5.00E-04	mg/m^3	Developmental	1,000	HEAST	July, 1997
Cadmium	Chronic	2.00E-05	mg/m^3	Kidney and Respiratory tract	30	CalEPA-OEHHA	2012 RSL Table
Chromium, Total[3]	Chronic	1.00E-04	mg/m^3	Respiratory tract	300	IRIS	12/12/2012
Cobalt	Chronic	6.00E-06	mg/m^3	Respiratory tract	300	PPRTV	8/25/2008
Iron	---	NA	---	---	---	---	---
Lead	---	NA	---	---	---	---	---
Manganese	Chronic	5.00E-05	mg/m^3	Nervous system	1,000	IRIS	12/12/2012
Mercury[4]	Chronic	3.00E-04	mg/m^3	Nervous system	30	IRIS	12/12/2012
Nickel	Chronic	9.00E-05	mg/m^3	Respiratory tract	30	ATSDR	8/1/2005
Thallium	Chronic	NA	---	---	---	---	---
Vanadium	Chronic	1.00E-04	mg/m^3	Respiratory tract	30	ATSDR	9/1/2012
Zinc	Chronic	NA	---	---	---	---	---

(1) Represents date source was searched.

(2) 2,3,7,8-TCDD TEQ value used.

(3) Chromium VI (particulates) value used due to the absence of chromium speciation data.

(4) Elemental mercury.

Definitions: ATSDR=Agency for Toxic Substances and Disease Registry
CalEPA=California Environmental Protection Agency
HEAST=Health Effects Assessment Summary Tables (EPA, 1997b)
IRIS=Integrated Risk Information System
NA=Not available
PPRTV = Provisional Peer-Reviewed Toxicity Value (EPA, various dates)
MRL=Minimum Risk Levels
OEHHA=California Office of Environmental Health Hazard Assessment

TABLE A-6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Contaminant of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (1)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Dates (2)
Aldrin	1.70E+01	$(mg/kg\text{-}day)^{-1}$	1.0	1.70E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/8/2012
Alpha-BHC	6.30E+00	$(mg/kg\text{-}day)^{-1}$	1.0	6.30E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/8/2012
Beta-BHC	1.80E+00	$(mg/kg\text{-}day)^{-1}$	1.0	1.80E+00	$(mg/kg\text{-}day)^{-1}$	C	IRIS	11/26/2012
Delta-BHC	NA	---	---	NA	---	D	IRIS	11/8/2012
Gamma-BHC (Lindane)	1.10E+00	$(mg/kg\text{-}day)^{-1}$	1.0	1.10E+00	$(mg/kg\text{-}day)^{-1}$	Not assessed under IRIS	CalEPA-OEHHA	2012 RSL Table
1,1'-Biphenyl	8.00E-03	$(mg/kg\text{-}day)^{-1}$	1.0	8.00E-03	$(mg/kg\text{-}day)^{-1}$	D (EPA Classification)	PPRTV Appendix	11/8/2012
Bis(2-ethylhexyl)phthalate	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1.0	1.40E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
1,3-Dichlorobenzene	NA	---	---	NA	---	D	IRIS	11/8/2012
4,4'-DDE	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.0	3.40E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/8/2012
4,4'-DDT	3.40E-01	$(mg/kg\text{-}day)^{-1}$	1.0	3.40E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/8/2012
o,p'-DDD	NA	---	---	NA	---	No information	---	---
o,p'-DDT	NA	---	---	NA	---	No information	---	---
Dibenzofuran	NA	---	---	NA	---	D	IRIS	12/12/2012
Dieldrin	1.60E+01	$(mg/kg\text{-}day)^{-1}$	1.0	1.60E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Di-n-octyl phthalate	NA	---	---	NA	---	No information	---	---
trans-Nonachlor	NA	---	---	NA	---	No information	---	---
Pentachlorophenol	4.00E-01	$(mg/kg\text{-}day)^{-1}$	1.0	4.00E-01	$(mg/kg\text{-}day)^{-1}$	Likely to be carcinogenic	IRIS	11/8/2012
2,3,7,8-TCDD TEQ	1.30E+05	$(mg/kg\text{-}day)^{-1}$	1.0	1.30E+05	$(mg/kg\text{-}day)^{-1}$	Assessment underway	CalEPA-OEHHA	2012 RSL Table
PCB Dioxin-like Congener TEQ[3]	1.30E+05	$(mg/kg\text{-}day)^{-1}$	1.0	1.30E+05	$(mg/kg\text{-}day)^{-1}$	Assessment underway	CalEPA-OEHHA	2012 RSL Table
Heptachlor Epoxide	9.10E+00	$(mg/kg\text{-}day)^{-1}$	1.0	9.10E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Benzo(a)anthracene	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.0	7.30E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Benzo(a)pyrene	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.0	7.30E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Benzo(b)fluoranthene	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.0	7.30E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Benzo(g,h,i)perylene	NA	---	---	NA	---	D	IRIS	12/12/2012
Benzo(k)fluoranthene	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.0	7.30E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Carbazole	NA	---	---	NA	---	No information	---	---
Chrysene	7.30E-03	$(mg/kg\text{-}day)^{-1}$	1.0	7.30E-03	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Dibenz(a,h)anthracene	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.0	7.30E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Fluoranthene	NA	---	---	NA	---	D	IRIS	12/12/2012
Indeno(1,2,3-cd)pyrene	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.0	7.30E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
2-Methylnaphthalene	NA	---	---	NA	---	Data are inadequate	IRIS	11/8/2012
Naphthalene	NA	---	---	NA	---	C	IRIS	12/12/2012
Pyrene	NA	---	---	NA	---	D	IRIS	12/12/2012
Monochloronaphthalene, Total	NA	---	---	NA	---	No information	---	---
Dichloronaphthalene, Total	NA	---	---	NA	---	No information	---	---
Trichloronaphthalene, Total	NA	---	---	NA	---	No information	---	---
Tetrachloronaphthalene, Total	NA	---	---	NA	---	No information	---	---
Pentachloronaphthalene, Total	NA	---	---	NA	---	No information	---	---

TABLE A-6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Contaminant of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (1)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Dates (2)
Hexachloronaphthalene, Total	NA	---	---	NA	---	No information	---	---
Heptachloronaphthalene, Total	NA	---	---	NA	---	No information	---	---
Total PCB Homologs[4]	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.0	2.00E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Total PCBs[4]	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.0	2.00E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	12/12/2012
Aluminum	NA	---	---	NA	---	No information	---	---
Antimony	NA	---	---	NA	---	Not assessed under IRIS	IRIS	11/8/2012
Arsenic	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.0	1.50E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	12/12/2012
Barium	NA	---	---	NA	---	D	IRIS	12/12/2012
Cadmium	NA	---	---	NA	---	B1	IRIS	12/12/2012
Chromium, Total[5]	5.00E-01	$(mg/kg\text{-}day)^{-1}$	0.025	1.25E-02	$(mg/kg\text{-}day)^{-1}$	D	NJDEP	4/8/2009
Cobalt	NA	---	---	NA	---	No information	---	---
Iron	NA	---	---	NA	---	No information	---	---
Lead	NA	---	---	NA	---	B2	IRIS	12/12/2012
Manganese	NA	---	---	NA	---	D	IRIS	12/12/2012
Mercury	NA	---	---	NA	---	D	IRIS	12/12/2012
Nickel	NA	---	---	NA	---	No information	---	---
Thallium	NA	---	---	NA	---	No information	IRIS	12/12/2012
Vanadium	NA	---	---	NA	---	No information	---	---
Zinc	NA	---	---	NA	---	D	IRIS	12/12/2012

(1) Source: RAGS Part E Guidance

(2) Represents date source was searched.

(3) Alternative dioxin toxicity value available from California EPA.

(4) The IRIS slope factor for high risk, high persistence environmental mixtures is selected.

(5) Chromium VI, NJDEP value endorsed by OSWER, September 28, 2009. Chromium VI value used due to the absence of chromium speciation data.

Definitions: CalEPA=California Environmental Protection Agency
HEAST=Health Effects Assessment Summary Tables (EPA, 1997b)
IRIS = Integrated Risk Information System
OEHHA=California Office of Environmental Health Hazard Assessment
NJDEP=New Jersey Department of Environmental Protection
NA = Not available.
A - Human carcinogen.
B1 - Probable human carcinogen - indicates that limited human data are available.
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans.
C - Possible human carcinogen.
D - Not classifiable as a human carcinogen.

TABLE A-6.2
CANCER TOXICITY DATA -- INHALATION
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Contaminant of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline	Unit Risk: Inhalation CSF	
	Value	Units	Description	Source(s)	Dates (1)
Aldrin	4.90E-03	$(\mu g/m^3)^{-1}$	B2	IRIS	11/8/2012
Alpha-BHC	1.80E-03	$(\mu g/m^3)^{-1}$	B2	IRIS	11/8/2012
Delta-BHC	NA	---	D	IRIS	11/8/2012
Gamma-BHC (Lindane)	3.10E-04	$(\mu g/m^3)^{-1}$	Not assessed	CalEPA-OEHHA	2012 RSL Table
1,1'-Biphenyl	NA	---	D	IRIS	11/8/2012
Bis(2-ethylhexyl)phthalate	2.40E-06	---	No information	CalEPA-OEHHA	2012 RSL Table
1,3-Dichlorobenzene	NA	---	D	IRIS	11/8/2012
4,4'-DDE	9.70E-05	$(\mu g/m^3)^{-1}$	Not assessed	CalEPA-OEHHA	2012 RSL Table
4,4'-DDT	9.70E-05	$(\mu g/m^3)^{-1}$	B2	IRIS	11/8/2012
o,p'-DDT	NA	---	No information	---	---
Dibenzofuran	NA	---	D	IRIS	12/12/2012
Dieldrin	4.60E-03	$(\mu g/m^3)^{-1}$	B2	IRIS	12/12/2012
Di-n-octyl phthalate	NA	---	No information	---	---
Pentachlorophenol	5.10E-06	$(\mu g/m^3)^{-1}$	Likely to be carcinogenic	CalEPA-OEHHA	2012 RSL Table
2,3,7,8-TCDD TEQ	3.80E+01	$(\mu g/m^3)^{-1}$	Assessment underway	CalEPA-OEHHA	2012 RSL Table
PCB Dioxin-like Congener TEQ	3.80E+01	$(\mu g/m^3)^{-1}$	Assessment underway	CalEPA-OEHHA	2012 RSL Table
Heptachlor Epoxide	2.60E-03	$(\mu g/m^3)^{-1}$	B2	IRIS	12/12/2012
Benzo(a)anthracene	1.10E-04	$(\mu g/m^3)^{-1}$	B2	CalEPA-OEHHA	2012 RSL Table
Benzo(a)pyrene	1.10E-03	$(\mu g/m^3)^{-1}$	B2	CalEPA-OEHHA	2012 RSL Table
Benzo(b)fluoranthene	1.10E-04	$(\mu g/m^3)^{-1}$	B2	CalEPA-OEHHA	2012 RSL Table
Benzo(g,h,i)perylene	NA	---	D	IRIS	12/12/2012
Benzo(k)fluoranthene	1.10E-04	$(\mu g/m^3)^{-1}$	B2	CalEPA-OEHHA	2012 RSL Table
Carbazole	NA	---	No information	---	---
Chrysene	1.10E-05	$(\mu g/m^3)^{-1}$	B2	CalEPA-OEHHA	2012 RSL Table
Dibenz(a,h)anthracene	1.20E-03	$(\mu g/m^3)^{-1}$	B2	CalEPA-OEHHA	2012 RSL Table
Fluoranthene	NA	---	D	IRIS	12/12/2012
Indeno(1,2,3-cd)pyrene	1.10E-04	$(\mu g/m^3)^{-1}$	B2	CalEPA-OEHHA	2012 RSL Table
2-Methylnaphthalene	NA	---	Data are inadequate	IRIS	11/8/2012
Naphthalene	3.40E-05	$(\mu g/m^3)^{-1}$	C	CalEPA-OEHHA	2012 RSL Table
Pyrene	NA	---	D	IRIS	12/12/2012
Monochloronaphthalene, Total	NA	---	No information	---	---
Dichloronaphthalene, Total	NA	---	No information	---	---
Trichloronaphthalene, Total	NA	---	No information	---	---
Tetrachloronaphthalene, Total	NA	---	No information	---	---
Pentachloronaphthalene, Total	NA	---	No information	---	---
Hexachloronaphthalene, Total	NA	---	No information	---	---
Heptachloronaphthalene, Total	NA	---	No information	---	---
Total PCB Homologs[2]	5.71E-04	$(\mu g/m^3)^{-1}$	B2	IRIS	12/12/2012

TABLE A-6.2
CANCER TOXICITY DATA -- INHALATION
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Contaminant of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline	Unit Risk: Inhalation CSF	
	Value	Units	Description	Source(s)	Dates (1)
Aluminum	NA	---	No information	---	---
Antimony	NA	---	Not assessed	IRIS	11/8/2012
Arsenic	4.30E-03	$(\mu g/m^3)^{-1}$	A	IRIS	12/12/2012
Barium	NA	---	Cannot be determined	IRIS	12/12/2012
Cadmium	1.80E-03	$(\mu g/m^3)^{-1}$	B1	IRIS	12/12/2012
Chromium, Total[3]	8.40E-02	$(\mu g/m^3)^{-1}$	A	IRIS	12/12/2012
Cobalt	9.00E-03	$(\mu g/m^3)^{-1}$	No information	PPRTV	8/25/2008
Iron	NA	---	No information	---	---
Lead	NA	---	B2	IRIS	12/12/2012
Manganese	NA	---	D	IRIS	12/12/2012
Mercury	NA	---	D	IRIS	12/12/2012
Nickel	2.60E-04	$(\mu g/m^3)^{-1}$	No information	CalEPA-OEHHA	2012 RSL Table
Thallium	NA	---	No information	IRIS	12/12/2012
Vanadium	NA	---	No information	---	---
Zinc	NA	---	D	IRIS	12/12/2012

(1) Represents date source was searched.

(2) Aroclor 1254 value used.

(3) Chromium VI value used due to the absence of chromium speciation data.

Definitions: CalEPA=California Environmental Protection Agency
IRIS = Integrated Risk Information System.
OEHHA=California Office of Environmental Health Hazard Assessment
NA = Not available.
PPRTV = Provisional Peer-Reviewed Toxicity Value
A - Human carcinogen.
B1 - Probable human carcinogen - indicates that limited human data are available.
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans.
C - Possible human carcinogen.
D - Not classifiable as a human carcinogen.

TABLE A-7.1A-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	2.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	2.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	2.3E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	2.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	1.7E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	5.7E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	5.6E-07	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	4.1E-07	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	6.4E-07	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	2.3E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	6.7E-08	mg/kg-day	7.0E-10	mg/kg-day	96
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	1.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.072
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	2.6E-11	mg/kg-day	7.0E-10	mg/kg-day	0.037
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	4.0E-06	mg/kg-day	4.0E-04	mg/kg-day	0.010
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	8.3E-04	mg/kg-day	3.0E-04	mg/kg-day	2.8
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	2.1E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0070
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	1.6E-05	mg/kg-day	3.0E-04	mg/kg-day	0.055
				Iron	2.15E+04	mg/kg	---	---	---	---	---	2.9E-02	mg/kg-day	7.0E-01	mg/kg-day	0.042
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	3.0E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0043
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	2.0E-04	mg/kg-day	3.0E-04	mg/kg-day	0.66
			Ingestion Total								---					100
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	8.6E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	2.9E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	6.1E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	8.1E-09	mg/kg-day	7.0E-10	mg/kg-day	12
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	8.1E-07	mg/kg-day	2.0E-05	mg/kg-day	0.040
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	1.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.021
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	9.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.33
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA

TABLE A-7.1A-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								---					12
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	1.2E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	4.3E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	8.9E-11	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	4.2E-11	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	4.8E-11	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	1.7E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	5.0E-12	mg/m^3	4.0E-08	mg/m^3	0.00013
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	1.1E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	2.0E-15	mg/m^3	4.0E-08	mg/m^3	0.000000049
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	3.0E-10	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	6.2E-08	mg/m^3	1.5E-05	mg/m^3	0.0041
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	1.0E-04	mg/m^3	0.000016
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	6.0E-06	mg/m^3	0.00021
				Iron	2.15E+04	mg/kg	---	---	---	---	---	2.2E-06	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	2.3E-08	mg/m^3	5.0E-05	mg/m^3	0.00045
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	4.4E-03	mg/m^3	3.0E-04	mg/m^3	15
			Inhalation Total								---					15
	Surface Soil Total										---					126
Soil Total											---					126
											Total of Receptor Risks Across All Media					126

TABLE A-7.1A-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	2.1E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	2.1E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	1.5E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	5.3E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	5.2E-06	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	3.8E-06	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	6.0E-06	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	2.2E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	6.3E-07	mg/kg-day	7.0E-10	mg/kg-day	897
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	1.4E-05	mg/kg-day	2.0E-05	mg/kg-day	0.68
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	2.4E-10	mg/kg-day	7.0E-10	mg/kg-day	0.35
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	3.8E-05	mg/kg-day	4.0E-04	mg/kg-day	0.094
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	7.7E-03	mg/kg-day	3.0E-04	mg/kg-day	26
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	2.0E-04	mg/kg-day	3.0E-03	mg/kg-day	0.065
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	1.5E-04	mg/kg-day	3.0E-04	mg/kg-day	0.51
				Iron	2.15E+04	mg/kg	---	---	---	---	---	2.7E-01	mg/kg-day	7.0E-01	mg/kg-day	0.39
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	2.8E-03	mg/kg-day	7.0E-02	mg/kg-day	0.040
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	1.9E-03	mg/kg-day	3.0E-04	mg/kg-day	6.2
			Ingestion Total								---					931
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	7.8E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	7.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	7.7E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	7.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	5.6E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	1.9E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	4.0E-06	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	5.3E-08	mg/kg-day	7.0E-10	mg/kg-day	75
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	5.3E-06	mg/kg-day	2.0E-05	mg/kg-day	0.26
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	9.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.14
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	6.5E-04	mg/kg-day	3.0E-04	mg/kg-day	2.2
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA

TABLE A-7.1A-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								---					78
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	1.2E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	4.3E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	8.9E-11	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	4.2E-11	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	4.8E-11	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	1.7E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	5.0E-12	mg/m^3	4.0E-08	mg/m^3	0.00013
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	1.1E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	2.0E-15	mg/m^3	4.0E-08	mg/m^3	0.000000049
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	3.0E-10	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	6.2E-08	mg/m^3	1.5E-05	mg/m^3	0.0041
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	1.0E-04	mg/m^3	0.000016
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	6.0E-06	mg/m^3	0.00021
				Iron	2.15E+04	mg/kg	---	---	---	---	---	2.2E-06	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	2.3E-08	mg/m^3	5.0E-05	mg/m^3	0.00045
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	4.4E-03	mg/m^3	3.0E-04	mg/m^3	15
			Inhalation Total								---					15
	Surface Soil Total										---					1023
Soil Total											---					1023
											Total of Receptor Risks Across All Media					1023

TABLE A-7.1A-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				8.2E-06	---	---	---	---	---
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				7.5E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				8.1E-06	---	---	---	---	---
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				7.5E-07	---	---	---	---	---
				Carbazole	1.21E-01	mg/kg	1.9E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				2.6E-05	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				4.2E-06	---	---	---	---	---
				Dichloronaphthalene, Total	4.10E-01	mg/kg	6.4E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	4.7E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	7.4E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.70E-01	mg/kg	2.7E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	7.7E-08	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.0E-02	---	---	---	---	---
				Total PCB Homologs	1.06E+00	mg/kg	1.7E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	3.3E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	3.0E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.9E-06	---	---	---	---	---
				Antimony	2.95E+00	mg/kg	4.6E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	6.03E+02	mg/kg	9.4E-04	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.4E-03	---	---	---	---	---
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				5.1E-05	---	---	---	---	---
				Cobalt	1.20E+01	mg/kg	1.9E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	2.15E+04	mg/kg	3.4E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	2.19E+02	mg/kg	3.4E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	1.45E+02	mg/kg	2.3E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								1.2E-02					---
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				3.1E-06	---	---	---	---	---
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				2.9E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				3.1E-06	---	---	---	---	---
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				2.9E-07	---	---	---	---	---
				Carbazole	1.21E-01	mg/kg	7.8E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				9.8E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				1.6E-06	---	---	---	---	---
				Dichloronaphthalene, Total	4.10E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.70E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	7.3E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	9.5E-04	---	---	---	---	---
				Total PCB Homologs	1.06E+00	mg/kg	7.3E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.5E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.3E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.7E-06	---	---	---	---	---
				Antimony	2.95E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	6.03E+02	mg/kg	8.9E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.3E-04	---	---	---	---	---
				Chromium	1.53E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	1.20E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---

TABLE A-7.1A-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	2.19E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	1.45E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								1.1E-03					---
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				2.0E-11	---	---	---	---	---
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				1.9E-10	---	---	---	---	---
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				2.0E-11	---	---	---	---	---
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				1.9E-11	---	---	---	---	---
				Carbazole	1.21E-01	mg/kg	5.3E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				7.0E-11	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				1.1E-11	---	---	---	---	---
				Dichloronaphthalene, Total	4.10E-01	mg/kg	1.8E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	1.3E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	2.1E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.70E-01	mg/kg	7.5E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	2.2E-12	mg/m^3	3.8E+01	(µg/m3)^-1	8.2E-08	---	---	---	---	---
				Total PCB Homologs	1.06E+00	mg/kg	4.7E-11	mg/m^3	5.7E-04	(µg/m3)^-1	2.7E-11	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	8.4E-16	mg/m^3	3.8E+01	(µg/m3)^-1	3.2E-11	---	---	---	---	---
				Antimony	2.95E+00	mg/kg	1.3E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	6.03E+02	mg/kg	2.7E-08	mg/m^3	4.3E-03	(µg/m3)^-1	1.1E-07	---	---	---	---	---
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-1				1.4E-07	---	---	---	---	---
				Cobalt	1.20E+01	mg/kg	5.3E-10	mg/m^3	9.0E-03	(µg/m3)^-1	4.8E-09	---	---	---	---	---
				Iron	2.15E+04	mg/kg	9.5E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	2.19E+02	mg/kg	9.7E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	1.45E+02	mg/kg	1.9E-03	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								3.4E-07					---
	Surface Soil Total										1.3E-02					---
Soil Total											1.3E-02					---
											Total of Receptor Risks Across All Media	1.3E-02		Total of Receptor Hazards Across All Media		---

TABLE A-7.1A-4
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	2.3E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.7E-07	6.8E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	2.1E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.6E-06	6.2E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	2.3E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.7E-07	6.7E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	2.1E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	1.6E-08	6.2E-07	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	1.7E-08	mg/kg-day	NA	---	NA	4.9E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	5.8E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.2E-07	1.7E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.8E-08	3.5E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	5.7E-08	mg/kg-day	NA	---	NA	1.7E-07	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	4.2E-08	mg/kg-day	NA	---	NA	1.2E-07	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	6.6E-08	mg/kg-day	NA	---	NA	1.9E-07	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	2.4E-08	mg/kg-day	NA	---	NA	6.9E-08	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	6.9E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.9E-04	2.0E-08	mg/kg-day	7.0E-10	mg/kg-day	29
				Total PCB Homologs	1.06E+00	mg/kg	1.5E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	3.0E-07	4.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.022
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	2.7E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.5E-07	7.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.011
				Antimony	2.95E+00	mg/kg	4.1E-07	mg/kg-day	NA	---	NA	1.2E-06	mg/kg-day	4.0E-04	mg/kg-day	0.0030
				Arsenic	6.03E+02	mg/kg	8.4E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.3E-04	2.5E-04	mg/kg-day	3.0E-04	mg/kg-day	0.82
				Chromium	1.53E+01	mg/kg	2.1E-06	mg/kg-day	5.0E-01	(mg/kg-day)^-1	1.1E-06	6.2E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0021
				Cobalt	1.20E+01	mg/kg	1.7E-06	mg/kg-day	NA	---	NA	4.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.016
				Iron	2.15E+04	mg/kg	3.0E-03	mg/kg-day	NA	---	NA	8.7E-03	mg/kg-day	7.0E-01	mg/kg-day	0.012
				Manganese	2.19E+02	mg/kg	3.1E-05	mg/kg-day	NA	---	NA	8.9E-05	mg/kg-day	7.0E-02	mg/kg-day	0.0013
				Mercury	1.45E+02	mg/kg	2.0E-05	mg/kg-day	NA	---	NA	5.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.20
			Ingestion Total								1.0E-03					30
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.8E-08	3.5E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	1.1E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	8.1E-07	3.2E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.7E-08	3.5E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	8.1E-09	3.2E-07	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	8.8E-09	mg/kg-day	NA	---	NA	2.6E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	3.0E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.2E-07	8.7E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	6.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.6E-08	1.8E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	8.2E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.1E-04	2.4E-09	mg/kg-day	7.0E-10	mg/kg-day	3.4
				Total PCB Homologs	1.06E+00	mg/kg	8.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.6E-07	2.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.012
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.5E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.9E-07	4.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0062
				Antimony	2.95E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	1.0E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.5E-05	2.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.10
				Chromium	1.53E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA

TABLE A-7.1A-4
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								1.2E-04					3.5
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	1.5E-12	mg/m^3	1.1E-04	(µg/m3)^-1	1.6E-13	4.3E-12	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	1.3E-12	mg/m^3	1.1E-03	(µg/m3)^-1	1.5E-12	3.9E-12	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	1.4E-12	mg/m^3	1.1E-04	(µg/m3)^-1	1.6E-13	4.2E-12	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	1.3E-12	mg/m^3	1.1E-04	(µg/m3)^-1	1.5E-13	3.9E-12	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	1.1E-13	mg/m^3	NA	---	NA	3.1E-13	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	3.6E-13	mg/m^3	1.2E-03	(µg/m3)^-1	4.3E-13	1.1E-12	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	7.5E-13	mg/m^3	1.1E-04	(µg/m3)^-1	8.3E-14	2.2E-12	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	3.6E-13	mg/m^3	NA	---	NA	1.0E-12	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	2.6E-13	mg/m^3	NA	---	NA	7.6E-13	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	4.1E-13	mg/m^3	NA	---	NA	1.2E-12	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	1.5E-13	mg/m^3	NA	---	NA	4.3E-13	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	4.3E-14	mg/m^3	3.8E+01	(µg/m3)^-1	1.6E-09	1.3E-13	mg/m^3	4.0E-08	mg/m^3	0.0000031
				Total PCB Homologs	1.06E+00	mg/kg	9.2E-13	mg/m^3	5.7E-04	(µg/m3)^-1	5.3E-13	2.7E-12	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.7E-17	mg/m^3	3.8E+01	(µg/m3)^-1	6.3E-13	4.8E-17	mg/m^3	4.0E-08	mg/m^3	0.0000000012
				Antimony	2.95E+00	mg/kg	2.6E-12	mg/m^3	NA	---	NA	7.5E-12	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	5.3E-10	mg/m^3	4.3E-03	(µg/m3)^-1	2.3E-09	1.5E-09	mg/m^3	1.5E-05	mg/m^3	0.00010
				Chromium	1.53E+01	mg/kg	1.3E-11	mg/m^3	8.4E-02	(µg/m3)^-1	1.1E-09	3.9E-11	mg/m^3	1.0E-04	mg/m^3	0.00000039
				Cobalt	1.20E+01	mg/kg	1.1E-11	mg/m^3	9.0E-03	(µg/m3)^-1	9.5E-11	3.1E-11	mg/m^3	6.0E-06	mg/m^3	0.0000051
				Iron	2.15E+04	mg/kg	1.9E-08	mg/m^3	NA	---	NA	5.5E-08	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	1.9E-10	mg/m^3	NA	---	NA	5.6E-10	mg/m^3	5.0E-05	mg/m^3	0.000011
				Mercury	1.45E+02	mg/kg	3.7E-05	mg/m^3	NA	---	NA	1.1E-04	mg/m^3	3.0E-04	mg/m^3	0.36
			Inhalation Total								5.1E-09					0.36
	Surface Soil Total										1.1E-03					34
Soil Total											1.1E-03					34
											Total of Receptor Risks Across All Media					1.1E-03					Total of Receptor Hazards Across All Media					34

TABLE A-7.1A-5
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				2.1E-06	6.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				1.9E-05	5.8E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				2.1E-06	6.3E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				1.9E-07	5.8E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	3.9E-08	mg/kg-day	NA	---	NA	4.6E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				6.6E-06	1.6E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				1.1E-06	3.3E-06	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	1.3E-07	mg/kg-day	NA	---	NA	1.6E-06	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	9.8E-08	mg/kg-day	NA	---	NA	1.1E-06	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	1.5E-07	mg/kg-day	NA	---	NA	1.8E-06	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	5.5E-08	mg/kg-day	NA	---	NA	6.5E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	1.6E-08	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.1E-03	1.9E-07	mg/kg-day	7.0E-10	mg/kg-day	266
				Total PCB Homologs	1.06E+00	mg/kg	3.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	6.9E-07	4.0E-06	mg/kg-day	2.0E-05	mg/kg-day	0.20
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	6.2E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.1E-07	7.2E-11	mg/kg-day	7.0E-10	mg/kg-day	0.10
				Antimony	2.95E+00	mg/kg	9.6E-07	mg/kg-day	NA	---	NA	1.1E-05	mg/kg-day	4.0E-04	mg/kg-day	0.028
				Arsenic	6.03E+02	mg/kg	2.0E-04	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.9E-04	2.3E-03	mg/kg-day	3.0E-04	mg/kg-day	7.6
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				1.3E-05	5.8E-05	mg/kg-day	3.0E-03	mg/kg-day	0.019
				Cobalt	1.20E+01	mg/kg	3.9E-06	mg/kg-day	NA	---	NA	4.6E-05	mg/kg-day	3.0E-04	mg/kg-day	0.15
				Iron	2.15E+04	mg/kg	7.0E-03	mg/kg-day	NA	---	NA	8.2E-02	mg/kg-day	7.0E-01	mg/kg-day	0.12
				Manganese	2.19E+02	mg/kg	7.1E-05	mg/kg-day	NA	---	NA	8.3E-04	mg/kg-day	7.0E-02	mg/kg-day	0.012
				Mercury	1.45E+02	mg/kg	4.7E-05	mg/kg-day	NA	---	NA	5.5E-04	mg/kg-day	3.0E-04	mg/kg-day	1.8
			Ingestion Total								2.4E-03					277
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				6.3E-07	2.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				5.7E-06	2.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				6.2E-07	2.3E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				5.7E-08	2.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	1.4E-08	mg/kg-day	NA	---	NA	1.7E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				2.0E-06	5.7E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				3.2E-07	1.2E-06	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	1.3E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.7E-04	1.6E-08	mg/kg-day	7.0E-10	mg/kg-day	22
				Total PCB Homologs	1.06E+00	mg/kg	1.3E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.7E-07	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	0.079
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	2.4E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.2E-07	2.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.040
				Antimony	2.95E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	1.6E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.5E-05	1.9E-04	mg/kg-day	3.0E-04	mg/kg-day	0.64
				Chromium	1.53E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA

TABLE A-7.1A-5
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								2.1E-04					23
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				2.1E-13	4.3E-12	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				1.9E-12	3.9E-12	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				2.1E-13	4.2E-12	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				1.9E-13	3.9E-12	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	2.6E-14	mg/m^3	NA	---	NA	3.1E-13	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				7.3E-13	1.1E-12	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				1.1E-13	2.2E-12	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	8.9E-14	mg/m^3	NA	---	NA	1.0E-12	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	6.5E-14	mg/m^3	NA	---	NA	7.6E-13	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	1.0E-13	mg/m^3	NA	---	NA	1.2E-12	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	3.7E-14	mg/m^3	NA	---	NA	4.3E-13	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	1.1E-14	mg/m^3	3.8E+01	(µg/m3)^-1	4.1E-10	1.3E-13	mg/m^3	4.0E-08	mg/m^3	0.0000031
				Total PCB Homologs	1.06E+00	mg/kg	2.3E-13	mg/m^3	5.7E-04	(µg/m3)^-1	1.3E-13	2.7E-12	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	4.2E-18	mg/m^3	3.8E+01	(µg/m3)^-1	1.6E-13	4.8E-17	mg/m^3	4.0E-08	mg/m^3	0.0000000012
				Antimony	2.95E+00	mg/kg	6.4E-13	mg/m^3	NA	---	NA	7.5E-12	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	1.3E-10	mg/m^3	4.3E-03	(µg/m3)^-1	5.7E-10	1.5E-09	mg/m^3	1.5E-05	mg/m^3	0.00010
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-3				1.5E-09	3.9E-11	mg/m^3	1.0E-04	mg/m^3	0.00000039
				Cobalt	1.20E+01	mg/kg	2.6E-12	mg/m^3	9.0E-03	(µg/m3)^-1	2.4E-11	3.1E-11	mg/m^3	6.0E-06	mg/m^3	0.0000051
				Iron	2.15E+04	mg/kg	4.7E-09	mg/m^3	NA	---	NA	5.5E-08	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	4.8E-11	mg/m^3	NA	---	NA	5.6E-10	mg/m^3	5.0E-05	mg/m^3	0.000011
				Mercury	1.45E+02	mg/kg	9.3E-06	mg/m^3	NA	---	NA	1.1E-04	mg/m^3	3.0E-04	mg/m^3	0.36
			Inhalation Total								2.5E-09					0.36
	Surface Soil Total										2.6E-03					300
Soil Total											2.6E-03					300
										Total of Receptor Risks Across All Media	2.6E-03			Total of Receptor Hazards Across All Media		300

TABLE A-7.1A-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.9E-07	9.2E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.6E-06	8.4E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.8E-07	9.0E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.6E-08	8.4E-07	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	9.5E-09	mg/kg-day	NA	---	NA	6.6E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				9.0E-07	2.3E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				1.5E-07	4.7E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	3.2E-08	mg/kg-day	NA	---	NA	2.2E-07	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	2.3E-08	mg/kg-day	NA	---	NA	1.6E-07	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	3.7E-08	mg/kg-day	NA	---	NA	2.6E-07	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	1.3E-08	mg/kg-day	NA	---	NA	9.3E-08	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	3.8E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.0E-04	2.7E-08	mg/kg-day	7.0E-10	mg/kg-day	38
				Total PCB Homologs	1.06E+00	mg/kg	8.3E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.7E-07	5.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.029
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.5E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.9E-07	1.0E-11	mg/kg-day	7.0E-10	mg/kg-day	0.015
				Antimony	2.95E+00	mg/kg	2.3E-07	mg/kg-day	NA	---	NA	1.6E-06	mg/kg-day	4.0E-04	mg/kg-day	0.0040
				Arsenic	6.03E+02	mg/kg	4.7E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	7.1E-05	3.3E-04	mg/kg-day	3.0E-04	mg/kg-day	1.1
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				1.8E-06	8.4E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0028
				Cobalt	1.20E+01	mg/kg	9.4E-07	mg/kg-day	NA	---	NA	6.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.022
				Iron	2.15E+04	mg/kg	1.7E-03	mg/kg-day	NA	---	NA	1.2E-02	mg/kg-day	7.0E-01	mg/kg-day	0.017
				Manganese	2.19E+02	mg/kg	1.7E-05	mg/kg-day	NA	---	NA	1.2E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0017
				Mercury	1.45E+02	mg/kg	1.1E-05	mg/kg-day	NA	---	NA	7.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.26
			Ingestion Total								5.8E-04					40
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				3.1E-07	1.0E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.8E-06	9.1E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				3.1E-07	9.8E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.9E-08	9.1E-07	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	1.0E-08	mg/kg-day	NA	---	NA	7.2E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				9.8E-07	2.5E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				1.6E-07	5.1E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	9.6E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.3E-04	6.8E-09	mg/kg-day	7.0E-10	mg/kg-day	9.6
				Total PCB Homologs	1.06E+00	mg/kg	9.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.9E-07	6.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.034
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.7E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.3E-07	1.2E-11	mg/kg-day	7.0E-10	mg/kg-day	0.017
				Antimony	2.95E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	1.2E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.8E-05	8.3E-05	mg/kg-day	3.0E-04	mg/kg-day	0.28
				Chromium	1.53E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA

TABLE A-7.1A-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								1.5E-04					10
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				3.0E-13	6.4E-12	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.7E-12	5.8E-12	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.9E-13	6.3E-12	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.7E-13	5.8E-12	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	6.6E-14	mg/m^3	NA	---	NA	4.6E-13	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				1.0E-12	1.6E-12	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				1.5E-13	3.3E-12	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	2.2E-13	mg/m^3	NA	---	NA	1.6E-12	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	1.6E-13	mg/m^3	NA	---	NA	1.1E-12	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	2.6E-13	mg/m^3	NA	---	NA	1.8E-12	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	9.3E-14	mg/m^3	NA	---	NA	6.5E-13	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	2.7E-14	mg/m^3	3.8E+01	(µg/m3)^-1	1.0E-09	1.9E-13	mg/m^3	4.0E-08	mg/m^3	0.0000047
				Total PCB Homologs	1.06E+00	mg/kg	5.8E-13	mg/m^3	5.7E-04	(µg/m3)^-1	3.3E-13	4.0E-12	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.0E-17	mg/m^3	3.8E+01	(µg/m3)^-1	3.9E-13	7.3E-17	mg/m^3	4.0E-08	mg/m^3	0.0000000018
				Antimony	2.95E+00	mg/kg	1.6E-12	mg/m^3	NA	---	NA	1.1E-11	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	3.3E-10	mg/m^3	4.3E-03	(µg/m3)^-1	1.4E-09	2.3E-09	mg/m^3	1.5E-05	mg/m^3	0.00015
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-4				2.1E-09	5.8E-11	mg/m^3	1.0E-04	mg/m^3	0.00000058
				Cobalt	1.20E+01	mg/kg	6.6E-12	mg/m^3	9.0E-03	(µg/m3)^-1	5.9E-11	4.6E-11	mg/m^3	6.0E-06	mg/m^3	0.0000077
				Iron	2.15E+04	mg/kg	1.2E-08	mg/m^3	NA	---	NA	8.2E-08	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	1.2E-10	mg/m^3	NA	---	NA	8.4E-10	mg/m^3	5.0E-05	mg/m^3	0.000017
				Mercury	1.45E+02	mg/kg	2.3E-05	mg/m^3	NA	---	NA	1.6E-04	mg/m^3	3.0E-04	mg/m^3	0.54
			Inhalation Total								4.6E-09					0.54
	Surface Soil Total										7.3E-04					50
Soil Total											7.3E-04					50
											Total of Receptor Risks Across All Media	7.3E-04		Total of Receptor Hazards Across All Media		50

TABLE A-7.1B-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	2.6E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	2.5E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	2.5E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	2.0E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	2.1E-06	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	3.2E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	6.0E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	2.4E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	1.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.17
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	2.2E-06	mg/kg-day	2.0E-05	mg/kg-day	0.11
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	5.6E-11	mg/kg-day	7.0E-10	mg/kg-day	0.080
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	6.8E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0068
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	1.7E-04	mg/kg-day	4.0E-04	mg/kg-day	0.43
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	8.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.28
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	3.1E-05	mg/kg-day	3.0E-03	mg/kg-day	0.010
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.036
				Iron	5.52E+04	mg/kg	---	---	---	---	---	7.6E-02	mg/kg-day	7.0E-01	mg/kg-day	0.11
				Lead	3.50E+03	mg/kg	---	---	---	---	---	4.8E-03	mg/kg-day	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	4.5E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0064
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	4.8E-05	mg/kg-day	3.0E-04	mg/kg-day	0.16
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	8.2E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0041
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	3.4E-05	mg/kg-day	7.0E-05	mg/kg-day	0.49
			Ingestion Total								---					1.9
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	1.4E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	1.0E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	1.7E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	3.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	1.4E-11	mg/kg-day	7.0E-10	mg/kg-day	0.021
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	0.061
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	3.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.045
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.034
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.52E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA

TABLE A-7.1B-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					0.16
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	2.0E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	1.9E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	1.9E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	1.5E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	2.4E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	4.5E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	1.8E-10	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	9.1E-15	mg/m^3	4.0E-08	mg/m^3	0.00000023
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	4.2E-15	mg/m^3	4.0E-08	mg/m^3	0.00000011
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	5.1E-07	mg/m^3	5.0E-03	mg/m^3	0.00010
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	1.3E-08	mg/m^3	NA	---	NA
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	6.4E-09	mg/m^3	1.5E-05	mg/m^3	0.00042
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	2.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000023
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	8.1E-10	mg/m^3	6.0E-06	mg/m^3	0.00013
				Iron	5.52E+04	mg/kg	---	---	---	---	---	5.7E-06	mg/m^3	NA	---	NA
				Lead	3.50E+03	mg/kg	---	---	---	---	---	3.6E-07	mg/m^3	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	3.4E-08	mg/m^3	5.0E-05	mg/m^3	0.00068
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	1.1E-03	mg/m^3	3.0E-04	mg/m^3	3.5
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	6.1E-09	mg/m^4	9.0E-05	mg/m^3	0.000068
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	2.6E-09	mg/m^5	1.0E-04	mg/m^3	0.000026
			Inhalation Total								---					3.5
	Surface Soil Total										---					5.6
Soil Total											---					5.6
											---					5.6

Total of Receptor Risks Across All Media

Total of Receptor Hazards Across All Media

TABLE A-7.1B-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	2.5E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	2.3E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	2.4E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	1.9E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	3.0E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	5.6E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	2.2E-05	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	1.1E-09	mg/kg-day	7.0E-10	mg/kg-day	1.6
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	2.0E-05	mg/kg-day	1.0
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	5.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.75
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	6.3E-02	mg/kg-day	1.0E+00	mg/kg-day	0.063
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	1.6E-03	mg/kg-day	4.0E-04	mg/kg-day	4.0
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	7.9E-04	mg/kg-day	3.0E-04	mg/kg-day	2.6
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	2.9E-04	mg/kg-day	3.0E-03	mg/kg-day	0.096
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	1.0E-04	mg/kg-day	3.0E-04	mg/kg-day	0.33
				Iron	5.52E+04	mg/kg	---	---	---	---	---	7.1E-01	mg/kg-day	7.0E-01	mg/kg-day	1.0
				Lead	3.50E+03	mg/kg	---	---	---	---	---	4.5E-02	mg/kg-day	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	4.2E-03	mg/kg-day	7.0E-02	mg/kg-day	0.060
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	4.5E-04	mg/kg-day	3.0E-04	mg/kg-day	1.5
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	7.6E-04	mg/kg-day	2.0E-02	mg/kg-day	0.038
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	3.2E-04	mg/kg-day	7.0E-05	mg/kg-day	4.6
			Ingestion Total								---					18
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	8.9E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	8.5E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	8.6E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	6.8E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	7.2E-06	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	2.0E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	8.0E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	9.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.14
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	7.9E-06	mg/kg-day	2.0E-05	mg/kg-day	0.40
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	2.1E-10	mg/kg-day	7.0E-10	mg/kg-day	0.29
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	6.6E-05	mg/kg-day	3.0E-04	mg/kg-day	0.22
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.52E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA

TABLE A-7.1B-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					1.0
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	2.0E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	1.9E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	1.9E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	1.5E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	2.4E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	4.5E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	1.8E-10	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	9.1E-15	mg/m^3	4.0E-08	mg/m^3	0.00000023
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	4.2E-15	mg/m^3	4.0E-08	mg/m^3	0.00000011
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	5.1E-07	mg/m^3	5.0E-03	mg/m^3	0.00010
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	1.3E-08	mg/m^3	NA	---	NA
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	6.4E-09	mg/m^3	1.5E-05	mg/m^3	0.00042
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	2.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000023
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	8.1E-10	mg/m^3	6.0E-06	mg/m^3	0.00013
				Iron	5.52E+04	mg/kg	---	---	---	---	---	5.7E-06	mg/m^3	NA	---	NA
				Lead	3.50E+03	mg/kg	---	---	---	---	---	3.6E-07	mg/m^3	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	3.4E-08	mg/m^3	5.0E-05	mg/m^3	0.00068
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	1.1E-03	mg/m^3	3.0E-04	mg/m^3	3.5
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	6.1E-09	mg/m^4	9.0E-05	mg/m^3	0.000068
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	2.6E-09	mg/m^5	1.0E-04	mg/m^3	0.000026
			Inhalation Total								---					3.5
	Surface Soil Total										---					22
Soil Total											---					22
											Total of Receptor Risks Across All Media ---					Total of Receptor Hazards Across All Media 22

TABLE A-7.1B-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				9.4E-06	---	---	---	---	---
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				8.9E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				9.1E-06	---	---	---	---	---
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	2.3E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				7.6E-07	---	---	---	---	---
				Carbazole	2.34E-01	mg/kg	3.7E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				2.1E-05	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				8.4E-06	---	---	---	---	---
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	1.4E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.8E-05	---	---	---	---	---
				Total PCB Homologs	1.59E+00	mg/kg	2.5E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	5.0E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	6.4E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.3E-06	---	---	---	---	---
				Aluminum	4.93E+03	mg/kg	7.7E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	1.26E+02	mg/kg	2.0E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	6.19E+01	mg/kg	9.7E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.5E-04	---	---	---	---	---
				Chromium	2.25E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				7.6E-05	---	---	---	---	---
				Cobalt	7.84E+00	mg/kg	1.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	5.52E+04	mg/kg	8.6E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	3.50E+03	mg/kg	5.5E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	3.29E+02	mg/kg	5.1E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	3.50E+01	mg/kg	5.5E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Nickel	5.98E+01	mg/kg	9.4E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Vanadium	2.52E+01	mg/kg	3.9E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								3.9E-04					---
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				3.6E-06	---	---	---	---	---
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				3.4E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				3.5E-06	---	---	---	---	---
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	9.4E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				2.9E-07	---	---	---	---	---
				Carbazole	2.34E-01	mg/kg	1.5E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				8.2E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				3.2E-06	---	---	---	---	---
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	1.3E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.7E-06	---	---	---	---	---
				Total PCB Homologs	1.59E+00	mg/kg	1.1E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.2E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	2.8E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.7E-06	---	---	---	---	---
				Aluminum	4.93E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	1.26E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	6.19E+01	mg/kg	9.2E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.4E-05	---	---	---	---	---
				Chromium	2.25E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	7.84E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Iron	5.52E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---

TABLE A-7.1B-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	3.29E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	3.50E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Nickel	5.98E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Vanadium	2.52E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								7.4E-05					---
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				2.3E-11	---	---	---	---	---
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				2.2E-10	---	---	---	---	---
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				2.3E-11	---	---	---	---	---
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	6.4E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				1.9E-11	---	---	---	---	---
				Carbazole	2.34E-01	mg/kg	1.0E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				5.8E-11	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				2.1E-11	---	---	---	---	---
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	3.9E-15	mg/m^3	3.8E+01	(µg/m3)^-1	1.5E-10	---	---	---	---	---
				Total PCB Homologs	1.59E+00	mg/kg	7.0E-11	mg/m^3	5.7E-04	(µg/m3)^-1	4.0E-11	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	1.8E-15	mg/m^3	3.8E+01	(µg/m3)^-1	6.9E-11	---	---	---	---	---
				Aluminum	4.93E+03	mg/kg	2.2E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Antimony	1.26E+02	mg/kg	5.5E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	6.19E+01	mg/kg	2.7E-09	mg/m^3	4.3E-03	(µg/m3)^-1	1.2E-08	---	---	---	---	---
				Chromium	2.25E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-5				2.1E-07	---	---	---	---	---
				Cobalt	7.84E+00	mg/kg	3.5E-10	mg/m^3	9.0E-03	(µg/m3)^-1	3.1E-09	---	---	---	---	---
				Iron	5.52E+04	mg/kg	2.4E-06	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	3.50E+03	mg/kg	1.5E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	3.29E+02	mg/kg	1.4E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	3.50E+01	mg/kg	4.5E-04	mg/m^3	NA	---	NA	---	---	---	---	---
				Nickel	5.98E+01	mg/kg	2.6E-09	mg/m^4	2.6E-04	(µg/m3)^-1	6.8E-10	---	---	---	---	---
				Vanadium	2.52E+01	mg/kg	1.1E-09	mg/m^5	NA	---	NA	---	---	---	---	---
			Inhalation Total								2.3E-07					---
	Surface Soil Total										4.6E-04					---
Soil Total											4.6E-04					---
											Total of Receptor Risks Across All Media	4.6E-04		Total of Receptor Hazards Across All Media		---

TABLE A-7.1B-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	6.7E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.9E-07	1.9E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	6.4E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.6E-06	1.8E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	6.5E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.7E-07	1.8E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	5.1E-07	mg/kg-day	NA	---	NA	1.4E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	5.4E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	3.9E-08	1.5E-06	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	8.2E-08	mg/kg-day	NA	---	NA	2.3E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	1.5E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.1E-06	4.3E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	6.0E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.4E-07	1.7E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	3.1E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.0E-06	8.7E-11	mg/kg-day	7.0E-10	mg/kg-day	0.12
				Total PCB Homologs	1.59E+00	mg/kg	5.5E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.1E-06	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	0.08
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	1.4E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.9E-06	4.0E-11	mg/kg-day	7.0E-10	mg/kg-day	0.057
				Aluminum	4.93E+03	mg/kg	1.7E-03	mg/kg-day	NA	---	NA	4.8E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0048
				Antimony	1.26E+02	mg/kg	4.4E-05	mg/kg-day	NA	---	NA	1.2E-04	mg/kg-day	4.0E-04	mg/kg-day	0.31
				Arsenic	6.19E+01	mg/kg	2.2E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	3.2E-05	6.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.20
				Chromium	2.25E+01	mg/kg	7.9E-06	mg/kg-day	5.0E-01	(mg/kg-day)^-1	3.9E-06	2.2E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0073
				Cobalt	7.84E+00	mg/kg	2.7E-06	mg/kg-day	NA	---	NA	7.7E-06	mg/kg-day	3.0E-04	mg/kg-day	0.026
				Iron	5.52E+04	mg/kg	1.9E-02	mg/kg-day	NA	---	NA	5.4E-02	mg/kg-day	7.0E-01	mg/kg-day	0.077
				Lead	3.50E+03	mg/kg	1.2E-03	mg/kg-day	NA	---	NA	3.4E-03	mg/kg-day	NA	---	NA
				Manganese	3.29E+02	mg/kg	1.1E-04	mg/kg-day	NA	---	NA	3.2E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0046
				Mercury	3.50E+01	mg/kg	1.2E-05	mg/kg-day	NA	---	NA	3.4E-05	mg/kg-day	3.0E-04	mg/kg-day	0.11
				Nickel	5.98E+01	mg/kg	2.1E-05	mg/kg-day	NA	---	NA	5.8E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0029
				Vanadium	2.52E+01	mg/kg	8.8E-06	mg/kg-day	NA	---	NA	2.5E-05	mg/kg-day	7.0E-05	mg/kg-day	0.35
			Ingestion Total								5.1E-05					1.4
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	5.8E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.2E-07	1.6E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	5.5E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.0E-06	1.5E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	5.6E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.1E-07	1.6E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	4.4E-07	mg/kg-day	NA	---	NA	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	4.6E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	3.4E-08	1.3E-06	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	7.0E-08	mg/kg-day	NA	---	NA	2.0E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	1.3E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	9.6E-07	3.7E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	5.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.8E-07	1.4E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	6.1E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.0E-07	1.7E-11	mg/kg-day	7.0E-10	mg/kg-day	0.024
				Total PCB Homologs	1.59E+00	mg/kg	5.1E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.0E-06	1.4E-06	mg/kg-day	2.0E-05	mg/kg-day	0.072
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	1.3E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.7E-06	3.7E-11	mg/kg-day	7.0E-10	mg/kg-day	0.053
				Aluminum	4.93E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.26E+02	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.19E+01	mg/kg	4.3E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	6.4E-06	1.2E-05	mg/kg-day	3.0E-04	mg/kg-day	0.040
				Chromium	2.25E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	7.84E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.52E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA

TABLE A-7.1B-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.29E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	3.50E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	5.98E+01	mg/kg	NA	---	NA	---	NA	NA	---	8.0E-04	mg/kg-day	NA
				Vanadium	2.52E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								1.6E-05					0.19
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	1.7E-11	mg/m^3	1.1E-04	(µg/m3)^-1	1.8E-12	4.7E-11	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	1.6E-11	mg/m^3	1.1E-03	(µg/m3)^-1	1.7E-11	4.5E-11	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	1.6E-11	mg/m^3	1.1E-04	(µg/m3)^-1	1.8E-12	4.5E-11	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	1.3E-11	mg/m^3	NA	---	NA	3.6E-11	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	1.4E-11	mg/m^3	1.1E-04	(µg/m3)^-1	1.5E-12	3.8E-11	mg/m^3	NA	---	NA
				Carbazole	2.34E-01	mg/kg	2.0E-12	mg/m^3	NA	---	NA	5.7E-12	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	3.8E-12	mg/m^3	1.2E-03	(µg/m3)^-1	4.6E-12	1.1E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	1.5E-11	mg/m^3	1.1E-04	(µg/m3)^-1	1.7E-12	4.2E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	7.7E-16	mg/m^3	3.8E+01	(µg/m3)^-1	2.9E-11	2.2E-15	mg/m^3	4.0E-08	mg/m^3	0.000000054
				Total PCB Homologs	1.59E+00	mg/kg	1.4E-11	mg/m^3	5.7E-04	(µg/m3)^-1	7.9E-12	3.9E-11	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	3.6E-16	mg/m^3	3.8E+01	(µg/m3)^-1	1.4E-11	1.0E-15	mg/m^3	4.0E-08	mg/m^3	0.000000025
				Aluminum	4.93E+03	mg/kg	4.3E-08	mg/m^3	NA	---	NA	1.2E-07	mg/m^3	5.0E-03	mg/m^3	0.000024
				Antimony	1.26E+02	mg/kg	1.1E-09	mg/m^3	NA	---	NA	3.1E-09	mg/m^3	NA	---	NA
				Arsenic	6.19E+01	mg/kg	5.4E-10	mg/m^3	4.3E-03	(µg/m3)^-1	2.3E-09	1.5E-09	mg/m^3	1.5E-05	mg/m^3	0.00010
				Chromium	2.25E+01	mg/kg	2.0E-10	mg/m^3	8.4E-02	(µg/m3)^-1	1.7E-08	5.5E-10	mg/m^3	1.0E-04	mg/m^3	0.0000055
				Cobalt	7.84E+00	mg/kg	6.9E-11	mg/m^3	9.0E-03	(µg/m3)^-1	6.2E-10	1.9E-10	mg/m^3	6.0E-06	mg/m^3	0.000032
				Iron	5.52E+04	mg/kg	4.8E-07	mg/m^3	NA	---	NA	1.4E-06	mg/m^3	NA	---	NA
				Lead	3.50E+03	mg/kg	3.1E-08	mg/m^3	NA	---	NA	8.6E-08	mg/m^3	NA	---	NA
				Manganese	3.29E+02	mg/kg	2.9E-09	mg/m^3	NA	---	NA	8.0E-09	mg/m^3	5.0E-05	mg/m^3	0.00016
				Mercury	3.50E+01	mg/kg	9.0E-05	mg/m^3	NA	---	NA	2.5E-04	mg/m^3	3.0E-04	mg/m^3	0.84
				Nickel	5.98E+01	mg/kg	5.2E-10	mg/m^4	2.6E-04	(µg/m3)^-1	1.4E-10	1.5E-09	mg/m^4	9.0E-05	mg/m^3	0.000016
				Vanadium	2.52E+01	mg/kg	2.2E-10	mg/m^5	NA	---	NA	6.2E-10	mg/m^5	1.0E-04	mg/m^3	0.0000062
			Inhalation Total								2.0E-08					0.84
	Surface Soil Total										6.7E-05					2.4
Soil Total											6.7E-05					2.4
											Total of Receptor Risks Across All Media					6.7E-05	Total of Receptor Hazards Across All Media				2.4

TABLE A-7.1B-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.3E-07	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.1E-06	1.0E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.2E-07	1.0E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	1.1E-07	mg/kg-day	NA	---	NA	8.0E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				2.6E-08	8.5E-07	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	1.8E-08	mg/kg-day	NA	---	NA	1.3E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				7.5E-07	2.4E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.0E-07	9.4E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	6.9E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	9.0E-07	4.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.069
				Total PCB Homologs	1.59E+00	mg/kg	1.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.5E-07	8.7E-07	mg/kg-day	2.0E-05	mg/kg-day	0.043
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	3.2E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.2E-07	2.2E-11	mg/kg-day	7.0E-10	mg/kg-day	0.032
				Aluminum	4.93E+03	mg/kg	3.9E-04	mg/kg-day	NA	---	NA	2.7E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0027
				Antimony	1.26E+02	mg/kg	9.9E-06	mg/kg-day	NA	---	NA	6.9E-05	mg/kg-day	4.0E-04	mg/kg-day	0.17
				Arsenic	6.19E+01	mg/kg	4.8E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	7.3E-06	3.4E-05	mg/kg-day	3.0E-04	mg/kg-day	0.11
				Chromium	2.25E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				2.6E-06	1.2E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0041
				Cobalt	7.84E+00	mg/kg	6.1E-07	mg/kg-day	NA	---	NA	4.3E-06	mg/kg-day	3.0E-04	mg/kg-day	0.014
				Iron	5.52E+04	mg/kg	4.3E-03	mg/kg-day	NA	---	NA	3.0E-02	mg/kg-day	7.0E-01	mg/kg-day	0.043
				Lead	3.50E+03	mg/kg	2.7E-04	mg/kg-day	NA	---	NA	1.9E-03	mg/kg-day	NA	---	NA
				Manganese	3.29E+02	mg/kg	2.6E-05	mg/kg-day	NA	---	NA	1.8E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0026
				Mercury	3.50E+01	mg/kg	2.7E-06	mg/kg-day	NA	---	NA	1.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.064
				Nickel	5.98E+01	mg/kg	4.7E-06	mg/kg-day	NA	---	NA	3.3E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0016
				Vanadium	2.52E+01	mg/kg	2.0E-06	mg/kg-day	NA	---	NA	1.4E-05	mg/kg-day	7.0E-05	mg/kg-day	0.20
			Ingestion Total								1.6E-05					0.76
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.6E-07	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.4E-06	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.5E-07	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	1.2E-07	mg/kg-day	NA	---	NA	8.7E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				2.9E-08	9.2E-07	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	2.0E-08	mg/kg-day	NA	---	NA	1.4E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				8.1E-07	2.6E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.2E-07	1.0E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	1.7E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.3E-07	1.2E-11	mg/kg-day	7.0E-10	mg/kg-day	0.017
				Total PCB Homologs	1.59E+00	mg/kg	1.5E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.9E-07	1.0E-06	mg/kg-day	2.0E-05	mg/kg-day	0.051
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	3.8E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.9E-07	2.6E-11	mg/kg-day	7.0E-10	mg/kg-day	0.038
				Aluminum	4.93E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.26E+02	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.19E+01	mg/kg	1.2E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.8E-06	8.5E-06	mg/kg-day	3.0E-04	mg/kg-day	0.028
				Chromium	2.25E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	7.84E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.52E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA

TABLE A-7.1B-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.29E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	3.50E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	5.98E+01	mg/kg	NA	---	NA	---	NA	NA	---	8.0E-04	mg/kg-day	NA
				Vanadium	2.52E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								8.1E-06					0.13
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.0E-13	7.3E-12	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.2E-12	6.9E-12	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.3E-13	7.1E-12	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	7.9E-13	mg/m^3	NA	---	NA	5.6E-12	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				2.8E-13	5.9E-12	mg/m^3	NA	---	NA
				Carbazole	2.34E-01	mg/kg	1.3E-13	mg/m^3	NA	---	NA	8.9E-13	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				8.5E-13	1.7E-12	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.1E-13	6.6E-12	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	4.8E-17	mg/m^3	3.8E+01	(µg/m3)^-1	1.8E-12	3.4E-16	mg/m^3	4.0E-08	mg/m^3	0.0000000084
				Total PCB Homologs	1.59E+00	mg/kg	8.7E-13	mg/m^3	5.7E-04	(µg/m3)^-1	4.9E-13	6.1E-12	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	2.2E-17	mg/m^3	3.8E+01	(µg/m3)^-1	8.5E-13	1.6E-16	mg/m^3	4.0E-08	mg/m^3	0.0000000039
				Aluminum	4.93E+03	mg/kg	2.7E-09	mg/m^3	NA	---	NA	1.9E-08	mg/m^3	5.0E-03	mg/m^3	0.0000038
				Antimony	1.26E+02	mg/kg	6.9E-11	mg/m^3	NA	---	NA	4.8E-10	mg/m^3	NA	---	NA
				Arsenic	6.19E+01	mg/kg	3.4E-11	mg/m^3	4.3E-03	(µg/m3)^-1	1.5E-10	2.4E-10	mg/m^3	1.5E-05	mg/m^3	0.000016
				Chromium	2.25E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-7				3.1E-09	8.6E-11	mg/m^3	1.0E-04	mg/m^3	0.00000086
				Cobalt	7.84E+00	mg/kg	4.3E-12	mg/m^3	9.0E-03	(µg/m3)^-1	3.9E-11	3.0E-11	mg/m^3	6.0E-06	mg/m^3	0.0000050
				Iron	5.52E+04	mg/kg	3.0E-08	mg/m^3	NA	---	NA	2.1E-07	mg/m^3	NA	---	NA
				Lead	3.50E+03	mg/kg	1.9E-09	mg/m^3	NA	---	NA	1.3E-08	mg/m^3	NA	---	NA
				Manganese	3.29E+02	mg/kg	1.8E-10	mg/m^3	NA	---	NA	1.3E-09	mg/m^3	5.0E-05	mg/m^3	0.000025
				Mercury	3.50E+01	mg/kg	5.6E-06	mg/m^3	NA	---	NA	3.9E-05	mg/m^3	3.0E-04	mg/m^3	0.13
				Nickel	5.98E+01	mg/kg	3.3E-11	mg/m^4	2.6E-04	(µg/m3)^-1	8.5E-12	2.3E-10	mg/m^4	9.0E-05	mg/m^3	0.0000025
				Vanadium	2.52E+01	mg/kg	1.4E-11	mg/m^5	NA	---	NA	9.6E-11	mg/m^5	1.0E-04	mg/m^3	0.0000010
			Inhalation Total								3.3E-09					0.13
	Surface Soil Total										2.4E-05					1.0
Soil Total											2.4E-05					1.0
											Total of Receptor Risks Across All Media					
											2.4E-05	Total of Receptor Hazards Across All Media				1.0

TABLE A-7.1C-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	2.4E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	1.8E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	1.6E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	1.7E-05	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	2.8E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	2.3E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	2.7E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	1.6E-05	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	3.7E-09	mg/kg-day	7.0E-10	mg/kg-day	5.3
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	9.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.013
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	9.6E-03	mg/kg-day	1.0E+00	mg/kg-day	0.010
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	1.5E-05	mg/kg-day	4.0E-04	mg/kg-day	0.037
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	2.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.084
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	1.7E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0056
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	9.1E-06	mg/kg-day	3.0E-04	mg/kg-day	0.030
				Iron	1.35E+04	mg/kg	---	---	---	---	---	1.9E-02	mg/kg-day	7.0E-01	mg/kg-day	0.026
				Lead	5.53E+02	mg/kg	---	---	---	---	---	7.6E-04	mg/kg-day	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	5.2E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0074
				Mercury	2.12E+01	mg/kg	---	---	---	---	---	2.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.10
			Ingestion Total								---					5.6
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	9.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	8.2E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	5.5E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	9.1E-06	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	1.5E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	1.4E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	8.2E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	4.5E-10	mg/kg-day	7.0E-10	mg/kg-day	0.64
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	5.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0073
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	3.0E-06	mg/kg-day	3.0E-04	mg/kg-day	0.010
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.35E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	5.53E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA

TABLE A-7.1C-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								---					0.65
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	1.8E-09	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	8.0E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	2.1E-11	mg/m^3	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	1.8E-09	mg/m^4	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	2.0E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	2.8E-13	mg/m^3	4.0E-08	mg/m^3	0.0000070
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	6.9E-16	mg/m^3	4.0E-08	mg/m^3	0.00000002
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	7.2E-07	mg/m^4	5.0E-03	mg/m^3	0.00014
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	1.9E-09	mg/m^3	1.5E-05	mg/m^3	0.00013
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000013
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	6.9E-10	mg/m^3	6.0E-06	mg/m^3	0.00011
				Iron	1.35E+04	mg/kg	---	---	---	---	---	1.4E-06	mg/m^3	NA	---	NA
				Lead	5.53E+02	mg/kg	---	---	---	---	---	5.7E-08	mg/m^3	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	3.9E-08	mg/m^3	5.0E-05	mg/m^3	0.00078
				Mercury	2.12E+01	mg/kg	---	---	---	---	---	6.4E-04	mg/m^3	3.0E-04	mg/m^3	2.1
			Inhalation Total								---					2.1
	Surface Soil Total										---					8.4
Soil Total											---					8.4
											Total of Receptor Risks Across All Media					---	Total of Receptor Hazards Across All Media				8.4

TABLE A-7.1C-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	2.2E-04	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	1.6E-04	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	1.5E-04	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	1.0E-04	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	1.6E-04	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	2.6E-06	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	2.2E-04	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	2.5E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	1.5E-04	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	3.5E-08	mg/kg-day	7.0E-10	mg/kg-day	50
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	8.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.12
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	8.9E-02	mg/kg-day	1.0E+00	mg/kg-day	0.089
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	4.0E-04	mg/kg-day	0.34
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	2.3E-04	mg/kg-day	3.0E-04	mg/kg-day	0.78
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	1.6E-04	mg/kg-day	3.0E-03	mg/kg-day	0.052
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	8.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.28
				Iron	1.35E+04	mg/kg	---	---	---	---	---	1.7E-01	mg/kg-day	7.0E-01	mg/kg-day	0.25
				Lead	5.53E+02	mg/kg	---	---	---	---	---	7.1E-03	mg/kg-day	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	4.9E-03	mg/kg-day	7.0E-02	mg/kg-day	0.069
				Mercury	2.12E+01	mg/kg	---	---	---	---	---	2.7E-04	mg/kg-day	3.0E-04	mg/kg-day	0.90
			Ingestion Total								---					52
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	8.2E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	6.0E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	5.4E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	3.6E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	5.9E-05	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	9.5E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	8.0E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	9.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	5.4E-05	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	2.9E-09	mg/kg-day	7.0E-10	mg/kg-day	4.2
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	3.3E-11	mg/kg-day	7.0E-10	mg/kg-day	0.048
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.066
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.35E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	5.53E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA

TABLE A-7.1C-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								---					4.3
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	1.8E-09	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	8.0E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	2.1E-11	mg/m^3	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	1.8E-09	mg/m^4	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	2.0E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	2.8E-13	mg/m^3	4.0E-08	mg/m^3	0.0000070
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	6.9E-16	mg/m^3	4.0E-08	mg/m^3	0.00000002
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	7.2E-07	mg/m^4	5.0E-03	mg/m^3	0.00014
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	1.9E-09	mg/m^3	1.5E-05	mg/m^3	0.00013
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000013
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	6.9E-10	mg/m^3	6.0E-06	mg/m^3	0.00011
				Iron	1.35E+04	mg/kg	---	---	---	---	---	1.4E-06	mg/m^3	NA	---	NA
				Lead	5.53E+02	mg/kg	---	---	---	---	---	5.7E-08	mg/m^3	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	3.9E-08	mg/m^3	5.0E-05	mg/m^3	0.00078
				Mercury	2.12E+01	mg/kg	---	---	---	---	---	6.4E-04	mg/m^3	3.0E-04	mg/m^3	2.1
			Inhalation Total								---					2.1
	Surface Soil Total										---					59
Soil Total											---					59
											Total of Receptor Risks Across All Media					---					Total of Receptor Hazards Across All Media	59

TABLE A-7.1C-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				8.6E-05	---	---	---	---	---
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				6.3E-04	---	---	---	---	---
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				5.7E-05	---	---	---	---	---
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	1.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				6.2E-06	---	---	---	---	---
				Carbazole	2.05E-01	mg/kg	3.2E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				8.4E-07	---	---	---	---	---
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				9.5E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				5.6E-05	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	4.3E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.5E-04	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	1.0E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.4E-06	---	---	---	---	---
				Aluminum	6.98E+03	mg/kg	1.1E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	1.07E+01	mg/kg	1.7E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	1.83E+01	mg/kg	2.9E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.3E-05	---	---	---	---	---
				Chromium	1.23E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				4.1E-05	---	---	---	---	---
				Cobalt	6.67E+00	mg/kg	1.0E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	1.35E+04	mg/kg	2.1E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	5.53E+02	mg/kg	8.7E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	3.79E+02	mg/kg	5.9E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	2.12E+01	mg/kg	3.3E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								1.5E-03					---
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				3.3E-05	---	---	---	---	---
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				2.4E-04	---	---	---	---	---
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				2.2E-05	---	---	---	---	---
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	5.0E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				2.4E-06	---	---	---	---	---
				Carbazole	2.05E-01	mg/kg	1.3E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				3.2E-07	---	---	---	---	---
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				3.7E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				2.2E-05	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	4.0E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.2E-05	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	4.6E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.0E-07	---	---	---	---	---
				Aluminum	6.98E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	1.07E+01	mg/kg	NA	---	NA	---	NA					
				Arsenic	1.83E+01	mg/kg	2.7E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.1E-06	---	---	---	---	---
				Chromium	1.23E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	6.67E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Iron	1.35E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Lead	5.53E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	3.79E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---

TABLE A-7.1C-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								3.8E-04					---
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				2.1E-10	---	---	---	---	---
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				1.6E-09	---	---	---	---	---
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				1.4E-10	---	---	---	---	---
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	3.4E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				1.6E-10	---	---	---	---	---
				Carbazole	2.05E-01	mg/kg	9.0E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				2.1E-11	---	---	---	---	---
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				2.6E-11	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				1.4E-10	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	1.2E-13	mg/m^3	3.8E+01	(µg/m3)^-1	4.5E-09	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	2.9E-16	mg/m^3	3.8E+01	(µg/m3)^-1	1.1E-11	---	---	---	---	---
				Aluminum	6.98E+03	mg/kg	3.1E-07	mg/m^4	NA	---	NA	---	---	---	---	---
				Antimony	1.07E+01	mg/kg	4.7E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	1.83E+01	mg/kg	8.1E-10	mg/m^3	4.3E-03	(µg/m3)^-1	3.5E-09	---	---	---	---	---
				Chromium	1.23E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-8				1.1E-07	---	---	---	---	---
				Cobalt	6.67E+00	mg/kg	2.9E-10	mg/m^3	9.0E-03	(µg/m3)^-1	2.6E-09	---	---	---	---	---
				Iron	1.35E+04	mg/kg	6.0E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	5.53E+02	mg/kg	2.4E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	3.79E+02	mg/kg	1.7E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	2.12E+01	mg/kg	2.7E-04	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								1.3E-07					---
	Surface Soil Total										1.9E-03					---
Soil Total											1.9E-03					---
											Total of Receptor Risks Across All Media					
											1.9E-03	Total of Receptor Hazards Across All Media				---

TABLE A-7.1C-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	6.1E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.5E-06	1.7E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	4.5E-06	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.3E-05	1.3E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	4.1E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.0E-06	1.1E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	2.7E-06	mg/kg-day	NA	---	NA	7.6E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	4.5E-06	mg/kg-day	7.3E-02	(mg/kg-day)^-1	3.3E-07	1.2E-05	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	7.2E-08	mg/kg-day	NA	---	NA	2.0E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	6.0E-06	mg/kg-day	7.3E-03	(mg/kg-day)^-1	4.4E-08	1.7E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	6.8E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	5.0E-07	1.9E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	4.0E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.9E-06	1.1E-05	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	9.5E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.2E-04	2.7E-09	mg/kg-day	7.0E-10	mg/kg-day	3.8
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	2.3E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.0E-07	6.5E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0093
				Aluminum	6.98E+03	mg/kg	2.4E-03	mg/kg-day	NA	---	NA	6.8E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0068
				Antimony	1.07E+01	mg/kg	3.7E-06	mg/kg-day	NA	---	NA	1.0E-05	mg/kg-day	4.0E-04	mg/kg-day	0.026
				Arsenic	1.83E+01	mg/kg	6.4E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	9.6E-06	1.8E-05	mg/kg-day	3.0E-04	mg/kg-day	0.060
				Chromium	1.23E+01	mg/kg	4.3E-06	mg/kg-day	5.0E-01	(mg/kg-day)^-1	2.1E-06	1.2E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0040
				Cobalt	6.67E+00	mg/kg	2.3E-06	mg/kg-day	NA	---	NA	6.5E-06	mg/kg-day	3.0E-04	mg/kg-day	0.022
				Iron	1.35E+04	mg/kg	4.7E-03	mg/kg-day	NA	---	NA	1.3E-02	mg/kg-day	7.0E-01	mg/kg-day	0.019
				Lead	5.53E+02	mg/kg	1.9E-04	mg/kg-day	NA	---	NA	5.4E-04	mg/kg-day	NA	---	NA
				Manganese	3.79E+02	mg/kg	1.3E-04	mg/kg-day	NA	---	NA	3.7E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0053
				Mercury	2.12E+01	mg/kg	7.4E-06	mg/kg-day	NA	---	NA	2.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.069
			Ingestion Total								1.8E-04					4.0
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	5.3E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.8E-06	1.5E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	3.9E-06	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.8E-05	1.1E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	3.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.5E-06	9.7E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	2.3E-06	mg/kg-day	NA	---	NA	6.5E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	3.8E-06	mg/kg-day	7.3E-02	(mg/kg-day)^-1	2.8E-07	1.1E-05	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	6.1E-08	mg/kg-day	NA	---	NA	1.7E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	5.1E-06	mg/kg-day	7.3E-03	(mg/kg-day)^-1	3.7E-08	1.4E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	5.8E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.3E-07	1.6E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	3.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.5E-06	9.7E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	1.9E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.4E-05	5.3E-10	mg/kg-day	7.0E-10	mg/kg-day	0.75
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	2.2E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.8E-07	6.0E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0086
				Aluminum	6.98E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.07E+01	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.83E+01	mg/kg	1.3E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.9E-06	3.5E-06	mg/kg-day	3.0E-04	mg/kg-day	0.012
				Chromium	1.23E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.67E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.35E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	5.53E+02	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.79E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA

TABLE A-7.1C-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								6.4E-05					0.77
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	1.5E-10	mg/m^3	1.1E-04	(µg/m3)^-1	1.7E-11	4.3E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	1.1E-10	mg/m^3	1.1E-03	(µg/m3)^-1	1.2E-10	3.1E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	1.0E-10	mg/m^3	1.1E-04	(µg/m3)^-1	1.1E-11	2.8E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	6.8E-11	mg/m^3	NA	---	NA	1.9E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	1.1E-10	mg/m^3	1.1E-04	(µg/m3)^-1	1.2E-11	3.1E-10	mg/m^3	NA	---	NA
				Carbazole	2.05E-01	mg/kg	1.8E-12	mg/m^3	NA	---	NA	5.0E-12	mg/m^3	NA	---	NA
				Chrysene	1.71E+01	mg/kg	1.5E-10	mg/m^4	1.1E-05	(µg/m3)^-1	1.6E-12	4.2E-10	mg/m^4	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	1.7E-12	mg/m^3	1.2E-03	(µg/m3)^-1	2.0E-12	4.8E-12	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	1.0E-10	mg/m^3	1.1E-04	(µg/m3)^-1	1.1E-11	2.8E-10	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	2.4E-14	mg/m^3	3.8E+01	(µg/m3)^-1	9.0E-10	6.6E-14	mg/m^3	4.0E-08	mg/m^3	0.0000017
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	5.8E-17	mg/m^3	3.8E+01	(µg/m3)^-1	2.2E-12	1.6E-16	mg/m^3	4.0E-08	mg/m^3	0.000000004
				Aluminum	6.98E+03	mg/kg	6.1E-08	mg/m^4	NA	---	NA	1.7E-07	mg/m^4	5.0E-03	mg/m^3	0.000034
				Antimony	1.07E+01	mg/kg	9.3E-11	mg/m^3	NA	---	NA	2.6E-10	mg/m^3	NA	---	NA
				Arsenic	1.83E+01	mg/kg	1.6E-10	mg/m^3	4.3E-03	(µg/m3)^-1	6.9E-10	4.5E-10	mg/m^3	1.5E-05	mg/m^3	0.000030
				Chromium	1.23E+01	mg/kg	1.1E-10	mg/m^3	8.4E-02	(µg/m3)^-1	9.0E-09	3.0E-10	mg/m^3	1.0E-04	mg/m^3	0.0000030
				Cobalt	6.67E+00	mg/kg	5.8E-11	mg/m^3	9.0E-03	(µg/m3)^-1	5.2E-10	1.6E-10	mg/m^3	6.0E-06	mg/m^3	0.000027
				Iron	1.35E+04	mg/kg	1.2E-07	mg/m^3	NA	---	NA	3.3E-07	mg/m^3	NA	---	NA
				Lead	5.53E+02	mg/kg	4.8E-09	mg/m^3	NA	---	NA	1.4E-08	mg/m^3	NA	---	NA
				Manganese	3.79E+02	mg/kg	3.3E-09	mg/m^3	NA	---	NA	9.3E-09	mg/m^3	5.0E-05	mg/m^3	0.00019
				Mercury	2.12E+01	mg/kg	5.4E-05	mg/m^3	NA	---	NA	1.5E-04	mg/m^3	3.0E-04	mg/m^3	0.51
			Inhalation Total								1.1E-08					0.51
	Surface Soil Total										2.4E-04					5.3
Soil Total											2.4E-04					5.3
											Total of Receptor Risks Across All Media	2.4E-04				Total of Receptor Hazards Across All Media	5.3

TABLE A-7.1C-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				3.0E-06	9.6E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.2E-05	7.0E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.0E-06	6.4E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	6.1E-07	mg/kg-day	NA	---	NA	4.3E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.2E-07	7.0E-06	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	1.6E-08	mg/kg-day	NA	---	NA	1.1E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.9E-08	9.4E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				3.3E-07	1.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.0E-06	6.3E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	2.1E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.8E-05	1.5E-09	mg/kg-day	7.0E-10	mg/kg-day	2.1
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	5.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.8E-08	3.7E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0052
				Aluminum	6.98E+03	mg/kg	5.5E-04	mg/kg-day	NA	---	NA	3.8E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0038
				Antimony	1.07E+01	mg/kg	8.4E-07	mg/kg-day	NA	---	NA	5.8E-06	mg/kg-day	4.0E-04	mg/kg-day	0.015
				Arsenic	1.83E+01	mg/kg	1.4E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.2E-06	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.033
				Chromium	1.23E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				1.4E-06	6.7E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0022
				Cobalt	6.67E+00	mg/kg	5.2E-07	mg/kg-day	NA	---	NA	3.7E-06	mg/kg-day	3.0E-04	mg/kg-day	0.012
				Iron	1.35E+04	mg/kg	1.1E-03	mg/kg-day	NA	---	NA	7.4E-03	mg/kg-day	7.0E-01	mg/kg-day	0.011
				Lead	5.53E+02	mg/kg	4.3E-05	mg/kg-day	NA	---	NA	3.0E-04	mg/kg-day	NA	---	NA
				Manganese	3.79E+02	mg/kg	3.0E-05	mg/kg-day	NA	---	NA	2.1E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0030
				Mercury	2.12E+01	mg/kg	1.7E-06	mg/kg-day	NA	---	NA	1.2E-05	mg/kg-day	3.0E-04	mg/kg-day	0.039
			Ingestion Total								6.1E-05					2.2
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				3.3E-06	1.0E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.4E-05	7.7E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.2E-06	6.9E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	6.6E-07	mg/kg-day	NA	---	NA	4.6E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.4E-07	7.6E-06	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	1.7E-08	mg/kg-day	NA	---	NA	1.2E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				3.2E-08	1.0E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				3.6E-07	1.2E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.2E-06	6.9E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	5.3E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.9E-06	3.7E-10	mg/kg-day	7.0E-10	mg/kg-day	0.53
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	6.1E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.0E-08	4.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0061
				Aluminum	6.98E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.07E+01	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.83E+01	mg/kg	3.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	5.4E-07	2.5E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0084
				Chromium	1.23E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.67E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.35E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	5.53E+02	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.79E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA

TABLE A-7.1C-7
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								4.0E-05					0.55
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				3.1E-12	6.7E-11	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.3E-11	4.9E-11	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.1E-12	4.4E-11	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	4.3E-12	mg/m^3	NA	---	NA	3.0E-11	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.3E-12	4.9E-11	mg/m^3	NA	---	NA
				Carbazole	2.05E-01	mg/kg	1.1E-13	mg/m^3	NA	---	NA	7.8E-13	mg/m^3	NA	---	NA
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				3.1E-13	6.5E-11	mg/m^2	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				3.8E-13	7.4E-13	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				2.1E-12	4.4E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	1.5E-15	mg/m^3	3.8E+01	(µg/m3)^-1	5.6E-11	1.0E-14	mg/m^3	4.0E-08	mg/m^3	0.00000026
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	3.6E-18	mg/m^3	3.8E+01	(µg/m3)^-1	1.4E-13	2.6E-17	mg/m^3	4.0E-08	mg/m^3	0.0000000006
				Aluminum	6.98E+03	mg/kg	3.8E-09	mg/m^4	NA	---	NA	2.7E-08	mg/m^4	5.0E-03	mg/m^3	0.0000053
				Antimony	1.07E+01	mg/kg	5.8E-12	mg/m^3	NA	---	NA	4.1E-11	mg/m^3	NA	---	NA
				Arsenic	1.83E+01	mg/kg	1.0E-11	mg/m^3	4.3E-03	(µg/m3)^-1	4.3E-11	7.0E-11	mg/m^3	1.5E-05	mg/m^3	0.000005
				Chromium	1.23E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-10				1.7E-09	4.7E-11	mg/m^3	1.0E-04	mg/m^3	0.00000047
				Cobalt	6.67E+00	mg/kg	3.6E-12	mg/m^3	9.0E-03	(µg/m3)^-1	3.3E-11	2.5E-11	mg/m^3	6.0E-06	mg/m^3	0.0000042
				Iron	1.35E+04	mg/kg	7.4E-09	mg/m^3	NA	---	NA	5.2E-08	mg/m^3	NA	---	NA
				Lead	5.53E+02	mg/kg	3.0E-10	mg/m^3	NA	---	NA	2.1E-09	mg/m^3	NA	---	NA
				Manganese	3.79E+02	mg/kg	2.1E-10	mg/m^3	NA	---	NA	1.4E-09	mg/m^3	5.0E-05	mg/m^3	0.000029
				Mercury	2.12E+01	mg/kg	3.4E-06	mg/m^3	NA	---	NA	2.4E-05	mg/m^3	3.0E-04	mg/m^3	0.079
			Inhalation Total								1.8E-09					0.079
	Surface Soil Total										1.0E-04					2.9
Soil Total											1.0E-04					2.9
											Total of Receptor Risks Across All Media 1.0E-04					Total of Receptor Hazards Across All Media 2.9

TABLE A-7.2A-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	2.6E-07	mg/kg-day	5.0E-02	mg/kg-day	0.0000052
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	6.8E-09	mg/kg-day	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	5.5E-05	mg/kg-day	1.0E-03	mg/kg-day	0.055
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	3.3E-08	mg/kg-day	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	5.1E-07	mg/kg-day	5.0E-03	mg/kg-day	0.00010
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	1.9E-05	mg/kg-day	4.0E-03	mg/kg-day	0.0048
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	1.0E-04	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	1.3E-04	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	4.2E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	2.8E-05	mg/kg-day	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	1.3E-04	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	8.0E-06	mg/kg-day	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	4.6E-04	mg/kg-day	4.0E-02	mg/kg-day	0.011
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	4.2E-05	mg/kg-day	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	1.8E-05	mg/kg-day	2.0E-02	mg/kg-day	0.00091
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	3.0E-04	mg/kg-day	3.0E-02	mg/kg-day	0.010
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	1.9E-07	mg/kg-day	NA	---	NA
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	1.8E-07	mg/kg-day	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	1.5E-07	mg/kg-day	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	7.9E-08	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	4.2E-07	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	5.8E-07	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	2.5E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	1.0E-07	mg/kg-day	7.0E-10	mg/kg-day	142
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	2.2E-05	mg/kg-day	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	4.2E-06	mg/kg-day	5.0E-04	mg/kg-day	0.0085
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	1.6E-05	mg/kg-day	3.0E-05	mg/kg-day	0.55
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	2.3E-06	mg/kg-day	8.0E-03	mg/kg-day	0.00029
				Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	3.7E-06	mg/kg-day	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	5.0E-05	mg/kg-day	0.23
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0064
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	6.4E-06	mg/kg-day	1.3E-05	mg/kg-day	0.50
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	4.5E-06	mg/kg-day	2.0E-05	mg/kg-day	0.22
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	1.0E-09	mg/kg-day	7.0E-10	mg/kg-day	1.5
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	8.0E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0080
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	3.6E-06	mg/kg-day	4.0E-04	mg/kg-day	0.0089
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	2.5E-04	mg/kg-day	3.0E-04	mg/kg-day	0.83
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	6.5E-06	mg/kg-day	1.0E-03	mg/kg-day	0.0065

TABLE A-7.2A-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	Chromium	1.32E+01	mg/kg	---	---	---	---	---	1.8E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0060
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	8.2E-05	mg/kg-day	3.0E-04	mg/kg-day	0.27
				Iron	5.15E+04	mg/kg	---	---	---	---	---	7.1E-02	mg/kg-day	7.0E-01	mg/kg-day	0.10
				Lead	2.88E+02	mg/kg	---	---	---	---	---	3.9E-04	mg/kg-day	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	3.2E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0045
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	6.4E-03	mg/kg-day	3.0E-04	mg/kg-day	21
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	1.0E-04	mg/kg-day	2.0E-02	mg/kg-day	0.0052
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	1.0E-05	mg/kg-day	0.12
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	1.8E-03	mg/kg-day	3.0E-01	mg/kg-day	0.0061
			Ingestion Total								---					168
			Dermal	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	NA	---	5.0E-02	mg/kg-day	NA
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	2.2E-05	mg/kg-day	1.0E-03	mg/kg-day	0.022
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	1.3E-08	mg/kg-day	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	5.1E-07	mg/kg-day	5.0E-03	mg/kg-day	0.00010
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	9.9E-06	mg/kg-day	4.0E-03	mg/kg-day	0.0025
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	7.5E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	5.4E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	6.5E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	2.2E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	1.4E-05	mg/kg-day	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	6.1E-06	mg/kg-day	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	6.8E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	4.1E-06	mg/kg-day	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	2.4E-04	mg/kg-day	4.0E-02	mg/kg-day	0.0060
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	2.2E-05	mg/kg-day	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	9.4E-06	mg/kg-day	2.0E-02	mg/kg-day	0.00047
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	1.6E-04	mg/kg-day	3.0E-02	mg/kg-day	0.0053
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	1.2E-08	mg/kg-day	7.0E-10	mg/kg-day	17
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	8.7E-06	mg/kg-day	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	5.1E-07	mg/kg-day	5.0E-04	mg/kg-day	0.0010
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	6.6E-06	mg/kg-day	3.0E-05	mg/kg-day	0.22
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	9.3E-07	mg/kg-day	8.0E-03	mg/kg-day	0.00012

TABLE A-7.2A-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Dermal	Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	1.5E-06	mg/kg-day	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	4.6E-06	mg/kg-day	5.0E-05	mg/kg-day	0.093
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	3.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0010
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	2.6E-06	mg/kg-day	1.3E-05	mg/kg-day	0.20
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	2.5E-06	mg/kg-day	2.0E-05	mg/kg-day	0.12
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	5.8E-10	mg/kg-day	7.0E-10	mg/kg-day	0.83
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	3.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.099
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	2.6E-08	mg/kg-day	2.5E-05	mg/kg-day	0.0010
				Chromium	1.32E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.15E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.88E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	NA	---	1.0E-05	mg/kg-day	NA
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	NA	---	3.0E-01	mg/kg-day	NA
			Dermal Total								---					19
			Inhalation	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	1.5E-06	mg/m^3	4.0E-04	mg/m^3	0.0038
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	5.1E-13	mg/m^3	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	1.8E-04	mg/m^3	NA	---	NA
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	2.5E-12	mg/m^3	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	3.8E-11	mg/m^3	NA	---	NA
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	2.2E-04	mg/m^3	NA	---	NA
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	1.1E-08	mg/m^3	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	7.8E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	9.4E-09	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	3.2E-09	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	2.1E-09	mg/m^3	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	8.8E-10	mg/m^3	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	9.8E-09	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	6.0E-10	mg/m^3	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	3.5E-08	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	3.1E-09	mg/m^3	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	2.6E-04	mg/m^3	3.0E-03	mg/m^3	0.086
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	8.3E-05	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	1.5E-11	mg/m^3	NA	---	NA

TABLE A-7.2A-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Inhalation	Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	1.3E-11	mg/m^3	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	1.1E-11	mg/m^3	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	6.0E-12	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	4.3E-11	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	1.9E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	7.5E-12	mg/m^3	4.0E-08	mg/m^3	0.00019
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	3.2E-10	mg/m^3	NA	---	NA
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	2.8E-10	mg/m^3	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	8.7E-10	mg/m^3	NA	---	NA
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	1.4E-10	mg/m^3	NA	---	NA
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	4.8E-10	mg/m^3	NA	---	NA
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	3.3E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	7.8E-14	mg/m^3	4.0E-08	mg/m^3	0.0000019
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	6.0E-07	mg/m^3	5.0E-03	mg/m^3	0.00012
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	2.7E-10	mg/m^3	NA	---	NA
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	1.9E-08	mg/m^3	1.5E-05	mg/m^3	0.0012
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	4.9E-10	mg/m^3	2.0E-05	mg/m^3	0.000024
				Chromium	1.32E+01	mg/kg	---	---	---	---	---	1.4E-09	mg/m^3	1.0E-04	mg/m^3	0.000014
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	6.2E-09	mg/m^3	6.0E-06	mg/m^3	0.0010
				Iron	5.15E+04	mg/kg	---	---	---	---	---	5.3E-06	mg/m^3	NA	---	NA
				Lead	2.88E+02	mg/kg	---	---	---	---	---	3.0E-08	mg/m^3	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	2.4E-08	mg/m^3	5.0E-05	mg/m^3	0.00047
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	1.4E-01	mg/m^3	3.0E-04	mg/m^3	467
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	7.8E-09	mg/m^3	9.0E-05	mg/m^3	0.000086
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	9.0E-11	mg/m^3	NA	---	NA
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	1.4E-07	mg/m^3	NA	---	NA
			Inhalation Total								---					467
	Aggregate Soil Total										---					654
Soil Total											---					654
											---	Total of Receptor Hazards Across All Media				654

Total of Receptor Risks Across All Media

TABLE A-7.2A-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	2.4E-06	mg/kg-day	5.0E-02	mg/kg-day	0.000049
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	6.4E-08	mg/kg-day	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	5.1E-04	mg/kg-day	1.0E-03	mg/kg-day	0.51
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	3.1E-07	mg/kg-day	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	4.7E-06	mg/kg-day	5.0E-03	mg/kg-day	0.00095
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	1.8E-04	mg/kg-day	4.0E-03	mg/kg-day	0.044
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	1.3E-03	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	9.7E-04	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	1.2E-03	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	3.9E-04	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	2.6E-04	mg/kg-day	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	1.1E-04	mg/kg-day	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	1.2E-03	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	7.4E-05	mg/kg-day	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	4.3E-03	mg/kg-day	4.0E-02	mg/kg-day	0.11
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	3.9E-04	mg/kg-day	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	1.7E-04	mg/kg-day	2.0E-02	mg/kg-day	0.0085
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	2.8E-03	mg/kg-day	3.0E-02	mg/kg-day	0.095
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	1.8E-06	mg/kg-day	NA	---	NA
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	1.7E-06	mg/kg-day	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	1.4E-06	mg/kg-day	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	7.4E-07	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	3.9E-06	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	5.4E-06	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	2.4E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	9.3E-07	mg/kg-day	7.0E-10	mg/kg-day	1330
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	2.0E-04	mg/kg-day	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	4.0E-05	mg/kg-day	5.0E-04	mg/kg-day	0.079
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	1.5E-04	mg/kg-day	3.0E-05	mg/kg-day	5.1
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	2.2E-05	mg/kg-day	8.0E-03	mg/kg-day	0.0027
				Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	3.5E-05	mg/kg-day	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	1.1E-04	mg/kg-day	5.0E-05	mg/kg-day	2.2
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	1.8E-05	mg/kg-day	3.0E-04	mg/kg-day	0.060
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	6.0E-05	mg/kg-day	1.3E-05	mg/kg-day	4.6
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	4.2E-05	mg/kg-day	2.0E-05	mg/kg-day	2.1
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	9.7E-09	mg/kg-day	7.0E-10	mg/kg-day	14
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	7.5E-02	mg/kg-day	1.0E+00	mg/kg-day	0.075
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	3.3E-05	mg/kg-day	4.0E-04	mg/kg-day	0.083
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	2.3E-03	mg/kg-day	3.0E-04	mg/kg-day	7.7
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	6.1E-05	mg/kg-day	1.0E-03	mg/kg-day	0.061

TABLE A-7.2A-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	Chromium	1.32E+01	mg/kg	---	---	---	---	---	1.7E-04	mg/kg-day	3.0E-03	mg/kg-day	0.056
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	7.7E-04	mg/kg-day	3.0E-04	mg/kg-day	2.6
				Iron	5.15E+04	mg/kg	---	---	---	---	---	6.6E-01	mg/kg-day	7.0E-01	mg/kg-day	0.94
				Lead	2.88E+02	mg/kg	---	---	---	---	---	3.7E-03	mg/kg-day	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	2.9E-03	mg/kg-day	7.0E-02	mg/kg-day	0.042
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	5.9E-02	mg/kg-day	3.0E-04	mg/kg-day	198
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	9.7E-04	mg/kg-day	2.0E-02	mg/kg-day	0.048
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	1.0E-05	mg/kg-day	1.1
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	1.7E-02	mg/kg-day	3.0E-01	mg/kg-day	0.057
			Ingestion Total								---					1569
			Dermal	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	NA	---	5.0E-02	mg/kg-day	NA
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	1.0E-03	mg/kg-day	0.14
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	8.6E-08	mg/kg-day	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	3.3E-06	mg/kg-day	5.0E-03	mg/kg-day	0.00066
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	6.5E-05	mg/kg-day	4.0E-03	mg/kg-day	0.016
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	4.9E-04	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	3.5E-04	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	4.3E-04	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	9.4E-05	mg/kg-day	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	4.0E-05	mg/kg-day	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	4.4E-04	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	2.7E-05	mg/kg-day	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	1.6E-03	mg/kg-day	4.0E-02	mg/kg-day	0.039
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	6.2E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0031
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	1.0E-03	mg/kg-day	3.0E-02	mg/kg-day	0.034
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	7.8E-08	mg/kg-day	7.0E-10	mg/kg-day	112
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	5.7E-05	mg/kg-day	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	3.3E-06	mg/kg-day	5.0E-04	mg/kg-day	0.0067
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	4.3E-05	mg/kg-day	3.0E-05	mg/kg-day	1.4
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	6.1E-06	mg/kg-day	8.0E-03	mg/kg-day	0.00076

TABLE A-7.2A-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Dermal	Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	9.7E-06	mg/kg-day	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	3.0E-05	mg/kg-day	5.0E-05	mg/kg-day	0.61
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0067
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	1.7E-05	mg/kg-day	1.3E-05	mg/kg-day	1.3
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	1.6E-05	mg/kg-day	2.0E-05	mg/kg-day	0.82
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	3.8E-09	mg/kg-day	7.0E-10	mg/kg-day	5.4
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	1.9E-04	mg/kg-day	3.0E-04	mg/kg-day	0.65
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	1.7E-07	mg/kg-day	2.5E-05	mg/kg-day	0.0068
				Chromium	1.32E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.15E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.88E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	NA	---	1.0E-05	mg/kg-day	NA
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	NA	---	3.0E-01	mg/kg-day	NA
			Dermal Total								---					122
			Inhalation	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	1.5E-06	mg/m^3	4.0E-04	mg/m^3	0.0038
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	5.1E-13	mg/m^3	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	1.8E-04	mg/m^3	NA	---	NA
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	2.5E-12	mg/m^3	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	3.8E-11	mg/m^3	NA	---	NA
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	2.2E-04	mg/m^3	NA	---	NA
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	1.1E-08	mg/m^3	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	7.8E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	9.4E-09	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	3.2E-09	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	2.1E-09	mg/m^3	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	8.8E-10	mg/m^3	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	9.8E-09	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	6.0E-10	mg/m^3	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	3.5E-08	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	3.1E-09	mg/m^3	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	2.6E-04	mg/m^3	3.0E-03	mg/m^3	0.086
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	8.3E-05	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	1.5E-11	mg/m^3	NA	---	NA

TABLE A-7.2A-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Inhalation	Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	1.3E-11	mg/m^3	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	1.1E-11	mg/m^3	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	6.0E-12	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	4.3E-11	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	1.9E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	7.5E-12	mg/m^3	4.0E-08	mg/m^3	0.00019
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	3.2E-10	mg/m^3	NA	---	NA
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	2.8E-10	mg/m^3	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	8.7E-10	mg/m^3	NA	---	NA
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	1.4E-10	mg/m^3	NA	---	NA
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	4.8E-10	mg/m^3	NA	---	NA
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	3.3E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	7.8E-14	mg/m^3	4.0E-08	mg/m^3	0.0000019
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	6.0E-07	mg/m^3	5.0E-03	mg/m^3	0.00012
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	2.7E-10	mg/m^3	NA	---	NA
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	1.9E-08	mg/m^3	1.5E-05	mg/m^3	0.0012
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	4.9E-10	mg/m^3	2.0E-05	mg/m^3	0.000024
				Chromium	1.32E+01	mg/kg	---	---	---	---	---	1.4E-09	mg/m^3	1.0E-04	mg/m^3	0.000014
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	6.2E-09	mg/m^3	6.0E-06	mg/m^3	0.0010
				Iron	5.15E+04	mg/kg	---	---	---	---	---	5.3E-06	mg/m^3	NA	---	NA
				Lead	2.88E+02	mg/kg	---	---	---	---	---	3.0E-08	mg/m^3	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	2.4E-08	mg/m^3	5.0E-05	mg/m^3	0.00047
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	1.4E-01	mg/m^3	3.0E-04	mg/m^3	467
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	7.8E-09	mg/m^3	9.0E-05	mg/m^3	0.000086
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	9.0E-11	mg/m^3	NA	---	NA
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	1.4E-07	mg/m^3	NA	---	NA
			Inhalation Total								---					467
	Aggregate Soil Total										---					2158
Soil Total											---					2158
											---	Total of Receptor Hazards Across All Media				2158
											Total of Receptor Risks Across All Media					

TABLE A-7.2A-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	1,1'-Biphenyl	1.90E-01	mg/kg	3.0E-07	mg/kg-day	8.0E-03	(mg/kg-day)^-1	2.4E-09	---	---	---	---	---
				1,3-Dichlorobenzene	5.00E-03	mg/kg	7.8E-09	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenzofuran	3.99E+01	mg/kg	6.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Di-n-octyl phthalate	2.40E-02	mg/kg	3.8E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pentachlorophenol	3.70E-01	mg/kg	5.8E-07	mg/kg-day	4.0E-01	(mg/kg-day)^-1	2.3E-07	---	---	---	---	---
				2-Methylnaphthalene	1.39E+01	mg/kg	2.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(a)anthracene	1.05E+02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				5.1E-04	---	---	---	---	---
				Benzo(a)pyrene	7.55E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				3.7E-03	---	---	---	---	---
				Benzo(b)fluoranthene	9.18E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				4.5E-04	---	---	---	---	---
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	4.8E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	2.01E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				9.8E-06	---	---	---	---	---
				Carbazole	8.56E+00	mg/kg	1.3E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	9.52E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				4.7E-06	---	---	---	---	---
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				1.9E-04	---	---	---	---	---
				Fluoranthene	3.36E+02	mg/kg	5.3E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				1.5E-04	---	---	---	---	---
				Naphthalene	1.33E+01	mg/kg	2.1E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pyrene	2.22E+02	mg/kg	3.5E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dichloronaphthalene, Total	1.42E-01	mg/kg	2.2E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	2.0E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	1.7E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Monochloronaphthalene, Total	5.80E-02	mg/kg	9.1E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	4.8E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	6.6E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.84E-01	mg/kg	2.9E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	1.1E-07	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.5E-02	---	---	---	---	---
				4,4'-DDE	1.60E+01	mg/kg	2.5E-05	mg/kg-day	3.4E-01	(mg/kg-day)^-1	8.5E-06	---	---	---	---	---
				4,4'-DDT	3.10E+00	mg/kg	4.9E-06	mg/kg-day	3.4E-01	(mg/kg-day)^-1	1.7E-06	---	---	---	---	---
				Aldrin	1.20E+01	mg/kg	1.9E-05	mg/kg-day	1.7E+01	(mg/kg-day)^-1	3.2E-04	---	---	---	---	---
				Alpha-BHC	1.70E+00	mg/kg	2.7E-06	mg/kg-day	6.3E+00	(mg/kg-day)^-1	1.7E-05	---	---	---	---	---
				Delta-BHC	2.70E+00	mg/kg	4.2E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dieldrin	8.50E+00	mg/kg	1.3E-05	mg/kg-day	1.6E+01	(mg/kg-day)^-1	2.1E-04	---	---	---	---	---
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	2.2E-06	mg/kg-day	1.1E+00	(mg/kg-day)^-1	2.4E-06	---	---	---	---	---
				Heptachlor Epoxide	4.70E+00	mg/kg	7.4E-06	mg/kg-day	9.1E+00	(mg/kg-day)^-1	6.7E-05	---	---	---	---	---
				Total PCB Homologs	3.26E+00	mg/kg	5.1E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.0E-05	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	1.2E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.5E-04	---	---	---	---	---
				Aluminum	5.85E+03	mg/kg	9.2E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	2.60E+00	mg/kg	4.1E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	1.81E+02	mg/kg	2.8E-04	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.3E-04	---	---	---	---	---
				Cadmium	4.76E+00	mg/kg	7.5E-06	mg/kg-day	NA	---	NA	---	---	---	---	---

TABLE A-7.2A-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	Chromium	1.32E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				4.4E-05	---	---	---	---	---
				Cobalt	6.02E+01	mg/kg	9.4E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	5.15E+04	mg/kg	8.1E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	2.88E+02	mg/kg	4.5E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	2.30E+02	mg/kg	3.6E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	4.64E+03	mg/kg	7.3E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Nickel	7.57E+01	mg/kg	1.2E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Thallium	8.80E-01	mg/kg	1.4E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Zinc	1.34E+03	mg/kg	2.1E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								2.1E-02					---
			Dermal	1,1'-Biphenyl	1.90E-01	mg/kg	NA	---	8.0E-03	(mg/kg-day)^-1	NA	---	---	---	---	---
				1,3-Dichlorobenzene	5.00E-03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Dibenzofuran	3.99E+01	mg/kg	2.0E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Di-n-octyl phthalate	2.40E-02	mg/kg	1.2E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pentachlorophenol	3.70E-01	mg/kg	4.6E-07	mg/kg-day	4.0E-01	(mg/kg-day)^-1	1.8E-07	---	---	---	---	---
				2-Methylnaphthalene	1.39E+01	mg/kg	8.9E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(a)anthracene	1.05E+02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				2.0E-04	---	---	---	---	---
				Benzo(a)pyrene	7.55E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				1.4E-03	---	---	---	---	---
				Benzo(b)fluoranthene	9.18E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				1.7E-04	---	---	---	---	---
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	2.0E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	2.01E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				3.8E-06	---	---	---	---	---
				Carbazole	8.56E+00	mg/kg	5.5E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	9.52E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				1.8E-06	---	---	---	---	---
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				7.4E-05	---	---	---	---	---
				Fluoranthene	3.36E+02	mg/kg	2.2E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				5.7E-05	---	---	---	---	---
				Naphthalene	1.33E+01	mg/kg	8.5E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pyrene	2.22E+02	mg/kg	1.4E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dichloronaphthalene, Total	1.42E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Monochloronaphthalene, Total	5.80E-02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.84E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	1.1E-08	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.4E-03	---	---	---	---	---
				4,4'-DDE	1.60E+01	mg/kg	7.9E-06	mg/kg-day	3.4E-01	(mg/kg-day)^-1	2.7E-06	---	---	---	---	---
				4,4'-DDT	3.10E+00	mg/kg	4.6E-07	mg/kg-day	3.4E-01	(mg/kg-day)^-1	1.6E-07	---	---	---	---	---
				Aldrin	1.20E+01	mg/kg	5.9E-06	mg/kg-day	1.7E+01	(mg/kg-day)^-1	1.0E-04	---	---	---	---	---
				Alpha-BHC	1.70E+00	mg/kg	8.4E-07	mg/kg-day	6.3E+00	(mg/kg-day)^-1	5.3E-06	---	---	---	---	---

TABLE A-7.2A-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Dermal	Delta-BHC	2.70E+00	mg/kg	1.3E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dieldrin	8.50E+00	mg/kg	4.2E-06	mg/kg-day	1.6E+01	(mg/kg-day)^-1	6.7E-05	---	---	---	---	---
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	2.8E-07	mg/kg-day	1.1E+00	(mg/kg-day)^-1	3.0E-07	---	---	---	---	---
				Heptachlor Epoxide	4.70E+00	mg/kg	2.3E-06	mg/kg-day	9.1E+00	(mg/kg-day)^-1	2.1E-05	---	---	---	---	---
				Total PCB Homologs	3.26E+00	mg/kg	2.3E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	4.5E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	5.2E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.8E-05	---	---	---	---	---
				Aluminum	5.85E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	2.60E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	1.81E+02	mg/kg	2.7E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.0E-05	---	---	---	---	---
				Cadmium	4.76E+00	mg/kg	2.4E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chromium	1.32E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	6.02E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Iron	5.15E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Lead	2.88E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	2.30E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	4.64E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Nickel	7.57E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Thallium	8.80E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Zinc	1.34E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								3.6E-03					---
			Inhalation	1,1'-Biphenyl	1.90E-01	mg/kg	6.6E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				1,3-Dichlorobenzene	5.00E-03	mg/kg	2.2E-13	mg/m^3	NA	---	NA	---	---	---	---	---
				Dibenzofuran	3.99E+01	mg/kg	7.9E-05	mg/m^3	NA	---	NA	---	---	---	---	---
				Di-n-octyl phthalate	2.40E-02	mg/kg	1.1E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Pentachlorophenol	3.70E-01	mg/kg	1.6E-11	mg/m^3	5.1E-06	(µg/m3)^-1	8.3E-14	---	---	---	---	---
				2-Methylnaphthalene	1.39E+01	mg/kg	9.3E-05	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(a)anthracene	1.05E+02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				1.3E-09	---	---	---	---	---
				Benzo(a)pyrene	7.55E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				9.2E-09	---	---	---	---	---
				Benzo(b)fluoranthene	9.18E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				1.1E-09	---	---	---	---	---
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	1.4E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	2.01E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				2.5E-10	---	---	---	---	---
				Carbazole	8.56E+00	mg/kg	3.8E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Chrysene	9.52E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				1.2E-10	---	---	---	---	---
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				5.2E-10	---	---	---	---	---
				Fluoranthene	3.36E+02	mg/kg	1.5E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				3.7E-10	---	---	---	---	---
				Naphthalene	1.33E+01	mg/kg	1.1E-04	mg/m^3	3.4E-05	(µg/m3)^-1	3.7E-06	---	---	---	---	---
				Pyrene	2.22E+02	mg/kg	3.5E-05	mg/m^3	NA	---	NA	---	---	---	---	---
				Dichloronaphthalene, Total	1.42E-01	mg/kg	6.3E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	5.7E-12	mg/m^3	NA	---	NA	---	---	---	---	---

TABLE A-7.2A-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Inhalation	Hexachloronaphthalene, Total	1.10E-01	mg/kg	4.8E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Monochloronaphthalene, Total	5.80E-02	mg/kg	2.6E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	1.3E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	1.9E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.84E-01	mg/kg	8.1E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	3.2E-12	mg/m^3	3.8E+01	(µg/m3)^-1	1.2E-07	---	---	---	---	---
				4,4'-DDE	1.60E+01	mg/kg	7.1E-10	mg/m^3	9.7E-05	(µg/m3)^-1	6.8E-11	---	---	---	---	---
				4,4'-DDT	3.10E+00	mg/kg	1.4E-10	mg/m^3	9.7E-05	(µg/m3)^-1	1.3E-11	---	---	---	---	---
				Aldrin	1.20E+01	mg/kg	5.3E-10	mg/m^3	4.9E-03	(µg/m3)^-1	2.6E-09	---	---	---	---	---
				Alpha-BHC	1.70E+00	mg/kg	7.5E-11	mg/m^3	1.8E-03	(µg/m3)^-1	1.3E-10	---	---	---	---	---
				Delta-BHC	2.70E+00	mg/kg	1.2E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Dieldrin	8.50E+00	mg/kg	3.7E-10	mg/m^3	4.6E-03	(µg/m3)^-1	1.7E-09	---	---	---	---	---
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	6.2E-11	mg/m^3	3.1E-04	(µg/m3)^-1	1.9E-11	---	---	---	---	---
				Heptachlor Epoxide	4.70E+00	mg/kg	2.1E-10	mg/m^3	2.6E-03	(µg/m3)^-1	5.4E-10	---	---	---	---	---
				Total PCB Homologs	3.26E+00	mg/kg	1.4E-10	mg/m^3	5.7E-04	(µg/m3)^-1	8.2E-11	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	3.3E-14	mg/m^3	3.8E+01	(µg/m3)^-1	1.3E-09	---	---	---	---	---
				Aluminum	5.85E+03	mg/kg	2.6E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Antimony	2.60E+00	mg/kg	1.1E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	1.81E+02	mg/kg	8.0E-09	mg/m^3	4.3E-03	(µg/m3)^-1	3.4E-08	---	---	---	---	---
				Cadmium	4.76E+00	mg/kg	2.1E-10	mg/m^3	1.8E-03	(µg/m3)^-1	3.8E-10	---	---	---	---	---
				Chromium	1.32E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-2				1.2E-07	---	---	---	---	---
				Cobalt	6.02E+01	mg/kg	2.7E-09	mg/m^3	9.0E-03	(µg/m3)^-1	2.4E-08	---	---	---	---	---
				Iron	5.15E+04	mg/kg	2.3E-06	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	2.88E+02	mg/kg	1.3E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	2.30E+02	mg/kg	1.0E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	4.64E+03	mg/kg	6.0E-02	mg/m^3	NA	---	NA	---	---	---	---	---
				Nickel	7.57E+01	mg/kg	3.3E-09	mg/m^3	2.6E-04	(µg/m3)^-1	8.7E-10	---	---	---	---	---
				Thallium	8.80E-01	mg/kg	3.9E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Zinc	1.34E+03	mg/kg	5.9E-08	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								4.1E-06					---
	Aggregate Soil Total										2.5E-02					---
Soil Total											2.5E-02					---
											Total of Receptor Risks Across All Media	2.5E-02		Total of Receptor Hazards Across All Media		---

TABLE A-7.2B-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	1.6E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	2.7E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	4.2E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.5E-10	mg/kg-day	7.0E-10	mg/kg-day	0.21
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	5.5E-06	mg/kg-day	2.0E-05	mg/kg-day	0.28
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	1.6E-10	mg/kg-day	7.0E-10	mg/kg-day	0.23
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	7.6E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0076
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	9.2E-05	mg/kg-day	4.0E-04	mg/kg-day	0.23
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	5.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.17
				Barium	3.19E+02	mg/kg	---	---	---	---	---	4.4E-04	mg/kg-day	2.0E-01	mg/kg-day	0.0022
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	2.5E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0083
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	3.0E-04	mg/kg-day	0.039
				Iron	4.27E+04	mg/kg	---	---	---	---	---	5.9E-02	mg/kg-day	7.0E-01	mg/kg-day	0.084
				Lead	2.51E+03	mg/kg	---	---	---	---	---	3.4E-03	mg/kg-day	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	4.5E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0064
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	3.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.12
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	8.8E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0044
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	2.5E-07	mg/kg-day	1.0E-05	mg/kg-day	0.025
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	3.2E-05	mg/kg-day	7.0E-05	mg/kg-day	0.46
			Ingestion Total								---					1.9
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	6.5E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	6.3E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	8.5E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	6.7E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	5.5E-07	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	1.4E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	2.2E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	6.6E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.025
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	3.1E-06	mg/kg-day	2.0E-05	mg/kg-day	0.15
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	8.9E-11	mg/kg-day	7.0E-10	mg/kg-day	0.13
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	6.1E-06	mg/kg-day	3.0E-04	mg/kg-day	0.020
				Barium	3.19E+02	mg/kg	---	---	---	---	---	NA	---	1.4E-02	mg/kg-day	NA

TABLE A-7.2B-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Chromium	1.81E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	4.27E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.51E+03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	NA	---	1.0E-05	mg/kg-day	NA
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					0.33
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	9.4E-11	mg/m^3	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	9.1E-11	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	1.2E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	9.7E-11	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	7.9E-11	mg/m^3	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	2.0E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	9.6E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.1E-14	mg/m^3	4.0E-08	mg/m^3	0.00000028
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	4.1E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	1.2E-14	mg/m^3	4.0E-08	mg/m^3	0.00000030
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	5.7E-07	mg/m^3	5.0E-03	mg/m^3	0.00011
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	6.9E-09	mg/m^3	NA	---	NA
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	3.8E-09	mg/m^3	1.5E-05	mg/m^3	0.00025
				Barium	3.19E+02	mg/kg	---	---	---	---	---	3.3E-08	mg/m^4	5.0E-04	mg/m^3	0.000066
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	1.9E-09	mg/m^3	1.0E-04	mg/m^3	0.000019
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	8.8E-10	mg/m^3	6.0E-06	mg/m^3	0.00015
				Iron	4.27E+04	mg/kg	---	---	---	---	---	4.4E-06	mg/m^3	NA	---	NA
				Lead	2.51E+03	mg/kg	---	---	---	---	---	2.6E-07	mg/m^3	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	3.3E-08	mg/m^3	5.0E-05	mg/m^3	0.00067
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	7.7E-04	mg/m^3	3.0E-04	mg/m^3	2.6
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	6.6E-09	mg/m^4	9.0E-05	mg/m^3	0.00007
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	1.9E-11	mg/m^5	NA	---	NA
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	2.4E-09	mg/m^3	1.0E-04	mg/m^3	0.000024
			Inhalation Total								---					2.6
	Aggregate Soil Total										---					4.8
Soil Total											---					4.8
											Total of Receptor Risks Across All Media	---		Total of Receptor Hazards Across All Media		4.8

TABLE A-7.2B-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	1.5E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	9.8E-06	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	2.5E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	3.9E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.4E-09	mg/kg-day	7.0E-10	mg/kg-day	2.0
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	5.1E-05	mg/kg-day	2.0E-05	mg/kg-day	2.6
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	1.5E-09	mg/kg-day	7.0E-10	mg/kg-day	2.1
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	7.1E-02	mg/kg-day	1.0E+00	mg/kg-day	0.071
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	8.6E-04	mg/kg-day	4.0E-04	mg/kg-day	2.2
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	4.7E-04	mg/kg-day	3.0E-04	mg/kg-day	1.6
				Barium	3.19E+02	mg/kg	---	---	---	---	---	4.1E-03	mg/kg-day	2.0E-01	mg/kg-day	0.020
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	2.3E-04	mg/kg-day	3.0E-03	mg/kg-day	0.077
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	1.1E-04	mg/kg-day	3.0E-04	mg/kg-day	0.36
				Iron	4.27E+04	mg/kg	---	---	---	---	---	5.5E-01	mg/kg-day	7.0E-01	mg/kg-day	0.78
				Lead	2.51E+03	mg/kg	---	---	---	---	---	3.2E-02	mg/kg-day	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	4.2E-03	mg/kg-day	7.0E-02	mg/kg-day	0.059
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	3.3E-04	mg/kg-day	3.0E-04	mg/kg-day	1.1
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	8.3E-04	mg/kg-day	2.0E-02	mg/kg-day	0.041
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	2.3E-06	mg/kg-day	1.0E-05	mg/kg-day	0.23
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	3.0E-04	mg/kg-day	7.0E-05	mg/kg-day	4.3
			Ingestion Total								---					17
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	4.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	4.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	5.6E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	4.4E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	3.6E-06	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	9.1E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	1.4E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	4.3E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.17
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	2.0E-05	mg/kg-day	1.0
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	5.8E-10	mg/kg-day	7.0E-10	mg/kg-day	0.83
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	4.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.13
				Barium	3.19E+02	mg/kg	---	---	---	---	---	NA	---	1.4E-02	mg/kg-day	NA

TABLE A-7.2B-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Chromium	1.81E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	4.27E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.51E+03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	NA	---	1.0E-05	mg/kg-day	NA
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					2.1
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	9.4E-11	mg/m^3	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	9.1E-11	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	1.2E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	9.7E-11	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	7.9E-11	mg/m^3	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	2.0E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	9.6E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.1E-14	mg/m^3	4.0E-08	mg/m^3	0.00000028
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	4.1E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	1.2E-14	mg/m^3	4.0E-08	mg/m^3	0.00000030
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	5.7E-07	mg/m^3	5.0E-03	mg/m^3	0.00011
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	6.9E-09	mg/m^3	NA	---	NA
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	3.8E-09	mg/m^3	1.5E-05	mg/m^3	0.00025
				Barium	3.19E+02	mg/kg	---	---	---	---	---	3.3E-08	mg/m^4	5.0E-04	mg/m^3	0.000066
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	1.9E-09	mg/m^3	1.0E-04	mg/m^3	0.000019
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	8.8E-10	mg/m^3	6.0E-06	mg/m^3	0.00015
				Iron	4.27E+04	mg/kg	---	---	---	---	---	4.4E-06	mg/m^3	NA	---	NA
				Lead	2.51E+03	mg/kg	---	---	---	---	---	2.6E-07	mg/m^3	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	3.3E-08	mg/m^3	5.0E-05	mg/m^3	0.00067
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	7.7E-04	mg/m^3	3.0E-04	mg/m^3	2.6
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	6.6E-09	mg/m^4	9.0E-05	mg/m^3	0.000074
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	1.9E-11	mg/m^5	NA	---	NA
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	2.4E-09	mg/m^3	1.0E-04	mg/m^3	0.000024
			Inhalation Total								---					2.6
	Aggregate Soil Total										---					22
Soil Total											---					22
											Total of Receptor Risks Across All Media	---		Total of Receptor Hazards Across All Media		22

TABLE A-7.2B-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				4.5E-06	---	---	---	---	---
				Benzo(a)pyrene	8.89E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				4.4E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.20E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				5.9E-06	---	---	---	---	---
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	1.5E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	7.70E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				3.8E-07	---	---	---	---	---
				Carbazole	1.95E-01	mg/kg	3.1E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.5E-05	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				4.5E-06	---	---	---	---	---
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	1.7E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.2E-05	---	---	---	---	---
				Total PCB Homologs	4.02E+00	mg/kg	6.3E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.3E-05	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	1.8E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.4E-05	---	---	---	---	---
				Aluminum	5.56E+03	mg/kg	8.7E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	6.73E+01	mg/kg	1.1E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	3.71E+01	mg/kg	5.8E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.7E-05	---	---	---	---	---
				Barium	3.19E+02	mg/kg	5.0E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chromium	1.81E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				6.1E-05	---	---	---	---	---
				Cobalt	8.56E+00	mg/kg	1.3E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	4.27E+04	mg/kg	6.7E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	2.51E+03	mg/kg	3.9E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	3.26E+02	mg/kg	5.1E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	2.55E+01	mg/kg	4.0E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Nickel	6.46E+01	mg/kg	1.0E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Thallium	1.80E-01	mg/kg	2.8E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Vanadium	2.34E+01	mg/kg	3.7E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								2.8E-04					---
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.7E-06	---	---	---	---	---
				Benzo(a)pyrene	8.89E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.7E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.20E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				2.3E-06	---	---	---	---	---
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	6.1E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	7.70E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.4E-07	---	---	---	---	---
				Carbazole	1.95E-01	mg/kg	1.3E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				5.7E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.7E-06	---	---	---	---	---
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	1.6E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.1E-06	---	---	---	---	---
				Total PCB Homologs	4.02E+00	mg/kg	2.8E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	5.6E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	8.0E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.0E-05	---	---	---	---	---
				Aluminum	5.56E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	6.73E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	3.71E+01	mg/kg	5.5E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.2E-06	---	---	---	---	---
				Barium	3.19E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---

TABLE A-7.2B-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Chromium	1.81E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	8.56E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Iron	4.27E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Lead	2.51E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	3.26E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	2.55E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Nickel	6.46E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Thallium	1.80E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Vanadium	2.34E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								5.5E-05					---
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.1E-11	---	---	---	---	---
				Benzo(a)pyrene	8.89E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.1E-10	---	---	---	---	---
				Benzo(b)fluoranthene	1.20E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.5E-11	---	---	---	---	---
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	4.2E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	7.70E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				9.4E-12	---	---	---	---	---
				Carbazole	1.95E-01	mg/kg	8.6E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				4.1E-11	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.1E-11	---	---	---	---	---
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	4.8E-15	mg/m^3	3.8E+01	(µg/m3)^-1	1.8E-10	---	---	---	---	---
				Total PCB Homologs	4.02E+00	mg/kg	1.8E-10	mg/m^3	5.7E-04	(µg/m3)^-1	1.0E-10	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	5.1E-15	mg/m^3	3.8E+01	(µg/m3)^-1	1.9E-10	---	---	---	---	---
				Aluminum	5.56E+03	mg/kg	2.5E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Antimony	6.73E+01	mg/kg	3.0E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	3.71E+01	mg/kg	1.6E-09	mg/m^3	4.3E-03	(µg/m3)^-1	7.0E-09	---	---	---	---	---
				Barium	3.19E+02	mg/kg	1.4E-08	mg/m^4	NA	---	NA	---	---	---	---	---
				Chromium	1.81E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-6				1.7E-07	---	---	---	---	---
				Cobalt	8.56E+00	mg/kg	3.8E-10	mg/m^3	9.0E-03	(µg/m3)^-1	3.4E-09	---	---	---	---	---
				Iron	4.27E+04	mg/kg	1.9E-06	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	2.51E+03	mg/kg	1.1E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	3.26E+02	mg/kg	1.4E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	2.55E+01	mg/kg	3.3E-04	mg/m^3	NA	---	NA	---	---	---	---	---
				Nickel	6.46E+01	mg/kg	2.8E-09	mg/m^4	2.6E-04	(µg/m3)^-1	7.4E-10	---	---	---	---	---
				Thallium	1.80E-01	mg/kg	7.9E-12	mg/m^5	NA	---	NA	---	---	---	---	---
				Vanadium	2.34E+01	mg/kg	1.0E-09	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								1.8E-07					---
	Aggregate Soil Total										3.3E-04					---
Soil Total											3.3E-04					---
											Total of Receptor Risks Across All Media					3.3E-04
														Total of Receptor Hazards Across All Media		---

TABLE A-7.2B-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	3.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.3E-07	9.0E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	3.1E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.3E-06	8.7E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	4.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.1E-07	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	3.3E-07	mg/kg-day	NA	---	NA	9.2E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	2.7E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	2.0E-08	7.5E-07	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	6.8E-08	mg/kg-day	NA	---	NA	1.9E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	1.1E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	7.8E-07	3.0E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	3.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.4E-07	9.1E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	3.8E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.9E-06	1.1E-10	mg/kg-day	7.0E-10	mg/kg-day	0.15
				Total PCB Homologs	4.02E+00	mg/kg	1.4E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.8E-06	3.9E-06	mg/kg-day	2.0E-05	mg/kg-day	0.20
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	4.1E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.3E-06	1.1E-10	mg/kg-day	7.0E-10	mg/kg-day	0.16
				Aluminum	5.56E+03	mg/kg	1.9E-03	mg/kg-day	NA	---	NA	5.4E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0054
				Antimony	6.73E+01	mg/kg	2.4E-05	mg/kg-day	NA	---	NA	6.6E-05	mg/kg-day	4.0E-04	mg/kg-day	0.16
				Arsenic	3.71E+01	mg/kg	1.3E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.9E-05	3.6E-05	mg/kg-day	3.0E-04	mg/kg-day	0.12
				Barium	3.19E+02	mg/kg	1.1E-04	mg/kg-day	NA	---	NA	3.1E-04	mg/kg-day	2.0E-01	mg/kg-day	0.0016
				Chromium	1.81E+01	mg/kg	6.3E-06	mg/kg-day	5.0E-01	(mg/kg-day)^-1	3.2E-06	1.8E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0059
				Cobalt	8.56E+00	mg/kg	3.0E-06	mg/kg-day	NA	---	NA	8.4E-06	mg/kg-day	3.0E-04	mg/kg-day	0.028
				Iron	4.27E+04	mg/kg	1.5E-02	mg/kg-day	NA	---	NA	4.2E-02	mg/kg-day	7.0E-01	mg/kg-day	0.060
				Lead	2.51E+03	mg/kg	8.8E-04	mg/kg-day	NA	---	NA	2.5E-03	mg/kg-day	NA	---	NA
				Manganese	3.26E+02	mg/kg	1.1E-04	mg/kg-day	NA	---	NA	3.2E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0046
				Mercury	2.55E+01	mg/kg	8.9E-06	mg/kg-day	NA	---	NA	2.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.083
				Nickel	6.46E+01	mg/kg	2.3E-05	mg/kg-day	NA	---	NA	6.3E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0032
				Thallium	1.80E-01	mg/kg	6.3E-08	mg/kg-day	NA	---	NA	1.8E-07	mg/kg-day	1.0E-05	mg/kg-day	0.018
				Vanadium	2.34E+01	mg/kg	8.2E-06	mg/kg-day	NA	---	NA	2.3E-05	mg/kg-day	7.0E-05	mg/kg-day	0.33
			Ingestion Total								3.9E-05					1.3
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	2.7E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.0E-07	7.7E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	2.7E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.9E-06	7.5E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	3.6E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.6E-07	1.0E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	2.8E-07	mg/kg-day	NA	---	NA	7.9E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	2.3E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	1.7E-08	6.5E-07	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	5.8E-08	mg/kg-day	NA	---	NA	1.6E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	9.1E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	6.7E-07	2.6E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	2.8E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.0E-07	7.8E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	7.5E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	9.8E-07	2.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.030
				Total PCB Homologs	4.02E+00	mg/kg	1.3E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.6E-06	3.6E-06	mg/kg-day	2.0E-05	mg/kg-day	0.18
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	3.8E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.9E-06	1.1E-10	mg/kg-day	7.0E-10	mg/kg-day	0.15
				Aluminum	5.56E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	6.73E+01	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	3.71E+01	mg/kg	2.6E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	3.8E-06	7.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.024
				Barium	3.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	1.4E-02	mg/kg-day	NA

TABLE A-7.2B-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Chromium	1.81E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	8.56E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	4.27E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.51E+03	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.26E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	2.55E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	6.46E+01	mg/kg	NA	---	NA	---	NA	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	1.80E-01	mg/kg	NA	---	NA	---	NA	NA	---	1.0E-05	mg/kg-day	NA
				Vanadium	2.34E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								1.6E-05					0.39
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	8.0E-12	mg/m^3	1.1E-04	(µg/m3)^-1	8.8E-13	2.2E-11	mg/m^3	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	7.8E-12	mg/m^3	1.1E-03	(µg/m3)^-1	8.6E-12	2.2E-11	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	1.0E-11	mg/m^3	1.1E-04	(µg/m3)^-1	1.2E-12	2.9E-11	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	8.3E-12	mg/m^3	NA	---	NA	2.3E-11	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	6.7E-12	mg/m^3	1.1E-04	(µg/m3)^-1	7.4E-13	1.9E-11	mg/m^3	NA	---	NA
				Carbazole	1.95E-01	mg/kg	1.7E-12	mg/m^3	NA	---	NA	4.8E-12	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	2.7E-12	mg/m^3	1.2E-03	(µg/m3)^-1	3.2E-12	7.5E-12	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	8.1E-12	mg/m^3	1.1E-04	(µg/m3)^-1	8.9E-13	2.3E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	9.5E-16	mg/m^3	3.8E+01	(µg/m3)^-1	3.6E-11	2.7E-15	mg/m^3	4.0E-08	mg/m^3	0.00000007
				Total PCB Homologs	4.02E+00	mg/kg	3.5E-11	mg/m^3	5.7E-04	(µg/m3)^-1	2.0E-11	9.9E-11	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	1.0E-15	mg/m^3	3.8E+01	(µg/m3)^-1	3.9E-11	2.8E-15	mg/m^3	4.0E-08	mg/m^3	0.00000007
				Aluminum	5.56E+03	mg/kg	4.9E-08	mg/m^3	NA	---	NA	1.4E-07	mg/m^3	5.0E-03	mg/m^3	0.000027
				Antimony	6.73E+01	mg/kg	5.9E-10	mg/m^3	NA	---	NA	1.6E-09	mg/m^3	NA	---	NA
				Arsenic	3.71E+01	mg/kg	3.2E-10	mg/m^3	4.3E-03	(µg/m3)^-1	1.4E-09	9.1E-10	mg/m^3	1.5E-05	mg/m^3	0.000060
				Barium	3.19E+02	mg/kg	2.8E-09	mg/m^4	NA	---	NA	7.8E-09	mg/m^4	5.0E-04	mg/m^3	0.000016
				Chromium	1.81E+01	mg/kg	1.6E-10	mg/m^3	8.4E-02	(µg/m3)^-1	1.3E-08	4.4E-10	mg/m^3	1.0E-04	mg/m^3	0.0000044
				Cobalt	8.56E+00	mg/kg	7.5E-11	mg/m^3	9.0E-03	(µg/m3)^-1	6.7E-10	2.1E-10	mg/m^3	6.0E-06	mg/m^3	0.000035
				Iron	4.27E+04	mg/kg	3.7E-07	mg/m^3	NA	---	NA	1.0E-06	mg/m^3	NA	---	NA
				Lead	2.51E+03	mg/kg	2.2E-08	mg/m^3	NA	---	NA	6.2E-08	mg/m^3	NA	---	NA
				Manganese	3.26E+02	mg/kg	2.8E-09	mg/m^3	NA	---	NA	8.0E-09	mg/m^3	5.0E-05	mg/m^3	0.00016
				Mercury	2.55E+01	mg/kg	6.6E-05	mg/m^3	NA	---	NA	1.8E-04	mg/m^3	3.0E-04	mg/m^3	0.61
				Nickel	6.46E+01	mg/kg	5.6E-10	mg/m^4	2.6E-04	(µg/m3)^-1	1.5E-10	1.6E-09	mg/m^4	9.0E-05	mg/m^3	0.000018
				Thallium	1.80E-01	mg/kg	1.6E-12	mg/m^5	NA	---	NA	4.4E-12	mg/m^5	NA	---	NA
				Vanadium	2.34E+01	mg/kg	2.0E-10	mg/m^3	NA	---	NA	5.7E-10	mg/m^3	1.0E-04	mg/m^3	0.0000057
			Inhalation Total								1.6E-08					0.61
	Aggregate Soil Total										5.5E-05					2.3
Soil Total											5.5E-05					2.3
											Total of Receptor Risks Across All Media	5.5E-05		Total of Receptor Hazards Across All Media		2.3

TABLE A-7.2B-8
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	2.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.6E-08	1.5E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	2.1E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.6E-07	1.5E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	2.9E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.1E-08	2.0E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	2.3E-08	mg/kg-day	NA	---	NA	1.6E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	1.8E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	1.3E-09	1.3E-06	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	4.7E-09	mg/kg-day	NA	---	NA	3.3E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	7.3E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	5.3E-08	5.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	2.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.6E-08	1.6E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	2.6E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.4E-07	1.8E-10	mg/kg-day	7.0E-10	mg/kg-day	0.26
				Total PCB Homologs	4.02E+00	mg/kg	9.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.9E-07	6.8E-06	mg/kg-day	2.0E-05	mg/kg-day	0.34
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	2.8E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.6E-07	2.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.28
				Aluminum	5.56E+03	mg/kg	1.3E-04	mg/kg-day	NA	---	NA	9.3E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0093
				Antimony	6.73E+01	mg/kg	1.6E-06	mg/kg-day	NA	---	NA	1.1E-04	mg/kg-day	4.0E-04	mg/kg-day	0.28
				Arsenic	3.71E+01	mg/kg	8.9E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.3E-06	6.2E-05	mg/kg-day	3.0E-04	mg/kg-day	0.21
				Barium	3.19E+02	mg/kg	7.6E-06	mg/kg-day	NA	---	NA	5.4E-04	mg/kg-day	2.0E-01	mg/kg-day	0.0027
				Chromium	1.81E+01	mg/kg	4.3E-07	mg/kg-day	5.0E-01	(mg/kg-day)^-1	2.2E-07	3.0E-05	mg/kg-day	3.0E-03	mg/kg-day	0.010
				Cobalt	8.56E+00	mg/kg	2.1E-07	mg/kg-day	NA	---	NA	1.4E-05	mg/kg-day	3.0E-04	mg/kg-day	0.048
				Iron	4.27E+04	mg/kg	1.0E-03	mg/kg-day	NA	---	NA	7.2E-02	mg/kg-day	7.0E-01	mg/kg-day	0.10
				Lead	2.51E+03	mg/kg	6.0E-05	mg/kg-day	NA	---	NA	4.2E-03	mg/kg-day	NA	---	NA
				Manganese	3.26E+02	mg/kg	7.8E-06	mg/kg-day	NA	---	NA	5.5E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0078
				Mercury	2.55E+01	mg/kg	6.1E-07	mg/kg-day	NA	---	NA	4.3E-05	mg/kg-day	3.0E-04	mg/kg-day	0.14
				Nickel	6.46E+01	mg/kg	1.5E-06	mg/kg-day	NA	---	NA	1.1E-04	mg/kg-day	2.0E-02	mg/kg-day	0.0054
				Thallium	1.80E-01	mg/kg	4.3E-09	mg/kg-day	NA	---	NA	3.0E-07	mg/kg-day	1.0E-05	mg/kg-day	0.030
				Vanadium	2.34E+01	mg/kg	5.6E-07	mg/kg-day	NA	---	NA	3.9E-05	mg/kg-day	7.0E-05	mg/kg-day	0.56
			Ingestion Total								2.7E-06					2.3
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	5.7E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.2E-09	4.0E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	5.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.0E-08	3.9E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	7.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	5.5E-09	5.2E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	5.9E-09	mg/kg-day	NA	---	NA	4.1E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	4.8E-09	mg/kg-day	7.3E-02	(mg/kg-day)^-1	3.5E-10	3.4E-07	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	1.2E-09	mg/kg-day	NA	---	NA	8.5E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	1.9E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.4E-08	1.3E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	5.8E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.2E-09	4.1E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	1.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.0E-08	1.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.016
				Total PCB Homologs	4.02E+00	mg/kg	2.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	5.4E-08	1.9E-06	mg/kg-day	2.0E-05	mg/kg-day	0.095
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	7.8E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.0E-07	5.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.078
				Aluminum	5.56E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	6.73E+01	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	3.71E+01	mg/kg	5.3E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.0E-08	3.7E-06	mg/kg-day	3.0E-04	mg/kg-day	0.012
				Barium	3.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	1.4E-02	mg/kg-day	NA

TABLE A-7.2B-8
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Chromium	1.81E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	8.56E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	4.27E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.51E+03	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.26E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	2.55E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	6.46E+01	mg/kg	NA	---	NA	---	NA	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	1.80E-01	mg/kg	NA	---	NA	---	NA	NA	---	1.0E-05	mg/kg-day	NA
				Vanadium	2.34E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								3.2E-07					0.20
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	1.1E-09	mg/m^3	1.1E-04	(µg/m3)^-1	1.2E-10	7.8E-08	mg/m^3	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	1.1E-09	mg/m^3	1.1E-03	(µg/m3)^-1	1.2E-09	7.6E-08	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	1.5E-09	mg/m^3	1.1E-04	(µg/m3)^-1	1.6E-10	1.0E-07	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	1.2E-09	mg/m^3	NA	---	NA	8.1E-08	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	9.4E-10	mg/m^3	1.1E-04	(µg/m3)^-1	1.0E-10	6.6E-08	mg/m^3	NA	---	NA
				Carbazole	1.95E-01	mg/kg	2.4E-10	mg/m^3	NA	---	NA	1.7E-08	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	3.7E-10	mg/m^3	1.2E-03	(µg/m3)^-1	4.5E-10	2.6E-08	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	1.1E-09	mg/m^3	1.1E-04	(µg/m3)^-1	1.2E-10	7.9E-08	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	1.3E-13	mg/m^3	3.8E+01	(µg/m3)^-1	5.0E-09	9.3E-12	mg/m^3	4.0E-08	mg/m^3	0.00023
				Total PCB Homologs	4.02E+00	mg/kg	4.9E-09	mg/m^3	5.7E-04	(µg/m3)^-1	2.8E-09	3.4E-07	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	1.4E-13	mg/m^3	3.8E+01	(µg/m3)^-1	5.4E-09	9.9E-12	mg/m^3	4.0E-08	mg/m^3	0.00025
				Aluminum	5.56E+03	mg/kg	6.8E-06	mg/m^3	NA	---	NA	4.8E-04	mg/m^3	5.0E-03	mg/m^3	0.10
				Antimony	6.73E+01	mg/kg	8.2E-08	mg/m^3	NA	---	NA	5.8E-06	mg/m^3	NA	---	NA
				Arsenic	3.71E+01	mg/kg	4.5E-08	mg/m^3	4.3E-03	(µg/m3)^-1	1.9E-07	3.2E-06	mg/m^3	1.5E-05	mg/m^3	0.21
				Barium	3.19E+02	mg/kg	3.9E-07	mg/m^4	NA	---	NA	2.7E-05	mg/m^4	5.0E-04	mg/m^3	0.055
				Chromium	1.81E+01	mg/kg	2.2E-08	mg/m^3	8.4E-02	(µg/m3)^-1	1.9E-06	1.5E-06	mg/m^3	1.0E-04	mg/m^3	0.015
				Cobalt	8.56E+00	mg/kg	1.0E-08	mg/m^3	9.0E-03	(µg/m3)^-1	9.4E-08	7.3E-07	mg/m^3	6.0E-06	mg/m^3	0.12
				Iron	4.27E+04	mg/kg	5.2E-05	mg/m^3	NA	---	NA	3.7E-03	mg/m^3	NA	---	NA
				Lead	2.51E+03	mg/kg	3.1E-06	mg/m^3	NA	---	NA	2.1E-04	mg/m^3	NA	---	NA
				Manganese	3.26E+02	mg/kg	4.0E-07	mg/m^3	NA	---	NA	2.8E-05	mg/m^3	5.0E-05	mg/m^3	0.56
				Mercury	2.55E+01	mg/kg	1.4E-06	mg/m^3	NA	---	NA	9.6E-05	mg/m^3	3.0E-04	mg/m^3	0.32
				Nickel	6.46E+01	mg/kg	7.9E-08	mg/m^4	2.6E-04	(µg/m3)^-1	2.1E-08	5.5E-06	mg/m^4	9.0E-05	mg/m^3	0.061
				Thallium	1.80E-01	mg/kg	2.2E-10	mg/m^5	NA	---	NA	1.5E-08	mg/m^5	NA	---	NA
				Vanadium	2.34E+01	mg/kg	2.9E-08	mg/m^3	NA	---	NA	2.0E-06	mg/m^3	1.0E-04	mg/m^3	0.020
			Inhalation Total								2.2E-06					1.5
	Aggregate Soil Total										5.2E-06					3.9
Soil Total											5.2E-06					3.9
											Total of Receptor Risks Across All Media	5.2E-06		Total of Receptor Hazards Across All Media		3.9

TABLE A-7.2C-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	1.5E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	7.7E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	1.4E-05	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	7.3E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	2.1E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	1.6E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	2.0E-02	mg/kg-day	0.000065
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	4.0E-09	mg/kg-day	7.0E-10	mg/kg-day	5.7
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	1.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.016
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	8.2E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0082
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	1.0E-05	mg/kg-day	4.0E-04	mg/kg-day	0.026
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	3.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.10
				Chromium	1.42E+01	mg/kg	---	---	---	---	---	1.9E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0065
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	9.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.031
				Iron	1.48E+04	mg/kg	---	---	---	---	---	2.0E-02	mg/kg-day	7.0E-01	mg/kg-day	0.029
				Lead	3.68E+02	mg/kg	---	---	---	---	---	5.0E-04	mg/kg-day	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	4.7E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0067
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	2.4E-05	mg/kg-day	3.0E-04	mg/kg-day	0.079
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	3.1E-05	mg/kg-day	7.0E-05	mg/kg-day	0.45
			Ingestion Total								---					6.5
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	1.0E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	7.8E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	6.3E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	4.0E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	7.4E-06	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	3.8E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	8.4E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	5.9E-06	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	6.8E-07	mg/kg-day	2.0E-02	mg/kg-day	0.000034
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	4.8E-10	mg/kg-day	7.0E-10	mg/kg-day	0.69
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	6.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0089
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	3.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.012

TABLE A-7.2C-1
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Chromium	1.42E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.48E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	3.68E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					0.71
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	1.5E-09	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	9.1E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	5.8E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	5.5E-11	mg/m^3	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^4	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	1.2E-10	mg/m^5	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	8.5E-10	mg/m^6	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	9.8E-11	mg/m^7	3.0E-03	mg/m^3	0.00000003
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	3.0E-13	mg/m^3	4.0E-08	mg/m^3	0.0000075
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	8.3E-16	mg/m^3	4.0E-08	mg/m^3	0.00000002
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	6.1E-07	mg/m^3	5.0E-03	mg/m^3	0.00012
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	7.9E-10	mg/m^3	NA	---	NA
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	2.2E-09	mg/m^3	1.5E-05	mg/m^3	0.00015
				Chromium	1.42E+01	mg/kg	---	---	---	---	---	1.5E-09	mg/m^3	1.0E-04	mg/m^3	0.000015
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	6.9E-10	mg/m^3	6.0E-06	mg/m^3	0.00012
				Iron	1.48E+04	mg/kg	---	---	---	---	---	1.5E-06	mg/m^3	NA	---	NA
				Lead	3.68E+02	mg/kg	---	---	---	---	---	3.8E-08	mg/m^3	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	3.5E-08	mg/m^3	5.0E-05	mg/m^3	0.00070
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	5.3E-04	mg/m^3	3.0E-04	mg/m^3	1.8
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	2.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000023
			Inhalation Total								---					1.8
	Aggregate Soil Total										---					8.9
Soil Total											---					8.9
											Total of Receptor Risks Across All Media	---		Total of Receptor Hazards Across All Media		8.9

TABLE A-7.2C-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	1.9E-04	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	1.1E-04	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	7.2E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	1.3E-04	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	6.8E-06	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	1.9E-04	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	1.5E-05	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	1.1E-04	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	2.0E-02	mg/kg-day	0.00061
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	3.7E-08	mg/kg-day	7.0E-10	mg/kg-day	54
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	1.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.15
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	7.6E-02	mg/kg-day	1.0E+00	mg/kg-day	0.076
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	9.8E-05	mg/kg-day	4.0E-04	mg/kg-day	0.24
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	2.8E-04	mg/kg-day	3.0E-04	mg/kg-day	0.93
				Chromium	1.42E+01	mg/kg	---	---	---	---	---	1.8E-04	mg/kg-day	3.0E-03	mg/kg-day	0.060
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	8.6E-05	mg/kg-day	3.0E-04	mg/kg-day	0.29
				Iron	1.48E+04	mg/kg	---	---	---	---	---	1.9E-01	mg/kg-day	7.0E-01	mg/kg-day	0.27
				Lead	3.68E+02	mg/kg	---	---	---	---	---	4.7E-03	mg/kg-day	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	4.4E-03	mg/kg-day	7.0E-02	mg/kg-day	0.062
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	2.2E-04	mg/kg-day	3.0E-04	mg/kg-day	0.74
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	2.9E-04	mg/kg-day	7.0E-05	mg/kg-day	4.2
			Ingestion Total								---					60
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	6.8E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	5.1E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	4.1E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	2.6E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	4.8E-05	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	2.5E-06	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	7.0E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	5.5E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	3.9E-05	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	4.4E-06	mg/kg-day	2.0E-02	mg/kg-day	0.00022
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	3.1E-09	mg/kg-day	7.0E-10	mg/kg-day	4.5
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	4.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.058
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	2.3E-05	mg/kg-day	3.0E-04	mg/kg-day	0.078

TABLE A-7.2C-2
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Chromium	1.42E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.48E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	3.68E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					4.6
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	1.5E-09	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	9.1E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	5.8E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	5.5E-11	mg/m^3	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^4	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	1.2E-10	mg/m^5	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	8.5E-10	mg/m^6	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	9.8E-11	mg/m^7	3.0E-03	mg/m^3	0.00000003
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	3.0E-13	mg/m^3	4.0E-08	mg/m^3	0.0000075
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	8.3E-16	mg/m^3	4.0E-08	mg/m^3	0.00000002
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	6.1E-07	mg/m^3	5.0E-03	mg/m^3	0.00012
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	7.9E-10	mg/m^3	NA	---	NA
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	2.2E-09	mg/m^3	1.5E-05	mg/m^3	0.00015
				Chromium	1.42E+01	mg/kg	---	---	---	---	---	1.5E-09	mg/m^3	1.0E-04	mg/m^3	0.000015
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	6.9E-10	mg/m^3	6.0E-06	mg/m^3	0.00012
				Iron	1.48E+04	mg/kg	---	---	---	---	---	1.5E-06	mg/m^3	NA	---	NA
				Lead	3.68E+02	mg/kg	---	---	---	---	---	3.8E-08	mg/m^3	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	3.5E-08	mg/m^3	5.0E-05	mg/m^3	0.00070
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	5.3E-04	mg/m^3	3.0E-04	mg/m^3	1.8
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	2.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000023
			Inhalation Total								---					1.8
	Aggregate Soil Total										---					67
Soil Total											---					67
											Total of Receptor Risks Across All Media					---
																Total of Receptor Hazards Across All Media
																67

TABLE A-7.2C-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				7.2E-05	---	---	---	---	---
				Benzo(a)pyrene	1.09E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				5.3E-04	---	---	---	---	---
				Benzo(b)fluoranthene	8.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				4.3E-05	---	---	---	---	---
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	8.8E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.04E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				5.1E-06	---	---	---	---	---
				Carbazole	5.35E-01	mg/kg	8.4E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	1.51E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				7.4E-07	---	---	---	---	---
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				5.8E-05	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				4.1E-05	---	---	---	---	---
				Naphthalene	9.54E-01	mg/kg	1.5E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	4.6E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.0E-04	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	1.3E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.7E-06	---	---	---	---	---
				Aluminum	5.96E+03	mg/kg	9.3E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	7.65E+00	mg/kg	1.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	2.17E+01	mg/kg	3.4E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	5.1E-05	---	---	---	---	---
				Chromium	1.42E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				4.7E-05	---	---	---	---	---
				Cobalt	6.73E+00	mg/kg	1.1E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	1.48E+04	mg/kg	2.3E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	3.68E+02	mg/kg	5.8E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	3.41E+02	mg/kg	5.3E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	1.74E+01	mg/kg	2.7E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Vanadium	2.28E+01	mg/kg	3.6E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								1.4E-03					---
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				2.8E-05	---	---	---	---	---
				Benzo(a)pyrene	1.09E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				2.1E-04	---	---	---	---	---
				Benzo(b)fluoranthene	8.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.7E-05	---	---	---	---	---
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	3.6E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.04E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.9E-06	---	---	---	---	---
				Carbazole	5.35E-01	mg/kg	3.4E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	1.51E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				2.8E-07	---	---	---	---	---
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				2.2E-05	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.6E-05	---	---	---	---	---
				Naphthalene	9.54E-01	mg/kg	6.1E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	4.3E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.6E-05	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	5.6E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	7.3E-07	---	---	---	---	---
				Aluminum	5.96E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	7.65E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	2.17E+01	mg/kg	3.2E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.8E-06	---	---	---	---	---
				Chromium	1.42E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	6.73E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---

TABLE A-7.2C-3
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Iron	1.48E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Lead	3.68E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	3.41E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	1.74E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Vanadium	2.28E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								3.5E-04					---
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.8E-10	---	---	---	---	---
				Benzo(a)pyrene	1.09E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.3E-09	---	---	---	---	---
				Benzo(b)fluoranthene	8.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.1E-10	---	---	---	---	---
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	2.5E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.04E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.3E-10	---	---	---	---	---
				Carbazole	5.35E-01	mg/kg	2.4E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Chrysene	1.51E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.8E-11	---	---	---	---	---
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.6E-10	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.0E-10	---	---	---	---	---
				Naphthalene	9.54E-01	mg/kg	4.2E-11	mg/m^2	3.4E-05	(µg/m3)^-1	1.4E-12	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	1.3E-13	mg/m^3	3.8E+01	(µg/m3)^-1	4.9E-09	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	3.6E-16	mg/m^3	3.8E+01	(µg/m3)^-1	1.4E-11	---	---	---	---	---
				Aluminum	5.96E+03	mg/kg	2.6E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Antimony	7.65E+00	mg/kg	3.4E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	2.17E+01	mg/kg	9.6E-10	mg/m^3	4.3E-03	(µg/m3)^-1	4.1E-09	---	---	---	---	---
				Chromium	1.42E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-9				1.3E-07	---	---	---	---	---
				Cobalt	6.73E+00	mg/kg	3.0E-10	mg/m^3	9.0E-03	(µg/m3)^-1	2.7E-09	---	---	---	---	---
				Iron	1.48E+04	mg/kg	6.5E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	3.68E+02	mg/kg	1.6E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	3.41E+02	mg/kg	1.5E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	1.74E+01	mg/kg	2.3E-04	mg/m^3	NA	---	NA	---	---	---	---	---
				Vanadium	2.28E+01	mg/kg	1.0E-09	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								1.5E-07					---
	Aggregate Soil Total										1.8E-03					---
Soil Total											1.8E-03					---
											Total of Receptor Risks Across All Media	1.8E-03			Total of Receptor Hazards Across All Media	---

TABLE A-7.2C-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	5.1E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.8E-06	1.4E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	3.8E-06	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.8E-05	1.1E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	3.1E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.3E-06	8.7E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	2.0E-06	mg/kg-day	NA	---	NA	5.5E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	3.6E-06	mg/kg-day	7.3E-02	(mg/kg-day)^-1	2.6E-07	1.0E-05	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	1.9E-07	mg/kg-day	NA	---	NA	5.2E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	5.3E-06	mg/kg-day	7.3E-03	(mg/kg-day)^-1	3.9E-08	1.5E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	4.1E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.0E-06	1.2E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	2.9E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.1E-06	8.1E-06	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	3.3E-07	mg/kg-day	NA	---	NA	9.3E-07	mg/kg-day	2.0E-02	mg/kg-day	0.000047
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	1.0E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.3E-04	2.9E-09	mg/kg-day	7.0E-10	mg/kg-day	4.1
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	2.8E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.7E-07	7.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.011
				Aluminum	5.96E+03	mg/kg	2.1E-03	mg/kg-day	NA	---	NA	5.8E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0058
				Antimony	7.65E+00	mg/kg	2.7E-06	mg/kg-day	NA	---	NA	7.5E-06	mg/kg-day	4.0E-04	mg/kg-day	0.019
				Arsenic	2.17E+01	mg/kg	7.6E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.1E-05	2.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.071
				Chromium	1.42E+01	mg/kg	4.9E-06	mg/kg-day	5.0E-01	(mg/kg-day)^-1	2.5E-06	1.4E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0046
				Cobalt	6.73E+00	mg/kg	2.4E-06	mg/kg-day	NA	---	NA	6.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.022
				Iron	1.48E+04	mg/kg	5.2E-03	mg/kg-day	NA	---	NA	1.5E-02	mg/kg-day	7.0E-01	mg/kg-day	0.021
				Lead	3.68E+02	mg/kg	1.3E-04	mg/kg-day	NA	---	NA	3.6E-04	mg/kg-day	NA	---	NA
				Manganese	3.41E+02	mg/kg	1.2E-04	mg/kg-day	NA	---	NA	3.3E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0048
				Mercury	1.74E+01	mg/kg	6.1E-06	mg/kg-day	NA	---	NA	1.7E-05	mg/kg-day	3.0E-04	mg/kg-day	0.057
				Vanadium	2.28E+01	mg/kg	8.0E-06	mg/kg-day	NA	---	NA	2.2E-05	mg/kg-day	7.0E-05	mg/kg-day	0.32
			Ingestion Total								1.9E-04					4.6
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	4.4E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.2E-06	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	3.3E-06	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.4E-05	9.2E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	2.7E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.9E-06	7.4E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	1.7E-06	mg/kg-day	NA	---	NA	4.7E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	3.1E-06	mg/kg-day	7.3E-02	(mg/kg-day)^-1	2.3E-07	8.7E-06	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	1.6E-07	mg/kg-day	NA	---	NA	4.5E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	4.5E-06	mg/kg-day	7.3E-03	(mg/kg-day)^-1	3.3E-08	1.3E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	3.5E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.6E-06	9.9E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	2.5E-06	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.8E-06	7.0E-06	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	2.9E-07	mg/kg-day	NA	---	NA	8.0E-07	mg/kg-day	2.0E-02	mg/kg-day	0.000040
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	2.0E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.6E-05	5.7E-10	mg/kg-day	7.0E-10	mg/kg-day	0.81
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	2.6E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.4E-07	7.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.010
				Aluminum	5.96E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	7.65E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	2.17E+01	mg/kg	1.5E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.3E-06	4.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.014
				Chromium	1.42E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.73E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA

TABLE A-7.2C-6
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Iron	1.48E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	3.68E+02	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.41E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.74E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Vanadium	2.28E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								6.3E-05					0.84
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	1.3E-10	mg/m^3	1.1E-04	(µg/m3)^-1	1.4E-11	3.6E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	9.5E-11	mg/m^3	1.1E-03	(µg/m3)^-1	1.0E-10	2.7E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	7.7E-11	mg/m^3	1.1E-04	(µg/m3)^-1	8.5E-12	2.2E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	4.9E-11	mg/m^3	NA	---	NA	1.4E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	9.0E-11	mg/m^3	1.1E-04	(µg/m3)^-1	1.0E-11	2.5E-10	mg/m^3	NA	---	NA
				Carbazole	5.35E-01	mg/kg	4.7E-12	mg/m^3	NA	---	NA	1.3E-11	mg/m^3	NA	---	NA
				Chrysene	1.51E+01	mg/kg	1.3E-10	mg/m^4	1.1E-05	(µg/m3)^-1	1.5E-12	3.7E-10	mg/m^4	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	1.0E-11	mg/m^5	1.2E-03	(µg/m3)^-1	1.2E-11	2.9E-11	mg/m^5	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	7.2E-11	mg/m^6	1.1E-04	(µg/m3)^-1	8.0E-12	2.0E-10	mg/m^6	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	8.3E-12	mg/m^7	3.4E-05	(µg/m3)^-1	2.8E-13	2.3E-11	mg/m^7	3.0E-03	mg/m^3	0.000000008
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	2.6E-14	mg/m^3	3.8E+01	(µg/m3)^-1	9.7E-10	7.2E-14	mg/m^3	4.0E-08	mg/m^3	0.0000018
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	7.1E-17	mg/m^3	3.8E+01	(µg/m3)^-1	2.7E-12	2.0E-16	mg/m^3	4.0E-08	mg/m^3	0.000000005
				Aluminum	5.96E+03	mg/kg	5.2E-08	mg/m^3	NA	---	NA	1.5E-07	mg/m^3	5.0E-03	mg/m^3	0.000029
				Antimony	7.65E+00	mg/kg	6.7E-11	mg/m^3	NA	---	NA	1.9E-10	mg/m^3	NA	---	NA
				Arsenic	2.17E+01	mg/kg	1.9E-10	mg/m^3	4.3E-03	(µg/m3)^-1	8.2E-10	5.3E-10	mg/m^3	1.5E-05	mg/m^3	0.000035
				Chromium	1.42E+01	mg/kg	1.2E-10	mg/m^3	8.4E-02	(µg/m3)^-1	1.0E-08	3.5E-10	mg/m^3	1.0E-04	mg/m^3	0.0000035
				Cobalt	6.73E+00	mg/kg	5.9E-11	mg/m^3	9.0E-03	(µg/m3)^-1	5.3E-10	1.6E-10	mg/m^3	6.0E-06	mg/m^3	0.000027
				Iron	1.48E+04	mg/kg	1.3E-07	mg/m^3	NA	---	NA	3.6E-07	mg/m^3	NA	---	NA
				Lead	3.68E+02	mg/kg	3.2E-09	mg/m^3	NA	---	NA	9.0E-09	mg/m^3	NA	---	NA
				Manganese	3.41E+02	mg/kg	3.0E-09	mg/m^3	NA	---	NA	8.3E-09	mg/m^3	5.0E-05	mg/m^3	0.00017
				Mercury	1.74E+01	mg/kg	4.5E-05	mg/m^3	NA	---	NA	1.3E-04	mg/m^3	3.0E-04	mg/m^3	0.42
				Vanadium	2.28E+01	mg/kg	2.0E-10	mg/m^3	NA	---	NA	5.6E-10	mg/m^3	1.0E-04	mg/m^3	0.0000056
			Inhalation Total								1.3E-08					0.42
	Aggregate Soil Total										2.5E-04					5.9
Soil Total											2.5E-04					5.9
											Total of Receptor Risks Across All Media					2.5E-04
																Total of Receptor Hazards Across All Media

TABLE A-7.2C-8
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	3.5E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.6E-07	2.5E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	2.6E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.9E-06	1.8E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	2.1E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.6E-07	1.5E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	1.4E-07	mg/kg-day	NA	---	NA	9.5E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	2.5E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	1.8E-08	1.7E-05	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	1.3E-08	mg/kg-day	NA	---	NA	9.0E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	3.6E-07	mg/kg-day	7.3E-03	(mg/kg-day)^-1	2.6E-09	2.5E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	2.8E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.1E-07	2.0E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	2.0E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.4E-07	1.4E-05	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	2.3E-08	mg/kg-day	NA	---	NA	1.6E-06	mg/kg-day	2.0E-02	mg/kg-day	0.000080
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	7.0E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	9.1E-06	4.9E-09	mg/kg-day	7.0E-10	mg/kg-day	7.0
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	1.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.5E-08	1.4E-11	mg/kg-day	7.0E-10	mg/kg-day	0.019
				Aluminum	5.96E+03	mg/kg	1.4E-04	mg/kg-day	NA	---	NA	1.0E-02	mg/kg-day	1.0E+00	mg/kg-day	0.010
				Antimony	7.65E+00	mg/kg	1.8E-07	mg/kg-day	NA	---	NA	1.3E-05	mg/kg-day	4.0E-04	mg/kg-day	0.032
				Arsenic	2.17E+01	mg/kg	5.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	7.8E-07	3.6E-05	mg/kg-day	3.0E-04	mg/kg-day	0.12
				Chromium	1.42E+01	mg/kg	3.4E-07	mg/kg-day	5.0E-01	(mg/kg-day)^-1	1.7E-07	2.4E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0079
				Cobalt	6.73E+00	mg/kg	1.6E-07	mg/kg-day	NA	---	NA	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.038
				Iron	1.48E+04	mg/kg	3.6E-04	mg/kg-day	NA	---	NA	2.5E-02	mg/kg-day	7.0E-01	mg/kg-day	0.036
				Lead	3.68E+02	mg/kg	8.8E-06	mg/kg-day	NA	---	NA	6.2E-04	mg/kg-day	NA	---	NA
				Manganese	3.41E+02	mg/kg	8.2E-06	mg/kg-day	NA	---	NA	5.7E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0082
				Mercury	1.74E+01	mg/kg	4.2E-07	mg/kg-day	NA	---	NA	2.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.10
				Vanadium	2.28E+01	mg/kg	5.5E-07	mg/kg-day	NA	---	NA	3.8E-05	mg/kg-day	7.0E-05	mg/kg-day	0.55
			Ingestion Total								1.3E-05					7.9
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	9.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	6.7E-08	6.4E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	6.8E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	5.0E-07	4.8E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	5.5E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.0E-08	3.9E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	3.5E-08	mg/kg-day	NA	---	NA	2.5E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	6.5E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	4.7E-09	4.5E-06	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	3.3E-09	mg/kg-day	NA	---	NA	2.3E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	9.4E-08	mg/kg-day	7.3E-03	(mg/kg-day)^-1	6.9E-10	6.6E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	7.3E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	5.4E-08	5.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	5.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.8E-08	3.6E-06	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	5.9E-09	mg/kg-day	NA	---	NA	4.2E-07	mg/kg-day	2.0E-02	mg/kg-day	0.000021
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	4.2E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.5E-07	3.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.42
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	5.4E-14	mg/kg-day	1.3E+05	(mg/kg-day)^-1	7.1E-09	3.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0054
				Aluminum	5.96E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	7.65E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	2.17E+01	mg/kg	3.1E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.7E-08	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0073

TABLE A-7.2C-8
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Chromium	1.42E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.73E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.48E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	3.68E+02	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.41E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.74E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Vanadium	2.28E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								1.3E-06					0.43
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	1.8E-08	mg/m^3	1.1E-04	(µg/m3)^-1	2.0E-09	1.3E-06	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	1.3E-08	mg/m^3	1.1E-03	(µg/m3)^-1	1.5E-08	9.3E-07	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	1.1E-08	mg/m^3	1.1E-04	(µg/m3)^-1	1.2E-09	7.6E-07	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	6.9E-09	mg/m^3	NA	---	NA	4.8E-07	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	1.3E-08	mg/m^3	1.1E-04	(µg/m3)^-1	1.4E-09	8.8E-07	mg/m^3	NA	---	NA
				Carbazole	5.35E-01	mg/kg	6.5E-10	mg/m^3	NA	---	NA	4.6E-08	mg/m^3	NA	---	NA
				Chrysene	1.51E+01	mg/kg	1.8E-08	mg/m^4	1.1E-05	(µg/m3)^-1	2.0E-10	1.3E-06	mg/m^4	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	1.4E-09	mg/m^5	1.2E-03	(µg/m3)^-1	1.7E-09	1.0E-07	mg/m^5	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	1.0E-08	mg/m^6	1.1E-04	(µg/m3)^-1	1.1E-09	7.1E-07	mg/m^6	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	1.2E-09	mg/m^7	3.4E-05	(µg/m3)^-1	4.0E-11	8.2E-08	mg/m^7	3.0E-03	mg/m^3	0.000027
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	3.6E-12	mg/m^3	3.8E+01	(µg/m3)^-1	1.4E-07	2.5E-10	mg/m^3	4.0E-08	mg/m^3	0.0063
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	9.9E-15	mg/m^3	3.8E+01	(µg/m3)^-1	3.8E-10	6.9E-13	mg/m^3	4.0E-08	mg/m^3	0.000017
				Aluminum	5.96E+03	mg/kg	7.3E-06	mg/m^3	NA	---	NA	5.1E-04	mg/m^3	5.0E-03	mg/m^3	0.10
				Antimony	7.65E+00	mg/kg	9.3E-09	mg/m^3	NA	---	NA	6.5E-07	mg/m^3	NA	---	NA
				Arsenic	2.17E+01	mg/kg	2.7E-08	mg/m^3	4.3E-03	(µg/m3)^-1	1.1E-07	1.9E-06	mg/m^3	1.5E-05	mg/m^3	0.12
				Chromium	1.42E+01	mg/kg	1.7E-08	mg/m^3	8.4E-02	(µg/m3)^-1	1.5E-06	1.2E-06	mg/m^3	1.0E-04	mg/m^3	0.012
				Cobalt	6.73E+00	mg/kg	8.2E-09	mg/m^3	9.0E-03	(µg/m3)^-1	7.4E-08	5.8E-07	mg/m^3	6.0E-06	mg/m^3	0.10
				Iron	1.48E+04	mg/kg	1.8E-05	mg/m^3	NA	---	NA	1.3E-03	mg/m^3	NA	---	NA
				Lead	3.68E+02	mg/kg	4.5E-07	mg/m^3	NA	---	NA	3.1E-05	mg/m^3	NA	---	NA
				Manganese	3.41E+02	mg/kg	4.2E-07	mg/m^3	NA	---	NA	2.9E-05	mg/m^3	5.0E-05	mg/m^3	0.58
				Mercury	1.74E+01	mg/kg	9.3E-07	mg/m^3	NA	---	NA	6.5E-05	mg/m^3	3.0E-04	mg/m^3	0.22
				Vanadium	2.28E+01	mg/kg	2.8E-08	mg/m^3	NA	---	NA	1.9E-06	mg/m^3	1.0E-04	mg/m^3	0.019
			Inhalation Total								1.8E-06					1.2
	Aggregate Soil Total										1.6E-05					9.5
Soil Total											1.6E-05					9.5
										Total of Receptor Risks Across All Media	1.6E-05			Total of Receptor Hazards Across All Media		9.5

TABLE A-7.3D-9

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 1

BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 1 Sediment	Ingestion	Benzo(a)anthracene	2.80E+00	mg/kg	8.3E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	6.0E-08	2.4E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.70E+00	mg/kg	8.0E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	5.8E-07	2.3E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	4.10E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.8E-08	3.5E-07	mg/kg-day	NA	---	NA
				Carbazole	2.80E-02	mg/kg	8.3E-10	mg/kg-day	NA	---	NA	2.4E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	7.50E-02	mg/kg	2.2E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.6E-08	6.5E-09	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.70E+00	mg/kg	5.0E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.7E-08	1.5E-07	mg/kg-day	NA	---	NA
				Aluminum	1.20E+04	mg/kg	3.5E-04	mg/kg-day	NA	---	NA	1.0E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0010
				Arsenic	9.90E-01	mg/kg	2.9E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.4E-08	8.5E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00028
				Chromium	1.90E+01	mg/kg	5.6E-07	mg/kg-day	5.0E-01	(mg/kg-day)^-1	2.8E-07	1.6E-06	mg/kg-day	3.0E-03	mg/kg-day	0.00055
				Cobalt	1.10E+01	mg/kg	3.2E-07	mg/kg-day	NA	---	NA	9.5E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0032
				Iron	1.70E+04	mg/kg	5.0E-04	mg/kg-day	NA	---	NA	1.5E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0021
				Manganese	3.80E+02	mg/kg	1.1E-05	mg/kg-day	NA	---	NA	3.3E-05	mg/kg-day	7.0E-02	mg/kg-day	0.00047
			Ingestion Total								1.1E-06					0.0076
			Dermal	Benzo(a)anthracene	2.80E+00	mg/kg	2.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.6E-07	6.5E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.70E+00	mg/kg	2.1E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.6E-06	6.3E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	4.10E+00	mg/kg	3.3E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.4E-07	9.5E-07	mg/kg-day	NA	---	NA
				Carbazole	2.80E-02	mg/kg	2.2E-09	mg/kg-day	NA	---	NA	6.5E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	7.50E-02	mg/kg	6.0E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.3E-08	1.7E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.70E+00	mg/kg	1.4E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	9.9E-08	3.9E-07	mg/kg-day	NA	---	NA
				Aluminum	1.20E+04	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Arsenic	9.90E-01	mg/kg	1.8E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.7E-08	5.3E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00018
				Chromium	1.90E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.10E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.70E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	3.80E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
			Dermal Total								2.1E-06					0.00018
Sediment Total											3.2E-06					0.0078
										Total of Receptor Risks Across All Media	3.2E-06			Total of Receptor Hazards Across All Media		0.0078

TABLE A-7.3D-10
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 1
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 1 Sediment	Ingestion	Benzo(a)anthracene	2.80E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				7.5E-07	2.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.70E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				7.2E-06	2.2E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	4.10E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				1.1E-06	3.3E-06	mg/kg-day	NA	---	NA
				Carbazole	2.80E-02	mg/kg	1.9E-09	mg/kg-day	NA	---	NA	2.3E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	7.50E-02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				2.0E-07	6.0E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.70E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				4.6E-07	1.4E-06	mg/kg-day	NA	---	NA
				Aluminum	1.20E+04	mg/kg	8.3E-04	mg/kg-day	NA	---	NA	9.6E-03	mg/kg-day	1.0E+00	mg/kg-day	0.010
				Arsenic	9.90E-01	mg/kg	6.8E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.0E-07	8.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0027
				Chromium	1.90E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				3.5E-06	1.5E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0051
				Cobalt	1.10E+01	mg/kg	7.6E-07	mg/kg-day	NA	---	NA	8.8E-06	mg/kg-day	3.0E-04	mg/kg-day	0.029
				Iron	1.70E+04	mg/kg	1.2E-03	mg/kg-day	NA	---	NA	1.4E-02	mg/kg-day	7.0E-01	mg/kg-day	0.020
				Manganese	3.80E+02	mg/kg	2.6E-05	mg/kg-day	NA	---	NA	3.1E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0044
			Ingestion Total								1.3E-05					0.071
			Dermal	Benzo(a)anthracene	2.80E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				2.7E-07	8.2E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.70E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				2.6E-06	7.9E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	4.10E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				4.0E-07	1.2E-06	mg/kg-day	NA	---	NA
				Carbazole	2.80E-02	mg/kg	7.0E-10	mg/kg-day	NA	---	NA	8.2E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	7.50E-02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				7.3E-08	2.2E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.70E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-11				1.7E-07	5.0E-07	mg/kg-day	NA	---	NA
				Aluminum	1.20E+04	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Arsenic	9.90E-01	mg/kg	5.7E-09	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.6E-09	6.7E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00022
				Chromium	1.90E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.10E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.70E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	3.80E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
			Dermal Total								3.6E-06					0.00022
Sediment Total											1.7E-05					0.071
										Total of Receptor Risks Across All Media	1.7E-05			Total of Receptor Hazards Across All Media		0.071

TABLE A-7.3E-9
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 2 Sediment	Ingestion	Benzo(a)anthracene	1.50E+00	mg/kg	4.4E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.2E-08	1.3E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.46E+00	mg/kg	4.3E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.2E-07	1.3E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.96E+00	mg/kg	5.8E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.2E-08	1.7E-07	mg/kg-day	NA	---	NA
				Carbazole	8.80E-02	mg/kg	2.6E-09	mg/kg-day	NA	---	NA	7.6E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	6.55E-02	mg/kg	1.9E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.4E-08	5.6E-09	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.45E-01	mg/kg	2.8E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.0E-08	8.1E-08	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	3.42E-05	mg/kg	1.0E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.3E-07	2.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0042
				o,p'-DDT	4.40E-03	mg/kg	1.3E-10	mg/kg-day	NA	---	NA	3.8E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	2.02E-01	mg/kg	6.0E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.2E-08	1.7E-08	mg/kg-day	2.0E-05	mg/kg-day	0.00087
				Aluminum	9.00E+03	mg/kg	2.7E-04	mg/kg-day	NA	---	NA	7.7E-04	mg/kg-day	1.0E+00	mg/kg-day	0.00077
				Arsenic	3.11E+00	mg/kg	9.2E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.4E-07	2.7E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00089
				Chromium	1.35E+01	mg/kg	4.0E-07	mg/kg-day	5.0E-01	(mg/kg-day)^-1	2.0E-07	1.2E-06	mg/kg-day	3.0E-03	mg/kg-day	0.00039
				Cobalt	9.40E+00	mg/kg	2.8E-07	mg/kg-day	NA	---	NA	8.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0027
				Iron	1.50E+04	mg/kg	4.4E-04	mg/kg-day	NA	---	NA	1.3E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0018
				Manganese	3.30E+02	mg/kg	9.7E-06	mg/kg-day	NA	---	NA	2.8E-05	mg/kg-day	7.0E-02	mg/kg-day	0.00041
			Ingestion Total								9.0E-07					0.012
			Dermal	Benzo(a)anthracene	1.50E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.7E-08	3.5E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.46E+00	mg/kg	1.2E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	8.5E-07	3.4E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.96E+00	mg/kg	1.6E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.1E-07	4.5E-07	mg/kg-day	NA	---	NA
				Carbazole	8.80E-02	mg/kg	7.0E-09	mg/kg-day	NA	---	NA	2.0E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	6.55E-02	mg/kg	5.2E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.8E-08	1.5E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.45E-01	mg/kg	7.5E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	5.5E-08	2.2E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	3.42E-05	mg/kg	6.3E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.1E-08	1.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0026
				o,p'-DDT	4.40E-03	mg/kg	2.7E-10	mg/kg-day	NA	---	NA	7.8E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	2.02E-01	mg/kg	1.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	3.5E-08	5.0E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0025
				Aluminum	9.00E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Arsenic	3.11E+00	mg/kg	5.7E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.5E-08	1.7E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00055
				Chromium	1.35E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	9.40E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.50E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	3.30E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
			Dermal Total								1.3E-06					0.0057
Sediment Total											2.2E-06					0.018
										Total of Receptor Risks Across All Media	2.2E-06			Total of Receptor Hazards Across All Media		0.018

TABLE A-7.3E-10
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 2 Sediment	Ingestion	Benzo(a)anthracene	1.50E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				4.0E-07	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.46E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				3.9E-06	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.96E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				5.3E-07	1.6E-06	mg/kg-day	NA	---	NA
				Carbazole	8.80E-02	mg/kg	6.1E-09	mg/kg-day	NA	---	NA	7.1E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	6.55E-02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				1.8E-07	5.3E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.45E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				2.5E-07	7.6E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	3.42E-05	mg/kg	2.4E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.1E-07	2.7E-11	mg/kg-day	7.0E-10	mg/kg-day	0.039
				o,p'-DDT	4.40E-03	mg/kg	3.0E-10	mg/kg-day	NA	---	NA	3.5E-09	mg/kg-day	NA	---	NA
				Total PCB Homologs	2.02E-01	mg/kg	1.4E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.8E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.0081
				Aluminum	9.00E+03	mg/kg	6.2E-04	mg/kg-day	NA	---	NA	7.2E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0072
				Arsenic	3.11E+00	mg/kg	2.1E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	3.2E-07	2.5E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0083
				Chromium	1.35E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				2.5E-06	1.1E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0036
				Cobalt	9.40E+00	mg/kg	6.5E-07	mg/kg-day	NA	---	NA	7.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.025
				Iron	1.50E+04	mg/kg	1.0E-03	mg/kg-day	NA	---	NA	1.2E-02	mg/kg-day	7.0E-01	mg/kg-day	0.017
				Manganese	3.30E+02	mg/kg	2.3E-05	mg/kg-day	NA	---	NA	2.7E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0038
			Ingestion Total								8.4E-06					0.11
			Dermal	Benzo(a)anthracene	1.50E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				1.5E-07	4.4E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.46E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				1.4E-06	4.3E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.96E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				1.9E-07	5.7E-07	mg/kg-day	NA	---	NA
				Carbazole	8.80E-02	mg/kg	2.2E-09	mg/kg-day	NA	---	NA	2.6E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	6.55E-02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				6.4E-08	1.9E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.45E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-12				9.2E-08	2.8E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	3.42E-05	mg/kg	2.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.6E-08	2.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0033
				o,p'-DDT	4.40E-03	mg/kg	8.5E-11	mg/kg-day	NA	---	NA	9.9E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	2.02E-01	mg/kg	5.5E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.1E-08	6.4E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0032
				Aluminum	9.00E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Arsenic	3.11E+00	mg/kg	1.8E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.7E-08	2.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00070
				Chromium	1.35E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	9.40E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.50E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	3.30E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
			Dermal Total								2.0E-06					0.0072
Sediment Total											1.0E-05					0.12
										Total of Receptor Risks Across All Media	1.0E-05			Total of Receptor Hazards Across All Media		0.12

TABLE A-7.3F-9
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 3 Sediment	Ingestion	Benzo(a)anthracene	2.40E+00	mg/kg	7.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	5.2E-08	2.1E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.90E+00	mg/kg	8.6E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	6.2E-07	2.5E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	3.80E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.2E-08	3.3E-07	mg/kg-day	NA	---	NA
				Carbazole	1.40E-01	mg/kg	4.1E-09	mg/kg-day	NA	---	NA	1.2E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.50E-01	mg/kg	1.0E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	7.5E-08	3.0E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.60E+00	mg/kg	4.7E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.4E-08	1.4E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.91E-04	mg/kg	8.6E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.1E-06	2.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.036
				o,p'-DDT	3.10E-03	mg/kg	9.2E-11	mg/kg-day	NA	---	NA	2.7E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	3.10E-01	mg/kg	9.2E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.8E-08	2.7E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0013
				Arsenic	7.30E+00	mg/kg	2.2E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	3.2E-07	6.3E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0021
				Chromium	1.07E+01	mg/kg	3.2E-07	mg/kg-day	5.0E-01	(mg/kg-day)^-1	1.6E-07	9.2E-07	mg/kg-day	3.0E-03	mg/kg-day	0.00031
				Mercury	3.66E+00	mg/kg	1.1E-07	mg/kg-day	NA	---	NA	3.2E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0011
			Ingestion Total								2.5E-06					0.041
			Dermal	Benzo(a)anthracene	2.40E+00	mg/kg	1.9E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.4E-07	5.6E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.90E+00	mg/kg	2.3E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.7E-06	6.7E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	3.80E+00	mg/kg	3.0E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.2E-07	8.8E-07	mg/kg-day	NA	---	NA
				Carbazole	1.40E-01	mg/kg	1.1E-08	mg/kg-day	NA	---	NA	3.2E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.50E-01	mg/kg	2.8E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.0E-07	8.1E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.60E+00	mg/kg	1.3E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	9.3E-08	3.7E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.91E-04	mg/kg	5.3E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.9E-07	1.6E-11	mg/kg-day	7.0E-10	mg/kg-day	0.022
				o,p'-DDT	3.10E-03	mg/kg	1.9E-10	mg/kg-day	NA	---	NA	5.5E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	3.10E-01	mg/kg	2.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	5.3E-08	7.7E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0039
				Arsenic	7.30E+00	mg/kg	1.3E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.0E-07	3.9E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0013
				Chromium	1.07E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Mercury	3.66E+00	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								3.3E-06					0.027
Sediment Total											5.8E-06					0.068
											Total of Receptor Risks Across All Media	5.8E-06		Total of Receptor Hazards Across All Media		0.068

TABLE A-7.3F-10
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 3 Sediment	Ingestion	Benzo(a)anthracene	2.40E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				6.4E-07	1.9E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.90E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				7.8E-06	2.3E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	3.80E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				1.0E-06	3.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.40E-01	mg/kg	9.6E-09	mg/kg-day	NA	---	NA	1.1E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.50E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				9.4E-07	2.8E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.60E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				4.3E-07	1.3E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.91E-04	mg/kg	2.0E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.6E-06	2.3E-10	mg/kg-day	7.0E-10	mg/kg-day	0.33
				o,p'-DDT	3.10E-03	mg/kg	2.1E-10	mg/kg-day	NA	---	NA	2.5E-09	mg/kg-day	NA	---	NA
				Total PCB Homologs	3.10E-01	mg/kg	2.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	4.3E-08	2.5E-07	mg/kg-day	2.0E-05	mg/kg-day	0.012
				Arsenic	7.30E+00	mg/kg	5.0E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	7.5E-07	5.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.020
				Chromium	1.07E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				2.0E-06	8.6E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0029
				Mercury	3.66E+00	mg/kg	2.5E-07	mg/kg-day	NA	---	NA	2.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0098
			Ingestion Total								1.6E-05					0.38
			Dermal	Benzo(a)anthracene	2.40E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				2.3E-07	7.0E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.90E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				2.8E-06	8.5E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	3.80E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				3.7E-07	1.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.40E-01	mg/kg	3.5E-09	mg/kg-day	NA	---	NA	4.1E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.50E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				3.4E-07	1.0E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.60E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-13				1.6E-07	4.7E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.91E-04	mg/kg	1.7E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.2E-07	2.0E-11	mg/kg-day	7.0E-10	mg/kg-day	0.028
				o,p'-DDT	3.10E-03	mg/kg	6.0E-11	mg/kg-day	NA	---	NA	7.0E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	3.10E-01	mg/kg	8.4E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.7E-08	9.8E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0049
				Arsenic	7.30E+00	mg/kg	4.2E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	6.3E-08	4.9E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0016
				Chromium	1.07E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Mercury	3.66E+00	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								4.2E-06					0.035
Sediment Total											2.0E-05					0.41
										Total of Receptor Risks Across All Media	2.0E-05			Total of Receptor Hazards Across All Media		0.41

TABLE A-7.4G-11
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - ANDROSCOGGIN RIVER FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish	Androscoggin River Reaches 3-9	Ingestion	Indeno(1,2,3-cd)pyrene	7.20E-03	mg/kg	---	---	---	---	---	3.2E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	6.96E-06	mg/kg	---	---	---	---	---	3.1E-09	mg/kg-day	7.0E-10	mg/kg-day	4.4
				4,4'-DDT	2.10E-01	mg/kg	---	---	---	---	---	9.2E-05	mg/kg-day	5.0E-04	mg/kg-day	0.18
				beta-BHC	3.90E-03	mg/kg	---	---	---	---	---	1.7E-06	mg/kg-day	NA	---	NA
				o,p'-DDD	5.60E-02	mg/kg	---	---	---	---	---	2.5E-05	mg/kg-day	NA	---	NA
				trans-Nonachlor	1.30E-03	mg/kg	---	---	---	---	---	5.7E-07	mg/kg-day	NA	---	NA
				PCB Dioxin-like Congener TEQ	7.10E-05	mg/kg	---	---	---	---	---	3.1E-08	mg/kg-day	7.0E-10	mg/kg-day	44
				Total PCBs	3.21E+00	mg/kg	---	---	---	---	---	1.4E-03	mg/kg-day	2.0E-05	mg/kg-day	70
				Arsenic	5.53E-01	mg/kg	---	---	---	---	---	2.4E-04	mg/kg-day	3.0E-04	mg/kg-day	0.81
				Chromium	4.93E-01	mg/kg	---	---	---	---	---	2.2E-04	mg/kg-day	3.0E-03	mg/kg-day	0.072
				Lead	1.02E-02	mg/kg	---	---	---	---	---	4.5E-06	mg/kg-day	NA	---	NA
				Mercury	1.23E+00	mg/kg	---	---	---	---	---	5.4E-04	mg/kg-day	1.0E-04	mg/kg-day	5.4
			Ingestion Total								---					126
Fish Ingestion Total											---					126
											Total of Receptor Risks Across All Media	---		Total of Receptor Hazards Across All Media		126

TABLE A-7.4G-12
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - ANDROSCOGGIN RIVER FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish	Androscoggin River Reaches 3-9	Ingestion	Indeno(1,2,3-cd)pyrene	7.20E-03	mg/kg	---	---	---	---	---	6.0E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	6.96E-06	mg/kg	---	---	---	---	---	5.8E-09	mg/kg-day	7.0E-10	mg/kg-day	8.3
				4,4'-DDT	2.10E-01	mg/kg	---	---	---	---	---	1.7E-04	mg/kg-day	5.0E-04	mg/kg-day	0.35
				beta-BHC	3.90E-03	mg/kg	---	---	---	---	---	3.2E-06	mg/kg-day	NA	---	NA
				o,p'-DDD	5.60E-02	mg/kg	---	---	---	---	---	4.7E-05	mg/kg-day	NA	---	NA
				trans-Nonachlor	1.30E-03	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				PCB Dioxin-like Congener TEQ	7.10E-05	mg/kg	---	---	---	---	---	5.9E-08	mg/kg-day	7.0E-10	mg/kg-day	84
				Total PCBs	3.21E+00	mg/kg	---	---	---	---	---	2.7E-03	mg/kg-day	2.0E-05	mg/kg-day	133
				Arsenic	5.53E-01	mg/kg	---	---	---	---	---	4.6E-04	mg/kg-day	3.0E-04	mg/kg-day	1.5
				Chromium	4.93E-01	mg/kg	---	---	---	---	---	4.1E-04	mg/kg-day	3.0E-03	mg/kg-day	0.14
				Lead	1.02E-02	mg/kg	---	---	---	---	---	8.5E-06	mg/kg-day	NA	---	NA
				Mercury	1.23E+00	mg/kg	---	---	---	---	---	1.0E-03	mg/kg-day	1.0E-04	mg/kg-day	10
			Ingestion Total								---					238
Fish Ingestion Total											---					238
											Total of Receptor Risks Across All Media	---		Total of Receptor Hazards Across All Media		238

TABLE A-7.4G-13
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - ANDROSCOGGIN RIVER FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Age-adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish	Androscoggin River Reaches 3-9	Ingestion	Indeno(1,2,3-cd)pyrene	7.20E-03	mg/kg	Mutagenic Mode of Action Calculation; see Table J-14				3.4E-06	---	---	---	---	---
				2,3,7,8-TCDD TEQ	6.96E-06	mg/kg	1.5E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.0E-04	---	---	---	---	---
				4,4'-DDT	2.10E-01	mg/kg	4.7E-05	mg/kg-day	3.4E-01	(mg/kg-day)^-1	1.6E-05	---	---	---	---	---
				beta-BHC	3.90E-03	mg/kg	8.6E-07	mg/kg-day	1.8E+00	(mg/kg-day)^-1	1.6E-06	---	---	---	---	---
				o,p'-DDD	5.60E-02	mg/kg	1.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				trans-Nonachlor	1.30E-03	mg/kg	2.9E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	7.10E-05	mg/kg	1.6E-08	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.0E-03	---	---	---	---	---
				Total PCBs	3.21E+00	mg/kg	7.1E-04	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.4E-03	---	---	---	---	---
				Arsenic	5.53E-01	mg/kg	1.2E-04	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.8E-04	---	---	---	---	---
				Chromium	4.93E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-14				1.6E-04	---	---	---	---	---
				Lead	1.02E-02	mg/kg	2.3E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	1.23E+00	mg/kg	2.7E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								4.0E-03					---
Fish Ingestion Total											4.0E-03					---
										Total of Receptor Risks Across All Media	4.0E-03			Total of Receptor Hazards Across All Media		---

TABLE A-9.1A-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	96	---	12	108
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.072	---	0.040	0.11
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.037	---	0.021	0.058
			Antimony	---	---	---	---	Blood	0.010	---	---	0.010
			Arsenic	---	---	---	---	Skin	2.8	---	0.33	3.1
			Chromium	---	---	---	---	None observed	0.0070	---	---	0.0070
			Cobalt	---	---	---	---	Thyroid	0.055	---	---	0.055
			Iron	---	---	---	---	Gastrointestinal	0.042	---	---	0.042
			Manganese	---	---	---	---	Nervous system	0.0043	---	---	0.0043
			Mercury	---	---	---	---	Kidney	0.66	---	---	0.66
			Chemical Total	---	---	---	---		100	---	12	112
		Exposure Point Total					---					112
		Air at CHP	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00013	---	0.00013
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000049	---	0.000000049
			Antimony	---	---	---	---	---	---	---	---	---

TABLE A-9.1A-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0041	---	0.0041
			Chromium	---	---	---	---	Respiratory tract	---	0.000016	---	0.000016
			Cobalt	---	---	---	---	Respiratory tract	---	0.00021	---	0.00021
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00045	---	0.00045
			Mercury	---	---	---	---	Nervous system	---	15	---	15
			Chemical Total	---	---	---	---		---	15	---	15
		Exposure Point Total					---					15
	Surface Soil Total						---					126
Soil Total							---					126

Total Risk Across All Media	---
Total Hazard Across All Media	126
Total Nervous System HI Across All Media	15
Total Skin HI Across All Media	3.1
Total Thyroid HI Across All Media	0.055
Total Gastrointestinal HI Across All Media	0.042
Total Kidney HI Across All Media	0.66
Total Developmental HI Across All Media	108
Total Cardiovascular HI Across All Media	0.0041
Total Lung/Respiratory Tract HI Across All Media	0.0045
Total Eyes HI Across All Media	0.11
Total Immune System HI Across All Media	0.11
Total Blood HI Across All Media	0.010
Total Liver HI Across All Media	0.00013
Total Reproductive System HI Across All Media	0.00013
Total Endrocrine System HI Across All Media	0.00013

TABLE A-9.1A-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	897	---	75	972
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.68	---	0.26	0.94
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.35	---	0.14	0.48
			Antimony	---	---	---	---	Blood	0.094	---	---	0.094
			Arsenic	---	---	---	---	Skin	26	---	2.2	28
			Chromium	---	---	---	---	None observed	0.065	---	---	0.065
			Cobalt	---	---	---	---	Thyroid	0.51	---	---	0.51
			Iron	---	---	---	---	Gastrointestinal	0.39	---	---	0.39
			Manganese	---	---	---	---	Nervous system	0.040	---	---	0.040
			Mercury	---	---	---	---	Kidney	6.2	---	---	6.2
			Chemical Total	---	---	---	---		931	---	78	1009
		Exposure Point Total					---					1009
		Air at CHP	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00013	---	0.00013
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000049	---	0.000000049
			Antimony	---	---	---	---	---	---	---	---	---

TABLE A-9.1A-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0041	---	0.0041
			Chromium	---	---	---	---	Respiratory tract	---	0.000016	---	0.000016
			Cobalt	---	---	---	---	Respiratory tract	---	0.00021	---	0.00021
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00045	---	0.00045
			Mercury	---	---	---	---	Nervous system	---	15	---	15
			Chemical Total	---	---	---	---		---	15	---	15
		Exposure Point Total					---					15
	Surface Soil Total						---					1023
Soil Total							---					1023

Total Risk Across All Media: ---

Total Hazard Across All Media: 1023

Total Nervous System HI Across All Media	15
Total Skin HI Across All Media	28
Total Thyroid HI Across All Media	0.51
Total Gastrointestinal HI Across All Media	0.39
Total Kidney HI Across All Media	6.2
Total Developmental HI Across All Media	972
Total Cardiovascular HI Across All Media	0.0041
Total Lung/Respiratory Tract HI Across All Media	0.0045
Total Eyes HI Across All Media	0.94
Total Immune System HI Across All Media	0.94
Total Blood HI Across All Media	0.094
Total Liver HI Across All Media	0.00013
Total Reproductive System HI Across All Media	0.00013
Total Endrocrine System HI Across All Media	0.00013

TABLE A-9.1A-3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	8.2E-06	2.0E-11	3.1E-06	1.1E-05	---	---	---	---	---
			Benzo(a)pyrene	7.5E-05	1.9E-10	2.9E-05	1.0E-04	---	---	---	---	---
			Benzo(b)fluoranthene	8.1E-06	2.0E-11	3.1E-06	1.1E-05	---	---	---	---	---
			Benzo(k)fluoranthene	7.5E-07	1.9E-11	2.9E-07	1.0E-06	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	2.6E-05	7.0E-11	9.8E-06	3.5E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.2E-06	1.1E-11	1.6E-06	5.8E-06	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.0E-02	8.2E-08	9.5E-04	1.1E-02	---	---	---	---	---
			Total PCB Homologs	3.3E-06	2.7E-11	1.5E-06	4.8E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	3.9E-06	3.2E-11	1.7E-06	5.6E-06	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	1.4E-03	1.1E-07	1.3E-04	1.5E-03	---	---	---	---	---
			Chromium	5.1E-05	1.4E-07	---	5.1E-05	---	---	---	---	---
			Cobalt	---	4.8E-09	---	4.8E-09	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Chemical Total	1.2E-02	3.4E-07	1.1E-03	1.3E-02		---	---	---	---
		Exposure Point Total					1.3E-02					---
	Surface Soil Total						1.3E-02					---
Soil Total							1.3E-02					---

Total Risk Across All Media: 1.3E-02

Total Hazard Across All Media: ---

TABLE A-9.1A-4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	1.7E-07	---	8.8E-08	2.6E-07	---	---	---	---	---
			Benzo(a)pyrene	1.6E-06	---	8.1E-07	2.4E-06	---	---	---	---	---
			Benzo(b)fluoranthene	1.7E-07	---	8.7E-08	2.6E-07	---	---	---	---	---
			Benzo(k)fluoranthene	1.6E-08	---	8.1E-09	2.4E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	4.2E-07	---	2.2E-07	6.4E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	8.8E-08	---	4.6E-08	1.3E-07	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	8.9E-04	---	1.1E-04	1.0E-03	Developmental	29	---	3.4	32
			Total PCB Homologs	3.0E-07	---	1.6E-07	4.6E-07	Eyes, Immune system	0.022	---	0.012	0.034
			PCB Dioxin-like Congener TEQ	3.5E-07	---	1.9E-07	5.4E-07	Developmental	0.011	---	0.0062	0.017
			Antimony	---	---	---	---	Blood	0.0030	---	---	0.0030
			Arsenic	1.3E-04	---	1.5E-05	1.4E-04	Skin	0.82	---	0.098	0.92
			Chromium	1.1E-06	---	---	1.1E-06	None observed	0.0021	---	---	0.0021
			Cobalt	---	---	---	---	Thyroid	0.016	---	---	0.016
			Iron	---	---	---	---	Gastrointestinal	0.012	---	---	0.012
			Manganese	---	---	---	---	Nervous system	0.0013	---	---	0.0013
			Mercury	---	---	---	---	Kidney	0.20	---	---	0.20
			Chemical Total	1.0E-03	---	1.2E-04	1.1E-03		30	---	3.5	33
		Exposure Point Total					1.1E-03					33
		Air at CHP	Benzo(a)anthracene	---	1.6E-13	---	1.6E-13	---	---	---	---	---
			Benzo(a)pyrene	---	1.5E-12	---	1.5E-12	---	---	---	---	---
			Benzo(b)fluoranthene	---	1.6E-13	---	1.6E-13	---	---	---	---	---
			Benzo(k)fluoranthene	---	1.5E-13	---	1.5E-13	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	4.3E-13	---	4.3E-13	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	8.3E-14	---	8.3E-14	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.6E-09	---	1.6E-09	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000031	---	0.0000031
			Total PCB Homologs	---	5.3E-13	---	5.3E-13	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	6.3E-13	---	6.3E-13	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000000012	---	0.0000000012
			Antimony	---	---	---	---	---	---	---	---	---

TABLE A-9.1A-4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	2.3E-09	---	2.3E-09	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00010	---	0.00010
			Chromium	---	1.1E-09	---	1.1E-09	Respiratory tract	---	0.00000039	---	0.00000039
			Cobalt	---	9.5E-11	---	9.5E-11	Respiratory tract	---	0.0000051	---	0.0000051
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.000011	---	0.000011
			Mercury	---	---	---	---	Nervous system	---	0.36	---	0.36
			Chemical Total	---	5.1E-09	---	5.1E-09		---	0.36	---	0.36
		Exposure Point Total					5.1E-09					0.36
	Surface Soil Total						1.1E-03					34
Soil Total							1.1E-03					34

Total Risk Across All Media	1.1E-03
Total Hazard Across All Media	34

Total Nervous System HI Across All Media	0.36
Total Skin HI Across All Media	0.92
Total Thyroid HI Across All Media	0.016
Total Gastrointestinal HI Across All Media	0.012
Total Kidney HI Across All Media	0.20
Total Developmental HI Across All Media	32
Total Cardiovascular HI Across All Media	0.00010
Total Lung/Respiratory Tract HI Across All Media	0.00011
Total Eyes HI Across All Media	0.034
Total Immune System HI Across All Media	0.034
Total Blood HI Across All Media	0.0030
Total Liver HI Across All Media	0.0000031
Total Reproductive System HI Across All Media	0.0000031
Total Endrocrine System HI Across All Media	0.0000031

TABLE A-9.1A-5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	2.1E-06	---	6.3E-07	2.7E-06	---	---	---	---	---
			Benzo(a)pyrene	1.9E-05	---	5.7E-06	2.5E-05	---	---	---	---	---
			Benzo(b)fluoranthene	2.1E-06	---	6.2E-07	2.7E-06	---	---	---	---	---
			Benzo(k)fluoranthene	1.9E-07	---	5.7E-08	2.5E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	6.6E-06	---	2.0E-06	8.6E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.1E-06	---	3.2E-07	1.4E-06	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.1E-03	---	1.7E-04	2.3E-03	Developmental	266	---	22	289
			Total PCB Homologs	6.9E-07	---	2.7E-07	9.6E-07	Eyes, Immune system	0.20	---	0.079	0.28
			PCB Dioxin-like Congener TEQ	8.1E-07	---	3.2E-07	1.1E-06	Developmental	0.10	---	0.040	0.14
			Antimony	---	---	---	---	Blood	0.028	---	---	0.028
			Arsenic	2.9E-04	---	2.5E-05	3.2E-04	Skin	7.6	---	0.64	8.3
			Chromium	1.3E-05	---	---	1.3E-05	None observed	0.019	---	---	0.019
			Cobalt	---	---	---	---	Thyroid	0.15	---	---	0.15
			Iron	---	---	---	---	Gastrointestinal	0.12	---	---	0.12
			Manganese	---	---	---	---	Nervous system	0.012	---	---	0.012
			Mercury	---	---	---	---	Kidney	1.8	---	---	1.8
			Chemical Total	2.4E-03	---	2.1E-04	2.6E-03		277	---	23	300
		Exposure Point Total					2.6E-03					300
		Air at CHP	Benzo(a)anthracene	---	2.1E-13	---	2.1E-13	---	---	---	---	---
			Benzo(a)pyrene	---	1.9E-12	---	1.9E-12	---	---	---	---	---
			Benzo(b)fluoranthene	---	2.1E-13	---	2.1E-13	---	---	---	---	---
			Benzo(k)fluoranthene	---	1.9E-13	---	1.9E-13	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	7.3E-13	---	7.3E-13	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	1.1E-13	---	1.1E-13	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	4.1E-10	---	4.1E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000031	---	0.0000031
			Total PCB Homologs	---	1.3E-13	---	1.3E-13	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	1.6E-13	---	1.6E-13	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000000012	---	0.0000000012
			Antimony	---	---	---	---	---	---	---	---	---

TABLE A-9.1A-5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	5.7E-10	---	5.7E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00010	---	0.00010
			Chromium	---	1.5E-09	---	1.5E-09	Respiratory tract	---	0.00000039	---	0.00000039
			Cobalt	---	2.4E-11	---	2.4E-11	Respiratory tract	---	0.0000051	---	0.0000051
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.000011	---	0.000011
			Mercury	---	---	---	---	Nervous system	---	0.36	---	0.36
			Chemical Total	---	2.5E-09	---	2.5E-09		---	0.36	---	0.36
		Exposure Point Total					2.5E-09					0.36
	Surface Soil Total						2.6E-03					300
Soil Total							2.6E-03					300

Total Risk Across All Media	2.6E-03
Total Hazard Across All Media	300
Total Nervous System HI Across All Media	0.37
Total Skin HI Across All Media	8.3
Total Thyroid HI Across All Media	0.15
Total Gastrointestinal HI Across All Media	0.12
Total Kidney HI Across All Media	1.8
Total Developmental HI Across All Media	289
Total Cardiovascular HI Across All Media	0.00010
Total Lung/Respiratory Tract HI Across All Media	0.00011
Total Eyes HI Across All Media	0.28
Total Immune System HI Across All Media	0.28
Total Blood HI Across All Media	0.028
Total Liver HI Across All Media	0.0000031
Total Reproductive System HI Across All Media	0.0000031
Total Endrocrine System HI Across All Media	0.0000031

TABLE A-9.1A-7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	2.9E-07	---	3.1E-07	6.0E-07	---	---	---	---	---
			Benzo(a)pyrene	2.6E-06	---	2.8E-06	5.5E-06	---	---	---	---	---
			Benzo(b)fluoranthene	2.8E-07	---	3.1E-07	5.9E-07	---	---	---	---	---
			Benzo(k)fluoranthene	2.6E-08	---	2.9E-08	5.5E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	9.0E-07	---	9.8E-07	1.9E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.5E-07	---	1.6E-07	3.1E-07	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	5.0E-04	---	1.3E-04	6.3E-04	Developmental	38	---	9.6	48
			Total PCB Homologs	1.7E-07	---	1.9E-07	3.6E-07	Eyes, Immune system	0.029	---	0.034	0.063
			PCB Dioxin-like Congener TEQ	1.9E-07	---	2.3E-07	4.2E-07	Developmental	0.015	---	0.017	0.032
			Antimony	---	---	---	---	Blood	0.0040	---	---	0.0040
			Arsenic	7.1E-05	---	1.8E-05	8.9E-05	Skin	1.1	---	0.28	1.4
			Chromium	1.8E-06	---	---	1.8E-06	None observed	0.0028	---	---	0.0028
			Cobalt	---	---	---	---	Thyroid	0.022	---	---	0.022
			Iron	---	---	---	---	Gastrointestinal	0.017	---	---	0.017
			Manganese	---	---	---	---	Nervous system	0.0017	---	---	0.0017
			Mercury	---	---	---	---	Kidney	0.26	---	---	0.26
			Chemical Total	5.8E-04	---	1.5E-04	7.3E-04		40	---	10	50
		Exposure Point Total					7.3E-04					50
		Air at CHP	Benzo(a)anthracene	---	3.0E-13	---	3.0E-13	---	---	---	---	---
			Benzo(a)pyrene	---	2.7E-12	---	2.7E-12	---	---	---	---	---
			Benzo(b)fluoranthene	---	2.9E-13	---	2.9E-13	---	---	---	---	---
			Benzo(k)fluoranthene	---	2.7E-13	---	2.7E-13	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	1.0E-12	---	1.0E-12	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	1.5E-13	---	1.5E-13	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.0E-09	---	1.0E-09	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000047	---	0.0000047
			Total PCB Homologs	---	3.3E-13	---	3.3E-13	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	3.9E-13	---	3.9E-13	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000000018	---	0.0000000018
			Antimony	---	---	---	---	---	---	---	---	---

TABLE A-9.1A-7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	1.4E-09	---	1.4E-09	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00015	---	0.00015
			Chromium	---	2.1E-09	---	2.1E-09	Respiratory tract	---	0.00000058	---	0.00000058
			Cobalt	---	5.9E-11	---	5.9E-11	Respiratory tract	---	0.0000077	---	0.0000077
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.000017	---	0.000017
			Mercury	---	---	---	---	Nervous system	---	0.54	---	0.54
			Chemical Total	---	4.6E-09	---	4.6E-09		---	0.54	---	0.54
		Exposure Point Total					4.6E-09					0.54
	Surface Soil Total						7.3E-04					50
Soil Total							7.3E-04					50

Total Risk Across All Media	7.3E-04
Total Hazard Across All Media	50
Total Nervous System HI Across All Media	0.54
Total Skin HI Across All Media	1.4
Total Thyroid HI Across All Media	0.022
Total Gastrointestinal HI Across All Media	0.017
Total Kidney HI Across All Media	0.26
Total Developmental HI Across All Media	48
Total Cardiovascular HI Across All Media	0.00015
Total Lung/Respiratory Tract HI Across All Media	0.00017
Total Eyes HI Across All Media	0.063
Total Immune System HI Across All Media	0.063
Total Blood HI Across All Media	0.0040
Total Liver HI Across All Media	0.0000047
Total Reproductive System HI Across All Media	0.0000047
Total Endrocrine System HI Across All Media	0.0000047

TABLE A-9.1B-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	0.17	---	0.021	0.19
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.11	---	0.061	0.17
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.080	---	0.045	0.13
			Aluminum	---	---	---	---	Nervous system	0.0068	---	---	0.0068
			Antimony	---	---	---	---	Blood	0.43	---	---	0.43
			Arsenic	---	---	---	---	Skin	0.28	---	0.034	0.32
			Chromium	---	---	---	---	None observed	0.010	---	---	0.010
			Cobalt	---	---	---	---	Thyroid	0.036	---	---	0.036
			Iron	---	---	---	---	Gastrointestinal	0.11	---	---	0.11
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0064	---	---	0.0064
			Mercury	---	---	---	---	Kidney	0.16	---	---	0.16
			Nickel	---	---	---	---	Body weight	0.0041	---	---	0.0041
			Vanadium	---	---	---	---	Kidney	0.49	---	---	0.49
			Chemical Total	---	---	---	---		1.9	---	0.16	2.1
		Exposure Point Total					---					2.1
		Air at SFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000002	---	0.0000002
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000011	---	0.00000011
			Aluminum	---	---	---	---	Nervous system	---	0.00010	---	0.00010
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00042	---	0.00042

TABLE A-9.1B-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at SFSA	Chromium	---	---	---	---	Respiratory tract	---	0.000023	---	0.000023
			Cobalt	---	---	---	---	Respiratory tract	---	0.00013	---	0.00013
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00068	---	0.00068
			Mercury	---	---	---	---	Nervous system	---	3.5	---	3.5
			Nickel	---	---	---	---	Respiratory tract	---	0.000068	---	0.000068
			Vanadium	---	---	---	---	Respiratory tract	---	0.000026	---	0.000026
			Chemical Total	---	---	---	---		---	3.5	---	3.5
		Exposure Point Total					---					3.5
	Surface Soil Total						---					5.6
Soil Total							---					5.6

Total Risk Across All Media	---
Total Hazard Across All Media	5.6

Total Nervous System HI Across All Media	3.5
Total Skin HI Across All Media	0.32
Total Thyroid HI Across All Media	0.036
Total Gastrointestinal HI Across All Media	0.11
Total Kidney HI Across All Media	0.65
Total Developmental HI Across All Media	0.32
Total Cardiovascular HI Across All Media	0.00042
Total Lung/Respiratory Tract HI Across All Media	0.00068
Total Eyes HI Across All Media	0.17
Total Immune System HI Across All Media	0.17
Total Blood HI Across All Media	0.43
Total Liver HI Across All Media	0.00000033
Total Reproductive System HI Across All Media	0.00000033
Total Endrocrine System HI Across All Media	0.00000033

TABLE A-9.1B-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	1.6	---	0.14	1.8
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	1.0	---	0.40	1.4
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.75	---	0.29	1.0
			Aluminum	---	---	---	---	Nervous system	0.063	---	---	0.063
			Antimony	---	---	---	---	Blood	4.0	---	---	4.0
			Arsenic	---	---	---	---	Skin	2.6	---	0.22	2.9
			Chromium	---	---	---	---	None observed	0.096	---	---	0.096
			Cobalt	---	---	---	---	Thyroid	0.33	---	---	0.33
			Iron	---	---	---	---	Gastrointestinal	1.0	---	---	1.0
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.060	---	---	0.060
			Mercury	---	---	---	---	Kidney	1.5	---	---	1.5
			Nickel	---	---	---	---	Body weight	0.038	---	---	0.038
			Vanadium	---	---	---	---	Kidney	4.6	---	---	4.6
			Chemical Total	---	---	---	---		18	---	1.0	19
		Exposure Point Total					---					19
		Air at SFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000023	---	0.00000023
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000011	---	0.00000011
			Aluminum	---	---	---	---	Nervous system	---	0.00010	---	0.00010
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00042	---	0.00042

TABLE A-9.1B-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at SFSA	Chromium	---	---	---	---	Respiratory tract	---	0.000023	---	0.000023
			Cobalt	---	---	---	---	Respiratory tract	---	0.00013	---	0.00013
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00068	---	0.00068
			Mercury	---	---	---	---	Nervous system	---	3.5	---	3.5
			Nickel	---	---	---	---	Respiratory tract	---	0.000068	---	0.000068
			Vanadium	---	---	---	---	Respiratory tract	---	0.000026	---	0.000026
			Chemical Total	---	---	---	---		---	3.5	---	3.5
		Exposure Point Total					---					3.5
	Surface Soil Total						---					22
Soil Total							---					22

Total Risk Across All Media	---
Total Hazard Across All Media	22

Total Nervous System HI Across All Media	3.6
Total Skin HI Across All Media	2.9
Total Thyroid HI Across All Media	0.33
Total Gastrointestinal HI Across All Media	1.0
Total Kidney HI Across All Media	6.1
Total Developmental HI Across All Media	2.8
Total Cardiovascular HI Across All Media	0.00042
Total Lung/Respiratory Tract HI Across All Media	0.00068
Total Eyes HI Across All Media	1.4
Total Immune System HI Across All Media	1.4
Total Blood HI Across All Media	4.0
Total Liver HI Across All Media	0.00000033
Total Reproductive System HI Across All Media	0.00000033
Total Endrocrine System HI Across All Media	0.00000033

TABLE A-9.1B-3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	9.4E-06	2.3E-11	3.6E-06	1.3E-05	---	---	---	---	---
			Benzo(a)pyrene	8.9E-05	2.2E-10	3.4E-05	1.2E-04	---	---	---	---	---
			Benzo(b)fluoranthene	9.1E-06	2.3E-11	3.5E-06	1.3E-05	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	7.6E-07	1.9E-11	2.9E-07	1.0E-06	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	2.1E-05	5.8E-11	8.2E-06	3.0E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	8.4E-06	2.1E-11	3.2E-06	1.2E-05	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.8E-05	1.5E-10	1.7E-06	2.0E-05	---	---	---	---	---
			Total PCB Homologs	5.0E-06	4.0E-11	2.2E-06	7.2E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	8.3E-06	6.9E-11	3.7E-06	1.2E-05	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	1.5E-04	1.2E-08	1.4E-05	1.6E-04	---	---	---	---	---
			Chromium	7.6E-05	2.1E-07	---	7.6E-05	---	---	---	---	---
			Cobalt	---	3.1E-09	---	3.1E-09	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Nickel	---	6.8E-10	---	6.8E-10	---	---	---	---	---
			Vanadium	---	---	---	---	---	---	---	---	---
			Chemical Total	3.9E-04	2.3E-07	7.4E-05	4.6E-04		---	---	---	---
		Exposure Point Total					4.6E-04					---
	Surface Soil Total						4.6E-04					---
Soil Total							4.6E-04					---

Total Risk Across All Media: 4.6E-04

Total Hazard Across All Media: ---

TABLE A-9.1B-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	4.9E-07	---	4.2E-07	9.1E-07	---	---	---	---	---
			Benzo(a)pyrene	4.6E-06	---	4.0E-06	8.6E-06	---	---	---	---	---
			Benzo(b)fluoranthene	4.7E-07	---	4.1E-07	8.8E-07	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	3.9E-08	---	3.4E-08	7.3E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.1E-06	---	9.6E-07	2.1E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.4E-07	---	3.8E-07	8.2E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	4.0E-06	---	8.0E-07	4.8E-06	Developmental	0.12	---	0.024	0.15
			Total PCB Homologs	1.1E-06	---	1.0E-06	2.1E-06	Eyes, Immune system	0.078	---	0.072	0.15
			PCB Dioxin-like Congener TEQ	1.9E-06	---	1.7E-06	3.6E-06	Developmental	0.057	---	0.053	0.11
			Aluminum	---	---	---	---	Nervous system	0.0048	---	---	0.0048
			Antimony	---	---	---	---	Blood	0.31	---	---	0.31
			Arsenic	3.2E-05	---	6.4E-06	3.9E-05	Skin	0.20	---	0.040	0.24
			Chromium	3.9E-06	---	---	3.9E-06	None observed	0.0073	---	---	0.0073
			Cobalt	---	---	---	---	Thyroid	0.026	---	---	0.026
			Iron	---	---	---	---	Gastrointestinal	0.077	---	---	0.077
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0046	---	---	0.0046
			Mercury	---	---	---	---	Kidney	0.11	---	---	0.11
			Nickel	---	---	---	---	Body weight	0.0029	---	---	0.0029
			Vanadium	---	---	---	---	Kidney	0.35	---	---	0.35
			Chemical Total	5.1E-05	---	1.6E-05	6.7E-05		1.4	---	0.19	1.5
		Exposure Point Total					6.7E-05					1.5
		Air at SFSA	Benzo(a)anthracene	---	1.8E-12	---	1.8E-12	---	---	---	---	---
			Benzo(a)pyrene	---	1.7E-11	---	1.7E-11	---	---	---	---	---
			Benzo(b)fluoranthene	---	1.8E-12	---	1.8E-12	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	1.5E-12	---	1.5E-12	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	4.6E-12	---	4.6E-12	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	1.7E-12	---	1.7E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	2.9E-11	---	2.9E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000054	---	0.000000054
			Total PCB Homologs	---	7.9E-12	---	7.9E-12	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	1.4E-11	---	1.4E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000025	---	0.000000025
			Aluminum	---	---	---	---	Nervous system	---	0.000024	---	0.000024
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	2.3E-09	---	2.3E-09	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00010	---	0.00010

TABLE A-9.1B-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at SFSA	Chromium	---	1.7E-08	---	1.7E-08	Respiratory tract	---	0.0000055	---	0.0000055
			Cobalt	---	6.2E-10	---	6.2E-10	Respiratory tract	---	0.000032	---	0.000032
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00016	---	0.00016
			Mercury	---	---	---	---	Nervous system	---	0.84	---	0.84
			Nickel	---	1.4E-10	---	1.4E-10	Respiratory tract	---	0.000016	---	0.000016
			Vanadium	---	---	---	---	Respiratory tract	---	0.0000062	---	0.0000062
			Chemical Total	---	2.0E-08	---	2.0E-08		---	0.84	---	0.84
		Exposure Point Total					2.0E-08					0.84
	Surface Soil Total						6.7E-05					2.4
Soil Total							6.7E-05					2.4

Total Risk Across All Media	6.7E-05
Total Hazard Across All Media	2.4
Total Nervous System HI Across All Media	0.85
Total Skin HI Across All Media	0.24
Total Thyroid HI Across All Media	0.026
Total Gastrointestinal HI Across All Media	0.077
Total Kidney HI Across All Media	0.47
Total Developmental HI Across All Media	0.26
Total Cardiovascular HI Across All Media	0.00010
Total Lung/Respiratory Tract HI Across All Media	0.00016
Total Eyes HI Across All Media	0.15
Total Immune System HI Across All Media	0.15
Total Blood HI Across All Media	0.31
Total Liver HI Across All Media	0.000000079
Total Reproductive System HI Across All Media	0.000000079
Total Endrocrine System HI Across All Media	0.000000079

TABLE A-9.1B-7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	3.3E-07	---	3.6E-07	6.9E-07	---	---	---	---	---
			Benzo(a)pyrene	3.1E-06	---	3.4E-06	6.5E-06	---	---	---	---	---
			Benzo(b)fluoranthene	3.2E-07	---	3.5E-07	6.6E-07	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	2.6E-08	---	2.9E-08	5.5E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	7.5E-07	---	8.1E-07	1.6E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	3.0E-07	---	3.2E-07	6.2E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	9.0E-07	---	2.3E-07	1.1E-06	Developmental	0.069	---	0.017	0.087
			Total PCB Homologs	2.5E-07	---	2.9E-07	5.4E-07	Eyes, Immune system	0.043	---	0.051	0.094
			PCB Dioxin-like Congener TEQ	4.2E-07	---	4.9E-07	9.1E-07	Developmental	0.032	---	0.038	0.070
			Aluminum	---	---	---	---	Nervous system	0.0027	---	---	0.0027
			Antimony	---	---	---	---	Blood	0.17	---	---	0.17
			Arsenic	7.3E-06	---	1.8E-06	9.1E-06	Skin	0.11	---	0.028	0.14
			Chromium	2.6E-06	---	---	2.6E-06	None observed	0.0041	---	---	0.0041
			Cobalt	---	---	---	---	Thyroid	0.014	---	---	0.014
			Iron	---	---	---	---	Gastrointestinal	0.043	---	---	0.043
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0026	---	---	0.0026
			Mercury	---	---	---	---	Kidney	0.064	---	---	0.064
			Nickel	---	---	---	---	Body weight	0.0016	---	---	0.0016
			Vanadium	---	---	---	---	Kidney	0.20	---	---	0.20
			Chemical Total	1.6E-05	---	8.1E-06	2.4E-05		0.76	---	0.13	0.89
		Exposure Point Total					2.4E-05					0.89
		Air at SFSA	Benzo(a)anthracene	---	3.0E-13	---	3.0E-13	---	---	---	---	---
			Benzo(a)pyrene	---	3.2E-12	---	3.2E-12	---	---	---	---	---
			Benzo(b)fluoranthene	---	3.3E-13	---	3.3E-13	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	2.8E-13	---	2.8E-13	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	8.5E-13	---	8.5E-13	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	3.1E-13	---	3.1E-13	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.8E-12	---	1.8E-12	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000008	---	0.000000008
			Total PCB Homologs	---	4.9E-13	---	4.9E-13	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	8.5E-13	---	8.5E-13	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000000039	---	0.0000000039
			Aluminum	---	---	---	---	Nervous system	---	0.0000038	---	0.0000038
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	1.5E-10	---	1.5E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000016	---	0.000016

TABLE A-9.1B-7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at SFSA	Chromium	---	3.1E-09	---	3.1E-09	Respiratory tract	---	0.00000086	---	0.00000086
			Cobalt	---	3.9E-11	---	3.9E-11	Respiratory tract	---	0.0000050	---	0.0000050
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.000025	---	0.000025
			Mercury	---	---	---	---	Nervous system	---	0.13	---	0.13
			Nickel	---	8.5E-12	---	8.5E-12	Respiratory tract	---	0.0000025	---	0.0000025
			Vanadium	---	---	---	---	Respiratory tract	---	0.0000010	---	0.0000010
			Chemical Total	---	3.3E-09	---	3.3E-09		---	0.13	---	0.13
		Exposure Point Total					3.3E-09					0.13
	Surface Soil Total						2.4E-05					1.0
Soil Total							2.4E-05					1.0

Total Risk Across All Media	2.4E-05
Total Hazard Across All Media	1.0
Total Nervous System HI Across All Media	0.14
Total Skin HI Across All Media	0.14
Total Thyroid HI Across All Media	0.014
Total Gastrointestinal HI Across All Media	0.043
Total Kidney HI Across All Media	0.26
Total Developmental HI Across All Media	0.16
Total Cardiovascular HI Across All Media	0.000016
Total Lung/Respiratory Tract HI Across All Media	0.000025
Total Eyes HI Across All Media	0.094
Total Immune System HI Across All Media	0.094
Total Blood HI Across All Media	0.17
Total Liver HI Across All Media	0.000000012
Total Reproductive System HI Across All Media	0.000000012
Total Endrocrine System HI Across All Media	0.000000012

TABLE A-9.1C-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	5.3	---	0.64	6.0
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.013	---	0.0073	0.020
			Aluminum	---	---	---	---	Nervous system	0.010	---	---	0.010
			Antimony	---	---	---	---	Blood	0.037	---	---	0.037
			Arsenic	---	---	---	---	Skin	0.084	---	0.010	0.094
			Chromium	---	---	---	---	None observed	0.0056	---	---	0.0056
			Cobalt	---	---	---	---	Thyroid	0.030	---	---	0.030
			Iron	---	---	---	---	Gastrointestinal	0.026	---	---	0.026
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0074	---	---	0.0074
			Mercury	---	---	---	---	Kidney	0.10	---	---	0.10
			Chemical Total	---	---	---	---		5.6	---	0.65	6.3
		Exposure Point Total					---					6.3
		Air at EFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000070	---	0.0000070
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000017	---	0.000000017
			Aluminum	---	---	---	---	Nervous system	---	0.00014	---	0.00014
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00013	---	0.00013
			Chromium	---	---	---	---	Respiratory tract	---	0.000013	---	0.000013
			Cobalt	---	---	---	---	Respiratory tract	---	0.00011	---	0.00011

TABLE A-9.1C-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at EFSA	Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00078	---	0.00078
			Mercury	---	---	---	---	Nervous system	---	2.1	---	2.1
			Chemical Total	---	---	---	---		---	2.1	---	2.1
		Exposure Point Total					---					2.1
	Surface Soil Total						---					8.4
Soil Total							---					8.4

Total Risk Across All Media	---
Total Hazard Across All Media	8.4
Total Nervous System HI Across All Media	2.2
Total Skin HI Across All Media	0.094
Total Thyroid HI Across All Media	0.030
Total Gastrointestinal HI Across All Media	0.026
Total Kidney HI Across All Media	0.10
Total Developmental HI Across All Media	6.0
Total Cardiovascular HI Across All Media	0.00013
Total Lung/Respiratory Tract HI Across All Media	0.00026
Total Blood HI Across All Media	0.037
Total Liver HI Across All Media	0.0000070
Total Reproductive System HI Across All Media	0.0000070
Total Endrocrine System HI Across All Media	0.0000070

TABLE A-9.1C-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	50	---	4.2	54
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.12	---	0.048	0.17
			Aluminum	---	---	---	---	Nervous system	0.089	---	---	0.089
			Antimony	---	---	---	---	Blood	0.34	---	---	0.34
			Arsenic	---	---	---	---	Skin	0.78	---	0.066	0.85
			Chromium	---	---	---	---	None observed	0.052	---	---	0.052
			Cobalt	---	---	---	---	Thyroid	0.28	---	---	0.28
			Iron	---	---	---	---	Gastrointestinal	0.25	---	---	0.25
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.069	---	---	0.069
			Mercury	---	---	---	---	Kidney	0.90	---	---	0.90
			Chemical Total	---	---	---	---		52	---	4.3	57
		Exposure Point Total					---					57
		Air at EFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000070	---	0.0000070
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000017	---	0.000000017
			Aluminum	---	---	---	---	Nervous system	---	0.00014	---	0.00014
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00013	---	0.00013
			Chromium	---	---	---	---	Respiratory tract	---	0.000013	---	0.000013
			Cobalt	---	---	---	---	Respiratory tract	---	0.00011	---	0.00011

TABLE A-9.1C-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at EFSA	Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00078	---	0.00078
			Mercury	---	---	---	---	Nervous system	---	2.1	---	2.1
			Chemical Total	---	---	---	---		---	2.1	---	2.1
		Exposure Point Total					---					2.1
	Surface Soil Total						---					59
Soil Total							---					59

Total Risk Across All Media	---
Total Hazard Across All Media	59

Total Nervous System HI Across All Media	2.3
Total Skin HI Across All Media	0.85
Total Thyroid HI Across All Media	0.28
Total Gastrointestinal HI Across All Media	0.25
Total Kidney HI Across All Media	0.90
Total Developmental HI Across All Media	54
Total Cardiovascular HI Across All Media	0.00013
Total Lung/Respiratory Tract HI Across All Media	0.00026
Total Blood HI Across All Media	0.34
Total Liver HI Across All Media	0.0000070
Total Reproductive System HI Across All Media	0.0000070
Total Endrocrine System HI Across All Media	0.0000070

TABLE A-9.1C-3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	8.6E-05	2.1E-10	3.3E-05	1.2E-04	---	---	---	---	---
			Benzo(a)pyrene	6.3E-04	1.6E-09	2.4E-04	8.7E-04	---	---	---	---	---
			Benzo(b)fluoranthene	5.7E-05	1.4E-10	2.2E-05	7.9E-05	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	6.2E-06	1.6E-10	2.4E-06	8.6E-06	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	8.4E-07	2.1E-11	3.2E-07	1.2E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	9.5E-06	2.6E-11	3.7E-06	1.3E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	5.6E-05	1.4E-10	2.2E-05	7.8E-05	---	---	---	---	---
			2,3,7,8-TCDD TEQ	5.5E-04	4.5E-09	5.2E-05	6.1E-04	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	1.4E-06	1.1E-11	6.0E-07	2.0E-06	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	4.3E-05	3.5E-09	4.1E-06	4.7E-05	---	---	---	---	---
			Chromium	4.1E-05	1.1E-07	---	4.1E-05	---	---	---	---	---
			Cobalt	---	2.6E-09	---	2.6E-09	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Chemical Total	1.5E-03	1.3E-07	3.8E-04	1.9E-03		---	---	---	---
		Exposure Point Total					1.9E-03					---
	Surface Soil Total						1.9E-03					---
Soil Total							1.9E-03					---

Total Risk Across All Media: 1.9E-03

Total Hazard Across All Media: ---

TABLE A-9.1C-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	4.5E-06	---	3.8E-06	8.3E-06	---	---	---	---	---
			Benzo(a)pyrene	3.3E-05	---	2.8E-05	6.1E-05	---	---	---	---	---
			Benzo(b)fluoranthene	3.0E-06	---	2.5E-06	5.5E-06	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	3.3E-07	---	2.8E-07	6.0E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	4.4E-08	---	3.7E-08	8.1E-08	---	---	---	---	---
			Dibenz(a,h)anthracene	5.0E-07	---	4.3E-07	9.2E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.9E-06	---	2.5E-06	5.5E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.2E-04	---	2.4E-05	1.5E-04	Developmental	3.8	---	0.75	4.5
			PCB Dioxin-like Congener TEQ	3.0E-07	---	2.8E-07	5.8E-07	Developmental	0.0093	---	0.0086	0.018
			Aluminum	---	---	---	---	Nervous system	0.0068	---	---	0.0068
			Antimony	---	---	---	---	Blood	0.026	---	---	0.026
			Arsenic	9.6E-06	---	1.9E-06	1.2E-05	Skin	0.060	---	0.012	0.072
			Chromium	2.1E-06	---	---	2.1E-06	None observed	0.0040	---	---	0.0040
			Cobalt	---	---	---	---	Thyroid	0.022	---	---	0.022
			Iron	---	---	---	---	Gastrointestinal	0.019	---	---	0.019
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0053	---	---	0.0053
			Mercury	---	---	---	---	Kidney	0.069	---	---	0.069
			Chemical Total	1.8E-04	---	6.4E-05	2.4E-04		4.0	---	0.77	4.8
		Exposure Point Total					2.4E-04					4.8
		Air at EFSA	Benzo(a)anthracene	---	1.7E-11	---	1.7E-11	---	---	---	---	---
			Benzo(a)pyrene	---	1.2E-10	---	1.2E-10	---	---	---	---	---
			Benzo(b)fluoranthene	---	1.1E-11	---	1.1E-11	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	1.2E-11	---	1.2E-11	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	1.6E-12	---	1.6E-12	---	---	---	---	---
			Dibenz(a,h)anthracene	---	2.0E-12	---	2.0E-12	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	1.1E-11	---	1.1E-11	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	9.0E-10	---	9.0E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000017	---	0.0000017
			PCB Dioxin-like Congener TEQ	---	2.2E-12	---	2.2E-12	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000000041	---	0.0000000041
			Aluminum	---	---	---	---	Nervous system	---	0.000034	---	0.000034
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	6.9E-10	---	6.9E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000030	---	0.000030
			Chromium	---	9.0E-09	---	9.0E-09	Respiratory tract	---	0.0000030	---	0.0000030
			Cobalt	---	5.2E-10	---	5.2E-10	Respiratory tract	---	0.000027	---	0.000027

TABLE A-9.1C-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at EFSA	Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00019	---	0.00019
			Mercury	---	---	---	---	Nervous system	---	0.51	---	0.51
			Chemical Total	---	1.1E-08	---	1.1E-08		---	0.51	---	0.51
		Exposure Point Total					1.1E-08					0.51
	Surface Soil Total						2.4E-04					5.3
Soil Total							2.4E-04					5.3

Total Risk Across All Media: 2.4E-04

Total Hazard Across All Media: 5.3

Total Nervous System HI Across All Media	0.52
Total Skin HI Across All Media	0.072
Total Thyroid HI Across All Media	0.022
Total Gastrointestinal HI Across All Media	0.019
Total Kidney HI Across All Media	0.069
Total Developmental HI Across All Media	4.6
Total Cardiovascular HI Across All Media	0.000030
Total Lung/Respiratory Tract HI Across All Media	0.000062
Total Blood HI Across All Media	0.026
Total Liver HI Across All Media	0.0000017
Total Reproductive System HI Across All Media	0.0000017
Total Endrocrine System HI Across All Media	0.0000017

TABLE A-9.1C-7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	3.0E-06	---	3.3E-06	6.3E-06	---	---	---	---	---
			Benzo(a)pyrene	2.2E-05	---	2.4E-05	4.6E-05	---	---	---	---	---
			Benzo(b)fluoranthene	2.0E-06	---	2.2E-06	4.2E-06	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	2.2E-07	---	2.4E-07	4.6E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	2.9E-08	---	3.2E-08	6.1E-08	---	---	---	---	---
			Dibenz(a,h)anthracene	3.3E-07	---	3.6E-07	7.0E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.0E-06	---	2.2E-06	4.1E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.8E-05	---	6.9E-06	3.5E-05	Developmental	2.1	---	0.53	2.7
			PCB Dioxin-like Congener TEQ	6.8E-08	---	8.0E-08	1.5E-07	Developmental	0.0052	---	0.0061	0.011
			Aluminum	---	---	---	---	Nervous system	0.0038	---	---	0.0038
			Antimony	---	---	---	---	Blood	0.015	---	---	0.015
			Arsenic	2.2E-06	---	5.4E-07	2.7E-06	Skin	0.033	---	0.0084	0.042
			Chromium	1.4E-06	---	---	1.4E-06	None observed	0.0022	---	---	0.0022
			Cobalt	---	---	---	---	Thyroid	0.012	---	---	0.012
			Iron	---	---	---	---	Gastrointestinal	0.011	---	---	0.011
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0030	---	---	0.0030
			Mercury	---	---	---	---	Kidney	0.039	---	---	0.039
			Chemical Total	6.1E-05	---	4.0E-05	1.0E-04		2.2	---	0.55	2.8
		Exposure Point Total					1.0E-04					2.8
		Air at EFSA	Benzo(a)anthracene	---	3.1E-12	---	3.1E-12	---	---	---	---	---
			Benzo(a)pyrene	---	2.3E-11	---	2.3E-11	---	---	---	---	---
			Benzo(b)fluoranthene	---	2.1E-12	---	2.1E-12	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	2.3E-12	---	2.3E-12	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	3.1E-13	---	3.1E-13	---	---	---	---	---
			Dibenz(a,h)anthracene	---	3.8E-13	---	3.8E-13	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	2.1E-12	---	2.1E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	5.6E-11	---	5.6E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000026	---	0.00000026
			PCB Dioxin-like Congener TEQ	---	1.4E-13	---	1.4E-13	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000000064	---	0.00000000064
			Aluminum	---	---	---	---	Nervous system	---	0.0000053	---	0.0000053
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	4.3E-11	---	4.3E-11	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0000047	---	0.0000047
			Chromium	---	1.7E-09	---	1.7E-09	Respiratory tract	---	0.00000047	---	0.00000047
			Cobalt	---	3.3E-11	---	3.3E-11	Respiratory tract	---	0.0000042	---	0.0000042

TABLE A-9.1C-7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.000029	---	0.000029
			Mercury	---	---	---	---	Nervous system	---	0.079	---	0.079
			Chemical Total	---	1.8E-09	---	1.8E-09		---	0.079	---	0.079
		Exposure Point Total					1.8E-09					0.079
	Surface Soil Total						1.0E-04					2.9
Soil Total							1.0E-04					2.9

Total Risk Across All Media	1.0E-04
Total Hazard Across All Media	2.9
Total Nervous System HI Across All Media	0.086
Total Skin HI Across All Media	0.042
Total Thyroid HI Across All Media	0.012
Total Gastrointestinal HI Across All Media	0.011
Total Kidney HI Across All Media	0.039
Total Developmental HI Across All Media	2.7
Total Cardiovascular HI Across All Media	0.0000047
Total Lung/Respiratory Tract HI Across All Media	0.0000096
Total Blood HI Across All Media	0.015
Total Liver HI Across All Media	0.00000026
Total Reproductive System HI Across All Media	0.00000026
Total Endrocrine System HI Across All Media	0.00000026

TABLE A-9.2A-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	1,1'-Biphenyl	---	---	---	---	Kidney	0.0000052	---	---	0.0000052
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	Body and organ weight	0.055	---	0.022	0.076
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	---	---	---	---	Liver	0.00010	---	0.00010	0.00020
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.0048	---	0.0025	0.0072
			Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Fluoranthene	---	---	---	---	Liver, Kidney, Blood	0.011	---	0.0060	0.017
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.00091	---	0.00047	0.0014
			Pyrene	---	---	---	---	Kidney	0.010	---	0.0053	0.015
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	142	---	17	160
			4,4'-DDE	---	---	---	---	---	---	---	---	---
			4,4'-DDT	---	---	---	---	Liver	0.0085	---	0.0010	0.0095
			Aldrin	---	---	---	---	Liver	0.55	---	0.22	0.77
			Alpha-BHC	---	---	---	---	Liver	0.00029	---	0.00012	0.00041
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	---	---	---	---	Liver	0.23	---	0.093	0.33
			Gamma-BHC (Lindane)	---	---	---	---	Liver and kidney	0.0064	---	0.0010	0.0074
			Heptachlor Epoxide	---	---	---	---	Liver	0.50	---	0.20	0.69
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.22	---	0.12	0.35
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	1.5	---	0.83	2.3
			Aluminum	---	---	---	---	Nervous system	0.0080	---	---	0.0080
			Antimony	---	---	---	---	Blood	0.0089	---	---	0.0089
			Arsenic	---	---	---	---	Skin	0.83	---	0.099	0.93

TABLE A-9.2A-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	Cadmium	---	---	---	---	Kidney	0.0065	---	0.0010	0.0076
			Chromium	---	---	---	---	None observed	0.0060	---	---	0.0060
			Cobalt	---	---	---	---	Thyroid	0.27	---	---	0.27
			Iron	---	---	---	---	Gastrointestinal	0.10	---	---	0.10
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0045	---	---	0.0045
			Mercury	---	---	---	---	Kidney	21	---	---	21
			Nickel	---	---	---	---	Body weight	0.0052	---	---	0.0052
			Thallium	---	---	---	---	Hair	0.12	---	---	0.12
			Zinc	---	---	---	---	Blood	0.0061	---	---	0.0061
			Chemical Total	---	---	---	---		168	---	19	187
		Exposure Point Total					---					187
		Air at CHP	1,1'-Biphenyl	---	---	---	---	Respiratory tract	---	0.0038	---	0.0038
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	---	---	---	---	---
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	---	---	---	---	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	---	---	---	---	---
			Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Fluoranthene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory tract	---	0.086	---	0.086
			Pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00019	---	0.00019
			4,4'-DDE	---	---	---	---	---	---	---	---	---

TABLE A-9.2A-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at CHP	4,4'-DDT	---	---	---	---	---	---	---	---	---
			Aldrin	---	---	---	---	---	---	---	---	---
			Alpha-BHC	---	---	---	---	---	---	---	---	---
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	---	---	---	---	---	---	---	---	---
			Gamma-BHC (Lindane)	---	---	---	---	---	---	---	---	---
			Heptachlor Epoxide	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000019	---	0.0000019
			Aluminum	---	---	---	---	Nervous system	---	0.00012	---	0.00012
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0012	---	0.0012
			Cadmium	---	---	---	---	Kidney and Respiratory tract	---	0.000024	---	0.000024
			Chromium	---	---	---	---	Respiratory tract	---	0.000014	---	0.000014
			Cobalt	---	---	---	---	Respiratory tract	---	0.0010	---	0.0010
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00047	---	0.00047
			Mercury	---	---	---	---	Nervous system	---	467	---	467
			Nickel	---	---	---	---	Respiratory tract	---	0.000086	---	0.000086
			Thallium	---	---	---	---	---	---	---	---	---
			Zinc	---	---	---	---	---	---	---	---	---
			Chemical Total	---	---	---	---		---	467	---	467
		Exposure Point Total					---					467
	Aggregate Soil Total						---					654
Soil Total							---					654

Total Risk Across All Media	---
Total Hazard Across All Media	654
Total Nervous System HI Across All Media	467
Total Skin HI Across All Media	0.93
Total Thyroid HI Across All Media	0.27
Total Gastrointestinal HI Across All Media	0.10
Total Kidney HI Across All Media	21
Total Developmental HI Across All Media	162
Total Cardiovascular HI Across All Media	0.0012
Total Lung/Respiratory Tract HI Across All Media	0.10

TABLE A-9.2A-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
											Total Eyes HI Across All Media	0.35
											Total Immune System HI Across All Media	0.35
											Total Blood HI Across All Media	0.033
											Total Liver HI Across All Media	1.8
											Total Reproductive System HI Across All Media	0.00019
											Total Endrocrine System HI Across All Media	0.00019
											Total Hair HI Across All Media	0.12
											Total Body Weight HI Across All Media	0.083

TABLE A-9.2A-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	1,1'-Biphenyl	---	---	---	---	Kidney	0.000049	---	---	0.000049
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	Body and organ weight	0.51	---	0.14	0.65
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	---	---	---	---	Liver	0.00095	---	0.00066	0.0016
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.044	---	0.016	0.061
			Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Fluoranthene	---	---	---	---	Liver, Kidney, Blood	0.11	---	0.039	0.15
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.0085	---	0.0031	0.012
			Pyrene	---	---	---	---	Kidney	0.095	---	0.034	0.13
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	1330	---	112	1441
			4,4'-DDE	---	---	---	---	---	---	---	---	---
			4,4'-DDT	---	---	---	---	Liver	0.079	---	0.0067	0.086
			Aldrin	---	---	---	---	Liver	5.1	---	1.4	6.5
			Alpha-BHC	---	---	---	---	Liver	0.0027	---	0.00076	0.0035
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	---	---	---	---	Liver	2.2	---	0.61	2.8
			Gamma-BHC (Lindane)	---	---	---	---	Liver and kidney	0.060	---	0.0067	0.066
			Heptachlor Epoxide	---	---	---	---	Liver	4.6	---	1.3	5.9
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	2.1	---	0.82	2.9
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	14	---	5.4	19
			Aluminum	---	---	---	---	Nervous system	0.075	---	---	0.075
			Antimony	---	---	---	---	Blood	0.083	---	---	0.083
			Arsenic	---	---	---	---	Skin	7.7	---	0.65	8.4

TABLE A-9.2A-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	Cadmium	---	---	---	---	Kidney	0.061	---	0.0068	0.068
			Chromium	---	---	---	---	None observed	0.056	---	---	0.056
			Cobalt	---	---	---	---	Thyroid	2.6	---	---	2.6
			Iron	---	---	---	---	Gastrointestinal	0.94	---	---	0.94
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.042	---	---	0.042
			Mercury	---	---	---	---	Kidney	198	---	---	198
			Nickel	---	---	---	---	Body weight	0.048	---	---	0.048
			Thallium	---	---	---	---	Hair	1.1	---	---	1.1
			Zinc	---	---	---	---	Blood	0.057	---	---	0.057
			Chemical Total	---	---	---	---		1569	---	122	1691
		Exposure Point Total					---					1691
		Air at CHP	1,1'-Biphenyl	---	---	---	---	Respiratory tract	---	0.0038	---	0.0038
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	---	---	---	---	---
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	---	---	---	---	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	---	---	---	---	---
			Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Fluoranthene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory tract	---	0.086	---	0.086
			Pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00019	---	0.00019
			4,4'-DDE	---	---	---	---	---	---	---	---	---

TABLE A-9.2A-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at CHP	4,4'-DDT	---	---	---	---	---	---	---	---	---
			Aldrin	---	---	---	---	---	---	---	---	---
			Alpha-BHC	---	---	---	---	---	---	---	---	---
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	---	---	---	---	---	---	---	---	---
			Gamma-BHC (Lindane)	---	---	---	---	---	---	---	---	---
			Heptachlor Epoxide	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000019	---	0.0000019
			Aluminum	---	---	---	---	Nervous system	---	0.00012	---	0.00012
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0012	---	0.0012
			Cadmium	---	---	---	---	Kidney and Respiratory tract	---	0.000024	---	0.000024
			Chromium	---	---	---	---	Respiratory tract	---	0.000014	---	0.000014
			Cobalt	---	---	---	---	Respiratory tract	---	0.0010	---	0.0010
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00047	---	0.00047
			Mercury	---	---	---	---	Nervous system	---	467	---	467
			Nickel	---	---	---	---	Respiratory tract	---	0.000086	---	0.000086
			Thallium	---	---	---	---	---	---	---	---	---
			Zinc	---	---	---	---	---	---	---	---	---
			Chemical Total	---	---	---	---		---	467	---	467
		Exposure Point Total					---					467
	Aggregate Soil Total						---					2158
Soil Total							---					2158

Total Risk Across All Media	---
Total Hazard Across All Media	2158
Total Nervous System HI Across All Media	467
Total Skin HI Across All Media	8.4
Total Thyroid HI Across All Media	2.6
Total Gastrointestinal HI Across All Media	0.94
Total Kidney HI Across All Media	198
Total Developmental HI Across All Media	1461
Total Cardiovascular HI Across All Media	0.0012
Total Lung/Respiratory Tract HI Across All Media	0.15

TABLE A-9.2A-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
											Total Eyes HI Across All Media	2.9
											Total Immune System HI Across All Media	2.9
											Total Blood HI Across All Media	0.29
											Total Liver HI Across All Media	16
											Total Reproductive System HI Across All Media	0.00019
											Total Endrocrine System HI Across All Media	0.00019
											Total Hair HI Across All Media	1.1
											Total Body Weight HI Across All Media	0.71

TABLE A-9.2A-3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	1,1'-Biphenyl	2.4E-09	---	---	2.4E-09	---	---	---	---	---
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	---	---	---	---	---
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	2.3E-07	8.3E-14	1.8E-07	4.1E-07	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	---	---	---	---	---
			Benzo(a)anthracene	5.1E-04	1.3E-09	2.0E-04	7.1E-04	---	---	---	---	---
			Benzo(a)pyrene	3.7E-03	9.2E-09	1.4E-03	5.1E-03	---	---	---	---	---
			Benzo(b)fluoranthene	4.5E-04	1.1E-09	1.7E-04	6.2E-04	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	9.8E-06	2.5E-10	3.8E-06	1.4E-05	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	4.7E-06	1.2E-10	1.8E-06	6.4E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	1.9E-04	5.2E-10	7.4E-05	2.7E-04	---	---	---	---	---
			Fluoranthene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.5E-04	3.7E-10	5.7E-05	2.1E-04	---	---	---	---	---
			Naphthalene	---	3.7E-06	---	3.7E-06	---	---	---	---	---
			Pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.5E-02	1.2E-07	1.4E-03	1.6E-02	---	---	---	---	---
			4,4'-DDE	8.5E-06	6.8E-11	2.7E-06	1.1E-05	---	---	---	---	---
			4,4'-DDT	1.7E-06	1.3E-11	1.6E-07	1.8E-06	---	---	---	---	---
			Aldrin	3.2E-04	2.6E-09	1.0E-04	4.2E-04	---	---	---	---	---
			Alpha-BHC	1.7E-05	1.3E-10	5.3E-06	2.2E-05	---	---	---	---	---
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	2.1E-04	1.7E-09	6.7E-05	2.8E-04	---	---	---	---	---
			Gamma-BHC (Lindane)	2.4E-06	1.9E-11	3.0E-07	2.7E-06	---	---	---	---	---
			Heptachlor Epoxide	6.7E-05	5.4E-10	2.1E-05	8.8E-05	---	---	---	---	---
			Total PCB Homologs	1.0E-05	8.2E-11	4.5E-06	1.5E-05	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	1.5E-04	1.3E-09	6.8E-05	2.2E-04	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	4.3E-04	3.4E-08	4.0E-05	4.7E-04	---	---	---	---	---

TABLE A-9.2A-3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	Cadmium	---	3.8E-10	---	3.8E-10	---	---	---	---	---
			Chromium	4.4E-05	1.2E-07	---	4.5E-05	---	---	---	---	---
			Cobalt	---	2.4E-08	---	2.4E-08	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Nickel	---	8.7E-10	---	8.7E-10	---	---	---	---	---
			Thallium	---	---	---	---	---	---	---	---	---
			Zinc	---	---	---	---	---	---	---	---	---
			Chemical Total	2.1E-02	4.1E-06	3.6E-03	2.5E-02		---	---	---	---
		Exposure Point Total					2.5E-02					---
	Aggregate Soil Total						2.5E-02					---
Soil Total							2.5E-02					---

Total Risk Across All Media: 2.5E-02

Total Hazard Across All Media: ---

TABLE A-9.2B-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	0.21	---	0.025	0.24
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.28	---	0.15	0.43
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.23	---	0.13	0.35
			Aluminum	---	---	---	---	Nervous system	0.0076	---	---	0.0076
			Antimony	---	---	---	---	Blood	0.23	---	---	0.23
			Arsenic	---	---	---	---	Skin	0.17	---	0.020	0.19
			Barium	---	---	---	---	Kidney	0.0022	---	---	0.0022
			Chromium	---	---	---	---	None observed	0.0083	---	---	0.0083
			Cobalt	---	---	---	---	Thyroid	0.039	---	---	0.039
			Iron	---	---	---	---	Gastrointestinal	0.084	---	---	0.084
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0064	---	---	0.0064
			Mercury	---	---	---	---	Kidney	0.12	---	---	0.12
			Nickel	---	---	---	---	Body weight	0.0044	---	---	0.0044
			Thallium	---	---	---	---	Hair	0.025	---	---	0.025
			Vanadium	---	---	---	---	Kidney	0.46	---	---	0.46
			Chemical Total	---	---	---	---		1.9	---	0.33	2.2
		Exposure Point Total					---					2.2
		Air at SFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000003	---	0.0000003
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000030	---	0.00000030

TABLE A-9.2B-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at SFSA	Aluminum	---	---	---	---	Nervous system	---	0.00011	---	0.00011
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00025	---	0.00025
			Barium	---	---	---	---	Developmental	---	0.00007	---	0.00007
			Chromium	---	---	---	---	Respiratory tract	---	0.000019	---	0.000019
			Cobalt	---	---	---	---	Respiratory tract	---	0.00015	---	0.00015
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00067	---	0.00067
			Mercury	---	---	---	---	Nervous system	---	2.6	---	2.6
			Nickel	---	---	---	---	Respiratory tract	---	0.000074	---	0.000074
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	Respiratory tract	---	0.000024	---	0.000024
			Chemical Total	---	---	---	---		---	2.6	---	2.6
		Exposure Point Total					---					2.6
	Aggregate Soil Total						---					4.8
Soil Total							---					4.8

Total Risk Across All Media: ---

Total Hazard Across All Media: 4.8

Total Nervous System HI Across All Media	2.6
Total Skin HI Across All Media	0.19
Total Thyroid HI Across All Media	0.039
Total Gastrointestinal HI Across All Media	0.084
Total Kidney HI Across All Media	0.58
Total Developmental HI Across All Media	0.59
Total Cardiovascular HI Across All Media	0.00025
Total Lung/Respiratory Tract HI Across All Media	0.00052
Total Eyes HI Across All Media	0.43
Total Immune System HI Across All Media	0.43
Total Blood HI Across All Media	0.230
Total Liver HI Across All Media	0.00000058
Total Reproductive System HI Across All Media	0.00000058
Total Endrocrine System HI Across All Media	0.00000058
Total Body Weight HI Across All Media	0.0044

TABLE A-9.2B-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	2.0	---	0.17	2.1
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	2.6	---	1.0	3.6
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	2.1	---	0.83	3.0
			Aluminum	---	---	---	---	Nervous system	0.071	---	---	0.071
			Antimony	---	---	---	---	Blood	2.2	---	---	2.2
			Arsenic	---	---	---	---	Skin	1.6	---	0.13	1.7
			Barium	---	---	---	---	Kidney	0.020	---	---	0.020
			Chromium	---	---	---	---	None observed	0.077	---	---	0.077
			Cobalt	---	---	---	---	Thyroid	0.36	---	---	0.36
			Iron	---	---	---	---	Gastrointestinal	0.78	---	---	0.78
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.059	---	---	0.059
			Mercury	---	---	---	---	Kidney	1.1	---	---	1.1
			Nickel	---	---	---	---	Body weight	0.041	---	---	0.041
			Thallium	---	---	---	---	Hair	0.23	---	---	0.23
			Vanadium	---	---	---	---	Kidney	4.3	---	---	4.3
			Chemical Total	---	---	---	---		17	---	2.1	20
		Exposure Point Total					---					20
		Air at SFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000003	---	0.0000003
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000030	---	0.00000030

TABLE A-9.2B-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at SFSA	Aluminum	---	---	---	---	Nervous system	---	0.00011	---	0.00011
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00025	---	0.00025
			Barium	---	---	---	---	Developmental	---	0.00007	---	0.00007
			Chromium	---	---	---	---	Respiratory tract	---	0.000019	---	0.000019
			Cobalt	---	---	---	---	Respiratory tract	---	0.00015	---	0.00015
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00067	---	0.00067
			Mercury	---	---	---	---	Nervous system	---	2.6	---	2.6
			Nickel	---	---	---	---	Respiratory tract	---	0.000074	---	0.000074
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	Respiratory tract	---	0.000024	---	0.000024
			Chemical Total	---	---	---	---		---	2.6	---	2.6
		Exposure Point Total					---					2.6
	Aggregate Soil Total						---					22
Soil Total							---					22

Total Risk Across All Media	---
Total Hazard Across All Media	22

Total Nervous System HI Across All Media	2.7
Total Skin HI Across All Media	1.7
Total Thyroid HI Across All Media	0.36
Total Gastrointestinal HI Across All Media	0.78
Total Kidney HI Across All Media	5.4
Total Developmental HI Across All Media	5.1
Total Cardiovascular HI Across All Media	0.00025
Total Lung/Respiratory Tract HI Across All Media	0.00052
Total Eyes HI Across All Media	3.6
Total Immune System HI Across All Media	3.6
Total Blood HI Across All Media	2.2
Total Liver HI Across All Media	0.00000058
Total Reproductive System HI Across All Media	0.00000058
Total Endrocrine System HI Across All Media	0.00000058
Total Body Weight HI Across All Media	0.041

TABLE A-9.2B-3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	4.5E-06	1.1E-11	1.7E-06	6.2E-06	---	---	---	---	---
			Benzo(a)pyrene	4.4E-05	1.1E-10	1.7E-05	6.0E-05	---	---	---	---	---
			Benzo(b)fluoranthene	5.9E-06	1.5E-11	2.3E-06	8.1E-06	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	3.8E-07	9.4E-12	1.4E-07	5.2E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.5E-05	4.1E-11	5.7E-06	2.1E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.5E-06	1.1E-11	1.7E-06	6.3E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.2E-05	1.8E-10	2.1E-06	2.4E-05	---	---	---	---	---
			Total PCB Homologs	1.3E-05	1.0E-10	5.6E-06	1.8E-05	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	2.4E-05	1.9E-10	1.0E-05	3.4E-05	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	8.7E-05	7.0E-09	8.2E-06	9.5E-05	---	---	---	---	---
			Barium	---	---	---	---	---	---	---	---	---
			Chromium	6.1E-05	1.7E-07	---	6.1E-05	---	---	---	---	---
			Cobalt	---	3.4E-09	---	3.4E-09	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Nickel	---	7.4E-10	---	7.4E-10	---	---	---	---	---
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	---	---	---	---	---
			Chemical Total	2.8E-04	1.8E-07	5.5E-05	3.3E-04		---	---	---	---
		Exposure Point Total					3.3E-04					---
	Aggregate Soil Total						3.3E-04					---
Soil Total							3.3E-04					---

Total Risk Across All Media: 3.3E-04

Total Hazard Across All Media: ---

TABLE A-9.2B-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	2.3E-07	---	2.0E-07	4.3E-07	---	---	---	---	---
			Benzo(a)pyrene	2.3E-06	---	1.9E-06	4.2E-06	---	---	---	---	---
			Benzo(b)fluoranthene	3.1E-07	---	2.6E-07	5.7E-07	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	2.0E-08	---	1.7E-08	3.6E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	7.8E-07	---	6.7E-07	1.4E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.4E-07	---	2.0E-07	4.4E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	4.9E-06	---	9.8E-07	5.9E-06	Developmental	0.15	---	0.030	0.18
			Total PCB Homologs	2.8E-06	---	2.6E-06	5.4E-06	Eyes, Immune system	0.20	---	0.18	0.38
			PCB Dioxin-like Congener TEQ	5.3E-06	---	4.9E-06	1.0E-05	Developmental	0.16	---	0.15	0.31
			Aluminum	---	---	---	---	Nervous system	0.0054	---	---	0.0054
			Antimony	---	---	---	---	Blood	0.16	---	---	0.16
			Arsenic	1.9E-05	---	3.8E-06	2.3E-05	Skin	0.12	---	0.024	0.14
			Barium	---	---	---	---	Kidney	0.0016	---	---	0.0016
			Chromium	3.2E-06	---	---	3.2E-06	None observed	0.0059	---	---	0.0059
			Cobalt	---	---	---	---	Thyroid	0.028	---	---	0.028
			Iron	---	---	---	---	Gastrointestinal	0.060	---	---	0.060
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0046	---	---	0.0046
			Mercury	---	---	---	---	Kidney	0.083	---	---	0.083
			Nickel	---	---	---	---	Body weight	0.0032	---	---	0.0032
			Thallium	---	---	---	---	Hair	0.018	---	---	0.018
			Vanadium	---	---	---	---	Kidney	0.33	---	---	0.33
			Chemical Total	3.9E-05	---	1.6E-05	5.5E-05		1.3	---	0.39	1.7
		Exposure Point Total					5.5E-05					1.7
		Air at SFSA	Benzo(a)anthracene	---	8.8E-13	---	8.8E-13	---	---	---	---	---
			Benzo(a)pyrene	---	8.6E-12	---	8.6E-12	---	---	---	---	---
			Benzo(b)fluoranthene	---	1.2E-12	---	1.2E-12	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	7.4E-13	---	7.4E-13	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	3.2E-12	---	3.2E-12	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	8.9E-13	---	8.9E-13	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	3.6E-11	---	3.6E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000066	---	0.000000066
			Total PCB Homologs	---	2.0E-11	---	2.0E-11	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	3.9E-11	---	3.9E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000071	---	0.000000071

TABLE A-9.2B-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at SFSA	Aluminum	---	---	---	---	Nervous system	---	0.000027	---	0.000027
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	1.4E-09	---	1.4E-09	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000060	---	0.000060
			Barium	---	---	---	---	Developmental	---	0.000016	---	0.000016
			Chromium	---	1.3E-08	---	1.3E-08	Respiratory tract	---	0.0000044	---	0.0000044
			Cobalt	---	6.7E-10	---	6.7E-10	Respiratory tract	---	0.000035	---	0.000035
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00016	---	0.00016
			Mercury	---	---	---	---	Nervous system	---	0.61	---	0.61
			Nickel	---	1.5E-10	---	1.5E-10	Respiratory tract	---	0.000018	---	0.000018
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	Respiratory tract	---	0.0000057	---	0.0000057
			Chemical Total	---	1.6E-08	---	1.6E-08		---	0.61	---	0.61
		Exposure Point Total					1.6E-08					0.61
	Aggregate Soil Total						5.5E-05					2.3
Soil Total							5.5E-05					2.3

Total Risk Across All Media	5.5E-05
Total Hazard Across All Media	2.3

Total Nervous System HI Across All Media	0.62
Total Skin HI Across All Media	0.14
Total Thyroid HI Across All Media	0.028
Total Gastrointestinal HI Across All Media	0.060
Total Kidney HI Across All Media	0.41
Total Developmental HI Across All Media	0.49
Total Cardiovascular HI Across All Media	0.00006
Total Lung/Respiratory Tract HI Across All Media	0.00012
Total Eyes HI Across All Media	0.38
Total Immune System HI Across All Media	0.38
Total Blood HI Across All Media	0.16
Total Liver HI Across All Media	0.00000014
Total Reproductive System HI Across All Media	0.00000014
Total Endrocrine System HI Across All Media	0.00000014
Total Body Weight HI Across All Media	0.0032

TABLE A-9.2B-8
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	1.6E-08	---	4.2E-09	2.0E-08	---	---	---	---	---
			Benzo(a)pyrene	1.6E-07	---	4.0E-08	2.0E-07	---	---	---	---	---
			Benzo(b)fluoranthene	2.1E-08	---	5.5E-09	2.6E-08	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	1.3E-09	---	3.5E-10	1.7E-09	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	5.3E-08	---	1.4E-08	6.7E-08	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.6E-08	---	4.2E-09	2.0E-08	---	---	---	---	---
			2,3,7,8-TCDD TEQ	3.4E-07	---	2.0E-08	3.6E-07	Developmental	0.26	---	0.016	0.28
			Total PCB Homologs	1.9E-07	---	5.4E-08	2.5E-07	Eyes, Immune system	0.34	---	0.095	0.43
			PCB Dioxin-like Congener TEQ	3.6E-07	---	1.0E-07	4.6E-07	Developmental	0.28	---	0.078	0.36
			Aluminum	---	---	---	---	Nervous system	0.0093	---	---	0.0093
			Antimony	---	---	---	---	Blood	0.28	---	---	0.28
			Arsenic	1.3E-06	---	8.0E-08	1.4E-06	Skin	0.21	---	0.012	0.22
			Barium	---	---	---	---	Kidney	0.0027	---	---	0.0027
			Chromium	2.2E-07	---	---	2.2E-07	None observed	0.010	---	---	0.010
			Cobalt	---	---	---	---	Thyroid	0.048	---	---	0.048
			Iron	---	---	---	---	Gastrointestinal	0.10	---	---	0.10
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0078	---	---	0.0078
			Mercury	---	---	---	---	Kidney	0.14	---	---	0.14
			Nickel	---	---	---	---	Body weight	0.0054	---	---	0.0054
			Thallium	---	---	---	---	Hair	0.030	---	---	0.030
			Vanadium	---	---	---	---	Kidney	0.56	---	---	0.56
			Chemical Total	2.7E-06	---	3.2E-07	3.0E-06		2.3	---	0.20	2.5
		Exposure Point Total					3.0E-06					2.5
		Air at SFSA	Benzo(a)anthracene	---	1.2E-10	---	1.2E-10	---	---	---	---	---
			Benzo(a)pyrene	---	1.2E-09	---	1.2E-09	---	---	---	---	---
			Benzo(b)fluoranthene	---	1.6E-10	---	1.6E-10	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	1.0E-10	---	1.0E-10	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	4.5E-10	---	4.5E-10	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	1.2E-10	---	1.2E-10	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	5.0E-09	---	5.0E-09	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00023	---	0.00023
			Total PCB Homologs	---	2.8E-09	---	2.8E-09	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	5.4E-09	---	5.4E-09	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00025	---	0.00025

TABLE A-9.2B-8
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at SFSA	Aluminum	---	---	---	---	Nervous system	---	0.095	---	0.095
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	1.9E-07	---	1.9E-07	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.21	---	0.21
			Barium	---	---	---	---	Developmental	---	0.055	---	0.055
			Chromium	---	1.9E-06	---	1.9E-06	Respiratory tract	---	0.015	---	0.015
			Cobalt	---	9.4E-08	---	9.4E-08	Respiratory tract	---	0.12	---	0.12
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.56	---	0.56
			Mercury	---	---	---	---	Nervous system	---	0.32	---	0.32
			Nickel	---	2.1E-08	---	2.1E-08	Respiratory tract	---	0.061	---	0.061
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	Respiratory tract	---	0.020	---	0.020
			Chemical Total	---	2.2E-06	---	2.2E-06		---	---	---	1.5
		Exposure Point Total					2.2E-06					1.5
	Aggregate Soil Total						5.2E-06					3.9
Soil Total							5.2E-06					3.9

Total Risk Across All Media	5.2E-06
Total Hazard Across All Media	3.9

Total Nervous System HI Across All Media	1.2
Total Skin HI Across All Media	0.43
Total Thyroid HI Across All Media	0.048
Total Gastrointestinal HI Across All Media	0.10
Total Kidney HI Across All Media	0.71
Total Developmental HI Across All Media	0.90
Total Cardiovascular HI Across All Media	0.21
Total Lung/Respiratory Tract HI Across All Media	0.43
Total Eyes HI Across All Media	0.43
Total Immune System HI Across All Media	0.43
Total Blood HI Across All Media	0.28
Total Liver HI Across All Media	0.00048
Total Reproductive System HI Across All Media	0.00048
Total Endrocrine System HI Across All Media	0.00048
Total Body Weight HI Across All Media	0.0054

TABLE A-9.2C-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.000065	---	0.000034	0.000099
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	5.7	---	0.69	6.4
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.016	---	0.0089	0.025
			Aluminum	---	---	---	---	Nervous system	0.0082	---	---	0.0082
			Antimony	---	---	---	---	Blood	0.026	---	---	0.026
			Arsenic	---	---	---	---	Skin	0.10	---	0.012	0.11
			Chromium	---	---	---	---	None observed	0.0065	---	---	0.0065
			Cobalt	---	---	---	---	Thyroid	0.031	---	---	0.031
			Iron	---	---	---	---	Gastrointestinal	0.029	---	---	0.029
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0067	---	---	0.0067
			Mercury	---	---	---	---	Kidney	0.079	---	---	0.079
			Vanadium	---	---	---	---	Kidney	0.45	---	---	0.45
			Chemical Total	---	---	---	---		6.5	---	0.71	7.2
		Exposure Point Total					---					7.2
		Air at EFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory tract	---	0.000000033	---	0.000000033
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000075	---	0.0000075
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000021	---	0.000000021
			Aluminum	---	---	---	---	Nervous system	---	0.00012	---	0.00012

TABLE A-9.2C-1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at EFSA	Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00015	---	0.00015
			Chromium	---	---	---	---	Respiratory tract	---	0.000015	---	0.000015
			Cobalt	---	---	---	---	Respiratory tract	---	0.00012	---	0.00012
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00070	---	0.00070
			Mercury	---	---	---	---	Nervous system	---	1.8	---	1.8
			Vanadium	---	---	---	---	Respiratory tract	---	0.000023	---	0.000023
			Chemical Total	---	---	---	---		---	1.8	---	1.8
		Exposure Point Total					---					1.8
	Aggregate Soil Total						---					8.9
Soil Total							---					8.9

Total Risk Across All Media	---
Total Hazard Across All Media	8.9

Total Nervous System HI Across All Media	1.8
Total Skin HI Across All Media	0.11
Total Thyroid HI Across All Media	0.031
Total Gastrointestinal HI Across All Media	0.029
Total Kidney HI Across All Media	0.52
Total Developmental HI Across All Media	6.4
Total Cardiovascular HI Across All Media	0.00015
Total Lung/Respiratory Tract HI Across All Media	0.00031
Total Blood HI Across All Media	0.026
Total Liver HI Across All Media	0.0000076
Total Reproductive System HI Across All Media	0.0000076
Total Endrocrine System HI Across All Media	0.0000076
Total Body Weight HI Across All Media	0.00010

TABLE A-9.2C-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.00061	---	0.00022	0.00083
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	54	---	4.5	58
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.15	---	0.058	0.21
			Aluminum	---	---	---	---	Nervous system	0.076	---	---	0.076
			Antimony	---	---	---	---	Blood	0.24	---	---	0.24
			Arsenic	---	---	---	---	Skin	0.93	---	0.078	1.0
			Chromium	---	---	---	---	None observed	0.060	---	---	0.060
			Cobalt	---	---	---	---	Thyroid	0.29	---	---	0.29
			Iron	---	---	---	---	Gastrointestinal	0.27	---	---	0.27
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.062	---	---	0.062
			Mercury	---	---	---	---	Kidney	0.74	---	---	0.74
			Vanadium	---	---	---	---	Kidney	4.2	---	---	4.2
			Chemical Total	---	---	---	---		60	---	4.6	65
		Exposure Point Total					---					65
		Air at EFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory tract	---	0.000000033	---	0.000000033
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000075	---	0.0000075
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000021	---	0.000000021
			Aluminum	---	---	---	---	Nervous system	---	0.00012	---	0.00012

TABLE A-9.2C-2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at EFSA	Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00015	---	0.00015
			Chromium	---	---	---	---	Respiratory tract	---	0.000015	---	0.000015
			Cobalt	---	---	---	---	Respiratory tract	---	0.00012	---	0.00012
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00070	---	0.00070
			Mercury	---	---	---	---	Nervous system	---	1.8	---	1.8
			Vanadium	---	---	---	---	Respiratory tract	---	0.000023	---	0.000023
			Chemical Total	---	---	---	---		---	1.8	---	1.8
		Exposure Point Total					---					1.8
	Aggregate Soil Total						---					67
Soil Total							---					67

Total Risk Across All Media	---
Total Hazard Across All Media	67
Total Nervous System HI Across All Media	1.9
Total Skin HI Across All Media	1.0
Total Thyroid HI Across All Media	0.29
Total Gastrointestinal HI Across All Media	0.27
Total Kidney HI Across All Media	4.9
Total Developmental HI Across All Media	58
Total Cardiovascular HI Across All Media	0.00015
Total Lung/Respiratory Tract HI Across All Media	0.00031
Total Blood HI Across All Media	0.24
Total Liver HI Across All Media	0.0000076
Total Reproductive System HI Across All Media	0.0000076
Total Endrocrine System HI Across All Media	0.0000076
Total Body Weight HI Across All Media	0.00083

TABLE A-9.2C-3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	7.2E-05	1.8E-10	2.8E-05	1.0E-04	---	---	---	---	---
			Benzo(a)pyrene	5.3E-04	1.3E-09	2.1E-04	7.4E-04	---	---	---	---	---
			Benzo(b)fluoranthene	4.3E-05	1.1E-10	1.7E-05	6.0E-05	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	5.1E-06	1.3E-10	1.9E-06	7.0E-06	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	7.4E-07	1.8E-11	2.8E-07	1.0E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	5.8E-05	1.6E-10	2.2E-05	8.0E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.1E-05	1.0E-10	1.6E-05	5.6E-05	---	---	---	---	---
			Naphthalene	---	1.4E-12	---	1.4E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	6.0E-04	4.9E-09	5.6E-05	6.5E-04	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	1.7E-06	1.4E-11	7.3E-07	2.4E-06	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	5.1E-05	4.1E-09	4.8E-06	5.6E-05	---	---	---	---	---
			Chromium	4.7E-05	1.3E-07	---	4.8E-05	---	---	---	---	---
			Cobalt	---	2.7E-09	---	2.7E-09	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	---	---	---	---	---
			Chemical Total	1.4E-03	1.5E-07	3.5E-04	1.8E-03		---	---	---	---
		Exposure Point Total					1.8E-03					---
	Aggregate Soil Total						1.8E-03					---
Soil Total							1.8E-03					---

Total Risk Across All Media: 1.8E-03

Total Hazard Across All Media: ---

TABLE A-9.2C-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	3.8E-06	---	3.2E-06	7.0E-06	---	---	---	---	---
			Benzo(a)pyrene	2.8E-05	---	2.4E-05	5.2E-05	---	---	---	---	---
			Benzo(b)fluoranthene	2.3E-06	---	1.9E-06	4.2E-06	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	2.6E-07	---	2.3E-07	4.9E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	3.9E-08	---	3.3E-08	7.2E-08	---	---	---	---	---
			Dibenz(a,h)anthracene	3.0E-06	---	2.6E-06	5.6E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.1E-06	---	1.8E-06	3.9E-06	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.000047	---	0.000040	0.000087
			2,3,7,8-TCDD TEQ	1.3E-04	---	2.6E-05	1.6E-04	Developmental	4.1	---	0.81	4.9
			PCB Dioxin-like Congener TEQ	3.7E-07	---	3.4E-07	7.1E-07	Developmental	0.011	---	0.010	0.022
			Aluminum	---	---	---	---	Nervous system	0.0058	---	---	0.0058
			Antimony	---	---	---	---	Blood	0.019	---	---	0.019
			Arsenic	1.1E-05	---	2.3E-06	1.4E-05	Skin	0.071	---	0.014	0.085
			Chromium	2.5E-06	---	---	2.5E-06	None observed	0.0046	---	---	0.0046
			Cobalt	---	---	---	---	Thyroid	0.022	---	---	0.022
			Iron	---	---	---	---	Gastrointestinal	0.021	---	---	0.021
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0048	---	---	0.0048
			Mercury	---	---	---	---	Kidney	0.057	---	---	0.057
			Vanadium	---	---	---	---	Kidney	0.32	---	---	0.32
			Chemical Total	1.9E-04	---	6.3E-05	2.5E-04		4.6	---	0.84	5.5
		Exposure Point Total					2.5E-04					5.5
		Air at EFSA	Benzo(a)anthracene	---	1.4E-11	---	1.4E-11	---	---	---	---	---
			Benzo(a)pyrene	---	1.0E-10	---	1.0E-10	---	---	---	---	---
			Benzo(b)fluoranthene	---	8.5E-12	---	8.5E-12	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	1.0E-11	---	1.0E-11	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	1.5E-12	---	1.5E-12	---	---	---	---	---
			Dibenz(a,h)anthracene	---	1.2E-11	---	1.2E-11	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	8.0E-12	---	8.0E-12	---	---	---	---	---
			Naphthalene	---	2.8E-13	---	2.8E-13	Respiratory tract	---	0.0000000078	---	0.0000000078
			2,3,7,8-TCDD TEQ	---	9.7E-10	---	9.7E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000018	---	0.0000018
			PCB Dioxin-like Congener TEQ	---	2.7E-12	---	2.7E-12	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000000050	---	0.0000000050
			Aluminum	---	---	---	---	Nervous system	---	0.000029	---	0.000029

TABLE A-9.2C-6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at EFSA	Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	8.2E-10	---	8.2E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000035	---	0.000035
			Chromium	---	1.0E-08	---	1.0E-08	Respiratory tract	---	0.0000035	---	0.0000035
			Cobalt	---	5.3E-10	---	5.3E-10	Respiratory tract	---	0.000027	---	0.000027
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00017	---	0.00017
			Mercury	---	---	---	---	Nervous system	---	0.42	---	0.42
			Vanadium	---	---	---	---	Respiratory tract	---	0.0000056	---	0.0000056
			Chemical Total	---	1.3E-08	---	1.3E-08		---	0.42	---	0.42
		Exposure Point Total					1.3E-08					0.42
	Aggregate Soil Total						2.5E-04					5.9
Soil Total							2.5E-04					5.9

Total Risk Across All Media	2.5E-04
Total Hazard Across All Media	5.9
Total Nervous System HI Across All Media	0.43
Total Skin HI Across All Media	0.085
Total Thyroid HI Across All Media	0.022
Total Gastrointestinal HI Across All Media	0.021
Total Kidney HI Across All Media	0.37
Total Developmental HI Across All Media	4.9
Total Cardiovascular HI Across All Media	0.000035
Total Lung/Respiratory Tract HI Across All Media	0.000074
Total Blood HI Across All Media	0.019
Total Liver HI Across All Media	0.0000018
Total Reproductive System HI Across All Media	0.0000018
Total Endrocrine System HI Across All Media	0.0000018
Total Body Weight HI Across All Media	0.000087

TABLE A-9.2C-8
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	2.6E-07	---	6.7E-08	3.2E-07	---	---	---	---	---
			Benzo(a)pyrene	1.9E-06	---	5.0E-07	2.4E-06	---	---	---	---	---
			Benzo(b)fluoranthene	1.6E-07	---	4.0E-08	2.0E-07	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	1.8E-08	---	4.7E-09	2.3E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	2.6E-09	---	6.9E-10	3.3E-09	---	---	---	---	---
			Dibenz(a,h)anthracene	2.1E-07	---	5.4E-08	2.6E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.4E-07	---	3.8E-08	1.8E-07	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.000080	---	0.000021	0.00010
			2,3,7,8-TCDD TEQ	9.1E-06	---	5.5E-07	9.7E-06	Developmental	7.0	---	0.42	7.4
			PCB Dioxin-like Congener TEQ	2.5E-08	---	7.1E-09	3.2E-08	Developmental	0.019	---	0.0054	0.025
			Aluminum	---	---	---	---	Nervous system	0.010	---	---	0.010
			Antimony	---	---	---	---	Blood	0.032	---	---	0.032
			Arsenic	7.8E-07	---	4.7E-08	8.3E-07	Skin	0.12	---	0.0073	0.13
			Chromium	1.7E-07	---	---	1.7E-07	None observed	0.0079	---	---	0.0079
			Cobalt	---	---	---	---	Thyroid	0.038	---	---	0.038
			Iron	---	---	---	---	Gastrointestinal	0.036	---	---	0.036
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0082	---	---	0.0082
			Mercury	---	---	---	---	Kidney	0.10	---	---	0.10
			Vanadium	---	---	---	---	Kidney	0.55	---	---	0.55
			Chemical Total	1.3E-05	---	1.3E-06	1.4E-05		7.9	---	0.43	8.4
		Exposure Point Total					1.4E-05					8.4
		Air at EFSA	Benzo(a)anthracene	---	2.0E-09	---	2.0E-09	---	---	---	---	---
			Benzo(a)pyrene	---	1.5E-08	---	1.5E-08	---	---	---	---	---
			Benzo(b)fluoranthene	---	1.2E-09	---	1.2E-09	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	1.4E-09	---	1.4E-09	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	2.0E-10	---	2.0E-10	---	---	---	---	---
			Dibenz(a,h)anthracene	---	1.7E-09	---	1.7E-09	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	1.1E-09	---	1.1E-09	---	---	---	---	---
			Naphthalene	---	4.0E-11	---	4.0E-11	Respiratory tract	---	0.000027	---	0.000027
			2,3,7,8-TCDD TEQ	---	1.4E-07	---	1.4E-07	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0063	---	0.0063
			PCB Dioxin-like Congener TEQ	---	3.8E-10	---	3.8E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000017	---	0.000017
			Aluminum	---	---	---	---	Nervous system	---	0.10	---	0.10

TABLE A-9.2C-8
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at EFSA	Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	1.1E-07	---	1.1E-07	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.12	---	0.12
			Chromium	---	1.5E-06	---	1.5E-06	Respiratory tract	---	0.012	---	0.012
			Cobalt	---	7.4E-08	---	7.4E-08	Respiratory tract	---	0.10	---	0.10
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.58	---	0.58
			Mercury	---	---	---	---	Nervous system	---	0.22	---	0.22
			Vanadium	---	---	---	---	Respiratory tract	---	0.019	---	0.019
			Chemical Total	---	1.8E-06	---	1.8E-06		---	1.2	---	1.2
		Exposure Point Total					1.8E-06					1.2
	Aggregate Soil Total						1.6E-05					9.5
Soil Total							1.6E-05					9.5

Total Risk Across All Media	1.6E-05
Total Hazard Across All Media	9.5
Total Nervous System HI Across All Media	1.0
Total Skin HI Across All Media	0.25
Total Thyroid HI Across All Media	0.038
Total Gastrointestinal HI Across All Media	0.036
Total Kidney HI Across All Media	0.64
Total Developmental HI Across All Media	7.6
Total Cardiovascular HI Across All Media	0.12
Total Lung/Respiratory Tract HI Across All Media	0.26
Total Blood HI Across All Media	0.04
Total Liver HI Across All Media	0.0063
Total Reproductive System HI Across All Media	0.0063
Total Endrocrine System HI Across All Media	0.0063
Total Body Weight HI Across All Media	0.00010

TABLE A-9.3D-9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 1
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 1 Sediment	Benzo(a)anthracene	6.0E-08	---	1.6E-07	2.2E-07	---	---	---	---	---
			Benzo(a)pyrene	5.8E-07	---	1.6E-06	2.1E-06	---	---	---	---	---
			Benzo(b)fluoranthene	8.8E-08	---	2.4E-07	3.3E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.6E-08	---	4.3E-08	6.0E-08	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	3.7E-08	---	9.9E-08	1.4E-07	---	---	---	---	---
			Aluminum	---	---	---	---	Nervous system	0.0010	---	---	0.0010
			Arsenic	4.4E-08	---	2.7E-08	7.1E-08	Skin	0.00028	---	0.00018	0.00046
			Chromium	2.8E-07	---	---	2.8E-07	None observed	0.00055	---	---	0.00055
			Cobalt	---	---	---	---	Thyroid	0.0032	---	---	0.0032
			Iron	---	---	---	---	Gastrointestinal	0.0021	---	---	0.0021
			Manganese	---	---	---	---	Nervous system	0.00047	---	---	0.00047
			Chemical Total	1.1E-06	---	2.1E-06	3.2E-06		0.0076	---	0.00018	0.0078
		Exposure Point Total					3.2E-06					0.0078
Sediment Total							3.2E-06					0.0078

Total Risk Across All Media	3.2E-06
Total Hazard Across All Media	0.0078
Total Nervous System HI Across All Media	0.0015
Total Skin HI Across All Media	0.00046
Total Thyroid HI Across All Media	0.0032
Total Gastrointestinal HI Across All Media	0.0021

TABLE A-9.3D-10
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - AREA 1 SEDIMENT
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 1 Sediment	Benzo(a)anthracene	7.5E-07	---	2.7E-07	1.0E-06	---	---	---	---	---
			Benzo(a)pyrene	7.2E-06	---	2.6E-06	9.9E-06	---	---	---	---	---
			Benzo(b)fluoranthene	1.1E-06	---	4.0E-07	1.5E-06	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	2.0E-07	---	7.3E-08	2.7E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.6E-07	---	1.7E-07	6.2E-07	---	---	---	---	---
			Aluminum	---	---	---	---	Nervous system	0.0096	---	---	0.0096
			Arsenic	1.0E-07	---	8.6E-09	1.1E-07	Skin	0.0027	---	0.00022	0.0029
			Chromium	3.5E-06	---	---	3.5E-06	None observed	0.0051	---	---	0.0051
			Cobalt	---	---	---	---	Thyroid	0.029	---	---	0.029
			Iron	---	---	---	---	Gastrointestinal	0.020	---	---	0.020
			Manganese	---	---	---	---	Nervous system	0.0044	---	---	0.0044
			Chemical Total	1.3E-05	---	3.6E-06	1.7E-05		0.071	---	0.00022	0.071
		Exposure Point Total					1.7E-05					0.071
Sediment Total							1.7E-05					0.071

Total Risk Across All Media	1.7E-05
Total Hazard Across All Media	0.071
Total Nervous System HI Across All Media	0.014
Total Skin HI Across All Media	0.0029
Total Thyroid HI Across All Media	0.029
Total Gastrointestinal HI Across All Media	0.020

TABLE A-9.3E-9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 2 Sediment	Benzo(a)anthracene	3.2E-08	---	8.7E-08	1.2E-07	---	---	---	---	---
			Benzo(a)pyrene	3.2E-07	---	8.5E-07	1.2E-06	---	---	---	---	---
			Benzo(b)fluoranthene	4.2E-08	---	1.1E-07	1.6E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.4E-08	---	3.8E-08	5.2E-08	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.0E-08	---	5.5E-08	7.5E-08	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.3E-07	---	8.1E-08	2.1E-07	Developmental	0.0042	---	0.0026	0.0068
			o,p'-DDT	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	1.2E-08	---	3.5E-08	4.6E-08	Eyes, Immune system	0.00087	---	0.0025	0.0034
			Aluminum	---	---	---	---	Nervous system	0.00077	---	---	0.00077
			Arsenic	1.4E-07	---	8.5E-08	2.2E-07	Skin	0.00089	---	0.00055	0.0014
			Chromium	2.0E-07	---	---	2.0E-07	None observed	0.00039	---	---	0.00039
			Cobalt	---	---	---	---	Thyroid	0.0027	---	---	0.0027
			Iron	---	---	---	---	Gastrointestinal	0.0018	---	---	0.0018
			Manganese	---	---	---	---	Nervous system	0.00041	---	---	0.00041
			Chemical Total	9.0E-07	---	1.3E-06	2.2E-06		0.012	---	0.0057	0.018
		Exposure Point Total					2.2E-06					0.018
Sediment Total							2.2E-06					0.018

Total Risk Across All Media	2.2E-06
Total Hazard Across All Media	0.018
Total Nervous System HI Across All Media	0.0012
Total Skin HI Across All Media	0.0014
Total Thyroid HI Across All Media	0.0027
Total Gastrointestinal HI Across All Media	0.0018
Total Developmental HI Across All Media	0.0068
Total Eyes HI Across All Media	0.0034
Total Immune System HI Across All Media	0.0034

TABLE A-9.3E-10
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 2 Sediment	Benzo(a)anthracene	4.0E-07	---	1.5E-07	5.5E-07	---	---	---	---	---
			Benzo(a)pyrene	3.9E-06	---	1.4E-06	5.4E-06	---	---	---	---	---
			Benzo(b)fluoranthene	5.3E-07	---	1.9E-07	7.2E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.8E-07	---	6.4E-08	2.4E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.5E-07	---	9.2E-08	3.5E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	3.1E-07	---	2.6E-08	3.3E-07	Developmental	0.039	---	0.0033	0.043
			o,p'-DDT	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	2.8E-08	---	1.1E-08	3.9E-08	Eyes, Immune system	0.0081	---	0.0032	0.011
			Aluminum	---	---	---	---	Nervous system	0.0072	---	---	0.0072
			Arsenic	3.2E-07	---	2.7E-08	3.5E-07	Skin	0.0083	---	0.00070	0.0090
			Chromium	2.5E-06	---	---	2.5E-06	None observed	0.0036	---	---	0.0036
			Cobalt	---	---	---	---	Thyroid	0.025	---	---	0.025
			Iron	---	---	---	---	Gastrointestinal	0.017	---	---	0.017
			Manganese	---	---	---	---	Nervous system	0.0038	---	---	0.0038
			Chemical Total	8.4E-06	---	2.0E-06	1.0E-05		0.11	---	0.0072	0.12
		Exposure Point Total					1.0E-05					0.12
Sediment Total							1.0E-05					0.12

Total Risk Across All Media	1.0E-05
Total Hazard Across All Media	0.12
Total Nervous System HI Across All Media	0.011
Total Skin HI Across All Media	0.0090
Total Thyroid HI Across All Media	0.025
Total Gastrointestinal HI Across All Media	0.017
Total Developmental HI Across All Media	0.043
Total Eyes HI Across All Media	0.011
Total Immune System HI Across All Media	0.011

TABLE A-9.3F-9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 3 Sediment	Benzo(a)anthracene	5.2E-08	---	1.4E-07	1.9E-07	---	---	---	---	---
			Benzo(a)pyrene	6.2E-07	---	1.7E-06	2.3E-06	---	---	---	---	---
			Benzo(b)fluoranthene	8.2E-08	---	2.2E-07	3.0E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	7.5E-08	---	2.0E-07	2.8E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	3.4E-08	---	9.3E-08	1.3E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.1E-06	---	6.9E-07	1.8E-06	Developmental	0.036	---	0.022	0.058
			o,p'-DDT	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	1.8E-08	---	5.3E-08	7.1E-08	Eyes, Immune system	0.0013	---	0.0039	0.0052
			Arsenic	3.2E-07	---	2.0E-07	5.2E-07	Skin	0.0021	---	0.0013	0.0034
			Chromium	1.6E-07	---	---	1.6E-07	None observed	0.00031	---	---	0.00031
			Mercury	---	---	---	---	Kidney	0.0011	---	---	0.0011
			Chemical Total	2.5E-06	---	3.3E-06	5.8E-06		0.041	---	0.027	0.068
		Exposure Point Total					5.8E-06					0.068
Sediment Total							5.8E-06					0.068

Total Risk Across All Media	5.8E-06
Total Hazard Across All Media	0.068
Total Eyes HI Across All Media	0.0052
Total Immune System HI Across All Media	0.0052
Total Skin HI Across All Media	0.0034
Total Kidney HI Across All Media	0.0011
Total Developmental HI Across All Media	0.058

TABLE A-9.3F-10
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 3 Sediment	Benzo(a)anthracene	6.4E-07	---	2.3E-07	8.8E-07	---	---	---	---	---
			Benzo(a)pyrene	7.8E-06	---	2.8E-06	1.1E-05	---	---	---	---	---
			Benzo(b)fluoranthene	1.0E-06	---	3.7E-07	1.4E-06	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	9.4E-07	---	3.4E-07	1.3E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.3E-07	---	1.6E-07	5.9E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.6E-06	---	2.2E-07	2.8E-06	Developmental	0.33	---	0.028	0.36
			o,p'-DDT	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	4.3E-08	---	1.7E-08	5.9E-08	Eyes, Immune system	0.012	---	0.0049	0.017
			Arsenic	7.5E-07	---	6.3E-08	8.2E-07	Skin	0.020	---	0.0016	0.021
			Chromium	2.0E-06	---	---	2.0E-06	None observed	0.0029	---	---	0.0029
			Mercury	---	---	---	---	Kidney	0.0098	---	---	0.0098
			Chemical Total	1.6E-05	---	4.2E-06	2.0E-05		0.38	---	0.035	0.41
		Exposure Point Total					2.0E-05					0.41
Sediment Total							2.0E-05					0.41

Total Risk Across All Media	2.0E-05
Total Hazard Across All Media	0.41
Total Eyes HI Across All Media	0.017
Total Immune System HI Across All Media	0.017
Total Skin HI Across All Media	0.021
Total Kidney HI Across All Media	0.0098
Total Developmental HI Across All Media	0.36

TABLE A-9.4G-11
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish	Androscoggin River Reaches 3-9	Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	4.4	---	---	4.4
			4,4'-DDT	---	---	---	---	Liver	0.18	---	---	0.18
			beta-BHC	---	---	---	---	---	---	---	---	---
			o,p'-DDD	---	---	---	---	---	---	---	---	---
			trans-Nonachlor	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	44	---	---	44
			Total PCBs	---	---	---	---	Eyes, Immune system	70	---	---	70
			Arsenic	---	---	---	---	Skin	0.81	---	---	0.81
			Chromium	---	---	---	---	None observed	0.072	---	---	0.072
			Lead	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	Kidney	5.4	---	---	5.4
			Chemical Total	---	---	---	---		126	---	---	126
		Exposure Point Total					---					126
Fish Ingestion Total							---					126

Total Risk Across All Media	---
Total Hazard Across All Media	126
Total Developmental HI Across All Media	49
Total Liver HI Across All Media	0.18
Total Eyes HI Across All Media	70
Total Immune System HI Across All Media	70
Total Skin HI Across All Media	0.81
Total Kidney HI Across All Media	5.4

TABLE A-9.4G-12
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish	Androscoggin River Reaches 3-9	Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	8.3	---	---	8.3
			4,4'-DDT	---	---	---	---	Liver	0.35	---	---	0.35
			beta-BHC	---	---	---	---	---	---	---	---	---
			o,p'-DDD	---	---	---	---	---	---	---	---	---
			trans-Nonachlor	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	84	---	---	84
			Total PCBs	---	---	---	---	Eyes, Immune system	133	---	---	133
			Arsenic	---	---	---	---	Skin	1.5	---	---	1.5
			Chromium	---	---	---	---	None observed	0.14	---	---	0.14
			Lead	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	Kidney	10	---	---	10
			Chemical Total	---	---	---	---		238	---	---	238
		Exposure Point Total					---					238
Fish Ingestion Total							---					238

Total Risk Across All Media	---
Total Hazard Across All Media	238
Total Developmental HI Across All Media	93
Total Liver HI Across All Media	0.35
Total Eyes HI Across All Media	133
Total Immune System HI Across All Media	133
Total Skin HI Across All Media	1.5
Total Kidney HI Across All Media	10

TABLE A-9.4G-13
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Age-adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish	Androscoggin River Reaches 3-9	Indeno(1,2,3-cd)pyrene	3.4E-06	---	---	3.4E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.0E-04	---	---	2.0E-04	---	---	---	---	---
			4,4'-DDT	1.6E-05	---	---	1.6E-05	---	---	---	---	---
			beta-BHC	1.6E-06	---	---	1.6E-06	---	---	---	---	---
			o,p'-DDD	---	---	---	---	---	---	---	---	---
			trans-Nonachlor	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	2.0E-03	---	---	2.0E-03	---	---	---	---	---
			Total PCBs	1.4E-03	---	---	1.4E-03	---	---	---	---	---
			Arsenic	1.8E-04	---	---	1.8E-04	---	---	---	---	---
			Chromium	1.6E-04	---	---	1.6E-04	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Chemical Total	4.0E-03	---	---	4.0E-03		---	---	---	---
		Exposure Point Total					4.0E-03					---
Fish Ingestion Total							4.0E-03					---

Total Risk Across All Media: 4.0E-03

Total Hazard Across All Media: ---

TABLE A-10.1A-1
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	96	---	12	108
			Arsenic	---	---	---	---	Skin	2.8	---	0.33	3.1
			Mercury	---	---	---	---	Kidney	0.66	---	---	0.66
			Chemical Total	---	---	---	---		99	---	12	111
		Exposure Point Total					---					111
		Air at CHP	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00013	---	0.00013
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0041	---	0.0041
			Mercury	---	---	---	---	Nervous system	---	15	---	15
			Chemical Total	---	---	---	---		---	15	---	15
		Exposure Point Total					---					15
	Surface Soil Total						---					126
Soil Total							---					126

Total Risk Across All Media: ---

Total Hazard Across All Media: 126

TABLE A-10.1A-2
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	897	---	75	972
			Arsenic	---	---	---	---	Skin	26	---	2.2	28
			Mercury	---	---	---	---	Kidney	6.2	---	---	6.2
			Chemical Total	---	---	---	---		929	---	77	1006
		Exposure Point Total					---					1006
		Air at CHP	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00013	---	0.00013
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0041	---	0.0041
			Mercury	---	---	---	---	Nervous system	---	15	---	15
			Chemical Total	---	---	---	---		---	15	---	15
		Exposure Point Total					---					15
	Surface Soil Total						---					1021
Soil Total							---					1021

Total Risk Across All Media: ---

Total Hazard Across All Media: 1021

TABLE A-10.1A-3
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	8.2E-06	2.0E-11	3.1E-06	1.1E-05	---	---	---	---	---
			Benzo(a)pyrene	7.5E-05	1.9E-10	2.9E-05	1.0E-04	---	---	---	---	---
			Benzo(b)fluoranthene	8.1E-06	2.0E-11	3.1E-06	1.1E-05	---	---	---	---	---
			Benzo(k)fluoranthene	7.5E-07	1.9E-11	2.9E-07	1.0E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	2.6E-05	7.0E-11	9.8E-06	3.5E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.2E-06	1.1E-11	1.6E-06	5.8E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.0E-02	8.2E-08	9.5E-04	1.1E-02	---	---	---	---	---
			Total PCB Homologs	3.3E-06	2.7E-11	1.5E-06	4.8E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	3.9E-06	3.2E-11	1.7E-06	5.6E-06	---	---	---	---	---
			Arsenic	1.4E-03	1.1E-07	1.3E-04	1.5E-03	---	---	---	---	---
			Chromium	5.1E-05	1.4E-07	---	5.1E-05	---	---	---	---	---
			Chemical Total	1.2E-02	3.4E-07	1.1E-03	1.3E-02		---	---	---	---
		Exposure Point Total					1.3E-02					---
	Surface Soil Total						1.3E-02					---
Soil Total							1.3E-02					---

Total Risk Across All Media: 1.3E-02

Total Hazard Across All Media: ---

TABLE A-10.1A-4
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)pyrene	1.6E-06	---	8.1E-07	2.4E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	8.9E-04	---	1.1E-04	1.0E-03	Developmental	29	---	3.4	32
			Arsenic	1.3E-04	---	1.5E-05	1.4E-04	---	---	---	---	---
			Chromium	1.1E-06	---	---	1.1E-06	---	---	---	---	---
			Chemical Total	1.0E-03	---	1.2E-04	1.1E-03		29	---	3.4	32
		Exposure Point Total					1.1E-03					32
		Air at CHP	Benzo(a)pyrene	---	1.5E-12	---	1.5E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.6E-09	---	1.6E-09	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000031	---	0.0000031
			Arsenic	---	2.3E-09	---	2.3E-09	---	---	---	---	---
			Chromium	---	1.1E-09	---	1.1E-09	---	---	---	---	---
			Chemical Total	---	5.0E-09	---	5.0E-09		---	0.0000031	---	0.0000031
		Exposure Point Total					5.0E-09					0.0000031
	Surface Soil Total						1.1E-03					32
Soil Total							1.1E-03					32

Total Risk Across All Media: 1.1E-03

Total Hazard Across All Media: 32

TABLE A-10.1A-5
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	2.1E-06	---	6.3E-07	2.7E-06	---	---	---	---	---
			Benzo(a)pyrene	1.9E-05	---	5.7E-06	2.5E-05	---	---	---	---	---
			Benzo(b)fluoranthene	2.1E-06	---	6.2E-07	2.7E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	6.6E-06	---	2.0E-06	8.6E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.1E-06	---	3.2E-07	1.4E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.1E-03	---	1.7E-04	2.3E-03	Developmental	266	---	22	289
			PCB Dioxin-like Congener TEQ	8.1E-07	---	3.2E-07	1.1E-06	---	---	---	---	---
			Arsenic	2.9E-04	---	2.5E-05	3.2E-04	Skin	7.6	---	0.64	8.3
			Chromium	1.3E-05	---	---	1.3E-05	---	---	---	---	---
			Mercury	---	---	---	---	Kidney	1.8	---	---	1.8
			Chemical Total	2.4E-03	---	2.1E-04	2.6E-03		276	---	23	299
		Exposure Point Total					2.6E-03					299
		Air at CHP	Benzo(a)anthracene	---	2.1E-13	---	2.1E-13	---	---	---	---	---
			Benzo(a)pyrene	---	1.9E-12	---	1.9E-12	---	---	---	---	---
			Benzo(b)fluoranthene	---	2.1E-13	---	2.1E-13	---	---	---	---	---
			Dibenz(a,h)anthracene	---	7.3E-13	---	7.3E-13	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	1.1E-13	---	1.1E-13	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	4.1E-10	---	4.1E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000031	---	0.0000031
			PCB Dioxin-like Congener TEQ	---	1.6E-13	---	1.6E-13	---	---	---	---	---
			Arsenic	---	5.7E-10	---	5.7E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00010	---	0.00010
			Chromium	---	1.5E-09	---	1.5E-09	---	---	---	---	---
			Mercury	---	---	---	---	Nervous system	---	0.36	---	0.36
			Chemical Total	---	2.5E-09	---	2.5E-09		---	0.36	---	0.36
		Exposure Point Total					2.5E-09					0.36
	Surface Soil Total						2.6E-03					299
Soil Total							2.6E-03					299

Total Risk Across All Media: 2.6E-03

Total Hazard Across All Media: 299

TABLE A-10.1A-7
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)pyrene	2.6E-06	---	2.8E-06	5.5E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	9.0E-07	---	9.8E-07	1.9E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	5.0E-04	---	1.3E-04	6.3E-04	Developmental	38	---	9.6	48
			Arsenic	7.1E-05	---	1.8E-05	8.9E-05	Skin	1.1	---	0.28	1.4
			Chromium	1.8E-06	---	---	1.8E-06	---	---	---	---	---
			Chemical Total	5.8E-04	---	1.5E-04	7.2E-04		40	---	9.9	49
		Exposure Point Total					7.2E-04					49
		Air at CHP	Benzo(a)pyrene	---	2.7E-12	---	2.7E-12	---	---	---	---	---
			Dibenz(a,h)anthracene	---	1.0E-12	---	1.0E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.0E-09	---	1.0E-09	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000047	---	0.0000047
			Arsenic	---	1.4E-09	---	1.4E-09	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00015	---	0.00015
			Chromium	---	2.1E-09	---	2.1E-09	---	---	---	---	---
			Chemical Total	---	4.5E-09	---	4.5E-09		---	0.00016	---	0.00016
		Exposure Point Total					4.5E-09					0.00016
	Surface Soil Total						7.2E-04					49
Soil Total							7.2E-04					49

Total Risk Across All Media: 7.2E-04

Total Hazard Across All Media: 49

TABLE A-10.1B-1
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Mercury	---	---	---	---	Kidney	0.16	---	---	0.16
			Chemical Total	---	---	---	---		0.16	---	---	0.16
		Exposure Point Total					---					0.16
		Air at SFSA	Mercury	---	---	---	---	Nervous system	---	3.5	---	3.5
			Chemical Total	---	---	---	---		---	3.5	---	3.5
		Exposure Point Total					---					3.5
	Surface Soil Total						---					3.7
Soil Total							---					3.7

Total Risk Across All Media: ---

Total Hazard Across All Media: 3.7

TABLE A-10.1B-2
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	1.6	---	0.14	1.8
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	1.0	---	0.40	1.4
			Antimony	---	---	---	---	Blood	4.0	---	---	4.0
			Arsenic	---	---	---	---	Skin	2.6	---	0.22	2.9
			Iron	---	---	---	---	Gastrointestinal	1.0	---	---	1.0
			Mercury	---	---	---	---	Kidney	1.5	---	---	1.5
			Vanadium	---	---	---	---	Kidney	4.6	---	---	4.6
			Chemical Total	---	---	---	---		16	---	0.75	17
		Exposure Point Total					---					17
		Air at SFSA	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000023	---	0.00000023
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00042	---	0.00042
			Iron	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	Nervous system	---	3.5	---	3.5
			Vanadium	---	---	---	---	Respiratory tract	---	0.000026	---	0.000026
			Chemical Total	---	---	---	---		---	3.5	---	3.5
		Exposure Point Total					---					3.5
	Surface Soil Total						---					21
Soil Total							---					21

Total Risk Across All Media: ---

Total Hazard Across All Media: 21

TABLE A-10.1B-3
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	9.4E-06	2.3E-11	3.6E-06	1.3E-05	---	---	---	---	---
			Benzo(a)pyrene	8.9E-05	2.2E-10	3.4E-05	1.2E-04	---	---	---	---	---
			Benzo(b)fluoranthene	9.1E-06	2.3E-11	3.5E-06	1.3E-05	---	---	---	---	---
			Benzo(k)fluoranthene	7.6E-07	1.9E-11	2.9E-07	1.0E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	2.1E-05	5.8E-11	8.2E-06	3.0E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	8.4E-06	2.1E-11	3.2E-06	1.2E-05	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.8E-05	1.5E-10	1.7E-06	2.0E-05	---	---	---	---	---
			Total PCB Homologs	5.0E-06	4.0E-11	2.2E-06	7.2E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	8.3E-06	6.9E-11	3.7E-06	1.2E-05	---	---	---	---	---
			Arsenic	1.5E-04	1.2E-08	1.4E-05	1.6E-04	---	---	---	---	---
			Chromium	7.6E-05	2.1E-07	---	7.6E-05	---	---	---	---	---
			Chemical Total	3.9E-04	2.2E-07	7.4E-05	4.6E-04		---	---	---	---
		Exposure Point Total					4.6E-04					---
	Surface Soil Total						4.6E-04					---
Soil Total							4.6E-04					---

Total Risk Across All Media: 4.6E-04

Total Hazard Across All Media: ---

TABLE A-10.1B-6
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)pyrene	4.6E-06	---	4.0E-06	8.6E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	1.1E-06	---	9.6E-07	2.1E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	4.0E-06	---	8.0E-07	4.8E-06	---	---	---	---	---
			Total PCB Homologs	1.1E-06	---	1.0E-06	2.1E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	1.9E-06	---	1.7E-06	3.6E-06	---	---	---	---	---
			Arsenic	3.2E-05	---	6.4E-06	3.9E-05	---	---	---	---	---
			Chromium	3.9E-06	---	---	3.9E-06	---	---	---	---	---
			Chemical Total	4.9E-05	---	1.5E-05	6.4E-05		---	---	---	---
		Exposure Point Total					6.4E-05					---
		Air at SFSA	Benzo(a)pyrene	---	1.7E-11	---	1.7E-11	---	---	---	---	---
			Dibenz(a,h)anthracene	---	4.6E-12	---	4.6E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	2.9E-11	---	2.9E-11	---	---	---	---	---
			Total PCB Homologs	---	7.9E-12	---	7.9E-12	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	1.4E-11	---	1.4E-11	---	---	---	---	---
			Arsenic	---	2.3E-09	---	2.3E-09	---	---	---	---	---
			Chromium	---	1.7E-08	---	1.7E-08	---	---	---	---	---
			Chemical Total	---	1.9E-08	---	1.9E-08		---	---	---	---
		Exposure Point Total					1.9E-08					---
	Surface Soil Total						6.4E-05					---
Soil Total							6.4E-05					---

Total Risk Across All Media: 6.4E-05

Total Hazard Across All Media: ---

TABLE A-10.1B-7
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)pyrene	3.1E-06	---	3.4E-06	6.5E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	7.5E-07	---	8.1E-07	1.6E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	9.0E-07	---	2.3E-07	1.1E-06	---	---	---	---	---
			Arsenic	7.3E-06	---	1.8E-06	9.1E-06	---	---	---	---	---
			Chromium	2.6E-06	---	---	2.6E-06	---	---	---	---	---
			Chemical Total	1.5E-05	---	6.3E-06	2.1E-05		---	---	---	---
		Exposure Point Total					2.1E-05					---
		Air at SFSA	Benzo(a)pyrene	---	3.2E-12	---	3.2E-12	---	---	---	---	---
			Dibenz(a,h)anthracene	---	8.5E-13	---	8.5E-13	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.8E-12	---	1.8E-12	---	---	---	---	---
			Arsenic	---	1.5E-10	---	1.5E-10	---	---	---	---	---
			Chromium	---	3.1E-09	---	3.1E-09	---	---	---	---	---
			Chemical Total	---	3.2E-09	---	3.2E-09		---	---	---	---
		Exposure Point Total					3.2E-09					---
	Surface Soil Total						2.1E-05					---
Soil Total							2.1E-05					---

Total Risk Across All Media: 2.1E-05

Total Hazard Across All Media: ---

TABLE A-10.1C-1
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	5.3	---	0.64	6.0
			Mercury	---	---	---	---	Kidney	0.10	---	---	0.10
			Chemical Total	---	---	---	---		5.4	---	0.64	6.0
		Exposure Point Total					---					6.0
		Air at EFSA	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000070	---	0.0000070
			Mercury	---	---	---	---	Nervous system	---	2.1	---	2.1
			Chemical Total	---	---	---	---		---	2.1	---	2.1
		Exposure Point Total					---					2.1
	Surface Soil Total						---					8.2
Soil Total							---					8.2

Total Risk Across All Media: ---

Total Hazard Across All Media: 8.2

TABLE A-10.1C-2
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	50	---	4.2	54
			Mercury	---	---	---	---	Kidney	0.90	---	---	0.90
			Chemical Total	---	---	---	---		51	---	4.2	55
		Exposure Point Total					---					55
		Air at EFSA	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000070	---	0.0000070
			Mercury	---	---	---	---	Nervous system	---	2.1	---	2.1
			Chemical Total	---	---	---	---		---	2.1	---	2.1
		Exposure Point Total					---					2.1
	Surface Soil Total						---					57
Soil Total							---					57

Total Risk Across All Media: ---

Total Hazard Across All Media: 57

TABLE A-10.1C-3
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	8.6E-05	2.1E-10	3.3E-05	1.2E-04	---	---	---	---	---
			Benzo(a)pyrene	6.3E-04	1.6E-09	2.4E-04	8.7E-04	---	---	---	---	---
			Benzo(b)fluoranthene	5.7E-05	1.4E-10	2.2E-05	7.9E-05	---	---	---	---	---
			Benzo(k)fluoranthene	6.2E-06	1.6E-10	2.4E-06	8.6E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	9.5E-06	2.6E-11	3.7E-06	1.3E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	5.6E-05	1.4E-10	2.2E-05	7.8E-05	---	---	---	---	---
			2,3,7,8-TCDD TEQ	5.5E-04	4.5E-09	5.2E-05	6.1E-04	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	1.4E-06	1.1E-11	6.0E-07	2.0E-06	---	---	---	---	---
			Arsenic	4.3E-05	3.5E-09	4.1E-06	4.7E-05	---	---	---	---	---
			Chromium	4.1E-05	1.1E-07	---	4.1E-05	---	---	---	---	---
			Chemical Total	1.5E-03	1.2E-07	3.8E-04	1.9E-03		---	---	---	---
		Exposure Point Total					1.9E-03					---
	Surface Soil Total						1.9E-03					---
Soil Total							1.9E-03					---

Total Risk Across All Media: 1.9E-03

Total Hazard Across All Media: ---

TABLE A-10.1C-6
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	4.5E-06	---	3.8E-06	8.3E-06	---	---	---	---	---
			Benzo(a)pyrene	3.3E-05	---	2.8E-05	6.1E-05	---	---	---	---	---
			Benzo(b)fluoranthene	3.0E-06	---	2.5E-06	5.5E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.9E-06	---	2.5E-06	5.5E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.2E-04	---	2.4E-05	1.5E-04	Developmental	3.8	---	0.75	4.5
			Arsenic	9.6E-06	---	1.9E-06	1.2E-05	---	---	---	---	---
			Chromium	2.1E-06	---	---	2.1E-06	---	---	---	---	---
			Chemical Total	1.8E-04	---	6.3E-05	2.4E-04		3.8	---	0.75	4.5
		Exposure Point Total					2.4E-04					4.5
		Air at EFSA	Benzo(a)anthracene	---	1.7E-11	---	1.7E-11	---	---	---	---	---
			Benzo(a)pyrene	---	1.2E-10	---	1.2E-10	---	---	---	---	---
			Benzo(b)fluoranthene	---	1.117E-11	---	1.1E-11	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	1.109E-11	---	1.1E-11	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	9.0E-10	---	9.0E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000017	---	0.0000017
			Arsenic	---	6.9E-10	---	6.9E-10	---	---	---	---	---
			Chromium	---	9.0E-09	---	9.0E-09	---	---	---	---	---
			Chemical Total	---	1.1E-08	---	1.1E-08		---	0.0000017	---	0.0000017
		Exposure Point Total					1.1E-08					0.0000017
	Surface Soil Total						2.4E-04					4.5
Soil Total							2.4E-04					4.5

Total Risk Across All Media: 2.4E-04

Total Hazard Across All Media: 4.5

TABLE A-10.1C-7
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	3.0E-06	---	3.3E-06	6.3E-06	---	---	---	---	---
			Benzo(a)pyrene	2.2E-05	---	2.4E-05	4.6E-05	---	---	---	---	---
			Benzo(b)fluoranthene	2.0E-06	---	2.2E-06	4.2E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.0E-06	---	2.2E-06	4.1E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.8E-05	---	6.9E-06	3.5E-05	Developmental	2.1	---	0.53	2.7
			Arsenic	2.2E-06	---	5.4E-07	2.7E-06	---	---	---	---	---
			Chromium	1.4E-06	---	---	1.4E-06	---	---	---	---	---
			Chemical Total	6.0E-05	---	3.9E-05	9.9E-05		2.1	---	0.53	2.7
		Exposure Point Total					9.9E-05					2.7
		Air at EFSA	Benzo(a)anthracene	---	3.1E-12	---	3.1E-12	---	---	---	---	---
			Benzo(a)pyrene	---	2.3E-11	---	2.3E-11	---	---	---	---	---
			Benzo(b)fluoranthene	---	2.1E-12	---	2.1E-12	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	2.1E-12	---	2.1E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	5.6E-11	---	5.6E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000026	---	0.00000026
			Arsenic	---	4.3E-11	---	4.3E-11	---	---	---	---	---
			Chromium	---	1.7E-09	---	1.7E-09	---	---	---	---	---
			Chemical Total	---	1.8E-09	---	1.8E-09		---	0.00000026	---	0.00000026
		Exposure Point Total					1.8E-09					0.00000026
	Surface Soil Total						9.9E-05					2.7
Soil Total							9.9E-05					2.7

Total Risk Across All Media: 9.9E-05

Total Hazard Across All Media: 2.7

TABLE A-10.2A-1
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	142	---	17	160
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	1.5	---	0.83	2.3
			Mercury	---	---	---	---	Kidney	21	---	---	21
			Chemical Total	---	---	---	---		165	---	18	183
		Exposure Point Total					---					183
		Air at CHP	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00019	---	0.00019
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000019	---	0.0000019
			Mercury	---	---	---	---	Nervous system	---	467	---	467
			Chemical Total	---	---	---	---		---	467	---	467
		Exposure Point Total					---					467
	Aggregate Soil Total						---					650
Soil Total							---					650

Total Risk Across All Media: ---

Total Hazard Across All Media: 650

TABLE A-10.2A-2
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	1330	---	112	1441
			Aldrin	---	---	---	---	Liver	5.1	---	1.4	6.5
			Dieldrin	---	---	---	---	Liver	2.2	---	0.61	2.8
			Heptachlor Epoxide	---	---	---	---	Liver	4.6	---	1.3	5.9
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	2.1	---	0.82	2.9
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	14	---	5.4	19
			Arsenic	---	---	---	---	Skin	7.7	---	0.65	8.4
			Cobalt	---	---	---	---	Thyroid	2.6	---	---	2.6
			Mercury	---	---	---	---	Kidney	198	---	---	198
			Thallium	---	---	---	---	Hair	1.1	---	---	1.1
			Chemical Total	---	---	---	---		1567	---	122	1688
		Exposure Point Total					---					1688
		Air at CHP	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00019	---	0.00019
			Aldrin	---	---	---	---	---	---	---	---	---
			Dieldrin	---	---	---	---	---	---	---	---	---
			Heptachlor Epoxide	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000019	---	0.0000019
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0012	---	0.0012
			Cobalt	---	---	---	---	Respiratory tract	---	0.0010	---	0.0010
			Mercury	---	---	---	---	Nervous system	---	467	---	467
			Thallium	---	---	---	---	---	---	---	---	---
			Chemical Total	---	---	---	---		---	467	---	467
		Exposure Point Total					---					467
	Aggregate Soil Total						---					2155
Soil Total							---					2155

Total Risk Across All Media: ---

Total Hazard Across All Media: 2155

TABLE A-10.2A-3
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	Benzo(a)anthracene	5.1E-04	1.3E-09	2.0E-04	7.1E-04	---	---	---	---	---
			Benzo(a)pyrene	3.7E-03	9.2E-09	1.4E-03	5.1E-03	---	---	---	---	---
			Benzo(b)fluoranthene	4.5E-04	1.1E-09	1.7E-04	6.2E-04	---	---	---	---	---
			Benzo(k)fluoranthene	9.8E-06	2.5E-10	3.8E-06	1.4E-05	---	---	---	---	---
			Chrysene	4.7E-06	1.2E-10	1.8E-06	6.4E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	1.9E-04	5.2E-10	7.4E-05	2.7E-04	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.5E-04	3.7E-10	5.7E-05	2.1E-04	---	---	---	---	---
			Naphthalene	---	3.7E-06	---	3.7E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.5E-02	1.2E-07	1.4E-03	1.6E-02	---	---	---	---	---
			4,4'-DDE	8.5E-06	6.8E-11	2.7E-06	1.1E-05	---	---	---	---	---
			4,4'-DDT	1.7E-06	1.3E-11	1.6E-07	1.8E-06	---	---	---	---	---
			Aldrin	3.2E-04	2.6E-09	1.0E-04	4.2E-04	---	---	---	---	---
			Alpha-BHC	1.7E-05	1.3E-10	5.3E-06	2.2E-05	---	---	---	---	---
			Dieldrin	2.1E-04	1.7E-09	6.7E-05	2.8E-04	---	---	---	---	---
			Gamma-BHC (Lindane)	2.4E-06	1.9E-11	3.0E-07	2.7E-06	---	---	---	---	---
			Heptachlor Epoxide	6.7E-05	5.4E-10	2.1E-05	8.8E-05	---	---	---	---	---
			Total PCB Homologs	1.0E-05	8.2E-11	4.5E-06	1.5E-05	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	1.5E-04	1.3E-09	6.8E-05	2.2E-04	---	---	---	---	---
			Arsenic	4.3E-04	3.4E-08	4.0E-05	4.7E-04	---	---	---	---	---
			Chromium	4.4E-05	1.2E-07	---	4.5E-05	---	---	---	---	---
			Chemical Total	2.1E-02	4.0E-06	3.6E-03	2.5E-02		---	---	---	---
		Exposure Point Total					2.5E-02					---
	Aggregate Soil Total						2.5E-02					---
Soil Total							2.5E-02					---

Total Risk Across All Media: 2.5E-02

Total Hazard Across All Media: ---

TABLE A-10.2B-1
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Mercury	---	---	---	---	Kidney	0.12	---	---	0.12
			Chemical Total	---	---	---	---		0.12	---	---	0.12
		Exposure Point Total					---					0.12
		Air at SFSA	Mercury	---	---	---	---	Nervous system	---	2.6	---	2.6
			Chemical Total	---	---	---	---		---	2.6	---	2.6
		Exposure Point Total					---					2.6
	Aggregate Soil Total						---					2.7
Soil Total							---					2.7

Total Risk Across All Media: ---

Total Hazard Across All Media: 2.7

TABLE A-10.2B-2
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	2.0	---	0.17	2.1
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	2.6	---	1.0	3.6
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	2.1	---	0.83	3.0
			Antimony	---	---	---	---	Blood	2.2	---	---	2.2
			Arsenic	---	---	---	---	Skin	1.6	---	0.13	1.7
			Mercury	---	---	---	---	Kidney	1.1	---	---	1.1
			Vanadium	---	---	---	---	Kidney	4.3	---	---	4.3
			Chemical Total	---	---	---	---		16	---	2.1	18
		Exposure Point Total					---					18
		Air at SFSA	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000028	---	0.00000028
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000030	---	0.00000030
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00025	---	0.00025
			Mercury	---	---	---	---	Nervous system	---	2.6	---	2.6
			Vanadium	---	---	---	---	Respiratory tract	---	0.000024	---	0.000024
			Chemical Total	---	---	---	---		---	2.6	---	2.6
		Exposure Point Total					---					2.6
	Aggregate Soil Total						---					20
Soil Total							---					20

Total Risk Across All Media: ---

Total Hazard Across All Media: 20

TABLE A-10.2B-3
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	4.5E-06	1.1E-11	1.7E-06	6.2E-06	---	---	---	---	---
			Benzo(a)pyrene	4.4E-05	1.1E-10	1.7E-05	6.0E-05	---	---	---	---	---
			Benzo(b)fluoranthene	5.9E-06	1.5E-11	2.3E-06	8.1E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	1.5E-05	4.1E-11	5.7E-06	2.1E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.5E-06	1.1E-11	1.7E-06	6.3E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.2E-05	1.8E-10	2.1E-06	2.4E-05	---	---	---	---	---
			Total PCB Homologs	1.3E-05	1.0E-10	5.6E-06	1.8E-05	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	2.4E-05	1.9E-10	1.0E-05	3.4E-05	---	---	---	---	---
			Arsenic	8.7E-05	7.0E-09	8.2E-06	9.5E-05	---	---	---	---	---
			Chromium	6.1E-05	1.7E-07	---	6.1E-05	---	---	---	---	---
			Chemical Total	2.8E-04	1.8E-07	5.5E-05	3.3E-04		---	---	---	---
		Exposure Point Total					3.3E-04					---
	Aggregate Soil Total						3.3E-04					---
Soil Total							3.3E-04					---

Total Risk Across All Media: 3.3E-04

Total Hazard Across All Media: ---

TABLE A-10.2B-6
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)pyrene	2.3E-06	---	1.9E-06	4.2E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	7.8E-07	---	6.7E-07	1.4E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	4.9E-06	---	9.8E-07	5.9E-06	---	---	---	---	---
			Total PCB Homologs	2.8E-06	---	2.6E-06	5.4E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	5.3E-06	---	4.9E-06	1.0E-05	---	---	---	---	---
			Arsenic	1.9E-05	---	3.8E-06	2.3E-05	---	---	---	---	---
			Chromium	3.2E-06	---	---	3.2E-06	---	---	---	---	---
			Chemical Total	3.9E-05	---	1.5E-05	5.4E-05		---	---	---	---
		Exposure Point Total					5.4E-05					---
		Air at SFSA	Benzo(a)pyrene	---	8.6E-12	---	8.6E-12	---	---	---	---	---
			Dibenz(a,h)anthracene	---	3.2E-12	---	3.2E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	3.6E-11	---	3.6E-11	---	---	---	---	---
			Total PCB Homologs	---	2.0E-11	---	2.0E-11	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	3.9E-11	---	3.9E-11	---	---	---	---	---
			Arsenic	---	1.4E-09	---	1.4E-09	---	---	---	---	---
			Chromium	---	1.3E-08	---	1.3E-08	---	---	---	---	---
			Chemical Total	---	1.5E-08	---	1.5E-08		---	---	---	---
		Exposure Point Total					1.5E-08					---
	Aggregate Soil Total						5.4E-05					---
Soil Total							5.4E-05					---

Total Risk Across All Media: 5.4E-05

Total Hazard Across All Media: ---

TABLE A-10.2B-8
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Arsenic	1.3E-06	---	8.0E-08	1.4E-06	---	---	---	---	---
			Chromium	2.2E-07	---	---	2.2E-07	---	---	---	---	---
			Chemical Total	1.6E-06	---	8.0E-08	1.6E-06		---	---	---	---
		Exposure Point Total					1.6E-06					---
		Air at SFSA	Arsenic	---	1.9E-07	---	1.9E-07	---	---	---	---	---
			Chromium	---	1.9E-06	---	1.9E-06	---	---	---	---	---
			Chemical Total	---	2.1E-06	---	2.1E-06		---	---	---	---
		Exposure Point Total					2.1E-06					---
	Aggregate Soil Total						3.7E-06					---
Soil Total							3.7E-06					---

Total Risk Across All Media: 3.7E-06

Total Hazard Across All Media: ---

TABLE A-10.2C-1
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	5.7	---	0.69	6.4
			Mercury	---	---	---	---	Kidney	0.079	---	---	0.079
			Chemical Total	---	---	---	---		5.8	---	0.69	6.5
		Exposure Point Total					---					6.5
		Air at EFSA	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000075	---	0.0000075
			Mercury	---	---	---	---	Nervous system	---	1.8	---	1.8
			Chemical Total	---	---	---	---		---	1.8	---	1.8
		Exposure Point Total					---					1.8
	Aggregate Soil Total						---					8.3
Soil Total							---					8.3

Total Risk Across All Media: ---

Total Hazard Across All Media: 8.3

TABLE A-10.2C-2
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	54	---	4.5	58
			Mercury	---	---	---	---	Kidney	0.74	---	---	0.74
			Vanadium	---	---	---	---	Kidney	4.2	---	---	4.2
			Chemical Total	---	---	---	---		58	---	4.5	63
		Exposure Point Total					---					63
		Air at EFSA	2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000075	---	0.0000075
			Mercury	---	---	---	---	Nervous system	---	1.8	---	1.8
			Vanadium	---	---	---	---	Respiratory tract	---	0.000023	---	0.000023
			Chemical Total	---	---	---	---		---	1.8	---	1.8
		Exposure Point Total					---					1.8
	Aggregate Soil Total						---					65
Soil Total							---					65

Total Risk Across All Media: ---

Total Hazard Across All Media: 65

TABLE A-10.2C-3
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	7.2E-05	1.8E-10	2.8E-05	1.0E-04	---	---	---	---	---
			Benzo(a)pyrene	5.3E-04	1.3E-09	2.1E-04	7.4E-04	---	---	---	---	---
			Benzo(b)fluoranthene	4.3E-05	1.1E-10	1.7E-05	6.0E-05	---	---	---	---	---
			Benzo(k)fluoranthene	5.1E-06	1.3E-10	1.9E-06	7.0E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	5.8E-05	1.6E-10	2.2E-05	8.0E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.1E-05	1.0E-10	1.6E-05	5.6E-05	---	---	---	---	---
			2,3,7,8-TCDD TEQ	6.0E-04	4.9E-09	5.6E-05	6.5E-04	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	1.7E-06	1.4E-11	7.3E-07	2.4E-06	---	---	---	---	---
			Arsenic	5.1E-05	4.1E-09	4.8E-06	5.6E-05	---	---	---	---	---
			Chromium	4.7E-05	1.3E-07	---	4.8E-05	---	---	---	---	---
			Chemical Total	1.4E-03	1.4E-07	3.5E-04	1.8E-03		---	---	---	---
		Exposure Point Total					1.8E-03					---
	Aggregate Soil Total						1.8E-03					---
Soil Total							1.8E-03					---

Total Risk Across All Media: 1.8E-03

Total Hazard Across All Media: ---

TABLE A-10.2C-6
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	3.8E-06	---	3.2E-06	7.0E-06	---	---	---	---	---
			Benzo(a)pyrene	2.8E-05	---	2.4E-05	5.2E-05	---	---	---	---	---
			Benzo(b)fluoranthene	2.3E-06	---	1.9E-06	4.2E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	3.0E-06	---	2.6E-06	5.6E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.1E-06	---	1.8E-06	3.9E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.3E-04	---	2.6E-05	1.6E-04	Developmental	4.1	---	0.81	4.9
			Arsenic	1.1E-05	---	2.3E-06	1.4E-05	---	---	---	---	---
			Chromium	2.5E-06	---	---	2.5E-06	---	---	---	---	---
			Chemical Total	1.9E-04	---	6.2E-05	2.5E-04		4.1	---	0.81	4.9
		Exposure Point Total					2.5E-04					4.9
		Air at EFSA	Benzo(a)anthracene	---	1.415E-11	---	1.4E-11	---	---	---	---	---
			Benzo(a)pyrene	---	1.0E-10	---	1.0E-10	---	---	---	---	---
			Benzo(b)fluoranthene	---	8.52E-12	---	8.5E-12	---	---	---	---	---
			Dibenz(a,h)anthracene	---	1.2E-11	---	1.2E-11	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	7.963E-12	---	8.0E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	9.7E-10	---	9.7E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000018	---	0.0000018
			Arsenic	---	8.2E-10	---	8.2E-10	---	---	---	---	---
			Chromium	---	1.0E-08	---	1.0E-08	---	---	---	---	---
			Chemical Total	---	1.2E-08	---	1.2E-08		---	0.0000018	---	0.0000018
		Exposure Point Total					1.2E-08					0.0000018
	Aggregate Soil Total						2.5E-04					4.9
Soil Total							2.5E-04					4.9

Total Risk Across All Media: 2.5E-04

Total Hazard Across All Media: 4.9

TABLE A-10.2C-8
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)pyrene	1.9E-06	---	5.0E-07	2.4E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	9.1E-06	---	5.5E-07	9.7E-06	Developmental	7.0	---	0.42	7.4
			Chromium	1.7E-07	---	---	1.7E-07	---	---	---	---	---
			Chemical Total	1.1E-05	---	1.0E-06	1.2E-05		7.0	---	0.42	7.4
		Exposure Point Total					1.2E-05					7.4
		Air at EFSA	Benzo(a)pyrene	---	1.5E-08	---	1.5E-08	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.4E-07	---	1.4E-07	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0063	---	0.0063
			Chromium	---	1.5E-06	---	1.5E-06	---	---	---	---	---
			Chemical Total	---	1.6E-06	---	1.6E-06		---	0.0063	---	0.0063
		Exposure Point Total					1.6E-06					0.0063
	Aggregate Soil Total						1.4E-05					7.5
Soil Total							1.4E-05					7.5

Total Risk Across All Media: 1.4E-05

Total Hazard Across All Media: 7.5

TABLE A-10.3D-9
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 1
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 1 Sediment	Benzo(a)pyrene	5.8E-07	---	1.6E-06	2.1E-06	---	---	---	---	---
			Chemical Total	5.8E-07	---	1.6E-06	2.1E-06		---	---	---	---
		Exposure Point Total					2.1E-06					---
Sediment Total							2.1E-06					---

Total Risk Across All Media: 2.1E-06

Total Hazard Across All Media: ---

TABLE A-10.3D-10
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - AREA 1 SEDIMENT
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 1 Sediment	Benzo(a)anthracene	7.5E-07	---	2.7E-07	1.0E-06	---	---	---	---	---
			Benzo(a)pyrene	7.2E-06	---	2.6E-06	9.9E-06	---	---	---	---	---
			Benzo(b)fluoranthene	1.1E-06	---	4.0E-07	1.5E-06	---	---	---	---	---
			Chromium	3.5E-06	---	---	3.5E-06	None observed	---	---	---	---
			Chemical Total	1.3E-05	---	3.3E-06	1.6E-05		---	---	---	---
		Exposure Point Total					1.6E-05					---
Sediment Total							1.6E-05					---

Total Risk Across All Media: 1.6E-05

Total Hazard Across All Media: ---

TABLE A-10.3E-9
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 2 Sediment	Benzo(a)pyrene	3.2E-07	---	8.5E-07	1.2E-06	---	---	---	---	---
			Chemical Total	3.2E-07	---	8.5E-07	1.2E-06		---	---	---	---
		Exposure Point Total					1.2E-06					---
Sediment Total							1.2E-06					---

Total Risk Across All Media: 1.2E-06

Total Hazard Across All Media: ---

TABLE A-10.3E-10
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 2 Sediment	Benzo(a)pyrene	3.9E-06	---	1.4E-06	5.4E-06	---	---	---	---	---
			Chromium	2.5E-06	---	---	2.5E-06	---	---	---	---	---
			Chemical Total	6.4E-06	---	1.4E-06	7.8E-06		---	---	---	---
		Exposure Point Total					7.8E-06					---
Sediment Total							7.8E-06					---

Total Risk Across All Media: 7.8E-06

Total Hazard Across All Media: ---

TABLE A-10.3F-9
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 3 Sediment	Benzo(a)pyrene	6.2E-07	---	1.7E-06	2.3E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.1E-06	---	6.9E-07	1.8E-06	---	---	---	---	---
			Chemical Total	1.7E-06	---	2.4E-06	4.1E-06		---	---	---	---
		Exposure Point Total					4.1E-06					---
Sediment Total							4.1E-06					---

Total Risk Across All Media: 4.1E-06

Total Hazard Across All Media: ---

TABLE A-10.3F-10
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 3 Sediment	Benzo(a)pyrene	7.8E-06	---	2.8E-06	1.1E-05	---	---	---	---	---
			Benzo(b)fluoranthene	1.0E-06	---	3.7E-07	1.4E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	9.4E-07	---	3.4E-07	1.3E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.6E-06	---	2.2E-07	2.8E-06	---	---	---	---	---
			Chromium	2.0E-06	---	---	2.0E-06	---	---	---	---	---
			Chemical Total	1.4E-05	---	3.8E-06	1.8E-05		---	---	---	---
		Exposure Point Total					1.8E-05					---
Sediment Total							1.8E-05					---

Total Risk Across All Media: 1.8E-05

Total Hazard Across All Media: ---

TABLE A-10.4G-11
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish	Androscoggin River Reaches 3-9	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	4.4	---	---	4.4
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	44	---	---	44
			Total PCBs	---	---	---	---	Eyes, Immune system	70	---	---	70
			Mercury	---	---	---	---	Kidney	5.4	---	---	5.4
			Chemical Total	---	---	---	---		125	---	---	125
		Exposure Point Total					---					125
Fish Ingestion Total							---					125

Total Risk Across All Media: ---

Total Hazard Across All Media: 125

TABLE A-10.4G-12
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish	Androscoggin River Reaches 3-9	2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	8.3	---	---	8.3
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	84	---	---	84
			Total PCBs	---	---	---	---	Eyes, Immune system	133	---	---	133
			Arsenic	---	---	---	---	Skin	1.5	---	---	1.5
			Mercury	---	---	---	---	Kidney	10	---	---	10
			Chemical Total	---	---	---	---		238	---	---	238
		Exposure Point Total					---					238
Fish Ingestion Total							---					238

Total Risk Across All Media: ---

Total Hazard Across All Media: 238

TABLE A-10.4G-13
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CHLOR ALKALI SUPERFUND SITE - FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Age-adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish	Androscoggin River Reaches 3-9	Indeno(1,2,3-cd)pyrene	3.4E-06	---	---	3.4E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.0E-04	---	---	2.0E-04	---	---	---	---	---
			4,4'-DDT	1.6E-05	---	---	1.6E-05	---	---	---	---	---
			beta-BHC	1.6E-06	---	---	1.6E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	2.0E-03	---	---	2.0E-03	---	---	---	---	---
			Total PCBs	1.4E-03	---	---	1.4E-03	---	---	---	---	---
			Arsenic	1.8E-04	---	---	1.8E-04	---	---	---	---	---
			Chromium	1.6E-04	---	---	1.6E-04	---	---	---	---	---
			Chemical Total	4.0E-03	---	---	4.0E-03		---	---	---	---
		Exposure Point Total					4.0E-03					---
Fish Ingestion Total							4.0E-03					---

Total Risk Across All Media: 4.0E-03

Total Hazard Across All Media: ---

APPENDIX B

APPENDIX B

LISTS OF SAMPLE LOCATIONS

TABLE B-1
SAMPLE LIST - SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Area	Sample Location	Depth (ft)	Collection Date
Cell House Property	MW-24O1	0-0.5	8/5/2009
Cell House Property	MW-25O1	0-0.5	8/5/2009
Cell House Property	MW-29O1	0-0.5	8/11/2009
Cell House Property	MW-31O1	0-0.5	8/11/2009
Cell House Property	SB-01O1	0-0.5	8/12/2009
Cell House Property	SB-02O1	0-0.5	8/7/2009
Cell House Property	SB-03O1	0-0.5	8/13/2009
Cell House Property	SB-04O1	0-0.5	8/13/2009
Cell House Property	SB-05O1	0-0.5	8/12/2009
Cell House Property	SB-06O1	0-0.5	8/10/2009
SFSA	FSA-013	0-1	8/16/2010
SFSA	FSA-024	0-1	8/17/2010
SFSA	FSA-039	0-1	8/17/2010
SFSA	FSA-060	0-1	8/17/2010
SFSA	FSA-062	0-1	8/17/2010
SFSA	FSA-066	0-1	8/18/2010
SFSA	FSA-075	0-1	8/25/2010
SFSA	FSA-089	0-1	8/18/2010
SFSA	FSA-102	0-1	8/18/2010
SFSA	FSA-105	0-1	8/19/2010
SFSA	FSA-106	0-1	8/18/2010
SFSA	FSA-151	0-1	8/19/2010
SFSA	FSA-168	0-1	8/16/2010
SFSA	FSA-171	0-1	8/23/2010
SFSA	FSA-SS-03	0-1	9/15/2010
SFSA	FSA-SS-06	0-1	9/15/2010
SFSA	FSA-SS-32	0-1	9/15/2010
SFSA	MW-34O1	0-1	9/13/2010
SFSA	MW-35O1	0-1	9/17/2010
SFSA	MW-36O1	0-1	9/22/2010
SFSA	MW-37O1	0-1	9/22/2010
SFSA	SB-08O1	0-1	9/17/2010
SFSA	SB-09O1	0-1	9/27/2010
SFSA	SB-10O1	0-1	9/21/2010
SFSA	SB-11O1	0-1	9/21/2010
SFSA	SB-12O1	0-1	9/20/2010
SFSA	SB-13O1	0-1	9/22/2010
SFSA	SB-14O1	0-1	9/20/2010
SFSA	SB-15O1	0-1	9/21/2010
SFSA	SB-16O1	0-1	9/22/2010
SFSA	SB-17O1	0-1	9/17/2010
SFSA	SB-18O1	0-1	9/16/2010
SFSA	SB-19O1	0-1	9/21/2010
SFSA	SB-20O1	0-1	9/15/2010
SFSA	SB-21O1	0-1	9/20/2010
SFSA	SB-22O1	0-1	9/17/2010
SFSA	SB-24O1	0-1	9/13/2010
SFSA	SB-25O1	0-1	9/13/2010
SFSA	SB-26O1	0-1	9/14/2010
SFSA	SB-27O1	0-1	9/14/2010
SFSA	SB-28O1	0-1	9/15/2010
SFSA	SB-29O1	0-1	9/15/2010
SFSA	SB-30O1	0-1	9/14/2010
SFSA	SB-31O1	0-1	9/15/2010
SFSA	SB-40O1	0-1	9/21/2010

TABLE B-1
SAMPLE LIST - SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Area	Sample Location	Depth (ft)	Collection Date
EFSA	FSA-137	0-1	8/26/2010
EFSA	FSA-SS-17	0-1	9/15/2010
EFSA	FSA-SS-18	0-1	9/15/2010
EFSA	FSA-SS-22	0-1	9/15/2010
EFSA	FSA-SS-25	0-1	9/15/2010
EFSA	SB-23O1	0-1	9/16/2010
EFSA	SB-33O1	0-1	9/23/2010
EFSA	SB-34O1	0-1	9/16/2010
EFSA	SB-35O1	0-1	9/16/2010
EFSA	SB-36O1	0-1	9/16/2010
EFSA	SB-37O1	0-1	9/15/2010
EFSA	SB-38O1	0-1	9/16/2010
Background	HF01	0-0.5	10/6/2011
Background	HF02	0-0.5	10/6/2011
Background	HF03	0-0.5	10/6/2011
Background	HP01	0-0.5	10/6/2011
Background	HP02	0-0.5	10/6/2011
Background	HP03	0-0.5	10/6/2011

TABLE B-2
SAMPLE LIST - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Area	Sample Location	Depth (ft)	Collection Date
Cell House Property	MW-24O1	0-0.5	8/5/2009
		8-10	8/6/2009
Cell House Property	MW-25O1	0-0.5	8/5/2009
		1-2	8/10/2009
		4-6	8/10/2009
Cell House Property	MW-29O1	0-0.5	8/11/2009
		1-2	8/11/2009
		4-6	8/11/2009
Cell House Property	MW-31O1	0-0.5	8/11/2009
		1-2	8/11/2009
		6-8	8/12/2009
Cell House Property	SB-01O1	0-0.5	8/12/2009
		2-4	8/12/2009
		5-7	8/12/2009
Cell House Property	SB-02O1	0-0.5	8/7/2009
		6-8	8/7/2009
Cell House Property	SB-03O1	0-0.5	8/13/2009
		1-2	8/13/2009
Cell House Property	SB-04O1	0-0.5	8/13/2009
		1-2	8/13/2009
		4-6	8/13/2009
Cell House Property	SB-05O1	0-0.5	8/12/2009
		1-2	8/12/2009
		4-6	8/12/2009
Cell House Property	SB-06O1	0-0.5	8/10/2009
Cell House Property	TP-01O1	0-2	7/28/2009
		2-4	7/28/2009
Cell House Property	TP-02O1	0-2	7/29/2009
		2-4	7/29/2009
		4-6	7/29/2009
Cell House Property	TP-03O1	0-2	7/29/2009
Cell House Property	TP-04	3-4	11/15/2011
		6-7	11/15/2011
Cell House Property	TP-05	6-7	11/15/2011
		8-9	11/15/2011
Cell House Property	TP-06	9-9	11/15/2011
SFSA	FSA-006	3-4	8/16/2010
SFSA	FSA-009	3-4	8/16/2010
SFSA	FSA-013	0-1	8/16/2010
SFSA	FSA-015	3-4	8/17/2010
SFSA	FSA-018	1-2	8/17/2010
SFSA	FSA-024	0-1	8/17/2010
SFSA	FSA-027	3-4	8/17/2010
SFSA	FSA-033	3-4	8/17/2010
SFSA	FSA-039	0-1	8/17/2010
SFSA	FSA-053	1-2	8/17/2010
SFSA	FSA-060	0-1	8/17/2010
SFSA	FSA-062	0-1	8/17/2010
		1-2	8/17/2010
SFSA	FSA-066	0-1	8/18/2010
SFSA	FSA-075	0-1	8/25/2010
SFSA	FSA-087	3-4	8/19/2010
SFSA	FSA-089	0-1	8/18/2010
SFSA	FSA-097	1-2	8/18/2010
SFSA	FSA-098	3-4	8/19/2010
SFSA	FSA-102	0-1	8/18/2010
SFSA	FSA-105	0-1	8/19/2010
SFSA	FSA-106	0-1	8/18/2010
SFSA	FSA-125	3-4	8/16/2010
SFSA	FSA-150	1-2	8/19/2010
SFSA	FSA-151	0-1	8/19/2010
SFSA	FSA-157	3-4	8/20/2010
SFSA	FSA-168	0-1	8/16/2010
SFSA	FSA-171	0-1	8/23/2010
		1-2	8/23/2010
SFSA	FSA-172	3-4	8/18/2010
SFSA	FSA-SS-03	0-1	9/15/2010
SFSA	FSA-SS-06	0-1	9/15/2010
SFSA	FSA-SS-32	0-1	9/15/2010

TABLE B-2
SAMPLE LIST - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Area	Sample Location	Depth (ft)	Collection Date
SFSA	MW-34O1	0-1	9/13/2010
		6-8	9/13/2010
SFSA	MW-35O1	0-1	9/17/2010
		2-4	9/17/2010
SFSA	MW-36O1	0-1	9/22/2010
		2-4	9/22/2010
SFSA	MW-37O1	0-1	9/22/2010
		6-8	9/22/2010
SFSA	SB-08O1	0-1	9/17/2010
		2-4	9/17/2010
SFSA	SB-09O1	0-1	9/27/2010
		6-8	9/27/2010
SFSA	SB-10O1	0-1	9/21/2010
		2-4	9/21/2010
SFSA	SB-11O1	0-1	9/21/2010
		2-4	9/21/2010
SFSA	SB-12O1	0-1	9/20/2010
		6-8	9/20/2010
SFSA	SB-13O1	0-1	9/22/2010
		2-4	9/22/2010
SFSA	SB-14O1	0-1	9/20/2010
		2-4	9/20/2010
		4-6	9/20/2010
SFSA	SB-15O1	0-1	9/21/2010
SFSA	SB-16O1	0-1	9/22/2010
		4-6	9/22/2010
SFSA	SB-17O1	0-1	9/17/2010
		4-6	9/17/2010
SFSA	SB-18O1	0-1	9/16/2010
		8-10	9/16/2010
SFSA	SB-19O1	0-1	9/21/2010
		2-4	9/21/2010
SFSA	SB-20O1	0-1	9/15/2010
		2-4	9/15/2010
SFSA	SB-21O1	0-1	9/20/2010
		2-4	9/20/2010
SFSA	SB-22O1	0-1	9/17/2010
		1-2	9/17/2010
		2-4	9/17/2010
SFSA	SB-24O1	0-1	9/13/2010
		2-4	9/13/2010
SFSA	SB-25O1	0-1	9/13/2010
SFSA	SB-26O1	0-1	9/14/2010
		4-6	9/14/2010
SFSA	SB-27O1	0-1	9/14/2010
		2-4	9/14/2010
SFSA	SB-28O1	0-1	9/15/2010
		2-4	9/15/2010
SFSA	SB-29O1	0-1	9/15/2010
		2-4	9/15/2010
SFSA	SB-30O1	0-1	9/14/2010
		2-4	9/14/2010
SFSA	SB-31O1	0-1	9/15/2010
		2-4	9/15/2010
SFSA	SB-40O1	0-1	9/21/2010
		4-6	9/21/2010
EFSA	FSA-127	3-4	8/19/2010
EFSA	FSA-132	3-4	8/26/2010
EFSA	FSA-137	0-1	8/26/2010
EFSA	FSA-SS-17	0-1	9/15/2010
EFSA	FSA-SS-18	0-1	9/15/2010
EFSA	FSA-SS-22	0-1	9/15/2010
EFSA	FSA-SS-25	0-1	9/15/2010
EFSA	SB-23O1	0-1	9/16/2010
EFSA	SB-33O1	0-1	9/23/2010
		2-4	9/16/2010
EFSA	SB-34O1	0-1	9/16/2010
		2-4	9/16/2010

TABLE B-2
SAMPLE LIST - AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Area	Sample Location	Depth (ft)	Collection Date
EFSA	SB-35O1	0-1	9/16/2010
		4-6	9/16/2010
EFSA	SB-36O1	0-1	9/16/2010
		4-6	9/16/2010
EFSA	SB-37O1	0-1	9/15/2010
		2-4	9/15/2010
EFSA	SB-38O1	0-1	9/16/2010
		2-4	9/16/2010
Background	HF01	0-0.5	10/6/2011
		0.5-3	10/6/2011
Background	HF02	0-0.5	10/6/2011
		0.5-2	10/6/2011
Background	HF03	0-0.5	10/6/2011
Background	HP01	0-0.5	10/6/2011
		0.5-3	10/6/2011
Background	HP02	0-0.5	10/6/2011
		0.5-2.5	10/6/2011
Background	HP03	0-0.5	10/6/2011
		0.5-2.5	10/6/2011

TABLE B-3
SAMPLE LIST - SEDIMENT
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Risk Area	Reach	Sample ID	Collection Date
Area 1	AR3	BH01-SD-20060918	9/18/2006
Area 1	AR3	BH02-SD-20060918	9/18/2006
Area 1	AR4	AR4-00-SDCH0001-0-091008	10/8/2009
Area 1	AR4	AR4-00-SDCH0002-0-091008	10/8/2009
Area 1	AR4	AR4-1 FD1	8/27/2010
Area 1	AR4	AR4-1 FD2	8/27/2010
Area 1	AR4	AR4-1 FD3	8/27/2010
Area 1	AR4	AR4-1 N	8/27/2010
Area 1	AR4	AR4-2 FD1	8/27/2010
Area 1	AR4	AR4-2 FD2	8/27/2010
Area 1	AR4	AR4-2 FD3	8/27/2010
Area 1	AR4	AR4-2 N	8/27/2010
Area 1	AR4	SH1-0-SD-20060918	9/18/2006
Area 1	AR4	SH2-0-SD-20060918	9/18/2006
Area 1	AR5	AR5-1 FD1	8/27/2010
Area 1	AR5	AR5-1 FD2	8/27/2010
Area 1	AR5	AR5-1 FD3	8/27/2010
Area 1	AR5	AR5-1 N	8/27/2010
Area 1	AR5	AR5-2 FD1	8/27/2010
Area 1	AR5	AR5-2 FD2	8/27/2010
Area 1	AR5	AR5-2 FD3	8/27/2010
Area 1	AR5	AR5-2 N	8/27/2010
Area 2	AR6	AR6-00-SDCH0001-0-090918	9/18/2009
Area 2	AR6	AR6-2 FD1	8/26/2010
Area 2	AR6	AR6-2 FD2	8/26/2010
Area 2	AR6	AR6-2 FD3	8/26/2010
Area 2	AR6	AR6-2 N	8/26/2010
Area 2	AR6	AR6-3 FD1	8/26/2010
Area 2	AR6	AR6-3 FD2	8/26/2010
Area 2	AR6	AR6-3 FD3	8/26/2010
Area 2	AR6	AR6-3 N	8/26/2010
Area 2	AR6	DUP01-SD-20060919	9/19/2006
Area 2	AR6	MD01-SD-20060919	9/19/2006
Area 2	AR7	AR7-1 FD1	8/26/2010
Area 2	AR7	AR7-1 FD2	8/26/2010
Area 2	AR7	AR7-1 FD3	8/26/2010
Area 2	AR7	AR7-1 N	8/26/2010
Area 2	AR7	AR7-2 FD1	8/26/2010
Area 2	AR7	AR7-2 FD2	8/26/2010
Area 2	AR7	AR7-2 FD3	8/26/2010
Area 2	AR7	AR7-2 N	8/26/2010
Area 2	AR7	RHD01-SD-20060919	9/19/2006
Area 2	AR8	AR8-00-SDCH0001-0-090918	9/18/2009
Area 2	AR8	AR8-00-SDCH0002-0-090918	9/18/2009
Area 2	AR8	AR8-00-SDCH0003-0-090918	9/18/2009
Area 2	AR8	AR8-4 FD1	8/24/2010
Area 2	AR8	AR8-4 FD2	8/24/2010
Area 2	AR8	AR8-4 FD3	8/24/2010
Area 2	AR8	AR8-4 N	8/24/2010
Area 2	AR8	AR8-5 FD1	8/24/2010
Area 2	AR8	AR8-5 FD2	8/24/2010
Area 2	AR8	AR8-5 FD3	8/24/2010
Area 2	AR8	AR8-5 N	8/24/2010
Area 2	AR8	DPWD01-SD-20060919	9/19/2006
Area 2	AR8	DPWD02-SD-20060919	9/19/2006
Area 3	AR9	AR9-00-SDCH0001-0-090917	9/17/2009
Area 3	AR9	AR9-00-SDCH0002-0-090917	9/17/2009
Area 3	AR9	AR9-00-SDCH0002-1-090917	9/17/2009
Area 3	AR9	AR9-00-SDCH0003-0-090917	9/17/2009

TABLE B-3
SAMPLE LIST - SEDIMENT
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Risk Area	Reach	Sample ID	Collection Date
Area 3	AR9	AR9-00-SDCH0004-0-090917	9/17/2009
Area 3	AR9	AR9-5 FD1	8/24/2010
Area 3	AR9	AR9-5 FD2	8/24/2010
Area 3	AR9	AR9-5 FD3	8/24/2010
Area 3	AR9	AR9-5 N	8/24/2010
Area 3	AR9	AR9-6 FD1	8/25/2010
Area 3	AR9	AR9-6 FD2	8/25/2010
Area 3	AR9	AR9-6 FD3	8/25/2010
Area 3	AR9	AR9-6 N	8/25/2010
Area 3	AR9	AR9-7 FD1	8/25/2010
Area 3	AR9	AR9-7 FD2	8/25/2010
Area 3	AR9	AR9-7 FD3	8/25/2010
Area 3	AR9	AR9-7 N	8/25/2010
Background	AR2	AR2-4 FD1	8/23/2010
Background	AR2	AR2-4 FD2	8/23/2010
Background	AR2	AR2-4 FD3	8/23/2010
Background	AR2	AR2-4 N	8/23/2010
Background	AR2	AR2-5 FD1	8/23/2010
Background	AR2	AR2-5 FD2	8/23/2010
Background	AR2	AR2-5 FD3	8/23/2010
Background	AR2	AR2-5 N	8/23/2010
Background	AR2	AR2-WB-SDCH0001-0-090916	9/16/2009
Background	AR2	AR2-WB-SDCH0002-0-090916	9/16/2009
Background	AR2	AR2-WB-SDCH0003-0-090916	9/16/2009
Background	AR2	BG01-SD-20060919	9/19/2006
Background	AR2	BG02-SD-20060919	9/19/2006
Background	AR2	BG03-SD-20060919	9/19/2006
Background	AR2	DUP02-SD-20060919	9/19/2006

TABLE B-4
SAMPLE LIST - SURFACE WATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Risk Area	Reach	Sample ID	Collection Date
Area 1	AR3	AR3-00-SWCHFI01-0-090915	9/15/2009
Area 1	AR3	AR3-00-SWCHUF01-0-090915	9/15/2009
Area 1	AR4	AR4-00-SWCHFI01-0-090915	9/15/2009
Area 1	AR4	AR4-00-SWCHUF01-0-090915	9/15/2009
Area 2	AR8	AR8-00-SWCHFI01-0-090914	9/14/2009
Area 2	AR8	AR8-00-SWCHUF01-0-090914	9/14/2009
Area 3	AR9	AR9-00-SWCHFI01-0-090914	9/14/2009
Area 3	AR9	AR9-00-SWCHFI01-1-090914	9/14/2009
Area 3	AR9	AR9-00-SWCHUF01-0-090914	9/14/2009
Area 3	AR9	AR9-00-SWCHUF01-1-090914	9/14/2009
Background	AR2	AR2-WB-SWCHFI01-0-090914	9/14/2009
Background	AR2	AR2-WB-SWCHUF01-0-090914	9/14/2009

TABLE B-5
SAMPLE LIST - SHALLOW GROUNDWATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Area	Sample Location	Aquifer	Collection Date
A	MW-10B	Overburden	6/23/2011
			10/6/2009
A	MW-11A	Overburden	11/17/2009
			10/6/2009
			10/5/2009
A	MW-13A	Overburden	6/24/2011
			11/18/2010
			10/8/2009
A	MW-15	Bedrock	10/7/2009
A	MW-16A	Overburden	6/22/2011
			10/5/2009
A	MW-17	Overburden	6/28/2011
			10/8/2009
A	MW-2	Overburden	6/24/2011
			11/17/2010
			10/8/2009
A	MW-20A	Overburden	11/16/2010
			10/7/2009
A	MW-21	Bedrock	6/27/2011
			10/7/2009
A	MW-22	Overburden	6/22/2011
			10/7/2009
A	MW-23A	Overburden	6/23/2011
			10/7/2009
A	MW-24O1	Overburden	6/22/2011
			11/18/2010
			10/9/2009
A	MW-26B1	Bedrock	11/17/2010
			11/18/2010
			10/9/2009
			10/12/2009
A	MW-28B1	Bedrock	6/27/2011
			6/28/2011
			11/22/2010
			11/23/2010
A	MW-31O1	Overburden	11/16/2010
			10/13/2009
A	MW-39O1	Overburden	6/28/2011
			11/16/2010
A	MW-40O1	Overburden	6/28/2011
			11/16/2010
A	MW-6	Overburden	11/16/2010
			10/6/2009
B	MW-1	Overburden	6/21/2011
			11/16/2010
			10/9/2009
B	MW-12	Overburden	6/21/2011
			10/5/2009
B	MW-18A	Overburden	6/22/2011
			10/8/2009
B	MW-34O1	Overburden	6/21/2011
			11/16/2010
B	MW-35O1	Overburden	6/20/2011
			11/15/2010
B	MW-36O1	Overburden	6/20/2011
			11/18/2010
B	MW-37O1	Overburden	6/20/2011
			11/15/2010
C	MW-32B1	Bedrock	6/20/2011
			6/21/2011
			11/19/2010
			11/23/2010
C	MW-33B1	Bedrock	6/21/2011
			6/22/2011
			11/18/2010
			11/19/2010

Groundwater exposure areas: A=Cell House Property (CHP); B=SFSA; and C=EFSA.

TABLE B-6
SAMPLE LIST - GROUNDWATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Area	Sample Location	Aquifer	Collection Date
A	MW-10B	Overburden	6/23/2011
			10/6/2009
A	MW-11A	Overburden	11/17/2009
			10/6/2009
			10/5/2009
A	MW-11B	Bedrock	11/16/2010
			10/6/2009
A	MW-13A	Overburden	6/24/2011
			11/18/2010
			10/8/2009
A	MW-13B	Bedrock	6/27/2011
			11/17/2010
			10/18/2009
A	MW-14R	Bedrock	6/22/2011
A	MW-15	Bedrock	10/7/2009
A	MW-16A	Overburden	6/22/2011
			10/5/2009
A	MW-16B	Bedrock	6/22/2011
			10/6/2009
A	MW-17	Overburden	6/28/2011
			10/8/2009
A	MW-19	Bedrock	6/22/2011
			10/6/2011
A	MW-2	Overburden	6/24/2011
			11/17/2010
			10/8/2009
A	MW-20A	Overburden	11/16/2010
			10/7/2009
A	MW-20B	Bedrock	11/15/2010
			10/7/2009
A	MW-21	Bedrock	6/27/2011
			10/7/2009
A	MW-22	Overburden	6/22/2011
			10/7/2009
A	MW-23A	Overburden	6/23/2011
			10/7/2009
A	MW-23B	Bedrock	6/23/2011
			10/7/2009
A	MW-24O1	Overburden	6/22/2011
			11/18/2010
			10/9/2009
A	MW-24OB	Bedrock	6/22/2011
			11/18/2010
			10/13/2009
A	MW-24B1	Bedrock	6/22/2011
			6/23/2011
			11/18/2010
			10/6/2009
			10/7/2009
A	MW-24B2	Bedrock	11/7/2010
			10/7/2009
			10/8/2009
A	MW-25B1	Bedrock	6/23/2011
			6/27/2011
			11/17/2010
			11/18/2010
			10/12/2009
			10/13/2009
A	MW-26B1	Bedrock	11/17/2010
			11/18/2010
			10/9/2009
			10/12/2009

TABLE B-6
SAMPLE LIST - GROUNDWATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Area	Sample Location	Aquifer	Collection Date
A	MW-26B2	Bedrock	6/27/2011
			6/28/2011
			11/18/2010
			11/19/2010
			11/22/2010
A	MW-27B1	Bedrock	11/17/2010
A	MW-28B1	Bedrock	6/27/2011
			6/28/2011
			11/22/2010
			11/23/2010
A	MW-31O1	Overburden	11/16/2010
			10/13/2009
A	MW-39O1	Overburden	6/28/2011
			11/16/2010
A	MW-40O1	Overburden	6/28/2011
			11/16/2010
A	MW-40B1	Bedrock	6/23/2011
			6/24/2011
			11/22/2010
			11/23/2010
A	MW-6	Overburden	11/16/2010
			10/6/2009
A	MW-7	Bedrock	6/23/2011
			11/16/2010
			10/8/2009
A	MW-8	Bedrock	11/18/2010
			10/7/2009
A	MW-9	Bedrock	6/23/2011
			10/6/2009
B	MW-1	Overburden	6/21/2011
			11/16/2010
			10/9/2009
B	MW-12	Overburden	6/21/2011
			10/5/2009
B	MW-18A	Overburden	6/22/2011
			10/8/2009
B	MW-18B	Bedrock	6/22/2011
			10/9/2009
B	MW-34O1	Overburden	6/21/2011
			11/16/2010
B	MW-34B1	Bedrock	6/21/2011
			11/19/2010
			11/22/2010
B	MW-35O1	Overburden	6/20/2011
			11/15/2010
B	MW-35B1	Bedrock	6/21/2011
			11/18/2010
B	MW-36O1	Overburden	6/20/2011
			11/18/2010
B	MW-37O1	Overburden	6/20/2011
			11/15/2010
B	MW-38B1	Bedrock	6/20/2011
			6/21/2011
			11/19/2010
			11/22/2010
			11/23/2010
C	MW-32B1	Bedrock	6/20/2011
			6/21/2011
			11/19/2010
			11/23/2010
C	MW-33B1	Bedrock	6/21/2011
			6/22/2011
			11/18/2010
			11/19/2010

Groundwater exposure areas: A=Cell House Property (CHP); B=SFSA; and

TABLE B-7
SAMPLE LIST - FISH TISSUE
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Risk Area	Reach	Sample ID	Collection Date
Area 1	AR3	AR3-00-FFSBSO02-0-090827	8/27/2009
Area 1	AR3	AR3-00-FFSBSO03-0-090827	8/27/2009
Area 1	AR3	AR3-00-FFSBSR02-0-090827	8/27/2009
Area 1	AR3	AR3-00-FFSBSR03-0-090827	8/27/2009
Area 1	AR3	AR3-00-FFSBSR04-0-090827	8/27/2009
Area 1	AR3	AR3-00-FFSBSR05-0-090827	8/27/2009
Area 1	AR4	AR4-00-FFSBSO01-0-090826	8/26/2009
Area 1	AR4	AR4-00-FFSBSR01-0-090826	8/26/2009
Area 1	AR5	AR5-0-FFSMBSR01	8/9/2011
Area 1	AR5	AR5-0-FFSMBSR02	8/9/2011
Area 1	AR5	AR5-0-FFSMBSR03	8/9/2011
Area 1	AR5	AR5-0-FFSMBSR04	8/9/2011
Area 1	AR5	AR5-0-FFSMBSR05	8/9/2011
Area 2	AR6	AR6-0-FFSMBSR01	8/11/2011
Area 2	AR6	AR6-0-FFSMBSR02	8/11/2011
Area 2	AR6	AR6-0-FFSMBSR03	8/11/2011
Area 2	AR6	AR6-0-FFSMBSR04	8/11/2011
Area 2	AR6	AR6-0-FFSMBSR05	8/11/2011
Area 2	AR6	AR7-00-FFSBSO01-0-090827	8/27/2009
Area 2	AR6	AR7-00-FFSBSO02-0-090827	8/27/2009
Area 2	AR6	AR7-00-FFSBSO03-0-090827	8/27/2009
Area 2	AR6	AR7-00-FFSBSO04-0-090827	8/27/2009
Area 2	AR6	AR7-00-FFSBSO05-0-090828	8/28/2009
Area 2	AR6	AR7-00-FFSBSR01-0-090827	8/27/2009
Area 2	AR6	AR7-00-FFSBSR02-0-090827	8/27/2009
Area 2	AR6	AR7-00-FFSBSR03-0-090827	8/27/2009
Area 2	AR6	AR7-00-FFSBSR04-0-090827	8/27/2009
Area 2	AR6	AR7-00-FFSBSR05-0-090828	8/28/2009
Area 2	AR7	AR7-0-FFSMBSR01	8/10/2011
Area 2	AR7	AR7-0-FFSMBSR02	8/10/2011
Area 2	AR7	AR7-0-FFSMBSR03	8/10/2011
Area 2	AR7	AR7-0-FFSMBSR04	8/10/2011
Area 2	AR7	AR7-0-FFSMBSR05	8/10/2011
Area 2	AR8	AR8-00-FFSBSO01-0-090826	8/26/2009
Area 2	AR8	AR8-00-FFSBSO02-0-090826	8/26/2009
Area 2	AR8	AR8-00-FFSBSO03-0-090826	8/26/2009
Area 2	AR8	AR8-00-FFSBSO04-0-090826	8/26/2009
Area 2	AR8	AR8-00-FFSBSO05-0-090826	8/26/2009
Area 2	AR8	AR8-00-FFSBSR01-0-090826	8/26/2009
Area 2	AR8	AR8-00-FFSBSR02-0-090826	8/26/2009
Area 2	AR8	AR8-00-FFSBSR03-0-090826	8/26/2009
Area 2	AR8	AR8-00-FFSBSR04-0-090826	8/26/2009
Area 2	AR8	AR8-00-FFSBSR05-0-090826	8/26/2009
Area 3	AR9	AR9-00-FFSBSO01-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSO02-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSO03-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSO04-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSO04-1-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSO06-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSO07-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSO08-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSR01-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSR02-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSR03-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSR05-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSR05-1-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSR06-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSR07-0-090825	8/25/2009
Area 3	AR9	AR9-00-FFSBSR08-0-090825	8/25/2009

TABLE B-7
SAMPLE LIST - FISH TISSUE
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Risk Area	Reach	Sample ID	Collection Date
Background	AR2	AR2-WB-FFSBSO04-0-090824	8/24/2009
Background	AR2	AR2-WB-FFSBSO05-0-090824	8/24/2009
Background	AR2	AR2-WB-FFSBSO06-0-090824	8/24/2009
Background	AR2	AR2-WB-FFSBSR01-0-090824	8/24/2009
Background	AR2	AR2-WB-FFSBSR02-0-090824	8/24/2009
Background	AR2	AR2-WB-FFSBSR04-0-090824	8/24/2009
Background	AR2	AR2-WB-FFSBSR05-0-090824	8/24/2009
Background	AR2	AR2-WB-FFSBSR06-0-090824	8/24/2009
Background	AR2	AR2-WB-FFSMBSR01	8/8/2011
Background	AR2	AR2-WB-FFSMBSR02	8/8/2011
Background	AR2	AR2-WB-FFSMBSR03	8/8/2011
Background	AR2	AR2-WB-FFSMBSR04	8/8/2011
Background	AR2	AR2-WB-FFSMBSR05	8/8/2011

APPENDIX C

APPENDIX C

DIOXIN TOXICITY EQUIVALENCY FACTORS (TEFS) AND DIOXIN-LIKE PCB TEFs

TABLE C-1
DIOXIN AND FURAN TOXICITY EQUIVALENCY FACTORS[a]
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Compound	TEF
Dioxins	
Mono-, Di-, and Trichlorodibenzo-p-dioxins	0
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1
Other TCDDs	0
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDDs)	1
Other PeCDDs	0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxins (HxCDDs)	0.1
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxins (HxCDDs)	0.1
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxins (HxCDDs)	0.1
Other HxCDDs	0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0.01
Other HpCDDs	0
Octachlorodibenzo-p-dioxin (OCDD)	0.0003
Furans	
Mono-, Di-, and Trichlorodibenzo-p-furans	0
2,3,7,8-Tetrachlorodibenzo-p-furan (TCDF)	0.1
Other TCDFs	0
1,2,3,7,8-Pentachlorodibenzo-p-furan (PeCDF)	0.03
2,3,4,7,8-Pentachlorodibenzo-p-furans (PeCDF)	0.3
Other PeCDFs	0
1,2,3,4,7,8-Hexachlorodibenzo-p-furans (HxCDFs)	0.1
1,2,3,6,7,8-Hexachlorodibenzo-p-furans (HxCDFs)	0.1
1,2,3,7,8,9-Hexachlorodibenzo-p-furans (HxCDFs)	0.1
2,3,4,6,7,8-Hexachlorodibenzo-p-furans (HxCDFs)	0.1
Other HxCDFs	0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furans (HpCDFs)	0.01
1,2,3,4,7,8,9-Heptachlorodibenzo-p-furans (HpCDFs)	0.01
Other HpCDFs	0
Octachlorodibenzo-p-furan (OCDF)	0.0003

[a] **The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds.**
Martin van den Berg, Linda S. Birnbaum, Michael Denison, Mike De Vito, William Farland, Mark Feeley, Heidelore Fiedler, Helen Hakansson, Annika Hanberg, Laurie Haws, Martin Rose, Stephen Safe, Dieter Schrenk, Chiharu Tohyama, Angelika Tritscher, Jouko Tuomisto, Mats Tysklind, Nigel Walker, and Richard E. Peterson.

Toxicological Sciences Advance Access published **7 July 2006**.
http://www.who.int/ipcs/assessment/tef_update/en/

TABLE C-2
PCB DIOXIN-LIKE CONGENER TOXICITY EQUIVALENT FACTORS[a]
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

PCB Congeners	TEF
PCB-77	0.0001
PCB-81	0.0003
PCB-126	0.1
PCB-169	0.03
PCB-105	0.00003
PCB-114	0.00003
PCB-118	0.00003
PCB-123	0.00003
PCB-156	0.00003
PCB-157	0.00003
PCB-167	0.00003
PCB-189	0.00003

[a] **The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds.**
Martin van den Berg, Linda S. Birnbaum, Michael Denison, Mike De Vito, William Farland, Mark Feeley, Heidelore Fiedler, Helen Hakansson, Annika Hanberg, Laurie Haws, Martin Rose, Stephen Safe, Dieter Schrenk, Chiharu Tohyama, Angelika Tritscher, Jouko Tuomisto, Mats Tysklind, Nigel Walker, and Richard E. Peterson.

Toxicological Sciences Advance Access published **7 July 2006**.
http://www.who.int/ipcs/assessment/tef_update/en/

APPENDIX D

APPENDIX D

BACKGROUND SAMPLE SUMMARY

TABLE D-1
SURFACE SOIL BACKGROUND DATA
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Point	CAS Number	Contaminant	Units	Minimum Concentration	Maximum Concentration	Detection Frequency	Average Concentration
Surface Soil	120821	1,2,4-Trichlorobenzene	mg/kg	0.011	0.011	1/5	0.0083
	67641	Acetone	mg/kg	0.019	0.040	3/6	0.022
	100527	Benzaldehyde	mg/kg	0.043	0.25	2/6	0.24
	74839	Bromomethane	mg/kg	0.0036	0.0036	1/6	0.0075
	74873	Chloromethane	mg/kg	0.0036	0.0036	1/6	0.0075
	75092	Methylene chloride	mg/kg	0.0019	0.0019	1/6	0.0073
	79016	Trichloroethene	mg/kg	0.0016	0.0016	1/6	0.0072
	117817	Bis(2-ethylhexyl)phthalate	mg/kg	0.027	0.056	5/6	0.094
	84742	Di-n-butyl phthalate	mg/kg	0.037	0.053	4/6	0.12
	108952	Phenol	mg/kg	0.26	0.26	1/6	0.27
	208968	Acenaphthylene	mg/kg	0.049	0.061	1/6	0.23
	120127	Anthracene	mg/kg	0.051	0.093	1/6	0.24
	56553	Benzo(a)anthracene	mg/kg	0.11	0.90	6/6	0.33
	50328	Benzo(a)pyrene	mg/kg	0.093	0.70	6/6	0.27
	205992	Benzo(b)fluoranthene	mg/kg	0.091	0.83	6/6	0.32
	191242	Benzo(g,h,i)perylene	mg/kg	0.064	0.50	6/6	0.19
	207089	Benzo(k)fluoranthene	mg/kg	0.098	0.61	6/6	0.23
	86748	Carbazole	mg/kg	0.066	0.081	1/6	0.23
	218019	Chrysene	mg/kg	0.14	0.86	6/6	0.35
	53703	Dibenz(a,h)anthracene	mg/kg	0.074	0.15	3/6	0.17
	206440	Fluoranthene	mg/kg	0.20	1.8	6/6	0.62
	193395	Indeno(1,2,3-cd)pyrene	mg/kg	0.092	0.81	6/6	0.30
	85018	Phenanthrene	mg/kg	0.079	0.62	6/6	0.25
	129000	Pyrene	mg/kg	0.20	1.6	6/6	0.55
	---	2,3,7,8-TCDD TEQ	mg/kg	0.00000084	0.0000020	6/6	0.0000014
	5103742	gamma-Chlordane	mg/kg	0.0024	0.0036	3/6	0.0025
	---	Total PCB Homologues	mg/kg	0.0052	0.017	6/6	0.0098
	---	PCB Dioxin-like Congener TEQ	mg/kg	0.00000032	0.00000082	6/6	0.00000057
	7429905	Aluminum	mg/kg	4220	16300	6/6	8450
	7440382	Arsenic	mg/kg	1.3	4.9	6/6	3.3
	7440393	Barium	mg/kg	24	42	6/6	32
	7440417	Beryllium	mg/kg	0.20	0.68	5/6	0.43
	7440439	Cadmium	mg/kg	0.49	0.49	1/6	0.68
	7440702	Calcium	mg/kg	272	1830	6/6	872
	7440473	Chromium	mg/kg	7.2	18	6/6	12
	7440484	Cobalt	mg/kg	2.5	3.6	5/6	3.6
	7440508	Copper	mg/kg	9.0	23	6/6	13
	7439896	Iron	mg/kg	5210	19900	6/6	11377
	7439921	Lead	mg/kg	20	82	6/6	36
	7439954	Magnesium	mg/kg	457	1380	6/6	923
	7439965	Manganese	mg/kg	48	144	6/6	106
	7439976	Mercury	mg/kg	0.068	0.37	6/6	0.16
	7440020	Nickel	mg/kg	4.5	11	6/6	6.6
	7440097	Potassium	mg/kg	279	741	6/6	388
	7440622	Vanadium	mg/kg	20	53	6/6	35
	7440666	Zinc	mg/kg	23	51	6/6	34

TABLE D-2
AGGREGATE SOIL BACKGROUND DATA
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Point	CAS Number	Contaminant	Units	Minimum Concentration	Maximum Concentration	Detection Frequency	Average Concentration
Aggregate Soil	120821	1,2,4-Trichlorobenzene	mg/kg	0.011	0.011	1/10	0.0075
	67641	Acetone	mg/kg	0.0070	0.099	5/11	0.026
	100527	Benzaldehyde	mg/kg	0.043	0.25	2/11	0.22
	74839	Bromomethane	mg/kg	0.0018	0.0036	3/11	0.0064
	74873	Chloromethane	mg/kg	0.0018	0.0046	3/11	0.0065
	79209	Methyl Acetate	mg/kg	0.0067	0.0067	1/11	0.0076
	75092	Methylene chloride	mg/kg	0.0019	0.0055	3/11	0.0066
	79016	Trichloroethene	mg/kg	0.0016	0.0016	1/11	0.0070
	117817	Bis(2-ethylhexyl)phthalate	mg/kg	0.027	0.056	5/11	0.15
	84742	Di-n-butyl phthalate	mg/kg	0.025	0.053	8/11	0.096
	108952	Phenol	mg/kg	0.26	0.26	1/11	0.24
	208968	Acenaphthylene	mg/kg	0.049	0.061	1/11	0.22
	120127	Anthracene	mg/kg	0.051	0.093	1/11	0.22
	56553	Benzo(a)anthracene	mg/kg	0.027	0.90	8/11	0.24
	50328	Benzo(a)pyrene	mg/kg	0.093	0.70	6/11	0.24
	205992	Benzo(b)fluoranthene	mg/kg	0.091	0.83	6/11	0.27
	191242	Benzo(g,h,i)perylene	mg/kg	0.064	0.50	6/11	0.20
	207089	Benzo(k)fluoranthene	mg/kg	0.098	0.61	6/11	0.22
	86748	Carbazole	mg/kg	0.066	0.081	1/11	0.22
	218019	Chrysene	mg/kg	0.028	0.86	8/11	0.25
	53703	Dibenz(a,h)anthracene	mg/kg	0.074	0.15	3/11	0.19
	206440	Fluoranthene	mg/kg	0.039	1.8	9/11	0.39
	193395	Indeno(1,2,3-cd)pyrene	mg/kg	0.092	0.81	6/11	0.26
	85018	Phenanthrene	mg/kg	0.047	0.62	7/11	0.22
	129000	Pyrene	mg/kg	0.043	1.6	8/11	0.37
	---	2,3,7,8-TCDD TEQ	mg/kg	0.00000019	0.0000020	11/11	0.00000094
	5103742	gamma-Chlordane	mg/kg	0.0024	0.0036	3/11	0.0023
	76448	Heptachlor	mg/kg	0.0021	0.0058	5/11	0.0031
	---	Total PCB Homologues	mg/kg	0.00014	0.017	11/11	0.0057
	---	PCB Dioxin-like Congener TEQ	mg/kg	0.00000013	0.00000082	11/11	0.00000042
	7429905	Aluminum	mg/kg	4220	23900	11/11	9906
	7440382	Arsenic	mg/kg	0.96	4.9	11/11	2.6
	7440393	Barium	mg/kg	24	42	11/11	30
	7440417	Beryllium	mg/kg	0.20	0.68	10/11	0.40
	7440439	Cadmium	mg/kg	0.49	0.49	1/11	0.65
	7440702	Calcium	mg/kg	220	1830	11/11	794
	7440473	Chromium	mg/kg	7.2	18	11/11	12
	7440484	Cobalt	mg/kg	2.4	5.9	10/11	3.8
	7440508	Copper	mg/kg	3.8	23	11/11	10
	7439896	Iron	mg/kg	5210	19900	11/11	12742
	7439921	Lead	mg/kg	8.6	82	11/11	25
	7439954	Magnesium	mg/kg	457	2470	11/11	1155
	7439965	Manganese	mg/kg	48	295	11/11	126
	7439976	Mercury	mg/kg	0.026	0.37	9/11	0.13
	7440020	Nickel	mg/kg	4.5	11	11/11	6.2
	7440097	Potassium	mg/kg	279	1540	9/11	585
	7440622	Vanadium	mg/kg	20	53	11/11	31
	7440666	Zinc	mg/kg	23	51	11/11	34

TABLE D-3
SEDIMENT BACKGROUND DATA
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Point	CAS Number	Contaminant	Units	Minimum Concentration	Maximum Concentration	Detection Frequency	Average Concentration
Sediment	98862	Acetophenone	mg/kg	0.060	0.10	3/6	0.43
	100527	Benzaldehyde	mg/kg	0.016	0.028	3/3	0.024
	100527	Benzaldehyde	mg/kg	0.016	0.028	3/3	0.024
	117817	Bis(2-ethylhexyl)phthalate	mg/kg	0.0082	0.013	3/6	0.39
	84662	Diethylphthalate	mg/kg	0.0016	0.0016	1/6	0.39
	84742	Di-n-butyl phthalate	mg/kg	0.0095	0.0095	1/6	0.39
	208968	Acenaphthylene	mg/kg	0.0050	0.0061	3/6	0.39
	120127	Anthracene	mg/kg	0.0032	0.0042	3/6	0.39
	56553	Benzo(a)anthracene	mg/kg	0.011	0.013	3/6	0.39
	50328	Benzo(a)pyrene	mg/kg	0.012	0.015	3/6	0.39
	205992	Benzo(b)fluoranthene	mg/kg	0.018	0.020	3/6	0.39
	205992	Benzo(b)fluoranthene	mg/kg	0.018	0.020	3/6	0.39
	191242	Benzo(g,h,i)perylene	mg/kg	0.011	0.013	3/6	0.39
	207089	Benzo(k)fluoranthene	mg/kg	0.0067	0.0077	3/6	0.39
	86748	Carbazole	mg/kg	0.0014	0.0022	3/6	0.39
	218019	Chrysene	mg/kg	0.017	0.020	3/6	0.39
	206440	Fluoranthene	mg/kg	0.025	0.026	3/6	0.40
	86737	Fluorene	mg/kg	0.0014	0.0014	1/6	0.39
	193395	Indeno(1,2,3-cd)pyrene	mg/kg	0.012	0.015	3/6	0.39
	85018	Phenanthrene	mg/kg	0.013	0.013	3/6	0.39
	85018	Phenanthrene	mg/kg	0.013	0.013	3/6	0.39
	85018	Phenanthrene	mg/kg	0.013	0.013	3/6	0.39
	129000	Pyrene	mg/kg	0.028	0.030	3/6	0.40
	---	2,3,7,8-TCDD TEQ	mg/kg	0.0000010	0.0000012	3/3	0.0000011
	---	Total PCB homologues	mg/kg	0.00012	0.0013	3/3	0.00052
	---	PCB Dioxin-like Congener TEQ	mg/kg	0.0000000020	0.0000000020	1/3	0.0000000016
	7429905	Aluminum	mg/kg	3700	5800	3/3	4500
	7440382	Arsenic	mg/kg	2.1	2.5	3/6	11
	7440393	Barium	mg/kg	13	19	3/3	16
	7440417	Beryllium	mg/kg	0.27	0.37	3/6	0.64
	7440439	Cadmium	mg/kg	0.59	0.77	3/6	1.8
	7440702	Calcium	mg/kg	820	1100	3/3	973
	7440473	Chromium	mg/kg	6.4	15	6/6	11
	7440484	Cobalt	mg/kg	3.8	5.5	3/3	4.6
	7440508	Copper	mg/kg	3.6	12	6/6	7.0
	7439896	Iron	mg/kg	6900	12000	3/3	9100
	7439921	Lead	mg/kg	7.1	9.4	3/6	14
	7439954	Magnesium	mg/kg	1900	3400	3/3	2500
	7439965	Manganese	mg/kg	210	420	3/3	293
	7439976	Mercury	mg/kg	0.011	0.038	8/14	0.041
	---	Mercury, divalent	mg/kg	0.00017	0.00033	2/3	0.00032
	22967926	Methylmercury	mg/kg	0.00010	0.00047	4/5	0.00038
	7440020	Nickel	mg/kg	11	15	3/6	12
	7440097	Potassium	mg/kg	520	800	3/3	650
	7782492	Selenium	mg/kg	0.63	0.75	3/6	5.2
	7440246	Strontium	mg/kg	4.6	6.7	3/3	5.5
	7440622	Vanadium	mg/kg	12	27	6/6	16
	7440666	Zinc	mg/kg	21	66	6/6	39

TABLE D-4
FISH TISSUE BACKGROUND DATA
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Point	CAS Number	Contaminant	Units	Minimum Concentration	Maximum Concentration	Detection Frequency	Average Concentration
Androscoggin River	106445	4-Methylphenol	mg/kg	0.014	0.014	1/3	0.018
	TEQ_M	2,3,7,8-TCDD TEQ	mg/kg	0.00000093	0.00000093	1/3	0.00000068
	72559	4,4'-DDE	mg/kg	0.0022	0.0032	2/3	0.0024
	PCB_TEQ_M	PCB Dioxin-like Congener TEQ	mg/kg	0.00000064	0.00000083	3/3	0.00000071
	7440382	Arsenic	mg/Kg	0.12	0.12	1/5	0.11
	7440439	Cadmium	mg/Kg	0.0011	0.0014	3/5	0.0025
	7440473	Chromium	mg/Kg	0.089	0.089	1/5	0.081
	7440508	Copper	mg/Kg	0.18	0.24	5/5	0.21
	7439921	Lead	mg/Kg	0.0021	0.047	2/5	0.012
	7439976	Mercury	mg/kg	0.28	0.56	10/10	0.40
	7440020	Nickel	mg/Kg	0.022	0.048	2/5	0.039
	7782492	Selenium	mg/Kg	0.22	0.30	5/5	0.26
	7440246	Strontium	mg/Kg	1.1	1.1	1/5	0.43
	7440622	Vanadium	mg/Kg	0.018	0.021	5/5	0.020
	7440666	Zinc	mg/Kg	3.3	4.1	5/5	3.7

TABLE D-5
SURFACE WATER BACKGROUND DATA
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Point	CAS Number	Contaminant	Units	Minimum Concentration	Maximum Concentration	Detection Frequency	Average Concentration
Surface Water	7440246	Strontium	mg/kg	16	16	1/1	16
	7439976	Mercury	mg/kg	0.0010	0.0010	1/1	0.0010
	---	Mercury, divalent	mg/kg	0.000070	0.000070	1/1	0.000070
	22967926	Methylmercury	mg/kg	0.000050	0.000050	1/1	0.000050

APPENDIX E

APPENDIX E

SUPPORT DOCUMENTATION FOR THE CALCULATION OF EXPOSURE POINT CONCENTRATIONS (EPCs)

Appendix E
ProUCL Output for Surface Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

2,3,7,8-TCDD TEQ (mammal)

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.000084605	Minimum of Log Data	-9.378
Maximum	0.0606	Maximum of Log Data	-2.803
Mean	0.00738	Mean of log Data	-7.794
Geometric Mean	0.0004123	SD of log Data	2.225
Median	0.0001748		
SD	0.02		
Std. Error of Mean	0.00667		
Coefficient of Variation	2.714		
Skewness	2.968		

Warning: There are only 9 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.431	Shapiro Wilk Test Statistic	0.705
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0198	95% H-UCL	0.692
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.011
95% Adjusted-CLT UCL (Chen-1995)	0.0254	97.5% Chebyshev (MVUE) UCL	0.0146
95% Modified-t UCL (Johnson-1978)	0.0209	99% Chebyshev (MVUE) UCL	0.0217

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.239	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.0309		
MLE of Mean	0.00738		
MLE of Standard Deviation	0.0151		
nu star	4.295		
Approximate Chi Square Value (.05)	0.841	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.0184
Adjusted Chi Square Value	0.572	95% Jackknife UCL	0.0198
		95% Standard Bootstrap UCL	0.0176
Anderson-Darling Test Statistic	1.801	95% Bootstrap-t UCL	2.907
Anderson-Darling 5% Critical Value	0.827	95% Hall's Bootstrap UCL	0.838
Kolmogorov-Smirnov Test Statistic	0.443	95% Percentile Bootstrap UCL	0.0203
Kolmogorov-Smirnov 5% Critical Value	0.305	95% BCA Bootstrap UCL	0.0275
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0365
		97.5% Chebyshev(Mean, Sd) UCL	0.0491
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0738
95% Approximate Gamma UCL (Use when n >= 40)	0.0377		
95% Adjusted Gamma UCL (Use when n < 40)	0.0554		

Potential UCL to Use		Use 95% Hall's Bootstrap UCL	0.838

Recommended UCL exceeds the maximum observation
In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Antimony

General Statistics

Number of Valid Data	10	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	4
		Percent Non-Detects	40.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	1.4	Minimum Detected	0.336
Maximum Detected	3.3	Maximum Detected	1.194
Mean of Detected	2.367	Mean of Detected	0.813
SD of Detected	0.776	SD of Detected	0.35
Minimum Non-Detect	5.1	Minimum Non-Detect	1.629
Maximum Non-Detect	6.2	Maximum Non-Detect	1.825

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.934	Shapiro Wilk Test Statistic	0.923
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.6	Mean	0.919
SD	0.67	SD	0.3
95% DL/2 (t) UCL	2.989	95% H-Stat (DL/2) UCL	3.195
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.813
		SD in Log Scale	0.276
		Mean in Original Scale	2.33
		SD in Original Scale	0.615
		95% t UCL	2.686
		95% Percentile Bootstrap UCL	2.632
		95% BCA Bootstrap UCL	2.636
		95% H-UCL	2.801

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	5.31	**Data appear Normal at 5% Significance Level**	
Theta Star	0.446		
nu star	63.72		
A-D Test Statistic	0.294	**Nonparametric Statistics**	
5% A-D Critical Value	0.698	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.698	Mean	2.367
5% K-S Critical Value	0.332	SD	0.709
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.317
		95% KM (t) UCL	2.948
Assuming Gamma Distribution		95% KM (z) UCL	2.888
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.97
Minimum	1.4	95% KM (bootstrap t) UCL	3.042
Maximum	3.3	95% KM (BCA) UCL	2.9
Mean	2.403	95% KM (Percentile Bootstrap) UCL	2.871
Median	2.479	95% KM (Chebyshev) UCL	3.748
SD	0.616	97.5% KM (Chebyshev) UCL	4.346
k star	10.87	99% KM (Chebyshev) UCL	5.52
Theta star	0.221		
Nu star	217.4	**Potential UCLs to Use**	
AppChi2	184.3	95% KM (t) UCL	2.948
95% Gamma Approximate UCL (Use when n >= 40)	2.835	95% KM (Percentile Bootstrap) UCL	2.871
95% Adjusted Gamma UCL (Use when n < 40)	2.919		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

Arsenic

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		**Log-transformed Statistics**	
Minimum	1.5	Minimum of Log Data	0.405
Maximum	828	Maximum of Log Data	6.719
Mean	90.6	Mean of log Data	2.222
Geometric Mean	9.223	SD of log Data	1.845
Median	7.55		
SD	259.2		
Std. Error of Mean	81.97		
Coefficient of Variation	2.861		
Skewness	3.157		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.391	Shapiro Wilk Test Statistic	0.831
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	240.9	95% H-UCL	1111
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	132
95% Adjusted-CLT UCL (Chen-1995)	312.9	97.5% Chebyshev (MVUE) UCL	173.4
95% Modified-t UCL (Johnson-1978)	254.5	99% Chebyshev (MVUE) UCL	254.8

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.278	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	326.2		
MLE of Mean	90.6		
MLE of Standard Deviation	171.9		
nu star	5.555		
Approximate Chi Square Value (.05)	1.417	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	225.4
Adjusted Chi Square Value	1.088	95% Jackknife UCL	240.9
		95% Standard Bootstrap UCL	217.6
Anderson-Darling Test Statistic	1.735	95% Bootstrap-t UCL	4725
Anderson-Darling 5% Critical Value	0.813	95% Hall's Bootstrap UCL	2227
Kolmogorov-Smirnov Test Statistic	0.369	95% Percentile Bootstrap UCL	253.2
Kolmogorov-Smirnov 5% Critical Value	0.288	95% BCA Bootstrap UCL	339.1
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	447.9
		97.5% Chebyshev(Mean, Sd) UCL	602.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	906.2
95% Approximate Gamma UCL (Use when n >= 40)	355.2		
95% Adjusted Gamma UCL (Use when n < 40)	462.6		

Potential UCL to Use		
		Use 99% Chebyshev (Mean, Sd) UCL 906.2

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Benzo(A)Anthracene

General Statistics

Number of Valid Data	9	Number of Detected Data	8
Number of Distinct Detected Data	7	Number of Non-Detect Data	1
		Percent Non-Detects	11.11%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.25	Minimum Detected	-1.386
Maximum Detected	2.2	Maximum Detected	0.788
Mean of Detected	1.285	Mean of Detected	0.02
SD of Detected	0.774	SD of Detected	0.808
Minimum Non-Detect	0.195	Minimum Non-Detect	-1.635
Maximum Non-Detect	0.195	Maximum Non-Detect	-1.635

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk Test Statistic	0.869
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.153	Mean	-0.241
SD	0.826	SD	1.088
95% DL/2 (t) UCL	1.665	95% H-Stat (DL/2) UCL	5.334
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.116	Mean in Log Scale	-0.189
SD	0.842	SD in Log Scale	0.983
95% MLE (t) UCL	1.638	Mean in Original Scale	1.159
95% MLE (Tiku) UCL	1.639	SD in Original Scale	0.817
		95% t UCL	1.666
		95% Percentile Bootstrap UCL	1.589
		95% BCA Bootstrap UCL	1.589
		95% H UCL	4.081

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.533	**Data appear Normal at 5% Significance Level**	
Theta Star	0.838		
nu star	24.53		
A-D Test Statistic	0.448	**Nonparametric Statistics**	
5% A-D Critical Value	0.723	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.723	Mean	1.17
5% K-S Critical Value	0.297	SD	0.756
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.27
		95% KM (t) UCL	1.671
Assuming Gamma Distribution		95% KM (z) UCL	1.613
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.665
Minimum	0.000001	95% KM (bootstrap t) UCL	1.711
Maximum	2.2	95% KM (BCA) UCL	1.611
Mean	1.142	95% KM (Percentile Bootstrap) UCL	1.617
Median	1.1	95% KM (Chebyshev) UCL	2.345
SD	0.842	97.5% KM (Chebyshev) UCL	2.854
k star	0.34	99% KM (Chebyshev) UCL	3.852
Theta star	3.359		
Nu star	6.12	**Potential UCLs to Use**	
AppChi2	1.702	95% KM (t) UCL	1.671
95% Gamma Approximate UCL (Use when n >= 40)	4.108	95% KM (Percentile Bootstrap) UCL	1.617
95% Adjusted Gamma UCL (Use when n < 40)	5.558		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(A)Pyrene

General Statistics

Number of Valid Data	9	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	1
		Percent Non-Detects	11.11%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.31	Minimum Detected	-1.171
Maximum Detected	2.1	Maximum Detected	0.742
Mean of Detected	1.184	Mean of Detected	-0.0356
SD of Detected	0.685	SD of Detected	0.751
Minimum Non-Detect	0.195	Minimum Non-Detect	-1.635
Maximum Non-Detect	0.195	Maximum Non-Detect	-1.635

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.924	Shapiro Wilk Test Statistic	0.858
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.063	Mean	-0.29
SD	0.736	SD	1.038
95% DL/2 (t) UCL	1.519	95% H-Stat (DL/2) UCL	4.342
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.032	Mean in Log Scale	-0.231
SD	0.748	SD in Log Scale	0.915
95% MLE (t) UCL	1.496	Mean in Original Scale	1.071
95% MLE (Tiku) UCL	1.498	SD in Original Scale	0.725
		95% t UCL	1.52
		95% Percentile Bootstrap UCL	1.447
		95% BCA Bootstrap UCL	1.431
		95% H UCL	3.239

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.709	**Data appear Normal at 5% Significance Level**	
Theta Star	0.692		
nu star	27.35		
A-D Test Statistic	0.422	**Nonparametric Statistics**	
5% A-D Critical Value	0.722	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.722	Mean	1.087
5% K-S Critical Value	0.297	SD	0.663
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.236
		95% KM (t) UCL	1.526
Assuming Gamma Distribution		95% KM (z) UCL	1.475
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.523
Minimum	0.000001	95% KM (bootstrap t) UCL	1.565
Maximum	2.1	95% KM (BCA) UCL	1.512
Mean	1.052	95% KM (Percentile Bootstrap) UCL	1.473
Median	1	95% KM (Chebyshev) UCL	2.117
SD	0.752	97.5% KM (Chebyshev) UCL	2.563
k star	0.345	99% KM (Chebyshev) UCL	3.439
Theta star	3.053		
Nu star	6.203	**Potential UCLs to Use**	
AppChi2	1.745	95% KM (t) UCL	1.526
95% Gamma Approximate UCL (Use when n >= 40)	3.741	95% KM (Percentile Bootstrap) UCL	1.473
95% Adjusted Gamma UCL (Use when n < 40)	5.047		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(B)Fluoranthene

General Statistics

Number of Valid Data	9	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	2
		Percent Non-Detects	22.22%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.25	Minimum Detected	-1.386
Maximum Detected	2.5	Maximum Detected	0.916
Mean of Detected	1.286	Mean of Detected	-0.0791
SD of Detected	0.949	SD of Detected	0.964
Minimum Non-Detect	0.19	Minimum Non-Detect	-1.661
Maximum Non-Detect	0.195	Maximum Non-Detect	-1.635

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	2
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	22.22%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.882	Shapiro Wilk Test Statistic	0.872
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.021	Mean	-0.582
SD	0.975	SD	1.301
95% DL/2 (t) UCL	1.626	95% H-Stat (DL/2) UCL	7.991
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.896	Mean in Log Scale	-0.587
SD	1.094	SD in Log Scale	1.308
95% MLE (t) UCL	1.574	Mean in Original Scale	1.021
95% MLE (Tiku) UCL	1.591	SD in Original Scale	0.976
		95% t UCL	1.626
		95% Percentile Bootstrap UCL	1.54
		95% BCA Bootstrap UCL	1.593
		95% H UCL	8.178

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.044	**Data appear Normal at 5% Significance Level**	
Theta Star	1.232		
nu star	14.62		
A-D Test Statistic	0.398	**Nonparametric Statistics**	
5% A-D Critical Value	0.719	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.719	Mean	1.056
5% K-S Critical Value	0.316	SD	0.887
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.319
		95% KM (t) UCL	1.649
Assuming Gamma Distribution		95% KM (z) UCL	1.581
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.637
Minimum	0.000001	95% KM (bootstrap t) UCL	1.717
Maximum	2.5	95% KM (BCA) UCL	1.7
Mean	1	95% KM (Percentile Bootstrap) UCL	1.622
Median	0.83	95% KM (Chebyshev) UCL	2.447
SD	0.999	97.5% KM (Chebyshev) UCL	3.049
k star	0.227	99% KM (Chebyshev) UCL	4.232
Theta star	4.399		
Nu star	4.092	**Potential UCLs to Use**	
AppChi2	0.758	95% KM (t) UCL	1.649
95% Gamma Approximate UCL (Use when n >= 40)	5.396	95% KM (Percentile Bootstrap) UCL	1.622
95% Adjusted Gamma UCL (Use when n < 40)	8.041		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(K)Fluoranthene

General Statistics

Number of Valid Data	9	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	2
		Percent Non-Detects	22.22%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.26	Minimum Detected	-1.347
Maximum Detected	2.3	Maximum Detected	0.833
Mean of Detected	1.223	Mean of Detected	-0.0551
SD of Detected	0.814	SD of Detected	0.843
Minimum Non-Detect	0.19	Minimum Non-Detect	-1.661
Maximum Non-Detect	0.195	Maximum Non-Detect	-1.635

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	2
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	22.22%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.909	Shapiro Wilk Test Statistic	0.902
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.973	Mean	-0.563
SD	0.863	SD	1.245
95% DL/2 (t) UCL	1.507	95% H-Stat (DL/2) UCL	6.597
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.867	Mean in Log Scale	-0.5
SD	0.966	SD in Log Scale	1.146
95% MLE (t) UCL	1.466	Mean in Original Scale	0.98
95% MLE (Tiku) UCL	1.484	SD in Original Scale	0.855
		95% t UCL	1.509
		95% Percentile Bootstrap UCL	1.435
		95% BCA Bootstrap UCL	1.448
		95% H UCL	4.967

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.297	**Data appear Normal at 5% Significance Level**	
Theta Star	0.943		
nu star	18.15		
A-D Test Statistic	0.328	**Nonparametric Statistics**	
5% A-D Critical Value	0.715	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.715	Mean	1.009
5% K-S Critical Value	0.315	SD	0.776
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.279
		95% KM (t) UCL	1.529
Assuming Gamma Distribution		95% KM (z) UCL	1.469
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.512
Minimum	0.000001	95% KM (bootstrap t) UCL	1.641
Maximum	2.3	95% KM (BCA) UCL	1.571
Mean	0.951	95% KM (Percentile Bootstrap) UCL	1.52
Median	0.96	95% KM (Chebyshev) UCL	2.227
SD	0.888	97.5% KM (Chebyshev) UCL	2.754
k star	0.23	99% KM (Chebyshev) UCL	3.789
Theta star	4.13		
Nu star	4.145	**Potential UCLs to Use**	
AppChi2	0.78	95% KM (t) UCL	1.529
95% Gamma Approximate UCL (Use when n >= 40)	5.055	95% KM (Percentile Bootstrap) UCL	1.52
95% Adjusted Gamma UCL (Use when n < 40)	7.509		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Carbazole

General Statistics

Number of Valid Data	9	Number of Detected Data	8
Number of Distinct Detected Data	7	Number of Non-Detect Data	1
		Percent Non-Detects	11.11%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.034	Minimum Detected	-3.381
Maximum Detected	0.17	Maximum Detected	-1.772
Mean of Detected	0.0893	Mean of Detected	-2.562
SD of Detected	0.0486	SD of Detected	0.596
Minimum Non-Detect	0.195	Minimum Non-Detect	-1.635
Maximum Non-Detect	0.195	Maximum Non-Detect	-1.635

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.922	Shapiro Wilk Test Statistic	0.919
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0902	Mean	-2.536
SD	0.0456	SD	0.563
95% DL/2 (t) UCL	0.118	95% H-Stat (DL/2) UCL	0.148
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.562
		SD in Log Scale	0.557
		Mean in Original Scale	0.0879
		SD in Original Scale	0.0457
		95% t UCL	0.116
		95% Percentile Bootstrap UCL	0.113
		95% BCA Bootstrap UCL	0.113
		95% H-UCL	0.143

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	2.326	**Data appear Normal at 5% Significance Level**	
Theta Star	0.0384		
nu star	37.22		
A-D Test Statistic	0.369	**Nonparametric Statistics**	
5% A-D Critical Value	0.72	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.72	Mean	0.0893
5% K-S Critical Value	0.296	SD	0.0455
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0172
		95% KM (t) UCL	0.121
Assuming Gamma Distribution		95% KM (z) UCL	0.118
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.121
Minimum	0.034	95% KM (bootstrap t) UCL	0.127
Maximum	0.17	95% KM (BCA) UCL	0.115
Mean	0.0898	95% KM (Percentile Bootstrap) UCL	0.117
Median	0.0944	95% KM (Chebyshev) UCL	0.164
SD	0.0455	97.5% KM (Chebyshev) UCL	0.197
k star	2.75	99% KM (Chebyshev) UCL	0.26
Theta star	0.0327		
Nu star	49.49	**Potential UCLs to Use**	
AppChi2	34.34	95% KM (t) UCL	0.121
95% Gamma Approximate UCL (Use when n >= 40)	0.129	95% KM (Percentile Bootstrap) UCL	0.117
95% Adjusted Gamma UCL (Use when n < 40)	0.14		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

Chromium

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	8

Raw Statistics		Log-transformed Statistics	
Minimum	6.1	Minimum of Log Data	1.808
Maximum	29.7	Maximum of Log Data	3.391
Mean	10.95	Mean of log Data	2.273
Geometric Mean	9.709	SD of log Data	0.467
Median	8.7		
SD	7.017		
Std. Error of Mean	2.219		
Coefficient of Variation	0.641		
Skewness	2.537		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.661	Shapiro Wilk Test Statistic	0.835
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	15.02	95% H-UCL	15.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.71
95% Adjusted-CLT UCL (Chen-1995)	16.5	97.5% Chebyshev (MVUE) UCL	20.74
95% Modified-t UCL (Johnson-1978)	15.31	99% Chebyshev (MVUE) UCL	26.7

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.087	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	3.547		
MLE of Mean	10.95		
MLE of Standard Deviation	6.232		
nu star	61.75		
Approximate Chi Square Value (.05)	44.67	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	14.6
Adjusted Chi Square Value	42.16	95% Jackknife UCL	15.02
		95% Standard Bootstrap UCL	14.4
Anderson-Darling Test Statistic	0.92	95% Bootstrap-t UCL	23.76
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	29.39
Kolmogorov-Smirnov Test Statistic	0.3	95% Percentile Bootstrap UCL	15.02
Kolmogorov-Smirnov 5% Critical Value	0.268	95% BCA Bootstrap UCL	17.1
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.62
		97.5% Chebyshev(Mean, Sd) UCL	24.81
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	33.03
95% Approximate Gamma UCL (Use when n >= 40)	15.13		
95% Adjusted Gamma UCL (Use when n < 40)	16.04		

Potential UCL to Use		
	Use 95% Student's-t UCL	15.02
	or 95% Modified-t UCL	15.31

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Cobalt

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		**Log-transformed Statistics**	
Minimum	4.4	Minimum of Log Data	1.482
Maximum	18.5	Maximum of Log Data	2.918
Mean	8.595	Mean of log Data	2.022
Geometric Mean	7.55	SD of log Data	0.516
Median	6.8		
SD	4.997		
Std. Error of Mean	1.58		
Coefficient of Variation	0.581		
Skewness	1.318		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.808	Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	11.49	95% H-UCL	12.69
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.67
95% Adjusted-CLT UCL (Chen-1995)	11.9	97.5% Chebyshev (MVUE) UCL	17.34
95% Modified-t UCL (Johnson-1978)	11.6	99% Chebyshev (MVUE) UCL	22.58

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.879	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	2.985		
MLE of Mean	8.595		
MLE of Standard Deviation	5.065		
nu star	57.58		
Approximate Chi Square Value (.05)	41.14	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	11.19
Adjusted Chi Square Value	38.73	95% Jackknife UCL	11.49
		95% Standard Bootstrap UCL	11.06
Anderson-Darling Test Statistic	0.557	95% Bootstrap-t UCL	14.75
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	25.02
Kolmogorov-Smirnov Test Statistic	0.17	95% Percentile Bootstrap UCL	11.27
Kolmogorov-Smirnov 5% Critical Value	0.268	95% BCA Bootstrap UCL	11.67
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.48
		97.5% Chebyshev(Mean, Sd) UCL	18.46
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.32
95% Approximate Gamma UCL (Use when n >= 40)	12.03		
95% Adjusted Gamma UCL (Use when n < 40)	12.78		

Potential UCL to Use	
Use 95% Approximate Gamma UCL	12.03

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

Dibenz(A,H)Anthracene

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		Log-transformed Statistics	
Minimum	0.056	Minimum of Log Data	-2.882
Maximum	0.58	Maximum of Log Data	-0.545
Mean	0.281	Mean of log Data	-1.601
Geometric Mean	0.202	SD of log Data	0.927
Median	0.24		
SD	0.214		
Std. Error of Mean	0.0712		
Coefficient of Variation	0.759		
Skewness	0.463		

Warning: There are only 9 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.861	Shapiro Wilk Test Statistic	0.889
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.414	95% H-UCL	0.85
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.697
95% Adjusted-CLT UCL (Chen-1995)	0.41	97.5% Chebyshev (MVUE) UCL	0.873
95% Modified-t UCL (Johnson-1978)	0.415	99% Chebyshev (MVUE) UCL	1.218

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.176	**Data appear Normal at 5% Significance Level**	
Theta Star	0.239		
MLE of Mean	0.281		
MLE of Standard Deviation	0.259		
nu star	21.17		
Approximate Chi Square Value (.05)	11.72	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	0.398
Adjusted Chi Square Value	10.27	95% Jackknife UCL	0.414
		95% Standard Bootstrap UCL	0.39
Anderson-Darling Test Statistic	0.435	95% Bootstrap-t UCL	0.439
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	0.386
Kolmogorov-Smirnov Test Statistic	0.193	95% Percentile Bootstrap UCL	0.393
Kolmogorov-Smirnov 5% Critical Value	0.284	95% BCA Bootstrap UCL	0.407
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.592
		97.5% Chebyshev(Mean, Sd) UCL	0.726
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.989
95% Approximate Gamma UCL (Use when n >= 40)	0.508		
95% Adjusted Gamma UCL (Use when n < 40)	0.58		

Potential UCL to Use			
		Use 95% Student's-t UCL	0.414

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Indeno(1,2,3-Cd)Pyrene

General Statistics

Number of Valid Data	9	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	1
		Percent Non-Detects	11.11%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.2	Minimum Detected	-1.609
Maximum Detected	1.2	Maximum Detected	0.182
Mean of Detected	0.672	Mean of Detected	-0.577
SD of Detected	0.381	SD of Detected	0.685
Minimum Non-Detect	0.195	Minimum Non-Detect	-1.635
Maximum Non-Detect	0.195	Maximum Non-Detect	-1.635

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.91	Shapiro Wilk Test Statistic	0.884
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.608	Mean	-0.771
SD	0.405	SD	0.867
95% DL/2 (t) UCL	0.859	95% H-Stat (DL/2) UCL	1.663
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.595	Mean in Log Scale	-0.758
SD	0.405	SD in Log Scale	0.84
95% MLE (t) UCL	0.846	Mean in Original Scale	0.609
95% MLE (Tiku) UCL	0.844	SD in Original Scale	0.403
		95% t UCL	0.859
		95% Percentile Bootstrap UCL	0.827
		95% BCA Bootstrap UCL	0.838
		95% H UCL	1.577

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.927	**Data appear Normal at 5% Significance Level**	
Theta Star	0.349		
nu star	30.83		
A-D Test Statistic	0.405	**Nonparametric Statistics**	
5% A-D Critical Value	0.722	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.722	Mean	0.619
5% K-S Critical Value	0.296	SD	0.367
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.131
		95% KM (t) UCL	0.863
Assuming Gamma Distribution		95% KM (z) UCL	0.835
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.86
Minimum	0.000001	95% KM (bootstrap t) UCL	0.88
Maximum	1.2	95% KM (BCA) UCL	0.849
Mean	0.597	95% KM (Percentile Bootstrap) UCL	0.839
Median	0.56	95% KM (Chebyshev) UCL	1.19
SD	0.421	97.5% KM (Chebyshev) UCL	1.437
k star	0.358	99% KM (Chebyshev) UCL	1.922
Theta star	1.67		
Nu star	6.437	**Potential UCLs to Use**	
AppChi2	1.867	95% KM (t) UCL	0.863
95% Gamma Approximate UCL (Use when n >= 40)	2.059	95% KM (Percentile Bootstrap) UCL	0.839
95% Adjusted Gamma UCL (Use when n < 40)	2.756		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Iron

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		**Log-transformed Statistics**	
Minimum	8660	Minimum of Log Data	9.066
Maximum	39100	Maximum of Log Data	10.57
Mean	16286	Mean of log Data	9.609
Geometric Mean	14903	SD of log Data	0.413
Median	15000		
SD	8580		
Std. Error of Mean	2713		
Coefficient of Variation	0.527		
Skewness	2.425		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.711	Shapiro Wilk Test Statistic	0.889
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	21260	95% H-UCL	21686
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	25357
95% Adjusted-CLT UCL (Chen-1995)	22973	97.5% Chebyshev (MVUE) UCL	29370
95% Modified-t UCL (Johnson-1978)	21607	99% Chebyshev (MVUE) UCL	37253

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.122	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	3951		
MLE of Mean	16286		
MLE of Standard Deviation	8021		
nu star	82.45		
Approximate Chi Square Value (.05)	62.52	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	20749
Adjusted Chi Square Value	59.52	95% Jackknife UCL	21260
		95% Standard Bootstrap UCL	20608
Anderson-Darling Test Statistic	0.665	95% Bootstrap-t UCL	26361
Anderson-Darling 5% Critical Value	0.729	95% Hall's Bootstrap UCL	39347
Kolmogorov-Smirnov Test Statistic	0.261	95% Percentile Bootstrap UCL	21136
Kolmogorov-Smirnov 5% Critical Value	0.267	95% BCA Bootstrap UCL	22840
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28113
		97.5% Chebyshev(Mean, Sd) UCL	33231
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	43283
95% Approximate Gamma UCL (Use when n >= 40)	21476		
95% Adjusted Gamma UCL (Use when n < 40)	22561		

Potential UCL to Use	
Use 95% Approximate Gamma UCL	21476

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Manganese

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		**Log-transformed Statistics**	
Minimum	120	Minimum of Log Data	4.787
Maximum	271	Maximum of Log Data	5.602
Mean	190.1	Mean of log Data	5.216
Geometric Mean	184.1	SD of log Data	0.266
Median	178.5		
SD	50.65		
Std. Error of Mean	16.02		
Coefficient of Variation	0.267		
Skewness	0.504		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk Test Statistic	0.961
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	219.4	95% H-UCL	226.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	260.1
95% Adjusted-CLT UCL (Chen-1995)	219.1	97.5% Chebyshev (MVUE) UCL	290.4
95% Modified-t UCL (Johnson-1978)	219.8	99% Chebyshev (MVUE) UCL	350
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	11.2	**Data appear Normal at 5% Significance Level**	
Theta Star	16.96		
MLE of Mean	190.1		
MLE of Standard Deviation	56.78		
nu star	224.1		
Approximate Chi Square Value (.05)	190.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	216.4
Adjusted Chi Square Value	185.1	95% Jackknife UCL	219.4
		95% Standard Bootstrap UCL	214.8
Anderson-Darling Test Statistic	0.235	95% Bootstrap-t UCL	223.7
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	231.2
Kolmogorov-Smirnov Test Statistic	0.138	95% Percentile Bootstrap UCL	214.8
Kolmogorov-Smirnov 5% Critical Value	0.266	95% BCA Bootstrap UCL	218.3
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	259.9
		97.5% Chebyshev(Mean, Sd) UCL	290.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	349.4
95% Approximate Gamma UCL (Use when n >= 40)	223.6		
95% Adjusted Gamma UCL (Use when n < 40)	230.1		

Potential UCL to Use	
Use 95% Student's-t UCL	219.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

Mercury

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	0.71	Minimum of Log Data	-0.342
Maximum	147	Maximum of Log Data	4.99
Mean	30.5	Mean of log Data	1.522
Geometric Mean	4.583	SD of log Data	1.991
Median	2.55		
SD	57.91		
Std. Error of Mean	18.31		
Coefficient of Variation	1.899		
Skewness	1.777		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.561	Shapiro Wilk Test Statistic	0.819
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	64.07	95% H-UCL	1177
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	84.01
95% Adjusted-CLT UCL (Chen-1995)	71.62	97.5% Chebyshev (MVUE) UCL	110.9
95% Modified-t UCL (Johnson-1978)	65.79	99% Chebyshev (MVUE) UCL	163.6

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.315	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	96.99		
MLE of Mean	30.5		
MLE of Standard Deviation	54.39		
nu star	6.29		
Approximate Chi Square Value (.05)	1.79	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0267	95% CLT UCL	60.63
Adjusted Chi Square Value	1.405	95% Jackknife UCL	64.07
		95% Standard Bootstrap UCL	58.62
Anderson-Darling Test Statistic	1.334	95% Bootstrap-t UCL	472.1
Anderson-Darling 5% Critical Value	0.804	95% Hall's Bootstrap UCL	647.3
Kolmogorov-Smirnov Test Statistic	0.361	95% Percentile Bootstrap UCL	59.59
Kolmogorov-Smirnov 5% Critical Value	0.286	95% BCA Bootstrap UCL	71.29
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	110.3
		97.5% Chebyshev(Mean, Sd) UCL	144.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	212.7
95% Approximate Gamma UCL (Use when n >= 40)	107.2		
95% Adjusted Gamma UCL (Use when n < 40)	136.5		

Potential UCL to Use		
	Use 99% Chebyshev (Mean, Sd) UCL	212.7

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

PCB Dioxin-like Congener TEQ (mammal)

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		**Log-transformed Statistics**	
Minimum	1.5376E-06	Minimum of Log Data	-13.39
Maximum	0.000028229	Maximum of Log Data	-10.48
Mean	0.000013809	Mean of log Data	-11.45
Geometric Mean	0.000010617	SD of log Data	0.9
Median	0.000015893		
SD	8.4001E-06		
Std. Error of Mean	0.0000028		
Coefficient of Variation	N/A		
Skewness	0.153		

Warning: There are only 9 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.966	Shapiro Wilk Test Statistic	0.872
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.000019015	95% H-UCL	0.000041575
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.000035319
95% Adjusted-CLT UCL (Chen-1995)	0.000018566	97.5% Chebyshev (MVUE) UCL	0.000044098
95% Modified-t UCL (Johnson-1978)	0.000019039	99% Chebyshev (MVUE) UCL	0.000061342

Gamma Distribution Test		**Data Distribution**
k star (bias corrected)	1.443	**Data appear Normal at 5% Significance Level**
Theta Star	9.5691E-06	
MLE of Mean	0.000013809	
MLE of Standard Deviation	0.000011495	
nu star	25.97	
Approximate Chi Square Value (.05)	15.36	**Nonparametric Statistics**
Adjusted Level of Significance	0.0231	95% CLT UCL 0.000018414
Adjusted Chi Square Value	13.67	95% Jackknife UCL 0.000019015
		95% Standard Bootstrap UCL 0.000018155
Anderson-Darling Test Statistic	0.382	95% Bootstrap-t UCL 0.000018774
Anderson-Darling 5% Critical Value	0.73	95% Hall's Bootstrap UCL 0.000018725
Kolmogorov-Smirnov Test Statistic	0.225	95% Percentile Bootstrap UCL 0.000018384
Kolmogorov-Smirnov 5% Critical Value	0.282	95% BCA Bootstrap UCL 0.000018448
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 0.000026014
		97.5% Chebyshev(Mean, Sd) UCL 0.000031295
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 0.000041669
95% Approximate Gamma UCL (Use when n >= 40)	0.000023351	
95% Adjusted Gamma UCL (Use when n < 40)	0.000026243	

Potential UCL to Use		
		Use 95% Student's-t UCL 0.000019015

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

Total PCB Homologues

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.163	Minimum of Log Data	-1.814
Maximum	1.84	Maximum of Log Data	0.61
Mean	0.695	Mean of log Data	-0.694
Geometric Mean	0.5	SD of log Data	0.885
Median	0.511		
SD	0.583		
Std. Error of Mean	0.194		
Coefficient of Variation	0.839		
Skewness	1.121		

Warning: There are only 9 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.87	Shapiro Wilk Test Statistic	0.94
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	1.057	95% H-UCL	1.881
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.628
95% Adjusted-CLT UCL (Chen-1995)	1.093	97.5% Chebyshev (MVUE) UCL	2.029
95% Modified-t UCL (Johnson-1978)	1.069	99% Chebyshev (MVUE) UCL	2.818

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.182	**Data appear Normal at 5% Significance Level**	
Theta Star	0.588		
MLE of Mean	0.695		
MLE of Standard Deviation	0.64		
nu star	21.27		
Approximate Chi Square Value (.05)	11.79	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0231	95% CLT UCL	1.015
Adjusted Chi Square Value	10.34	95% Jackknife UCL	1.057
		95% Standard Bootstrap UCL	0.991
Anderson-Darling Test Statistic	0.274	95% Bootstrap-t UCL	1.307
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	1.341
Kolmogorov-Smirnov Test Statistic	0.173	95% Percentile Bootstrap UCL	1.021
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	1.081
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.542
		97.5% Chebyshev(Mean, Sd) UCL	1.909
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.629
95% Approximate Gamma UCL (Use when n >= 40)	1.254		
95% Adjusted Gamma UCL (Use when n < 40)	1.431		

Potential UCL to Use	
Use 95% Student's-t UCL	1.057

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
1,1'-Biphenyl **Berlin, New Hampshire**

General Statistics

Number of Valid Data	34	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	31
		Percent Non-Detects	91.18%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.01	Minimum Detected	-4.605
Maximum Detected	19	Maximum Detected	2.944
Mean of Detected	6.373	Mean of Detected	-1.289
SD of Detected	10.94	SD of Detected	3.858
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.73	Maximum Non-Detect	-0.315

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.06%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.754	Shapiro Wilk Test Statistic	0.958
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.674	Mean	-2.087
SD	3.239	SD	1.033
95% DL/2 (t) UCL	1.614	95% H-Stat (DL/2) UCL	0.331
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.229
		SD in Log Scale	1.857
		Mean in Original Scale	0.654
		SD in Original Scale	3.247
		95% t UCL	1.596
		95% Percentile Bootstrap UCL	1.763
		95% BCA Bootstrap UCL	2.375
		95% H-UCL	0.724

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	N/A	**Data appear Lognormal at 5% Significance Level**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.617
5% K-S Critical Value	N/A	SD	3.2
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.673
		95% KM (t) UCL	1.757
Assuming Gamma Distribution		95% KM (z) UCL	1.725
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.567
Minimum	N/A	95% KM (bootstrap t) UCL	16.3
Maximum	N/A	95% KM (BCA) UCL	19
Mean	N/A	95% KM (Percentile Bootstrap) UCL	19
Median	N/A	95% KM (Chebyshev) UCL	3.553
SD	N/A	97.5% KM (Chebyshev) UCL	4.823
k star	N/A	99% KM (Chebyshev) UCL	7.318
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	99% KM (Chebyshev) UCL	7.318
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

1,3-Dichlorobenzene

General Statistics

Number of Valid Data	34	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	31
		Percent Non-Detects	91.18%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0014	Minimum Detected	-6.571
Maximum Detected	0.0082	Maximum Detected	-4.804
Mean of Detected	0.0055	Mean of Detected	-5.45
SD of Detected	0.00361	SD of Detected	0.975
Minimum Non-Detect	0.0039	Minimum Non-Detect	-5.547
Maximum Non-Detect	0.028	Maximum Non-Detect	-3.576

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	34
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.887	Shapiro Wilk Test Statistic	0.822
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00367	Mean	-5.716
SD	0.00227	SD	0.429
95% DL/2 (t) UCL	0.00433	95% H-Stat (DL/2) UCL	0.00416
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.427
		SD in Log Scale	0.455
		Mean in Original Scale	0.00187
		SD in Original Scale	0.00149
		95% t UCL	0.0023
		95% Percentile Bootstrap UCL	0.00232
		95% BCA Bootstrap UCL	0.00252
		95% H-UCL	0.00209

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.00186
5% K-S Critical Value	N/A	SD	0.00163
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00038711
		95% KM (t) UCL	0.00252
Assuming Gamma Distribution		95% KM (z) UCL	0.0025
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00532
Minimum	N/A	95% KM (bootstrap t) UCL	0.0022
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.0082
Median	N/A	95% KM (Chebyshev) UCL	0.00355
SD	N/A	97.5% KM (Chebyshev) UCL	0.00428
k star	N/A	99% KM (Chebyshev) UCL	0.00572
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	0.00252
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (Percentile Bootstrap) UCL	0.0082
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

2,3,7,8-TCDD TEQ (mammal)

General Statistics

Number of Valid Observations	34	Number of Distinct Observations	34

Raw Statistics		**Log-transformed Statistics**	
Minimum	2.1829E-06	Minimum of Log Data	-13.03
Maximum	0.289	Maximum of Log Data	-1.241
Mean	0.015	Mean of log Data	-7.88
Geometric Mean	0.00037812	SD of log Data	2.734
Median	0.00017917		
SD	0.054		
Std. Error of Mean	0.00926		
Coefficient of Variation	3.596		
Skewness	4.514		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.319	Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical Value	0.933	Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0307	95% H-UCL	0.175
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0411
95% Adjusted-CLT UCL (Chen-1995)	0.0379	97.5% Chebyshev (MVUE) UCL	0.0543
95% Modified-t UCL (Johnson-1978)	0.0319	99% Chebyshev (MVUE) UCL	0.0803
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.202	**Data appear Lognormal at 5% Significance Level**	
Theta Star	0.0743		
MLE of Mean	0.015		
MLE of Standard Deviation	0.0334		
nu star	13.73		
Approximate Chi Square Value (.05)	6.386	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0422	95% CLT UCL	0.0302
Adjusted Chi Square Value	6.139	95% Jackknife UCL	0.0307
		95% Standard Bootstrap UCL	0.03
Anderson-Darling Test Statistic	3.837	95% Bootstrap-t UCL	0.0803
Anderson-Darling 5% Critical Value	0.899	95% Hall's Bootstrap UCL	0.0926
Kolmogorov-Smirnov Test Statistic	0.275	95% Percentile Bootstrap UCL	0.032
Kolmogorov-Smirnov 5% Critical Value	0.167	95% BCA Bootstrap UCL	0.0425
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0553
		97.5% Chebyshev(Mean, Sd) UCL	0.0728
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.107
95% Approximate Gamma UCL (Use when n >= 40)	0.0323		
95% Adjusted Gamma UCL (Use when n < 40)	0.0336		

Potential UCL to Use	
Use 97.5% Chebyshev (Mean, Sd) UCL	0.0728

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

2-Methylnaphthalene

General Statistics

Number of Valid Data	34	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	26
		Percent Non-Detects	76.47%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.012	Minimum Detected	-4.423
Maximum Detected	41	Maximum Detected	3.714
Mean of Detected	5.277	Mean of Detected	-2.066
SD of Detected	14.44	SD of Detected	2.756
Minimum Non-Detect	0.0925	Minimum Non-Detect	-2.381
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	31
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.18%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.432	Shapiro Wilk Test Statistic	0.832
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.319	Mean	-2.25
SD	7.013	SD	1.285
95% DL/2 (t) UCL	3.354	95% H-Stat (DL/2) UCL	0.452
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.236
		SD in Log Scale	1.752
		Mean in Original Scale	1.279
		SD in Original Scale	7.02
		95% t UCL	3.317
		95% Percentile Bootstrap UCL	3.685
		95% BCA Bootstrap UCL	4.916
		95% H-UCL	0.528

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.207	**Data appear Lognormal at 5% Significance Level**	
Theta Star	25.5		
nu star	3.31		
A-D Test Statistic	1.307	**Nonparametric Statistics**	
5% A-D Critical Value	0.837	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.837	Mean	1.262
5% K-S Critical Value	0.323	SD	6.919
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.269
		95% KM (t) UCL	3.409
Assuming Gamma Distribution		95% KM (z) UCL	3.349
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.3
Minimum	0.000001	95% KM (bootstrap t) UCL	160.3
Maximum	41	95% KM (BCA) UCL	3.681
Mean	1.598	95% KM (Percentile Bootstrap) UCL	3.655
Median	0.000001	95% KM (Chebyshev) UCL	6.791
SD	7.069	97.5% KM (Chebyshev) UCL	9.184
k star	0.0965	99% KM (Chebyshev) UCL	13.88
Theta star	16.55		
Nu star	6.565	**Potential UCLs to Use**	
AppChi2	1.935	99% KM (Chebyshev) UCL	13.88
95% Gamma Approximate UCL (Use when n >= 40)	5.421		
95% Adjusted Gamma UCL (Use when n < 40)	5.784		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
4,4'-DDE **Berlin, New Hampshire**

General Statistics

Number of Valid Data	5	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	3
		Percent Non-Detects	60.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.0046	Minimum Detected	-5.382
Maximum Detected	16	Maximum Detected	2.773
Mean of Detected	8.002	Mean of Detected	-1.305
SD of Detected	11.31	SD of Detected	5.766
Minimum Non-Detect	0.0022	Minimum Non-Detect	-6.119
Maximum Non-Detect	0.00235	Maximum Non-Detect	-6.053

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	60.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!
It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.202	Mean	-4.587
SD	7.155	SD	4.158
95% DL/2 (t) UCL	10.02	95% H-Stat (DL/2) UCL	1.58E+19
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	3.204
5% K-S Critical Value	N/A	SD	6.398
Data not Gamma Distributed at 5% Significance Level		SE of Mean	4.047
		95% KM (t) UCL	11.83
Assuming Gamma Distribution		95% KM (z) UCL	9.86
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	16.73
Minimum	N/A	95% KM (bootstrap t) UCL	3.204
Maximum	N/A	95% KM (BCA) UCL	16
Mean	N/A	95% KM (Percentile Bootstrap) UCL	16
Median	N/A	95% KM (Chebyshev) UCL	20.84
SD	N/A	97.5% KM (Chebyshev) UCL	28.47
k star	N/A	99% KM (Chebyshev) UCL	43.47
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	99% KM (Chebyshev) UCL	43.47
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

4,4'-DDT

General Statistics

Number of Valid Data	5	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	3
		Percent Non-Detects	60.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00067	Minimum Detected	-7.308
Maximum Detected	3.1	Maximum Detected	1.131
Mean of Detected	1.55	Mean of Detected	-3.088
SD of Detected	2.192	SD of Detected	5.968
Minimum Non-Detect	0.0019	Minimum Non-Detect	-6.266
Maximum Non-Detect	0.00235	Maximum Non-Detect	-6.053

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	80.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!
It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.621	Mean	-5.339
SD	1.386	SD	3.624
95% DL/2 (t) UCL	1.942	95% H-Stat (DL/2) UCL	6.066E+13
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.621
5% K-S Critical Value	N/A	SD	1.24
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.784
		95% KM (t) UCL	2.292
Assuming Gamma Distribution		95% KM (z) UCL	1.91
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.242
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	3.1
Mean	N/A	95% KM (Percentile Bootstrap) UCL	3.1
Median	N/A	95% KM (Chebyshev) UCL	4.038
SD	N/A	97.5% KM (Chebyshev) UCL	5.517
k star	N/A	99% KM (Chebyshev) UCL	8.422
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	99% KM (Chebyshev) UCL	8.422
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Aldrin

General Statistics

Number of Valid Data	5	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	3
		Percent Non-Detects	60.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.021	Minimum Detected	-3.863
Maximum Detected	12	Maximum Detected	2.485
Mean of Detected	6.011	Mean of Detected	-0.689
SD of Detected	8.47	SD of Detected	4.489
Minimum Non-Detect	0.0022	Minimum Non-Detect	-6.119
Maximum Non-Detect	0.00235	Maximum Non-Detect	-6.053

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	60.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!
It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.405	Mean	-4.341
SD	5.364	SD	4.019
95% DL/2 (t) UCL	7.519	95% H-Stat (DL/2) UCL	8.176E+17
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	2.417
5% K-S Critical Value	N/A	SD	4.792
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3.03
		95% KM (t) UCL	8.877
Assuming Gamma Distribution		95% KM (z) UCL	7.401
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	12.55
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	12
Median	N/A	95% KM (Chebyshev) UCL	15.63
SD	N/A	97.5% KM (Chebyshev) UCL	21.34
k star	N/A	99% KM (Chebyshev) UCL	32.57
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	99% KM (Chebyshev) UCL	32.57
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Alpha-BHC

General Statistics

Number of Valid Data	5	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	3
		Percent Non-Detects	60.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0033	Minimum Detected	-5.714
Maximum Detected	1.7	Maximum Detected	0.531
Mean of Detected	0.852	Mean of Detected	-2.592
SD of Detected	1.2	SD of Detected	4.416
Minimum Non-Detect	0.0019	Minimum Non-Detect	-6.266
Maximum Non-Detect	0.0023	Maximum Non-Detect	-6.075

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	60.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!
It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.341	Mean	-5.145
SD	0.76	SD	3.211
95% DL/2 (t) UCL	1.065	95% H-Stat (DL/2) UCL	26420000000
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.343
5% K-S Critical Value	N/A	SD	0.679
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.429
		95% KM (t) UCL	1.258
Assuming Gamma Distribution		95% KM (z) UCL	1.049
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.778
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	1.7
Mean	N/A	95% KM (Percentile Bootstrap) UCL	1.7
Median	N/A	95% KM (Chebyshev) UCL	2.214
SD	N/A	97.5% KM (Chebyshev) UCL	3.023
k star	N/A	99% KM (Chebyshev) UCL	4.613
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	99% KM (Chebyshev) UCL	4.613
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

Aluminum

General Statistics

Number of Valid Observations	36	Number of Distinct Observations	35

Raw Statistics		**Log-transformed Statistics**	
Minimum	1700	Minimum of Log Data	7.438
Maximum	12000	Maximum of Log Data	9.393
Mean	5116	Mean of log Data	8.434
Geometric Mean	4602	SD of log Data	0.463
Median	4525		
SD	2509		
Std. Error of Mean	418.2		
Coefficient of Variation	0.49		
Skewness	1.223		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.88	Shapiro Wilk Test Statistic	0.976
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	5822	95% H-UCL	5936
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6892
95% Adjusted-CLT UCL (Chen-1995)	5895	97.5% Chebyshev (MVUE) UCL	7665
95% Modified-t UCL (Johnson-1978)	5837	99% Chebyshev (MVUE) UCL	9184

Gamma Distribution Test		**Data Distribution**
k star (bias corrected)	4.497	**Data appear Gamma Distributed at 5% Significance Level**
Theta Star	1138	
MLE of Mean	5116	
MLE of Standard Deviation	2412	
nu star	323.8	
Approximate Chi Square Value (.05)	283.1	**Nonparametric Statistics**
Adjusted Level of Significance	0.0428	95% CLT UCL 5804
Adjusted Chi Square Value	281.4	95% Jackknife UCL 5822
		95% Standard Bootstrap UCL 5789
Anderson-Darling Test Statistic	0.514	95% Bootstrap-t UCL 5954
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL 5926
Kolmogorov-Smirnov Test Statistic	0.123	95% Percentile Bootstrap UCL 5799
Kolmogorov-Smirnov 5% Critical Value	0.147	95% BCA Bootstrap UCL 5862
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 6939
		97.5% Chebyshev(Mean, Sd) UCL 7727
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 9277
95% Approximate Gamma UCL (Use when n >= 40)	5851	
95% Adjusted Gamma UCL (Use when n < 40)	5887	

Potential UCL to Use	
Use 95% Approximate Gamma UCL	5851

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Antimony **Berlin, New Hampshire**

General Statistics

Number of Valid Data	36	Number of Detected Data	24
Number of Distinct Detected Data	21	Number of Non-Detect Data	12
		Percent Non-Detects	33.33%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.52	Minimum Detected	-0.654
Maximum Detected	5.8	Maximum Detected	1.758
Mean of Detected	2.167	Mean of Detected	0.543
SD of Detected	1.462	SD of Detected	0.72
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	7.8	Maximum Non-Detect	2.054

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	36
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.897	Shapiro Wilk Test Statistic	0.954
5% Shapiro Wilk Critical Value	0.916	5% Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.448	Mean	0.726
SD	1.272	SD	0.644
95% DL/2 (t) UCL	2.806	95% H-Stat (DL/2) UCL	3.173
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.528
		SD in Log Scale	0.598
		Mean in Original Scale	2.007
		SD in Original Scale	1.227
		95% t UCL	2.352
		95% Percentile Bootstrap UCL	2.368
		95% BCA Bootstrap UCL	2.422
		95% H-UCL	2.478

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	2.06	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	1.052		
nu star	98.9		
A-D Test Statistic	0.299	**Nonparametric Statistics**	
5% A-D Critical Value	0.754	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.754	Mean	2.127
5% K-S Critical Value	0.18	SD	1.39
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.281
		95% KM (t) UCL	2.603
Assuming Gamma Distribution		95% KM (z) UCL	2.59
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.605
Minimum	0.52	95% KM (bootstrap t) UCL	2.664
Maximum	5.8	95% KM (BCA) UCL	2.618
Mean	2.199	95% KM (Percentile Bootstrap) UCL	2.602
Median	2.19	95% KM (Chebyshev) UCL	3.354
SD	1.22	97.5% KM (Chebyshev) UCL	3.885
k star	2.985	99% KM (Chebyshev) UCL	4.928
Theta star	0.737		
Nu star	214.9	**Potential UCLs to Use**	
AppChi2	182	95% KM (Percentile Bootstrap) UCL	2.602
95% Gamma Approximate UCL (Use when n >= 40)	2.597		
95% Adjusted Gamma UCL (Use when n < 40)	2.617		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Arsenic **Berlin, New Hampshire**

General Statistics

Number of Valid Data	36	Number of Detected Data	35
Number of Distinct Detected Data	31	Number of Non-Detect Data	1
		Percent Non-Detects	2.78%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.9	Minimum Detected	-0.105
Maximum Detected	828	Maximum Detected	6.719
Mean of Detected	36.95	Mean of Detected	1.873
SD of Detected	141.4	SD of Detected	1.397
Minimum Non-Detect	0.8	Minimum Non-Detect	-0.223
Maximum Non-Detect	0.8	Maximum Non-Detect	-0.223

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.265	Shapiro Wilk Test Statistic	0.864
5% Shapiro Wilk Critical Value	0.934	5% Shapiro Wilk Critical Value	0.934
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	35.94	Mean	1.795
SD	139.5	SD	1.453
95% DL/2 (t) UCL	75.21	95% H-Stat (DL/2) UCL	35.65
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	33.15	Mean in Log Scale	1.78
SD	139.8	SD in Log Scale	1.484
95% MLE (t) UCL	72.53	Mean in Original Scale	35.93
95% MLE (Tiku) UCL	68.01	SD in Original Scale	139.5
		95% t UCL	75.2
		95% Percentile Bootstrap UCL	78.66
		95% BCA Bootstrap UCL	121.9
		95% H UCL	37.74

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.368	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	100.4		
nu star	25.76		
A-D Test Statistic	5.342	**Nonparametric Statistics**	
5% A-D Critical Value	0.838	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.838	Mean	35.95
5% K-S Critical Value	0.16	SD	137.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	23.25
		95% KM (t) UCL	75.24
Assuming Gamma Distribution		95% KM (z) UCL	74.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	75.21
Minimum	0.000001	95% KM (bootstrap t) UCL	439.1
Maximum	828	95% KM (BCA) UCL	80.97
Mean	35.93	95% KM (Percentile Bootstrap) UCL	80.81
Median	4.7	95% KM (Chebyshev) UCL	137.3
SD	139.5	97.5% KM (Chebyshev) UCL	181.2
k star	0.31	99% KM (Chebyshev) UCL	267.3
Theta star	115.7		
Nu star	22.35	**Potential UCLs to Use**	
AppChi2	12.6	97.5% KM (Chebyshev) UCL	181.2
95% Gamma Approximate UCL (Use when n >= 40)	63.72		
95% Adjusted Gamma UCL (Use when n < 40)	65.45		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(A)Anthracene

General Statistics

Number of Valid Data	34	Number of Detected Data	23
Number of Distinct Detected Data	22	Number of Non-Detect Data	11
		Percent Non-Detects	32.35%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.018	Minimum Detected	-4.017
Maximum Detected	320	Maximum Detected	5.768
Mean of Detected	16.03	Mean of Detected	0.0763
SD of Detected	66.37	SD of Detected	1.92
Minimum Non-Detect	0.0925	Minimum Non-Detect	-2.381
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	16
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	18
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	47.06%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.248	Shapiro Wilk Test Statistic	0.931
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	10.88	Mean	-0.693
SD	54.72	SD	1.939
95% DL/2 (t) UCL	26.76	95% H-Stat (DL/2) UCL	11.73
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.025
		SD in Log Scale	2.276
		Mean in Original Scale	10.86
		SD in Original Scale	54.72
		95% t UCL	26.74
		95% Percentile Bootstrap UCL	29.27
		95% BCA Bootstrap UCL	47.96
		95% H-UCL	26.33

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.256	**Data appear Lognormal at 5% Significance Level**	
Theta Star	62.55		
nu star	11.79		
A-D Test Statistic	3.587	**Nonparametric Statistics**	
5% A-D Critical Value	0.866	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.866	Mean	10.87
5% K-S Critical Value	0.199	SD	53.91
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.453
		95% KM (t) UCL	26.87
Assuming Gamma Distribution		95% KM (z) UCL	26.42
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	26.73
Minimum	0.000001	95% KM (bootstrap t) UCL	306.7
Maximum	320	95% KM (BCA) UCL	29.47
Mean	10.84	95% KM (Percentile Bootstrap) UCL	29.51
Median	0.395	95% KM (Chebyshev) UCL	52.07
SD	54.72	97.5% KM (Chebyshev) UCL	69.9
k star	0.126	99% KM (Chebyshev) UCL	104.9
Theta star	85.87		
Nu star	8.587	**Potential UCLs to Use**	
AppChi2	3.079	99% KM (Chebyshev) UCL	104.9
95% Gamma Approximate UCL (Use when n >= 40)	30.24		
95% Adjusted Gamma UCL (Use when n < 40)	31.91		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(A)Pyrene

General Statistics

Number of Valid Data	34	Number of Detected Data	22
Number of Distinct Detected Data	20	Number of Non-Detect Data	12
		Percent Non-Detects	35.29%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.16	Minimum Detected	-1.833
Maximum Detected	230	Maximum Detected	5.438
Mean of Detected	12.06	Mean of Detected	0.0999
SD of Detected	48.74	SD of Detected	1.629
Minimum Non-Detect	0.087	Minimum Non-Detect	-2.442
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	19
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	44.12%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.25	Shapiro Wilk Test Statistic	0.853
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.841	Mean	-0.773
SD	39.31	SD	1.781
95% DL/2 (t) UCL	19.25	95% H-Stat (DL/2) UCL	6.747
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.081
		SD in Log Scale	2.108
		Mean in Original Scale	7.822
		SD in Original Scale	39.31
		95% t UCL	19.23
		95% Percentile Bootstrap UCL	21.26
		95% BCA Bootstrap UCL	28.44
		95% H-UCL	13.78

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.281	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	42.96		
nu star	12.36		
A-D Test Statistic	3.966	**Nonparametric Statistics**	
5% A-D Critical Value	0.852	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.852	Mean	7.864
5% K-S Critical Value	0.202	SD	38.72
Data not Gamma Distributed at 5% Significance Level		SE of Mean	6.797
		95% KM (t) UCL	19.37
Assuming Gamma Distribution		95% KM (z) UCL	19.04
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	19.27
Minimum	0.000001	95% KM (bootstrap t) UCL	191.5
Maximum	230	95% KM (BCA) UCL	21.57
Mean	7.806	95% KM (Percentile Bootstrap) UCL	21.32
Median	0.32	95% KM (Chebyshev) UCL	37.49
SD	39.32	97.5% KM (Chebyshev) UCL	50.31
k star	0.125	99% KM (Chebyshev) UCL	75.49
Theta star	62.26		
Nu star	8.526	**Potential UCLs to Use**	
AppChi2	3.044	99% KM (Chebyshev) UCL	75.49
95% Gamma Approximate UCL (Use when n >= 40)	21.87		
95% Adjusted Gamma UCL (Use when n < 40)	23.08		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(B)Fluoranthene

General Statistics

Number of Valid Data	34	Number of Detected Data	22
Number of Distinct Detected Data	21	Number of Non-Detect Data	12
		Percent Non-Detects	35.29%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.014	Minimum Detected	-4.269
Maximum Detected	280	Maximum Detected	5.635
Mean of Detected	14.57	Mean of Detected	-0.0553
SD of Detected	59.36	SD of Detected	1.983
Minimum Non-Detect	0.0925	Minimum Non-Detect	-2.381
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	17
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	17
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.251	Shapiro Wilk Test Statistic	0.932
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.461	Mean	-0.85
SD	47.87	SD	1.929
95% DL/2 (t) UCL	23.35	95% H-Stat (DL/2) UCL	9.709
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.239
		SD in Log Scale	2.305
		Mean in Original Scale	9.439
		SD in Original Scale	47.87
		95% t UCL	23.33
		95% Percentile Bootstrap UCL	25.8
		95% BCA Bootstrap UCL	34.49
		95% H-UCL	23.6

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.253	**Data appear Lognormal at 5% Significance Level**	
Theta Star	57.46		
nu star	11.15		
A-D Test Statistic	3.271	**Nonparametric Statistics**	
5% A-D Critical Value	0.866	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.866	Mean	9.456
5% K-S Critical Value	0.203	SD	47.16
Data not Gamma Distributed at 5% Significance Level		SE of Mean	8.278
		95% KM (t) UCL	23.47
Assuming Gamma Distribution		95% KM (z) UCL	23.07
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	23.33
Minimum	0.000001	95% KM (bootstrap t) UCL	275.2
Maximum	280	95% KM (BCA) UCL	26.18
Mean	9.425	95% KM (Percentile Bootstrap) UCL	25.83
Median	0.26	95% KM (Chebyshev) UCL	45.54
SD	47.88	97.5% KM (Chebyshev) UCL	61.15
k star	0.122	99% KM (Chebyshev) UCL	91.83
Theta star	77.5		
Nu star	8.269	**Potential UCLs to Use**	
AppChi2	2.892	99% KM (Chebyshev) UCL	91.83
95% Gamma Approximate UCL (Use when n >= 40)	26.95		
95% Adjusted Gamma UCL (Use when n < 40)	28.48		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(G,H,I)Perylene

General Statistics

Number of Valid Data	34	Number of Detected Data	27
Number of Distinct Detected Data	26	Number of Non-Detect Data	7
		Percent Non-Detects	20.59%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.049	Minimum Detected	-3.016
Maximum Detected	93	Maximum Detected	4.533
Mean of Detected	4.375	Mean of Detected	-0.789
SD of Detected	17.8	SD of Detected	1.695
Minimum Non-Detect	0.087	Minimum Non-Detect	-2.442
Maximum Non-Detect	0.26	Maximum Non-Detect	-1.347

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	16
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	52.94%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.251	Shapiro Wilk Test Statistic	0.905
5% Shapiro Wilk Critical Value	0.923	5% Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.492	Mean	-1.141
SD	15.89	SD	1.67
95% DL/2 (t) UCL	8.105	95% H-Stat (DL/2) UCL	3.425
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.182
		SD in Log Scale	1.704
		Mean in Original Scale	3.489
		SD in Original Scale	15.89
		95% t UCL	8.102
		95% Percentile Bootstrap UCL	8.849
		95% BCA Bootstrap UCL	11.79
		95% H-UCL	3.611

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.295	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	14.84		
nu star	15.91		
A-D Test Statistic	3.834	**Nonparametric Statistics**	
5% A-D Critical Value	0.852	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.852	Mean	3.493
5% K-S Critical Value	0.183	SD	15.66
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.737
		95% KM (t) UCL	8.124
Assuming Gamma Distribution		95% KM (z) UCL	7.994
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.106
Minimum	0.000001	95% KM (bootstrap t) UCL	90.21
Maximum	93	95% KM (BCA) UCL	8.748
Mean	3.474	95% KM (Percentile Bootstrap) UCL	8.912
Median	0.21	95% KM (Chebyshev) UCL	15.42
SD	15.9	97.5% KM (Chebyshev) UCL	20.58
k star	0.167	99% KM (Chebyshev) UCL	30.72
Theta star	20.85		
Nu star	11.33	**Potential UCLs to Use**	
AppChi2	4.789	99% KM (Chebyshev) UCL	30.72
95% Gamma Approximate UCL (Use when n >= 40)	8.219		
95% Adjusted Gamma UCL (Use when n < 40)	8.596		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(K)Fluoranthene

General Statistics

Number of Valid Data	34	Number of Detected Data	21
Number of Distinct Detected Data	21	Number of Non-Detect Data	13
		Percent Non-Detects	38.24%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.099	Minimum Detected	-2.313
Maximum Detected	58	Maximum Detected	4.06
Mean of Detected	4.532	Mean of Detected	0.0253
SD of Detected	12.57	SD of Detected	1.541
Minimum Non-Detect	0.087	Minimum Non-Detect	-2.442
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	17
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	17
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.366	Shapiro Wilk Test Statistic	0.948
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.837	Mean	-0.891
SD	10.03	SD	1.697
95% DL/2 (t) UCL	5.748	95% H-Stat (DL/2) UCL	4.743
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.26
		SD in Log Scale	2.086
		Mean in Original Scale	2.816
		SD in Original Scale	10.04
		95% t UCL	5.728
		95% Percentile Bootstrap UCL	6.027
		95% BCA Bootstrap UCL	8.212
		95% H-UCL	10.68

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.406	**Data appear Lognormal at 5% Significance Level**	
Theta Star	11.16		
nu star	17.05		
A-D Test Statistic	1.894	**Nonparametric Statistics**	
5% A-D Critical Value	0.818	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.818	Mean	2.843
5% K-S Critical Value	0.202	SD	9.88
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.736
		95% KM (t) UCL	5.781
Assuming Gamma Distribution		95% KM (z) UCL	5.698
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.741
Minimum	0.000001	95% KM (bootstrap t) UCL	19.11
Maximum	58	95% KM (BCA) UCL	6.324
Mean	2.799	95% KM (Percentile Bootstrap) UCL	6.04
Median	0.285	95% KM (Chebyshev) UCL	10.41
SD	10.04	97.5% KM (Chebyshev) UCL	13.69
k star	0.134	99% KM (Chebyshev) UCL	20.12
Theta star	20.92		
Nu star	9.097	**Potential UCLs to Use**	
AppChi2	3.386	99% KM (Chebyshev) UCL	20.12
95% Gamma Approximate UCL (Use when n >= 40)	7.521		
95% Adjusted Gamma UCL (Use when n < 40)	7.921		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cadmium **Berlin, New Hampshire**

General Statistics

Number of Valid Data	36	Number of Detected Data	25
Number of Distinct Detected Data	22	Number of Non-Detect Data	11
		Percent Non-Detects	30.56%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.094	Minimum Detected	-2.364
Maximum Detected	20	Maximum Detected	2.996
Mean of Detected	1.708	Mean of Detected	-0.364
SD of Detected	3.938	SD of Detected	1.204
Minimum Non-Detect	0.41	Minimum Non-Detect	-0.892
Maximum Non-Detect	0.76	Maximum Non-Detect	-0.274

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	24
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	12
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.382	Shapiro Wilk Test Statistic	0.96
5% Shapiro Wilk Critical Value	0.918	5% Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.277	Mean	-0.627
SD	3.327	SD	1.079
95% DL/2 (t) UCL	2.214	95% H-Stat (DL/2) UCL	1.502
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.682
		SD in Log Scale	1.114
		Mean in Original Scale	1.262
		SD in Original Scale	3.332
		95% t UCL	2.2
		95% Percentile Bootstrap UCL	2.238
		95% BCA Bootstrap UCL	3.238
		95% H-UCL	1.51

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.621	**Data appear Lognormal at 5% Significance Level**	
Theta Star	2.748		
nu star	31.07		
A-D Test Statistic	1.595	**Nonparametric Statistics**	
5% A-D Critical Value	0.79	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.79	Mean	1.271
5% K-S Critical Value	0.182	SD	3.283
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.559
		95% KM (t) UCL	2.215
Assuming Gamma Distribution		95% KM (z) UCL	2.19
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.209
Minimum	0.000001	95% KM (bootstrap t) UCL	5.561
Maximum	20	95% KM (BCA) UCL	2.447
Mean	1.189	95% KM (Percentile Bootstrap) UCL	2.311
Median	0.365	95% KM (Chebyshev) UCL	3.706
SD	3.356	97.5% KM (Chebyshev) UCL	4.76
k star	0.178	99% KM (Chebyshev) UCL	6.831
Theta star	6.682		
Nu star	12.82	**Potential UCLs to Use**	
AppChi2	5.77	97.5% KM (Chebyshev) UCL	4.76
95% Gamma Approximate UCL (Use when n >= 40)	2.642		
95% Adjusted Gamma UCL (Use when n < 40)	2.744		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Carbazole **Berlin, New Hampshire**

General Statistics

Number of Valid Data	34	Number of Detected Data	18
Number of Distinct Detected Data	15	Number of Non-Detect Data	16
		Percent Non-Detects	47.06%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.02	Minimum Detected	-3.912
Maximum Detected	26	Maximum Detected	3.258
Mean of Detected	1.595	Mean of Detected	-1.889
SD of Detected	6.092	SD of Detected	1.546
Minimum Non-Detect	0.091	Minimum Non-Detect	-2.397
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	30
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	88.24%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.27	Shapiro Wilk Test Statistic	0.787
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.891	Mean	-2.112
SD	4.438	SD	1.155
95% DL/2 (t) UCL	2.179	95% H-Stat (DL/2) UCL	0.401
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.206
		SD in Log Scale	1.221
		Mean in Original Scale	0.886
		SD in Original Scale	4.439
		95% t UCL	2.175
		95% Percentile Bootstrap UCL	2.399
		95% BCA Bootstrap UCL	3.915
		95% H-UCL	0.415

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.282	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	5.66		
nu star	10.14		
A-D Test Statistic	3.926	**Nonparametric Statistics**	
5% A-D Critical Value	0.845	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.845	Mean	0.885
5% K-S Critical Value	0.221	SD	4.373
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.772
		95% KM (t) UCL	2.191
Assuming Gamma Distribution		95% KM (z) UCL	2.155
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.174
Minimum	0.000001	95% KM (bootstrap t) UCL	37.76
Maximum	26	95% KM (BCA) UCL	2.405
Mean	0.906	95% KM (Percentile Bootstrap) UCL	2.404
Median	0.0785	95% KM (Chebyshev) UCL	4.249
SD	4.442	97.5% KM (Chebyshev) UCL	5.705
k star	0.14	99% KM (Chebyshev) UCL	8.564
Theta star	6.458		
Nu star	9.543	**Potential UCLs to Use**	
AppChi2	3.658	99% KM (Chebyshev) UCL	8.564
95% Gamma Approximate UCL (Use when n >= 40)	2.364		
95% Adjusted Gamma UCL (Use when n < 40)	2.486		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Chromium

General Statistics

Number of Valid Observations	36	Number of Distinct Observations	30

Raw Statistics		**Log-transformed Statistics**	
Minimum	5.3	Minimum of Log Data	1.668
Maximum	29.7	Maximum of Log Data	3.391
Mean	11.59	Mean of log Data	2.354
Geometric Mean	10.52	SD of log Data	0.427
Median	8.9		
SD	5.721		
Std. Error of Mean	0.954		
Coefficient of Variation	0.494		
Skewness	1.535		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.829	Shapiro Wilk Test Statistic	0.93
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	13.2	95% H-UCL	13.18
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15.19
95% Adjusted-CLT UCL (Chen-1995)	13.42	97.5% Chebyshev (MVUE) UCL	16.78
95% Modified-t UCL (Johnson-1978)	13.24	99% Chebyshev (MVUE) UCL	19.92

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.914	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	2.358		
MLE of Mean	11.59		
MLE of Standard Deviation	5.228		
nu star	353.8		
Approximate Chi Square Value (.05)	311.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0428	95% CLT UCL	13.16
Adjusted Chi Square Value	309.4	95% Jackknife UCL	13.2
		95% Standard Bootstrap UCL	13.14
Anderson-Darling Test Statistic	1.352	95% Bootstrap-t UCL	13.56
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	13.42
Kolmogorov-Smirnov Test Statistic	0.197	95% Percentile Bootstrap UCL	13.19
Kolmogorov-Smirnov 5% Critical Value	0.147	95% BCA Bootstrap UCL	13.5
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.75
		97.5% Chebyshev(Mean, Sd) UCL	17.55
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	21.08
95% Approximate Gamma UCL (Use when n >= 40)	13.18		
95% Adjusted Gamma UCL (Use when n < 40)	13.25		

Potential UCL to Use	
Use 95% Student's-t UCL	13.2
or 95% Modified-t UCL	13.24

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Chrysene **Berlin, New Hampshire**

General Statistics

Number of Valid Data	34	Number of Detected Data	23
Number of Distinct Detected Data	21	Number of Non-Detect Data	11
		Percent Non-Detects	32.35%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.012	Minimum Detected	-4.423
Maximum Detected	290	Maximum Detected	5.67
Mean of Detected	14.77	Mean of Detected	0.158
SD of Detected	60.1	SD of Detected	1.923
Minimum Non-Detect	0.0925	Minimum Non-Detect	-2.381
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	20
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	41.18%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.25	Shapiro Wilk Test Statistic	0.936
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	10.03	Mean	-0.638
SD	49.56	SD	1.964
95% DL/2 (t) UCL	24.41	95% H-Stat (DL/2) UCL	13.38
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.986
		SD in Log Scale	2.319
		Mean in Original Scale	10.01
		SD in Original Scale	49.57
		95% t UCL	24.39
		95% Percentile Bootstrap UCL	26.85
		95% BCA Bootstrap UCL	36.26
		95% H-UCL	32.06

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.269	**Data appear Lognormal at 5% Significance Level**	
Theta Star	54.97		
nu star	12.36		
A-D Test Statistic	3.349	**Nonparametric Statistics**	
5% A-D Critical Value	0.86	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.86	Mean	10.02
5% K-S Critical Value	0.198	SD	48.83
Data not Gamma Distributed at 5% Significance Level		SE of Mean	8.563
		95% KM (t) UCL	24.51
Assuming Gamma Distribution		95% KM (z) UCL	24.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	24.38
Minimum	0.000001	95% KM (bootstrap t) UCL	261.2
Maximum	290	95% KM (BCA) UCL	26.85
Mean	9.994	95% KM (Percentile Bootstrap) UCL	26.83
Median	0.445	95% KM (Chebyshev) UCL	47.34
SD	49.57	97.5% KM (Chebyshev) UCL	63.49
k star	0.128	99% KM (Chebyshev) UCL	95.21
Theta star	77.96		
Nu star	8.718	**Potential UCLs to Use**	
AppChi2	3.157	99% KM (Chebyshev) UCL	95.21
95% Gamma Approximate UCL (Use when n >= 40)	27.59		
95% Adjusted Gamma UCL (Use when n < 40)	29.11		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Cobalt **Berlin, New Hampshire**

General Statistics

Number of Valid Observations	36	Number of Distinct Observations	34

Raw Statistics		**Log-transformed Statistics**	
Minimum	2.5	Minimum of Log Data	0.916
Maximum	327	Maximum of Log Data	5.79
Mean	20.91	Mean of log Data	2.253
Geometric Mean	9.516	SD of log Data	0.966
Median	7.55		
SD	54.08		
Std. Error of Mean	9.013		
Coefficient of Variation	2.587		
Skewness	5.49		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.32	Shapiro Wilk Test Statistic	0.853
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	36.13	95% H-UCL	22.25
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	26.93
95% Adjusted-CLT UCL (Chen-1995)	44.54	97.5% Chebyshev (MVUE) UCL	32.13
95% Modified-t UCL (Johnson-1978)	37.51	99% Chebyshev (MVUE) UCL	42.36

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.715	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	29.26		
MLE of Mean	20.91		
MLE of Standard Deviation	24.73		
nu star	51.45		
Approximate Chi Square Value (.05)	35.98	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0428	95% CLT UCL	35.73
Adjusted Chi Square Value	35.39	95% Jackknife UCL	36.13
		95% Standard Bootstrap UCL	35.65
Anderson-Darling Test Statistic	4.162	95% Bootstrap-t UCL	84.57
Anderson-Darling 5% Critical Value	0.788	95% Hall's Bootstrap UCL	86.34
Kolmogorov-Smirnov Test Statistic	0.279	95% Percentile Bootstrap UCL	37.91
Kolmogorov-Smirnov 5% Critical Value	0.153	95% BCA Bootstrap UCL	49.57
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	60.19
		97.5% Chebyshev(Mean, Sd) UCL	77.19
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	110.6
95% Approximate Gamma UCL (Use when n >= 40)	29.9		
95% Adjusted Gamma UCL (Use when n < 40)	30.39		

Potential UCL to Use	
Use 95% Chebyshev (Mean, Sd) UCL	60.19

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Delta-BHC **Berlin, New Hampshire**

General Statistics

Number of Valid Data	5	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	3
		Percent Non-Detects	60.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00055	Minimum Detected	-7.506
Maximum Detected	2.7	Maximum Detected	0.993
Mean of Detected	1.35	Mean of Detected	-3.256
SD of Detected	1.909	SD of Detected	6.01
Minimum Non-Detect	0.0019	Minimum Non-Detect	-6.266
Maximum Non-Detect	0.00235	Maximum Non-Detect	-6.053

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	80.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!
It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.541	Mean	-5.406
SD	1.207	SD	3.59
95% DL/2 (t) UCL	1.692	95% H-Stat (DL/2) UCL	2.856E+13
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.54
5% K-S Critical Value	N/A	SD	1.08
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.683
		95% KM (t) UCL	1.996
Assuming Gamma Distribution		95% KM (z) UCL	1.664
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.824
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	2.7
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	3.517
SD	N/A	97.5% KM (Chebyshev) UCL	4.805
k star	N/A	99% KM (Chebyshev) UCL	7.335
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	99% KM (Chebyshev) UCL	7.335
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Dibenz(A,H)Anthracene

General Statistics

Number of Valid Data	34	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	14
		Percent Non-Detects	41.18%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.029	Minimum Detected	-3.54
Maximum Detected	17	Maximum Detected	2.833
Mean of Detected	1.262	Mean of Detected	-1.385
SD of Detected	3.771	SD of Detected	1.558
Minimum Non-Detect	0.087	Minimum Non-Detect	-2.442
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	73.53%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.343	Shapiro Wilk Test Statistic	0.93
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.783	Mean	-1.786
SD	2.92	SD	1.297
95% DL/2 (t) UCL	1.631	95% H-Stat (DL/2) UCL	0.737
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.903
		SD in Log Scale	1.373
		Mean in Original Scale	0.775
		SD in Original Scale	2.922
		95% t UCL	1.623
		95% Percentile Bootstrap UCL	1.72
		95% BCA Bootstrap UCL	2.64
		95% H-UCL	0.772

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.378	**Data appear Lognormal at 5% Significance Level**	
Theta Star	3.338		
nu star	15.13		
A-D Test Statistic	2.142	**Nonparametric Statistics**	
5% A-D Critical Value	0.822	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.822	Mean	0.776
5% K-S Critical Value	0.207	SD	2.878
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.506
		95% KM (t) UCL	1.633
Assuming Gamma Distribution		95% KM (z) UCL	1.609
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.624
Minimum	0.000001	95% KM (bootstrap t) UCL	8.854
Maximum	17	95% KM (BCA) UCL	1.743
Mean	0.743	95% KM (Percentile Bootstrap) UCL	1.74
Median	0.0615	95% KM (Chebyshev) UCL	2.983
SD	2.93	97.5% KM (Chebyshev) UCL	3.939
k star	0.135	99% KM (Chebyshev) UCL	5.815
Theta star	5.491		
Nu star	9.196	**Potential UCLs to Use**	
AppChi2	3.446	99% KM (Chebyshev) UCL	5.815
95% Gamma Approximate UCL (Use when n >= 40)	1.982		
95% Adjusted Gamma UCL (Use when n < 40)	2.086		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Dibenzofuran

General Statistics

Number of Valid Data	34	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	23
		Percent Non-Detects	67.65%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0285	Minimum Detected	-3.558
Maximum Detected	120	Maximum Detected	4.787
Mean of Detected	11.01	Mean of Detected	-1.833
SD of Detected	36.15	SD of Detected	2.318
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.73	Maximum Non-Detect	-0.315

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.06%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.347	Shapiro Wilk Test Statistic	0.643
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.647	Mean	-2.046
SD	20.56	SD	1.317
95% DL/2 (t) UCL	9.614	95% H-Stat (DL/2) UCL	0.593
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.344
		SD in Log Scale	1.467
		Mean in Original Scale	3.628
		SD in Original Scale	20.56
		95% t UCL	9.596
		95% Percentile Bootstrap UCL	10.68
		95% BCA Bootstrap UCL	14.22
		95% H-UCL	0.616

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.189	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	58.11		
nu star	4.168		
A-D Test Statistic	2.886	**Nonparametric Statistics**	
5% A-D Critical Value	0.868	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.868	Mean	3.613
5% K-S Critical Value	0.283	SD	20.26
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3.644
		95% KM (t) UCL	9.781
Assuming Gamma Distribution		95% KM (z) UCL	9.608
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9.582
Minimum	0.000001	95% KM (bootstrap t) UCL	1078
Maximum	120	95% KM (BCA) UCL	10.68
Mean	4.085	95% KM (Percentile Bootstrap) UCL	10.66
Median	0.000001	95% KM (Chebyshev) UCL	19.5
SD	20.59	97.5% KM (Chebyshev) UCL	26.37
k star	0.0927	99% KM (Chebyshev) UCL	39.87
Theta star	44.07		
Nu star	6.303	**Potential UCLs to Use**	
AppChi2	1.796	99% KM (Chebyshev) UCL	39.87
95% Gamma Approximate UCL (Use when n >= 40)	14.33		
95% Adjusted Gamma UCL (Use when n < 40)	15.32		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Dieldrin

General Statistics

Number of Valid Data	5	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	4
		Percent Non-Detects	80.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Dieldrin was not processed!

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

Di-N-Octyl Phthalate

General Statistics

Number of Valid Data	33	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	32
		Percent Non-Detects	96.97%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Di-N-Octyl Phthalate was not processed!

Fluoranthene

General Statistics

Number of Valid Data	33	Number of Detected Data	25
Number of Distinct Detected Data	25	Number of Non-Detect Data	8
		Percent Non-Detects	24.24%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.074	Minimum Detected	-2.604
Maximum Detected	1000	Maximum Detected	6.908
Mean of Detected	43.87	Mean of Detected	0.56
SD of Detected	199.3	SD of Detected	2.027
Minimum Non-Detect	0.0925	Minimum Non-Detect	-2.381
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	33.33%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.226	Shapiro Wilk Test Statistic	0.929
5% Shapiro Wilk Critical Value	0.918	5% Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	33.26	Mean	-0.132
SD	173.7	SD	2.157
95% DL/2 (t) UCL	84.47	95% H-Stat (DL/2) UCL	42.72
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.32
		SD in Log Scale	2.37
		Mean in Original Scale	33.25
		SD in Original Scale	173.7
		95% t UCL	84.46
		95% Percentile Bootstrap UCL	93.42
		95% BCA Bootstrap UCL	124.8
		95% H-UCL	77.19

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.224	**Data appear Lognormal at 5% Significance Level**	
Theta Star	195.8		
nu star	11.2		
A-D Test Statistic	4.151	**Nonparametric Statistics**	
5% A-D Critical Value	0.885	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.885	Mean	33.26
5% K-S Critical Value	0.192	SD	171
Data not Gamma Distributed at 5% Significance Level		SE of Mean	30.38
		95% KM (t) UCL	84.73
Assuming Gamma Distribution		95% KM (z) UCL	83.24
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	84.46
Minimum	0.000001	95% KM (bootstrap t) UCL	1461
Maximum	1000	95% KM (BCA) UCL	94.16
Mean	33.24	95% KM (Percentile Bootstrap) UCL	93.57
Median	0.57	95% KM (Chebyshev) UCL	165.7
SD	173.7	97.5% KM (Chebyshev) UCL	223
k star	0.132	99% KM (Chebyshev) UCL	335.6
Theta star	251.8		
Nu star	8.71	**Potential UCLs to Use**	
AppChi2	3.153	99% KM (Chebyshev) UCL	335.6
95% Gamma Approximate UCL (Use when n >= 40)	91.82		
95% Adjusted Gamma UCL (Use when n < 40)	97.07		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Gamma-BHC (Lindane) **Berlin, New Hampshire**

General Statistics

Number of Valid Observations	5	Number of Distinct Observations	5

Raw Statistics		**Log-transformed Statistics**	
Minimum	0.00063	Minimum of Log Data	-7.37
Maximum	1.4	Maximum of Log Data	0.336
Mean	0.283	Mean of log Data	-4.75
Geometric Mean	0.00865	SD of log Data	2.984
Median	0.005		
SD	0.625		
Std. Error of Mean	0.279		
Coefficient of Variation	2.209		
Skewness	2.236		

Warning: A sample size of 'n' = 5 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 5 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.556	Shapiro Wilk Test Statistic	0.823
Shapiro Wilk Critical Value	0.762	Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.878	95% H-UCL	752700000
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.528
95% Adjusted-CLT UCL (Chen-1995)	1.041	97.5% Chebyshev (MVUE) UCL	0.709
95% Modified-t UCL (Johnson-1978)	0.925	99% Chebyshev (MVUE) UCL	1.066

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.217	**Data appear Lognormal at 5% Significance Level**	
Theta Star	1.302		
MLE of Mean	0.283		
MLE of Standard Deviation	0.607		
nu star	2.171		
Approximate Chi Square Value (.05)	0.176	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0086	95% CLT UCL	0.742
Adjusted Chi Square Value	0.0764	95% Jackknife UCL	0.878
		95% Standard Bootstrap UCL	0.695
Anderson-Darling Test Statistic	0.88	95% Bootstrap-t UCL	98.19
Anderson-Darling 5% Critical Value	0.772	95% Hall's Bootstrap UCL	84.35
Kolmogorov-Smirnov Test Statistic	0.448	95% Percentile Bootstrap UCL	0.841
Kolmogorov-Smirnov 5% Critical Value	0.388	95% BCA Bootstrap UCL	0.842
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.5
		97.5% Chebyshev(Mean, Sd) UCL	2.027
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3.062
95% Approximate Gamma UCL (Use when n >= 40)	3.482		
95% Adjusted Gamma UCL (Use when n < 40)	8.038		

Potential UCL to Use	
Use 99% Chebyshev (Mean, Sd) UCL	3.062

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Heptachlor Epoxide

General Statistics

Number of Valid Data	5	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	3
		Percent Non-Detects	60.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0059	Minimum Detected	-5.133
Maximum Detected	4.7	Maximum Detected	1.548
Mean of Detected	2.353	Mean of Detected	-1.793
SD of Detected	3.319	SD of Detected	4.724
Minimum Non-Detect	0.0022	Minimum Non-Detect	-6.119
Maximum Non-Detect	0.00235	Maximum Non-Detect	-6.053

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	60.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!
It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.942	Mean	-4.782
SD	2.101	SD	3.609
95% DL/2 (t) UCL	2.945	95% H-Stat (DL/2) UCL	7.94E+13
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.945
5% K-S Critical Value	N/A	SD	1.878
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.188
		95% KM (t) UCL	3.476
Assuming Gamma Distribution		95% KM (z) UCL	2.898
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.915
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	6.121
SD	N/A	97.5% KM (Chebyshev) UCL	8.361
k star	N/A	99% KM (Chebyshev) UCL	12.76
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	99% KM (Chebyshev) UCL	12.76
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Indeno(1,2,3-Cd)Pyrene

General Statistics

Number of Valid Data	34	Number of Detected Data	22
Number of Distinct Detected Data	19	Number of Non-Detect Data	12
		Percent Non-Detects	35.29%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.1	Minimum Detected	-2.303
Maximum Detected	92	Maximum Detected	4.522
Mean of Detected	5.324	Mean of Detected	-0.32
SD of Detected	19.45	SD of Detected	1.56
Minimum Non-Detect	0.087	Minimum Non-Detect	-2.442
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	16
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	52.94%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.277	Shapiro Wilk Test Statistic	0.874
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.478	Mean	-1.058
SD	15.72	SD	1.618
95% DL/2 (t) UCL	8.041	95% H-Stat (DL/2) UCL	3.246
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.427
		SD in Log Scale	1.994
		Mean in Original Scale	3.458
		SD in Original Scale	15.73
		95% t UCL	8.022
		95% Percentile Bootstrap UCL	8.748
		95% BCA Bootstrap UCL	13.8
		95% H-UCL	6.687

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.323	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	16.47		
nu star	14.22		
A-D Test Statistic	3.399	**Nonparametric Statistics**	
5% A-D Critical Value	0.839	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.839	Mean	3.484
5% K-S Critical Value	0.2	SD	15.49
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.718
		95% KM (t) UCL	8.084
Assuming Gamma Distribution		95% KM (z) UCL	7.955
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.044
Minimum	0.000001	95% KM (bootstrap t) UCL	51.08
Maximum	92	95% KM (BCA) UCL	9.119
Mean	3.445	95% KM (Percentile Bootstrap) UCL	8.808
Median	0.225	95% KM (Chebyshev) UCL	15.33
SD	15.73	97.5% KM (Chebyshev) UCL	20.46
k star	0.133	99% KM (Chebyshev) UCL	30.53
Theta star	25.83		
Nu star	9.071	**Potential UCLs to Use**	
AppChi2	3.37	99% KM (Chebyshev) UCL	30.53
95% Gamma Approximate UCL (Use when n >= 40)	9.273		
95% Adjusted Gamma UCL (Use when n < 40)	9.767		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Iron **Berlin, New Hampshire**

General Statistics

Number of Valid Observations	36	Number of Distinct Observations	33

Raw Statistics		**Log-transformed Statistics**	
Minimum	8130	Minimum of Log Data	9.003
Maximum	210000	Maximum of Log Data	12.25
Mean	25977	Mean of log Data	9.828
Geometric Mean	18550	SD of log Data	0.692
Median	15750		
SD	35198		
Std. Error of Mean	5866		
Coefficient of Variation	1.355		
Skewness	4.477		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.468	Shapiro Wilk Test Statistic	0.869
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	35889	95% H-UCL	30004
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	36113
95% Adjusted-CLT UCL (Chen-1995)	40304	97.5% Chebyshev (MVUE) UCL	41626
95% Modified-t UCL (Johnson-1978)	36618	99% Chebyshev (MVUE) UCL	52455
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.514	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	17158		
MLE of Mean	25977		
MLE of Standard Deviation	21112		
nu star	109		
Approximate Chi Square Value (.05)	85.91	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0428	95% CLT UCL	35627
Adjusted Chi Square Value	84.98	95% Jackknife UCL	35889
		95% Standard Bootstrap UCL	35613
Anderson-Darling Test Statistic	2.754	95% Bootstrap-t UCL	52780
Anderson-Darling 5% Critical Value	0.765	95% Hall's Bootstrap UCL	75200
Kolmogorov-Smirnov Test Statistic	0.259	95% Percentile Bootstrap UCL	36866
Kolmogorov-Smirnov 5% Critical Value	0.149	95% BCA Bootstrap UCL	43887
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	51548
		97.5% Chebyshev(Mean, Sd) UCL	62613
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	84347
95% Approximate Gamma UCL (Use when n >= 40)	32961		
95% Adjusted Gamma UCL (Use when n < 40)	33322		

Potential UCL to Use	
Use 95% Chebyshev (Mean, Sd) UCL	51548

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Lead **Berlin, New Hampshire**

General Statistics

Number of Valid Observations	36	Number of Distinct Observations	36

Raw Statistics		**Log-transformed Statistics**	
Minimum	4.3	Minimum of Log Data	1.459
Maximum	1010	Maximum of Log Data	6.918
Mean	163.3	Mean of log Data	4.396
Geometric Mean	81.09	SD of log Data	1.209
Median	78.8		
SD	234.7		
Std. Error of Mean	39.12		
Coefficient of Variation	1.438		
Skewness	2.537		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.618	Shapiro Wilk Test Statistic	0.976
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	229.4	95% H-UCL	288.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	336.5
95% Adjusted-CLT UCL (Chen-1995)	245.3	97.5% Chebyshev (MVUE) UCL	411.7
95% Modified-t UCL (Johnson-1978)	232.1	99% Chebyshev (MVUE) UCL	559.3

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.791	**Data appear Lognormal at 5% Significance Level**	
Theta Star	206.5		
MLE of Mean	163.3		
MLE of Standard Deviation	183.6		
nu star	56.93		
Approximate Chi Square Value (.05)	40.59	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0428	95% CLT UCL	227.6
Adjusted Chi Square Value	39.96	95% Jackknife UCL	229.4
		95% Standard Bootstrap UCL	227.5
Anderson-Darling Test Statistic	1.289	95% Bootstrap-t UCL	276.1
Anderson-Darling 5% Critical Value	0.784	95% Hall's Bootstrap UCL	234.3
Kolmogorov-Smirnov Test Statistic	0.185	95% Percentile Bootstrap UCL	228.3
Kolmogorov-Smirnov 5% Critical Value	0.152	95% BCA Bootstrap UCL	245.4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	333.8
		97.5% Chebyshev(Mean, Sd) UCL	407.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	552.5
95% Approximate Gamma UCL (Use when n >= 40)	229		
95% Adjusted Gamma UCL (Use when n < 40)	232.6		

Potential UCL to Use		
	Use 95% H-UCL	288.2

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Manganese **Berlin, New Hampshire**

General Statistics

Number of Valid Observations	36	Number of Distinct Observations	30

Raw Statistics		**Log-transformed Statistics**	
Minimum	83.4	Minimum of Log Data	4.424
Maximum	603	Maximum of Log Data	6.402
Mean	197.4	Mean of log Data	5.174
Geometric Mean	176.6	SD of log Data	0.447
Median	165		
SD	112.4		
Std. Error of Mean	18.73		
Coefficient of Variation	0.569		
Skewness	2.267		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.751	Shapiro Wilk Test Statistic	0.933
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	229.1	95% H-UCL	224.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	260.3
95% Adjusted-CLT UCL (Chen-1995)	235.8	97.5% Chebyshev (MVUE) UCL	288.7
95% Modified-t UCL (Johnson-1978)	230.3	99% Chebyshev (MVUE) UCL	344.5

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.279	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	46.14		
MLE of Mean	197.4		
MLE of Standard Deviation	95.44		
nu star	308.1		
Approximate Chi Square Value (.05)	268.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0428	95% CLT UCL	228.2
Adjusted Chi Square Value	266.8	95% Jackknife UCL	229.1
		95% Standard Bootstrap UCL	228
Anderson-Darling Test Statistic	1.296	95% Bootstrap-t UCL	243.9
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	253.9
Kolmogorov-Smirnov Test Statistic	0.16	95% Percentile Bootstrap UCL	229.2
Kolmogorov-Smirnov 5% Critical Value	0.147	95% BCA Bootstrap UCL	236.2
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	279.1
		97.5% Chebyshev(Mean, Sd) UCL	314.4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	383.8
95% Approximate Gamma UCL (Use when n >= 40)	226.6		
95% Adjusted Gamma UCL (Use when n < 40)	228		

Potential UCL to Use	
Use 95% Student's-t UCL	229.1
or 95% Modified-t UCL	230.3

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Mercury **Berlin, New Hampshire**

General Statistics

Number of Valid Data	36	Number of Detected Data	35
Number of Distinct Detected Data	33	Number of Non-Detect Data	1
		Percent Non-Detects	2.78%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.22	Minimum Detected	-1.514
Maximum Detected	15000	Maximum Detected	9.616
Mean of Detected	506.7	Mean of Detected	2.566
SD of Detected	2533	SD of Detected	2.337
Minimum Non-Detect	0.1	Minimum Non-Detect	-2.303
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.21	Shapiro Wilk Test Statistic	0.955
5% Shapiro Wilk Critical Value	0.934	5% Shapiro Wilk Critical Value	0.934
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	492.6	Mean	2.411
SD	2498	SD	2.483
95% DL/2 (t) UCL	1196	95% H-Stat (DL/2) UCL	1563
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	441.4	Mean in Log Scale	2.403
SD	2503	SD in Log Scale	2.502
95% MLE (t) UCL	1146	Mean in Original Scale	492.6
95% MLE (Tiku) UCL	1064	SD in Original Scale	2498
		95% t UCL	1196
		95% Percentile Bootstrap UCL	1305
		95% BCA Bootstrap UCL	1789
		95% H UCL	1670

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.203	**Data appear Lognormal at 5% Significance Level**	
Theta Star	2500		
nu star	14.19		
A-D Test Statistic	5.044	**Nonparametric Statistics**	
5% A-D Critical Value	0.899	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.899	Mean	492.6
5% K-S Critical Value	0.165	SD	2463
Data not Gamma Distributed at 5% Significance Level		SE of Mean	416.5
		95% KM (t) UCL	1196
Assuming Gamma Distribution		95% KM (z) UCL	1178
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1196
Minimum	0.000001	95% KM (bootstrap t) UCL	12319
Maximum	15000	95% KM (BCA) UCL	1307
Mean	492.6	95% KM (Percentile Bootstrap) UCL	1307
Median	12.45	95% KM (Chebyshev) UCL	2308
SD	2498	97.5% KM (Chebyshev) UCL	3094
k star	0.186	99% KM (Chebyshev) UCL	4637
Theta star	2651		
Nu star	13.38	**Potential UCLs to Use**	
AppChi2	6.15	99% KM (Chebyshev) UCL	4637
95% Gamma Approximate UCL (Use when n >= 40)	1072		
95% Adjusted Gamma UCL (Use when n < 40)	1112		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Naphthalene

General Statistics

Number of Valid Data	34	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	22
		Percent Non-Detects	64.71%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.026	Minimum Detected	-3.65
Maximum Detected	40	Maximum Detected	3.689
Mean of Detected	3.489	Mean of Detected	-2.049
SD of Detected	11.5	SD of Detected	2.132
Minimum Non-Detect	0.0925	Minimum Non-Detect	-2.381
Maximum Non-Detect	0.27	Maximum Non-Detect	-1.309

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	31
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.18%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.342	Shapiro Wilk Test Statistic	0.748
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.298	Mean	-2.211
SD	6.84	SD	1.249
95% DL/2 (t) UCL	3.283	95% H-Stat (DL/2) UCL	0.436
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.578
		SD in Log Scale	1.437
		Mean in Original Scale	1.28
		SD in Original Scale	6.844
		95% t UCL	3.267
		95% Percentile Bootstrap UCL	3.627
		95% BCA Bootstrap UCL	4.824
		95% H-UCL	0.455

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.22	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	15.83		
nu star	5.29		
A-D Test Statistic	2.495	**Nonparametric Statistics**	
5% A-D Critical Value	0.857	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.857	Mean	1.267
5% K-S Critical Value	0.27	SD	6.744
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.208
		95% KM (t) UCL	3.312
Assuming Gamma Distribution		95% KM (z) UCL	3.255
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.254
Minimum	0.000001	95% KM (bootstrap t) UCL	96.82
Maximum	40	95% KM (BCA) UCL	3.617
Mean	1.449	95% KM (Percentile Bootstrap) UCL	3.618
Median	0.0197	95% KM (Chebyshev) UCL	6.533
SD	6.861	97.5% KM (Chebyshev) UCL	8.812
k star	0.113	99% KM (Chebyshev) UCL	13.29
Theta star	12.8		
Nu star	7.699	**Potential UCLs to Use**	
AppChi2	2.562	99% KM (Chebyshev) UCL	13.29
95% Gamma Approximate UCL (Use when n >= 40)	4.355		
95% Adjusted Gamma UCL (Use when n < 40)	4.615		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Berlin, New Hampshire

Nickel

General Statistics

Number of Valid Observations	36	Number of Distinct Observations	34

Raw Statistics		**Log-transformed Statistics**	
Minimum	4	Minimum of Log Data	1.386
Maximum	177	Maximum of Log Data	5.176
Mean	23.25	Mean of log Data	2.709
Geometric Mean	15.02	SD of log Data	0.846
Median	11.68		
SD	31.62		
Std. Error of Mean	5.269		
Coefficient of Variation	1.36		
Skewness	3.74		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.557	Shapiro Wilk Test Statistic	0.941
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	32.16	95% H-UCL	29.48
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	35.79
95% Adjusted-CLT UCL (Chen-1995)	35.43	97.5% Chebyshev (MVUE) UCL	42.11
95% Modified-t UCL (Johnson-1978)	32.7	99% Chebyshev (MVUE) UCL	54.51

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.196	**Data appear Lognormal at 5% Significance Level**	
Theta Star	19.44		
MLE of Mean	23.25		
MLE of Standard Deviation	21.26		
nu star	86.14		
Approximate Chi Square Value (.05)	65.75	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0428	95% CLT UCL	31.92
Adjusted Chi Square Value	64.94	95% Jackknife UCL	32.16
		95% Standard Bootstrap UCL	31.82
Anderson-Darling Test Statistic	1.822	95% Bootstrap-t UCL	42.02
Anderson-Darling 5% Critical Value	0.771	95% Hall's Bootstrap UCL	63.08
Kolmogorov-Smirnov Test Statistic	0.202	95% Percentile Bootstrap UCL	32.53
Kolmogorov-Smirnov 5% Critical Value	0.15	95% BCA Bootstrap UCL	35.03
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	46.22
		97.5% Chebyshev(Mean, Sd) UCL	56.16
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	75.68
95% Approximate Gamma UCL (Use when n >= 40)	30.47		
95% Adjusted Gamma UCL (Use when n < 40)	30.85		

Potential UCL to Use	
Use 95% H-UCL	29.48

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

PCB Dioxin-like Congener TEQ (mammal)

General Statistics

Number of Valid Data	34	Number of Detected Data	33
Number of Distinct Detected Data	33	Number of Non-Detect Data	1
		Percent Non-Detects	2.94%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	1.4003E-07	Minimum Detected	-15.78
Maximum Detected	0.00232	Maximum Detected	-6.068
Mean of Detected	0.000084017	Mean of Detected	-12.09
SD of Detected	0.00040124	SD of Detected	2.088
Minimum Non-Detect	3.2152E-07	Minimum Non-Detect	-14.95
Maximum Non-Detect	3.2152E-07	Maximum Non-Detect	-14.95

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.209	Shapiro Wilk Test Statistic	0.945
5% Shapiro Wilk Critical Value	0.931	5% Shapiro Wilk Critical Value	0.931
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00008155	Mean	-12.19
SD	0.00039537	SD	2.145
95% DL/2 (t) UCL	0.0001963	95% H-Stat (DL/2) UCL	0.00023368
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.000021508	Mean in Log Scale	-12.18
SD	0.00043607	SD in Log Scale	2.122
95% MLE (t) UCL	0.00014807	Mean in Original Scale	0.000081553
95% MLE (Tiku) UCL	0.00014283	SD in Original Scale	0.00039537
		95% t UCL	0.00019631
		95% Percentile Bootstrap UCL	0.00021533
		95% BCA Bootstrap UCL	0.00028818
		95% H UCL	0.00021924

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.258	**Data appear Lognormal at 5% Significance Level**	
Theta Star	0.00032618		
nu star	17		
A-D Test Statistic	3.88	**Nonparametric Statistics**	
5% A-D Critical Value	0.872	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.872	Mean	0.000081552
5% K-S Critical Value	0.168	SD	0.00038952
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.000067837
		95% KM (t) UCL	0.00019636
Assuming Gamma Distribution		95% KM (z) UCL	0.00019313
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0001963
Minimum	1.4003E-07	95% KM (bootstrap t) UCL	0.00267
Maximum	0.00232	95% KM (BCA) UCL	0.00021783
Mean	0.000081575	95% KM (Percentile Bootstrap) UCL	0.00021513
Median	5.9087E-06	95% KM (Chebyshev) UCL	0.00037725
SD	0.00039537	97.5% KM (Chebyshev) UCL	0.0005052
k star	0.256	99% KM (Chebyshev) UCL	0.00075653
Theta star	0.00031856		
Nu star	17.41	**Potential UCLs to Use**	
AppChi2	8.968	99% KM (Chebyshev) UCL	0.00075653
95% Gamma Approximate UCL (Use when n >= 40)	0.00015839		
95% Adjusted Gamma UCL (Use when n < 40)	0.00016387		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Pentachlorophenol

General Statistics

Number of Valid Data	34	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	33
		Percent Non-Detects	97.06%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!

It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Pentachlorophenol was not processed!

Thallium — **Berlin, New Hampshire**

General Statistics

Number of Valid Data	36	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	33
		Percent Non-Detects	91.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.7	Minimum Detected	-0.357
Maximum Detected	0.88	Maximum Detected	-0.128
Mean of Detected	0.78	Mean of Detected	-0.253
SD of Detected	0.0917	SD of Detected	0.116
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	3.8	Maximum Non-Detect	1.335

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	36
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.964	Shapiro Wilk Test Statistic	0.974
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.256	Mean	0.191
SD	0.324	SD	0.286
95% DL/2 (t) UCL	1.347	95% H-Stat (DL/2) UCL	1.374
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.253
		SD in Log Scale	0.087
		Mean in Original Scale	0.779
		SD in Original Scale	0.0679
		95% t UCL	0.798
		95% Percentile Bootstrap UCL	0.798
		95% BCA Bootstrap UCL	0.798
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.78
5% K-S Critical Value	N/A	SD	0.0748
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0529
		95% KM (t) UCL	0.869
Assuming Gamma Distribution		95% KM (z) UCL	0.867
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.888
Minimum	N/A	95% KM (bootstrap t) UCL	1.009
Maximum	N/A	95% KM (BCA) UCL	0.88
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	1.011
SD	N/A	97.5% KM (Chebyshev) UCL	1.11
k star	N/A	99% KM (Chebyshev) UCL	1.306
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	0.869
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (Percentile Bootstrap) UCL	N/A
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Total PCB Homologues **Berlin, New Hampshire**

General Statistics

Number of Valid Data	34	Number of Detected Data	33
Number of Distinct Detected Data	33	Number of Non-Detect Data	1
		Percent Non-Detects	2.94%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.0000657	Minimum Detected	-9.63
Maximum Detected	12.1	Maximum Detected	2.493
Mean of Detected	1.254	Mean of Detected	-2.104
SD of Detected	2.76	SD of Detected	3.118
Minimum Non-Detect	0.00459	Minimum Non-Detect	-5.384
Maximum Non-Detect	0.00459	Maximum Non-Detect	-5.384

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.493	Shapiro Wilk Test Statistic	0.9
5% Shapiro Wilk Critical Value	0.931	5% Shapiro Wilk Critical Value	0.931
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.218	Mean	-2.221
SD	2.727	SD	3.145
95% DL/2 (t) UCL	2.009	95% H-Stat (DL/2) UCL	348.5
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.757	Mean in Log Scale	-2.228
SD	3.129	SD in Log Scale	3.154
95% MLE (t) UCL	1.665	Mean in Original Scale	1.218
95% MLE (Tiku) UCL	1.647	SD in Original Scale	2.727
		95% t UCL	2.009
		95% Percentile Bootstrap UCL	2.053
		95% BCA Bootstrap UCL	2.339
		95% H UCL	362.4

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.29	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	4.331		
nu star	19.12		
A-D Test Statistic	0.634	**Nonparametric Statistics**	
5% A-D Critical Value	0.857	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.857	Mean	1.218
5% K-S Critical Value	0.166	SD	2.686
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.468
		95% KM (t) UCL	2.009
Assuming Gamma Distribution		95% KM (z) UCL	1.987
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.009
Minimum	0.000001	95% KM (bootstrap t) UCL	3.054
Maximum	12.1	95% KM (BCA) UCL	2.013
Mean	1.218	95% KM (Percentile Bootstrap) UCL	2.063
Median	0.256	95% KM (Chebyshev) UCL	3.257
SD	2.727	97.5% KM (Chebyshev) UCL	4.139
k star	0.262	99% KM (Chebyshev) UCL	5.873
Theta star	4.648		
Nu star	17.81	**Potential UCLs to Use**	
AppChi2	9.257	95% KM (Chebyshev) UCL	3.257
95% Gamma Approximate UCL (Use when n >= 40)	2.343		
95% Adjusted Gamma UCL (Use when n < 40)	2.423		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - CHP
Chlor Alkali Superfund Site
Zinc **Berlin, New Hampshire**

General Statistics

Number of Valid Observations	36	Number of Distinct Observations	36

Raw Statistics		**Log-transformed Statistics**	
Minimum	14.6	Minimum of Log Data	2.681
Maximum	3820	Maximum of Log Data	8.248
Mean	282.4	Mean of log Data	4.831
Geometric Mean	125.3	SD of log Data	1.151
Median	137		
SD	638.6		
Std. Error of Mean	106.4		
Coefficient of Variation	2.261		
Skewness	5.179		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.379	Shapiro Wilk Test Statistic	0.967
Shapiro Wilk Critical Value	0.935	Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	462.2	95% H-UCL	400.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	472.9
95% Adjusted-CLT UCL (Chen-1995)	555.6	97.5% Chebyshev (MVUE) UCL	575.4
95% Modified-t UCL (Johnson-1978)	477.6	99% Chebyshev (MVUE) UCL	776.7

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.695	**Data appear Lognormal at 5% Significance Level**	
Theta Star	406.3		
MLE of Mean	282.4		
MLE of Standard Deviation	338.8		
nu star	50.04		
Approximate Chi Square Value (.05)	34.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0428	95% CLT UCL	457.5
Adjusted Chi Square Value	34.22	95% Jackknife UCL	462.2
		95% Standard Bootstrap UCL	450.7
Anderson-Darling Test Statistic	1.841	95% Bootstrap-t UCL	1003
Anderson-Darling 5% Critical Value	0.789	95% Hall's Bootstrap UCL	1104
Kolmogorov-Smirnov Test Statistic	0.203	95% Percentile Bootstrap UCL	473.1
Kolmogorov-Smirnov 5% Critical Value	0.153	95% BCA Bootstrap UCL	606.1
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	746.3
		97.5% Chebyshev(Mean, Sd) UCL	947.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1341
95% Approximate Gamma UCL (Use when n >= 40)	406.1		
95% Adjusted Gamma UCL (Use when n < 40)	413		

Potential UCL to Use		
	Use 95% H-UCL	400.1

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

2,3,7,8-TCDD TEQ (mammal)

General Statistics

Number of Valid Observations	31	Number of Distinct Observations	31

Raw Statistics		Log-transformed Statistics	
Minimum	8.1E-07	Minimum of Log Data	-14.03
Maximum	0.0004689	Maximum of Log Data	-7.665
Mean	5.659E-05	Mean of log Data	-10.82
Geometric Mean	1.997E-05	SD of log Data	1.522
Median	2.097E-05		
SD	9.939E-05		
Std. Error of Mean	1.785E-05		
Coefficient of Variation	N/A		
Skewness	3.113		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.572	Shapiro Wilk Test Statistic	0.99
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	8.689E-05	95% H-UCL	0.0001508
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0001485
95% Adjusted-CLT UCL (Chen-1995)	9.662E-05	97.5% Chebyshev (MVUE) UCL	0.0001873
95% Modified-t UCL (Johnson-1978)	8.855E-05	99% Chebyshev (MVUE) UCL	0.0002633

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.558	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	0.0001014		
MLE of Mean	5.659E-05		
MLE of Standard Deviation	7.576E-05		
nu star	34.6		
Approximate Chi Square Value (.05)	22.14	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0413	95% CLT UCL	8.595E-05
Adjusted Chi Square Value	21.59	95% Jackknife UCL	8.689E-05
		95% Standard Bootstrap UCL	8.537E-05
Anderson-Darling Test Statistic	0.83	95% Bootstrap-t UCL	0.0001167
Anderson-Darling 5% Critical Value	0.801	95% Hall's Bootstrap UCL	0.0002283
Kolmogorov-Smirnov Test Statistic	0.139	95% Percentile Bootstrap UCL	8.942E-05
Kolmogorov-Smirnov 5% Critical Value	0.166	95% BCA Bootstrap UCL	9.613E-05
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0001344
		97.5% Chebyshev(Mean, Sd) UCL	0.0001681
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0002342
95% Approximate Gamma UCL (Use when n >= 40)	8.842E-05		
95% Adjusted Gamma UCL (Use when n < 40)	9.07E-05		

Potential UCL to Use	
Use 95% Approximate Gamma UCL	8.842E-05

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Aluminum

General Statistics

Number of Valid Observations	45	Number of Distinct Observations	45

Raw Statistics		Log-transformed Statistics	
Minimum	843	Minimum of Log Data	6.737
Maximum	7822	Maximum of Log Data	8.965
Mean	4544	Mean of log Data	8.351
Geometric Mean	4235	SD of log Data	0.412
Median	4420		
SD	1551		
Std. Error of Mean	231.3		
Coefficient of Variation	0.341		
Skewness	0.0798		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.983	Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4932	95% H-UCL	5171
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5876
95% Adjusted-CLT UCL (Chen-1995)	4927	97.5% Chebyshev (MVUE) UCL	6427
95% Modified-t UCL (Johnson-1978)	4933	99% Chebyshev (MVUE) UCL	7511

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.801	**Data appear Normal at 5% Significance Level**	
Theta Star	668.1		
MLE of Mean	4544		
MLE of Standard Deviation	1742		
nu star	612.1		
Approximate Chi Square Value (.05)	555.7	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0447	95% CLT UCL	4924
Adjusted Chi Square Value	553.9	95% Jackknife UCL	4932
		95% Standard Bootstrap UCL	4917
Anderson-Darling Test Statistic	0.455	95% Bootstrap-t UCL	4941
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	4943
Kolmogorov-Smirnov Test Statistic	0.12	95% Percentile Bootstrap UCL	4923
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	4907
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5552
		97.5% Chebyshev(Mean, Sd) UCL	5988
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6845
95% Approximate Gamma UCL (Use when n >= 40)	5005		
95% Adjusted Gamma UCL (Use when n < 40)	5021		

Potential UCL to Use		
		Use 95% Student's-t UCL 4932

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Antimony

General Statistics

Number of Valid Data	45	Number of Detected Data	29
Number of Distinct Detected Data	24	Number of Non-Detect Data	16
		Percent Non-Detects	35.56%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.46	Minimum Detected	-0.777
Maximum Detected	580	Maximum Detected	6.363
Mean of Detected	45.07	Mean of Detected	1.58
SD of Detected	126	SD of Detected	1.861
Minimum Non-Detect	6	Minimum Non-Detect	1.792
Maximum Non-Detect	7.8	Maximum Non-Detect	2.054

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	36
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	80.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.408	Shapiro Wilk Test Statistic	0.854
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	30.23	Mean	1.445
SD	102.5	SD	1.497
95% DL/2 (t) UCL	55.9	95% H-Stat (DL/2) UCL	25.51
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.301
		SD in Log Scale	1.564
		Mean in Original Scale	29.94
		SD in Original Scale	102.6
		95% t UCL	55.63
		95% Percentile Bootstrap UCL	56.75
		95% BCA Bootstrap UCL	70.24
		95% H-UCL	25.74

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.299	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	150.6		
nu star	17.36		
A-D Test Statistic	4.058	**Nonparametric Statistics**	
5% A-D Critical Value	0.854	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.854	Mean	29.77
5% K-S Critical Value	0.177	SD	101.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	15.4
		95% KM (t) UCL	55.64
Assuming Gamma Distribution		95% KM (z) UCL	55.09
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	55.47
Minimum	0.000001	95% KM (bootstrap t) UCL	118.5
Maximum	580	95% KM (BCA) UCL	59.47
Mean	29.76	95% KM (Percentile Bootstrap) UCL	57.25
Median	1.6	95% KM (Chebyshev) UCL	96.88
SD	102.7	97.5% KM (Chebyshev) UCL	125.9
k star	0.132	99% KM (Chebyshev) UCL	183
Theta star	225.1		
Nu star	11.9	**Potential UCLs to Use**	
AppChi2	5.159	97.5% KM (Chebyshev) UCL	125.9
95% Gamma Approximate UCL (Use when n >= 40)	68.62		
95% Adjusted Gamma UCL (Use when n < 40)	70.64		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Arsenic

General Statistics

Number of Valid Data	45	Number of Detected Data	44
Number of Distinct Detected Data	42	Number of Non-Detect Data	1
		Percent Non-Detects	2.22%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.2	Minimum Detected	0.788
Maximum Detected	281	Maximum Detected	5.638
Mean of Detected	29.45	Mean of Detected	2.543
SD of Detected	51.21	SD of Detected	1.207
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	1.2	Maximum Non-Detect	0.182

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.559	Shapiro Wilk Test Statistic	0.927
5% Shapiro Wilk Critical Value	0.944	5% Shapiro Wilk Critical Value	0.944
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	28.81	Mean	2.475
SD	50.8	SD	1.277
95% DL/2 (t) UCL	41.54	95% H-Stat (DL/2) UCL	45.17
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	28.11	Mean in Log Scale	2.475
SD	50.99	SD in Log Scale	1.278
95% MLE (t) UCL	40.88	Mean in Original Scale	28.81
95% MLE (Tiku) UCL	39.64	SD in Original Scale	50.8
		95% t UCL	41.54
		95% Percentile Bootstrap UCL	41.63
		95% BCA Bootstrap UCL	46.72
		95% H UCL	45.23

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.684	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	43.08		
nu star	60.16		
A-D Test Statistic	2.667	**Nonparametric Statistics**	
5% A-D Critical Value	0.793	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.793	Mean	28.85
5% K-S Critical Value	0.139	SD	50.22
Data not Gamma Distributed at 5% Significance Level		SE of Mean	7.572
		95% KM (t) UCL	41.57
Assuming Gamma Distribution		95% KM (z) UCL	41.3
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	41.56
Minimum	0.000001	95% KM (bootstrap t) UCL	51.79
Maximum	281	95% KM (BCA) UCL	43.85
Mean	28.8	95% KM (Percentile Bootstrap) UCL	43.21
Median	9.1	95% KM (Chebyshev) UCL	61.85
SD	50.81	97.5% KM (Chebyshev) UCL	76.14
k star	0.512	99% KM (Chebyshev) UCL	104.2
Theta star	56.24		
Nu star	46.09	**Potential UCLs to Use**	
AppChi2	31.51	95% KM (Chebyshev) UCL	61.85
95% Gamma Approximate UCL (Use when n >= 40)	42.12		
95% Adjusted Gamma UCL (Use when n < 40)	42.66		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(A)Anthracene

General Statistics

Number of Valid Data	31	Number of Detected Data	29
Number of Distinct Detected Data	23	Number of Non-Detect Data	2
		Percent Non-Detects	6.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.089	Minimum Detected	-2.419
Maximum Detected	5	Maximum Detected	1.609
Mean of Detected	1.06	Mean of Detected	-0.438
SD of Detected	1.192	SD of Detected	1.029
Minimum Non-Detect	0.19	Minimum Non-Detect	-1.661
Maximum Non-Detect	0.2	Maximum Non-Detect	-1.609

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	25
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	19.35%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.72	Shapiro Wilk Test Statistic	0.978
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.998	Mean	-0.56
SD	1.176	SD	1.101
95% DL/2 (t) UCL	1.357	95% H-Stat (DL/2) UCL	1.745
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.846	Mean in Log Scale	-0.542
SD	1.341	SD in Log Scale	1.072
95% MLE (t) UCL	1.254	Mean in Original Scale	1
95% MLE (Tiku) UCL	1.25	SD in Original Scale	1.175
		95% t UCL	1.358
		95% Percentile Bootstrap UCL	1.367
		95% BCA Bootstrap UCL	1.445
		95% H UCL	1.688

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.049	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	1.011		
nu star	60.82		
A-D Test Statistic	0.542	**Nonparametric Statistics**	
5% A-D Critical Value	0.771	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.771	Mean	1.001
5% K-S Critical Value	0.167	SD	1.156
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.211
		95% KM (t) UCL	1.359
Assuming Gamma Distribution		95% KM (z) UCL	1.348
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.359
Minimum	0.000001	95% KM (bootstrap t) UCL	1.631
Maximum	5	95% KM (BCA) UCL	1.41
Mean	0.992	95% KM (Percentile Bootstrap) UCL	1.365
Median	0.53	95% KM (Chebyshev) UCL	1.921
SD	1.182	97.5% KM (Chebyshev) UCL	2.32
k star	0.466	99% KM (Chebyshev) UCL	3.102
Theta star	2.128		
Nu star	28.9	**Potential UCLs to Use**	
AppChi2	17.63	95% KM (Chebyshev) UCL	1.921
95% Gamma Approximate UCL (Use when n >= 40)	1.626		
95% Adjusted Gamma UCL (Use when n < 40)	1.672		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Benzo(A)Pyrene

General Statistics

Number of Valid Data	31	Number of Detected Data	29
Number of Distinct Detected Data	23	Number of Non-Detect Data	2
		Percent Non-Detects	6.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.098	Minimum Detected	-2.323
Maximum Detected	4.3	Maximum Detected	1.459
Mean of Detected	1.04	Mean of Detected	-0.44
SD of Detected	1.08	SD of Detected	1.024
Minimum Non-Detect	0.19	Minimum Non-Detect	-1.661
Maximum Non-Detect	0.2	Maximum Non-Detect	-1.609

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	24
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	22.58%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.781	Shapiro Wilk Test Statistic	0.972
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.979	Mean	-0.562
SD	1.069	SD	1.096
95% DL/2 (t) UCL	1.305	95% H-Stat (DL/2) UCL	1.727
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.812	Mean in Log Scale	-0.535
SD	1.259	SD in Log Scale	1.055
95% MLE (t) UCL	1.195	Mean in Original Scale	0.983
95% MLE (Tiku) UCL	1.2	SD in Original Scale	1.067
		95% t UCL	1.308
		95% Percentile Bootstrap UCL	1.295
		95% BCA Bootstrap UCL	1.381
		95% H UCL	1.651

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.082	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.962		
nu star	62.75		
A-D Test Statistic	0.474	**Nonparametric Statistics**	
5% A-D Critical Value	0.77	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.77	Mean	0.982
5% K-S Critical Value	0.167	SD	1.049
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.192
		95% KM (t) UCL	1.308
Assuming Gamma Distribution		95% KM (z) UCL	1.298
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.308
Minimum	0.000001	95% KM (bootstrap t) UCL	1.439
Maximum	4.3	95% KM (BCA) UCL	1.338
Mean	0.973	95% KM (Percentile Bootstrap) UCL	1.318
Median	0.53	95% KM (Chebyshev) UCL	1.819
SD	1.075	97.5% KM (Chebyshev) UCL	2.18
k star	0.471	99% KM (Chebyshev) UCL	2.891
Theta star	2.064		
Nu star	29.23	**Potential UCLs to Use**	
AppChi2	17.89	95% KM (Chebyshev) UCL	1.819
95% Gamma Approximate UCL (Use when n >= 40)	1.59		
95% Adjusted Gamma UCL (Use when n < 40)	1.635		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(B)Fluoranthene

General Statistics

Number of Valid Data	31	Number of Detected Data	28
Number of Distinct Detected Data	27	Number of Non-Detect Data	3
		Percent Non-Detects	9.68%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.1	Minimum Detected	-2.303
Maximum Detected	4.5	Maximum Detected	1.504
Mean of Detected	1.1	Mean of Detected	-0.379
SD of Detected	1.099	SD of Detected	1.024
Minimum Non-Detect	0.19	Minimum Non-Detect	-1.661
Maximum Non-Detect	0.21	Maximum Non-Detect	-1.561

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	24
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	22.58%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.812	Shapiro Wilk Test Statistic	0.968
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.003	Mean	-0.565
SD	1.085	SD	1.131
95% DL/2 (t) UCL	1.334	95% H-Stat (DL/2) UCL	1.835
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.836	Mean in Log Scale	-0.537
SD	1.275	SD in Log Scale	1.089
95% MLE (t) UCL	1.225	Mean in Original Scale	1.007
95% MLE (Tiku) UCL	1.229	SD in Original Scale	1.082
		95% t UCL	1.337
		95% Percentile Bootstrap UCL	1.324
		95% BCA Bootstrap UCL	1.406
		95% H UCL	1.747

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.089	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	1.011		
nu star	60.96		
A-D Test Statistic	0.573	**Nonparametric Statistics**	
5% A-D Critical Value	0.769	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.769	Mean	1.008
5% K-S Critical Value	0.169	SD	1.063
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.195
		95% KM (t) UCL	1.338
Assuming Gamma Distribution		95% KM (z) UCL	1.328
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.337
Minimum	0.000001	95% KM (bootstrap t) UCL	1.455
Maximum	4.5	95% KM (BCA) UCL	1.361
Mean	0.994	95% KM (Percentile Bootstrap) UCL	1.327
Median	0.45	95% KM (Chebyshev) UCL	1.856
SD	1.093	97.5% KM (Chebyshev) UCL	2.223
k star	0.378	99% KM (Chebyshev) UCL	2.943
Theta star	2.632		
Nu star	23.41	**Potential UCLs to Use**	
AppChi2	13.4	95% KM (Chebyshev) UCL	1.856
95% Gamma Approximate UCL (Use when n >= 40)	1.736		
95% Adjusted Gamma UCL (Use when n < 40)	1.792		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Benzo(G,H,I)Perylene

General Statistics

Number of Valid Data	31	Number of Detected Data	29
Number of Distinct Detected Data	24	Number of Non-Detect Data	2
		Percent Non-Detects	6.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.083	Minimum Detected	-2.489
Maximum Detected	3.7	Maximum Detected	1.308
Mean of Detected	0.776	Mean of Detected	-0.876
SD of Detected	0.939	SD of Detected	1.134
Minimum Non-Detect	0.19	Minimum Non-Detect	-1.661
Maximum Non-Detect	0.21	Maximum Non-Detect	-1.561

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	20
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	35.48%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.734	Shapiro Wilk Test Statistic	0.943
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.732	Mean	-0.968
SD	0.923	SD	1.152
95% DL/2 (t) UCL	1.013	95% H-Stat (DL/2) UCL	1.277
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.447	Mean in Log Scale	-0.96
SD	1.221	SD in Log Scale	1.143
95% MLE (t) UCL	0.819	Mean in Original Scale	0.733
95% MLE (Tiku) UCL	0.851	SD in Original Scale	0.922
		95% t UCL	1.014
		95% Percentile Bootstrap UCL	1.002
		95% BCA Bootstrap UCL	1.063
		95% H UCL	1.265

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.862	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	0.9		
nu star	49.99		
A-D Test Statistic	0.916	**Nonparametric Statistics**	
5% A-D Critical Value	0.777	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.777	Mean	0.733
5% K-S Critical Value	0.168	SD	0.907
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.166
		95% KM (t) UCL	1.014
Assuming Gamma Distribution		95% KM (z) UCL	1.006
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.014
Minimum	0.000001	95% KM (bootstrap t) UCL	1.111
Maximum	3.7	95% KM (BCA) UCL	1.005
Mean	0.726	95% KM (Percentile Bootstrap) UCL	1.031
Median	0.3	95% KM (Chebyshev) UCL	1.456
SD	0.928	97.5% KM (Chebyshev) UCL	1.769
k star	0.439	99% KM (Chebyshev) UCL	2.383
Theta star	1.652		
Nu star	27.24	**Potential UCLs to Use**	
AppChi2	16.34	95% KM (Chebyshev) UCL	1.456
95% Gamma Approximate UCL (Use when n >= 40)	1.21		
95% Adjusted Gamma UCL (Use when n < 40)	1.246		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(K)Fluoranthene

General Statistics

Number of Valid Data	31	Number of Detected Data	29
Number of Distinct Detected Data	22	Number of Non-Detect Data	2
		Percent Non-Detects	6.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.099	Minimum Detected	-2.313
Maximum Detected	3.5	Maximum Detected	1.253
Mean of Detected	0.91	Mean of Detected	-0.516
SD of Detected	0.881	SD of Detected	0.966
Minimum Non-Detect	0.19	Minimum Non-Detect	-1.661
Maximum Non-Detect	0.2	Maximum Non-Detect	-1.609

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	24
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	22.58%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.789	Shapiro Wilk Test Statistic	0.967
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.858	Mean	-0.633
SD	0.875	SD	1.037
95% DL/2 (t) UCL	1.125	95% H-Stat (DL/2) UCL	1.45
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.726	Mean in Log Scale	-0.606
SD	1.028	SD in Log Scale	0.995
95% MLE (t) UCL	1.039	Mean in Original Scale	0.861
95% MLE (Tiku) UCL	1.043	SD in Original Scale	0.872
		95% t UCL	1.127
		95% Percentile Bootstrap UCL	1.115
		95% BCA Bootstrap UCL	1.174
		95% H UCL	1.389

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.212	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.751		
nu star	70.28		
A-D Test Statistic	0.456	**Nonparametric Statistics**	
5% A-D Critical Value	0.767	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.767	Mean	0.861
5% K-S Critical Value	0.166	SD	0.858
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.157
		95% KM (t) UCL	1.127
Assuming Gamma Distribution		95% KM (z) UCL	1.119
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.127
Minimum	0.000001	95% KM (bootstrap t) UCL	1.226
Maximum	3.5	95% KM (BCA) UCL	1.153
Mean	0.852	95% KM (Percentile Bootstrap) UCL	1.126
Median	0.51	95% KM (Chebyshev) UCL	1.545
SD	0.881	97.5% KM (Chebyshev) UCL	1.841
k star	0.491	99% KM (Chebyshev) UCL	2.422
Theta star	1.733		
Nu star	30.46	**Potential UCLs to Use**	
AppChi2	18.86	95% KM (Chebyshev) UCL	1.545
95% Gamma Approximate UCL (Use when n >= 40)	1.376		
95% Adjusted Gamma UCL (Use when n < 40)	1.414		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Carbazole

General Statistics

Number of Valid Data	31	Number of Detected Data	11
Number of Distinct Detected Data	10	Number of Non-Detect Data	20
		Percent Non-Detects	64.52%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.054	Minimum Detected	-2.919
Maximum Detected	1.2	Maximum Detected	0.182
Mean of Detected	0.259	Mean of Detected	-1.861
SD of Detected	0.352	SD of Detected	0.927
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.26	Maximum Non-Detect	-1.347

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	29
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.55%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.595	Shapiro Wilk Test Statistic	0.835
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.157	Mean	-2.146
SD	0.217	SD	0.581
95% DL/2 (t) UCL	0.223	95% H-Stat (DL/2) UCL	0.171
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.064
		SD in Log Scale	0.666
		Mean in Original Scale	0.173
		SD in Original Scale	0.218
		95% t UCL	0.239
		95% Percentile Bootstrap UCL	0.24
		95% BCA Bootstrap UCL	0.272
		95% H-UCL	0.204

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.873	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.297		
nu star	19.22		
A-D Test Statistic	1.347	**Nonparametric Statistics**	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	0.163
5% K-S Critical Value	0.262	SD	0.214
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0413
		95% KM (t) UCL	0.233
Assuming Gamma Distribution		95% KM (z) UCL	0.231
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.231
Minimum	0.000001	95% KM (bootstrap t) UCL	0.376
Maximum	1.2	95% KM (BCA) UCL	0.234
Mean	0.208	95% KM (Percentile Bootstrap) UCL	0.234
Median	0.172	95% KM (Chebyshev) UCL	0.343
SD	0.237	97.5% KM (Chebyshev) UCL	0.421
k star	0.383	99% KM (Chebyshev) UCL	0.574
Theta star	0.543		
Nu star	23.76	**Potential UCLs to Use**	
AppChi2	13.66	95% KM (t) UCL	0.233
95% Gamma Approximate UCL (Use when n >= 40)	0.362	95% KM (% Bootstrap) UCL	0.234
95% Adjusted Gamma UCL (Use when n < 40)	0.374		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Chromium

General Statistics

Number of Valid Observations	45	Number of Distinct Observations	41

Raw Statistics		**Log-transformed Statistics**	
Minimum	3.9	Minimum of Log Data	1.361
Maximum	54.3	Maximum of Log Data	3.995
Mean	14.84	Mean of log Data	2.492
Geometric Mean	12.08	SD of log Data	0.598
Median	11.4		
SD	11.82		
Std. Error of Mean	1.762		
Coefficient of Variation	0.797		
Skewness	2.241		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.691	Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	17.8	95% H-UCL	17.28
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20.36
95% Adjusted-CLT UCL (Chen-1995)	18.36	97.5% Chebyshev (MVUE) UCL	22.95
95% Modified-t UCL (Johnson-1978)	17.9	99% Chebyshev (MVUE) UCL	28.03

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.43	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	6.104		
MLE of Mean	14.84		
MLE of Standard Deviation	9.516		
nu star	218.7		
Approximate Chi Square Value (.05)	185.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0447	95% CLT UCL	17.73
Adjusted Chi Square Value	184.5	95% Jackknife UCL	17.8
		95% Standard Bootstrap UCL	17.71
Anderson-Darling Test Statistic	2.475	95% Bootstrap-t UCL	18.92
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	18.31
Kolmogorov-Smirnov Test Statistic	0.229	95% Percentile Bootstrap UCL	18.06
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	18.52
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	22.52
		97.5% Chebyshev(Mean, Sd) UCL	25.84
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.37
95% Approximate Gamma UCL (Use when n >= 40)	17.49		
95% Adjusted Gamma UCL (Use when n < 40)	17.59		

Potential UCL to Use		
	Use 95% Chebyshev (Mean, Sd) UCL	22.52

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Cobalt

General Statistics

Number of Valid Observations	45	Number of Distinct Observations	35

Raw Statistics		Log-transformed Statistics	
Minimum	3.6	Minimum of Log Data	1.281
Maximum	29.7	Maximum of Log Data	3.391
Mean	6.741	Mean of log Data	1.807
Geometric Mean	6.095	SD of log Data	0.407
Median	5.8		
SD	4.15		
Std. Error of Mean	0.619		
Coefficient of Variation	0.616		
Skewness	4.128		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.609	Shapiro Wilk Test Statistic	0.901
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.781	95% H-UCL	7.413
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.413
95% Adjusted-CLT UCL (Chen-1995)	8.165	97.5% Chebyshev (MVUE) UCL	9.194
95% Modified-t UCL (Johnson-1978)	7.844	99% Chebyshev (MVUE) UCL	10.73

Gamma Distribution Test		Data Distribution
k star (bias corrected)	4.795	**Data do not follow a Discernable Distribution (0.05)**
Theta Star	1.406	
MLE of Mean	6.741	
MLE of Standard Deviation	3.079	
nu star	431.5	
Approximate Chi Square Value (.05)	384.4	**Nonparametric Statistics**
Adjusted Level of Significance	0.0447	95% CLT UCL 7.759
Adjusted Chi Square Value	382.9	95% Jackknife UCL 7.781
		95% Standard Bootstrap UCL 7.748
Anderson-Darling Test Statistic	1.578	95% Bootstrap-t UCL 8.63
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL 12.17
Kolmogorov-Smirnov Test Statistic	0.148	95% Percentile Bootstrap UCL 7.858
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL 8.346
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 9.438
		97.5% Chebyshev(Mean, Sd) UCL 10.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 12.9
95% Approximate Gamma UCL (Use when n >= 40)	7.568	
95% Adjusted Gamma UCL (Use when n < 40)	7.597	

Potential UCL to Use	
Use 95% Student's-t UCL	7.781
or 95% Modified-t UCL	7.844

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Dibenz(A,H)Anthracene

General Statistics

Number of Valid Data	31	Number of Detected Data	19
Number of Distinct Detected Data	14	Number of Non-Detect Data	12
		Percent Non-Detects	38.71%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.1	Minimum Detected	-2.303
Maximum Detected	1.6	Maximum Detected	0.47
Mean of Detected	0.439	Mean of Detected	-1.2
SD of Detected	0.427	SD of Detected	0.868
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.26	Maximum Non-Detect	-1.347

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	22
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	70.97%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.77	Shapiro Wilk Test Statistic	0.913
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.308	Mean	-1.625
SD	0.371	SD	0.866
95% DL/2 (t) UCL	0.422	95% H-Stat (DL/2) UCL	0.411
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.558
		SD in Log Scale	0.837
		Mean in Original Scale	0.318
		SD in Original Scale	0.366
		95% t UCL	0.429
		95% Percentile Bootstrap UCL	0.429
		95% BCA Bootstrap UCL	0.453
		95% H-UCL	0.421

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.27	**Data appear Lognormal at 5% Significance Level**	
Theta Star	0.346		
nu star	48.27		
A-D Test Statistic	0.892	**Nonparametric Statistics**	
5% A-D Critical Value	0.758	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.758	Mean	0.316
5% K-S Critical Value	0.202	SD	0.36
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0666
		95% KM (t) UCL	0.429
Assuming Gamma Distribution		95% KM (z) UCL	0.426
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.428
Minimum	0.000001	95% KM (bootstrap t) UCL	0.489
Maximum	1.6	95% KM (BCA) UCL	0.437
Mean	0.306	95% KM (Percentile Bootstrap) UCL	0.43
Median	0.177	95% KM (Chebyshev) UCL	0.607
SD	0.376	97.5% KM (Chebyshev) UCL	0.732
k star	0.344	99% KM (Chebyshev) UCL	0.979
Theta star	0.89		
Nu star	21.36	**Potential UCLs to Use**	
AppChi2	11.86	95% KM (BCA) UCL	0.437
95% Gamma Approximate UCL (Use when n >= 40)	0.552		
95% Adjusted Gamma UCL (Use when n < 40)	0.571		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Indeno(1,2,3-Cd)Pyrene

General Statistics

Number of Valid Data	31	Number of Detected Data	28
Number of Distinct Detected Data	23	Number of Non-Detect Data	3
		Percent Non-Detects	9.68%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.087	Minimum Detected	-2.442
Maximum Detected	3.5	Maximum Detected	1.253
Mean of Detected	0.81	Mean of Detected	-0.771
SD of Detected	0.893	SD of Detected	1.089
Minimum Non-Detect	0.19	Minimum Non-Detect	-1.661
Maximum Non-Detect	0.21	Maximum Non-Detect	-1.561

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	20
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	35.48%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.776	Shapiro Wilk Test Statistic	0.941
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.741	Mean	-0.919
SD	0.873	SD	1.131
95% DL/2 (t) UCL	1.007	95% H-Stat (DL/2) UCL	1.289
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.47	Mean in Log Scale	-0.901
SD	1.163	SD in Log Scale	1.11
95% MLE (t) UCL	0.824	Mean in Original Scale	0.743
95% MLE (Tiku) UCL	0.855	SD in Original Scale	0.872
		95% t UCL	1.009
		95% Percentile Bootstrap UCL	1.016
		95% BCA Bootstrap UCL	1.041
		95% H UCL	1.262

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.941	**Data appear Lognormal at 5% Significance Level**	
Theta Star	0.86		
nu star	52.72		
A-D Test Statistic	0.947	**Nonparametric Statistics**	
5% A-D Critical Value	0.773	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.773	Mean	0.745
5% K-S Critical Value	0.17	SD	0.857
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.157
		95% KM (t) UCL	1.011
Assuming Gamma Distribution		95% KM (z) UCL	1.002
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.01
Minimum	0.000001	95% KM (bootstrap t) UCL	1.095
Maximum	3.5	95% KM (BCA) UCL	1.019
Mean	0.732	95% KM (Percentile Bootstrap) UCL	1.016
Median	0.27	95% KM (Chebyshev) UCL	1.428
SD	0.881	97.5% KM (Chebyshev) UCL	1.723
k star	0.369	99% KM (Chebyshev) UCL	2.304
Theta star	1.982		
Nu star	22.89	**Potential UCLs to Use**	
AppChi2	13	97.5% KM (Chebyshev) UCL	1.723
95% Gamma Approximate UCL (Use when n >= 40)	1.287		
95% Adjusted Gamma UCL (Use when n < 40)	1.33		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Iron

General Statistics

Number of Valid Observations	45	Number of Distinct Observations	45

Raw Statistics		Log-transformed Statistics	
Minimum	4325	Minimum of Log Data	8.372
Maximum	235011	Maximum of Log Data	12.37
Mean	28259	Mean of log Data	9.792
Geometric Mean	17897	SD of log Data	0.82
Median	14766		
SD	41452		
Std. Error of Mean	6179		
Coefficient of Variation	1.467		
Skewness	3.679		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.516	Shapiro Wilk Test Statistic	0.892
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	38642	95% H-UCL	32815
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	39658
95% Adjusted-CLT UCL (Chen-1995)	42044	97.5% Chebyshev (MVUE) UCL	46081
95% Modified-t UCL (Johnson-1978)	39207	99% Chebyshev (MVUE) UCL	58698

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.167	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	24212		
MLE of Mean	28259		
MLE of Standard Deviation	26158		
nu star	105		
Approximate Chi Square Value (.05)	82.39	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0447	95% CLT UCL	38423
Adjusted Chi Square Value	81.73	95% Jackknife UCL	38642
		95% Standard Bootstrap UCL	37975
Anderson-Darling Test Statistic	3.623	95% Bootstrap-t UCL	49156
Anderson-Darling 5% Critical Value	0.773	95% Hall's Bootstrap UCL	46351
Kolmogorov-Smirnov Test Statistic	0.216	95% Percentile Bootstrap UCL	39428
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL	43733
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	55194
		97.5% Chebyshev(Mean, Sd) UCL	66849
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	89742
95% Approximate Gamma UCL (Use when n >= 40)	36028		
95% Adjusted Gamma UCL (Use when n < 40)	36321		

Potential UCL to Use		
	Use 95% Chebyshev (Mean, Sd) UCL	55194

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Lead

General Statistics

Number of Valid Observations	45	Number of Distinct Observations	44

Raw Statistics		Log-transformed Statistics	
Minimum	7.4	Minimum of Log Data	2.001
Maximum	24438	Maximum of Log Data	10.1
Mean	1068	Mean of log Data	4.903
Geometric Mean	134.7	SD of log Data	1.779
Median	86.8		
SD	3745		
Std. Error of Mean	558.2		
Coefficient of Variation	3.505		
Skewness	5.821		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.309	Shapiro Wilk Test Statistic	0.912
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	2006	95% H-UCL	1621
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1572
95% Adjusted-CLT UCL (Chen-1995)	2504	97.5% Chebyshev (MVUE) UCL	1992
95% Modified-t UCL (Johnson-1978)	2087	99% Chebyshev (MVUE) UCL	2815
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.321	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	3328		
MLE of Mean	1068		
MLE of Standard Deviation	1886		
nu star	28.89		
Approximate Chi Square Value (.05)	17.63	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0447	95% CLT UCL	1987
Adjusted Chi Square Value	17.33	95% Jackknife UCL	2006
		95% Standard Bootstrap UCL	1964
Anderson-Darling Test Statistic	5.219	95% Bootstrap-t UCL	4137
Anderson-Darling 5% Critical Value	0.855	95% Hall's Bootstrap UCL	4883
Kolmogorov-Smirnov Test Statistic	0.327	95% Percentile Bootstrap UCL	2200
Kolmogorov-Smirnov 5% Critical Value	0.143	95% BCA Bootstrap UCL	2765
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3502
		97.5% Chebyshev(Mean, Sd) UCL	4554
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6623
95% Approximate Gamma UCL (Use when n >= 40)	1751		
95% Adjusted Gamma UCL (Use when n < 40)	1781		

Potential UCL to Use	
Use 95% Chebyshev (Mean, Sd) UCL	3502

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Manganese

General Statistics

Number of Valid Observations	45	Number of Distinct Observations	41

Raw Statistics		**Log-transformed Statistics**	
Minimum	59.8	Minimum of Log Data	4.091
Maximum	780	Maximum of Log Data	6.659
Mean	285.8	Mean of log Data	5.509
Geometric Mean	247	SD of log Data	0.55
Median	247		
SD	164.9		
Std. Error of Mean	24.58		
Coefficient of Variation	0.577		
Skewness	1.463		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk Test Statistic	0.976
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	327.1	95% H-UCL	337.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	394.3
95% Adjusted-CLT UCL (Chen-1995)	332	97.5% Chebyshev (MVUE) UCL	441.2
95% Modified-t UCL (Johnson-1978)	328	99% Chebyshev (MVUE) UCL	533.1

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.358	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	85.12		
MLE of Mean	285.8		
MLE of Standard Deviation	156		
nu star	302.2		
Approximate Chi Square Value (.05)	262.9	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0447	95% CLT UCL	326.2
Adjusted Chi Square Value	261.7	95% Jackknife UCL	327.1
		95% Standard Bootstrap UCL	326.2
Anderson-Darling Test Statistic	0.557	95% Bootstrap-t UCL	336.1
Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	336.7
Kolmogorov-Smirnov Test Statistic	0.0959	95% Percentile Bootstrap UCL	326.1
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	332.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	392.9
		97.5% Chebyshev(Mean, Sd) UCL	439.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	530.4
95% Approximate Gamma UCL (Use when n >= 40)	328.5		
95% Adjusted Gamma UCL (Use when n < 40)	330		

Potential UCL to Use	Use 95% Approximate Gamma UCL	328.5

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Mercury

General Statistics

Number of Valid Data	45	Number of Detected Data	44
Number of Distinct Detected Data	39	Number of Non-Detect Data	1
		Percent Non-Detects	2.22%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.055	Minimum Detected	-2.9
Maximum Detected	125	Maximum Detected	4.828
Mean of Detected	10.86	Mean of Detected	0.748
SD of Detected	26.37	SD of Detected	1.808
Minimum Non-Detect	3.3	Minimum Non-Detect	1.194
Maximum Non-Detect	3.3	Maximum Non-Detect	1.194

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.441	Shapiro Wilk Test Statistic	0.976
5% Shapiro Wilk Critical Value	0.944	5% Shapiro Wilk Critical Value	0.944
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	10.65	Mean	0.743
SD	26.1	SD	1.787
95% DL/2 (t) UCL	17.19	95% H-Stat (DL/2) UCL	25.84
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.726
		SD in Log Scale	1.793
		Mean in Original Scale	10.63
		SD in Original Scale	26.11
		95% t UCL	17.17
		95% Percentile Bootstrap UCL	17.82
		95% BCA Bootstrap UCL	18.87
		95% H-UCL	25.82

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.39	**Data appear Lognormal at 5% Significance Level**	
Theta Star	27.87		
nu star	34.28		
A-D Test Statistic	2.501	**Nonparametric Statistics**	
5% A-D Critical Value	0.837	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.837	Mean	10.64
5% K-S Critical Value	0.143	SD	25.81
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3.893
		95% KM (t) UCL	17.18
Assuming Gamma Distribution		95% KM (z) UCL	17.04
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	17.18
Minimum	0.000001	95% KM (bootstrap t) UCL	25.4
Maximum	125	95% KM (BCA) UCL	17.55
Mean	10.62	95% KM (Percentile Bootstrap) UCL	17.53
Median	1.8	95% KM (Chebyshev) UCL	27.6
SD	26.11	97.5% KM (Chebyshev) UCL	34.95
k star	0.339	99% KM (Chebyshev) UCL	49.37
Theta star	31.3		
Nu star	30.52	**Potential UCLs to Use**	
AppChi2	18.9	97.5% KM (Chebyshev) UCL	34.95
95% Gamma Approximate UCL (Use when n >= 40)	17.14		
95% Adjusted Gamma UCL (Use when n < 40)	17.42		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Nickel

General Statistics

Number of Valid Observations	45	Number of Distinct Observations	42

Raw Statistics		**Log-transformed Statistics**	
Minimum	4.1	Minimum of Log Data	1.411
Maximum	342	Maximum of Log Data	5.835
Mean	26.3	Mean of log Data	2.764
Geometric Mean	15.86	SD of log Data	0.8
Median	13.5		
SD	51.47		
Std. Error of Mean	7.673		
Coefficient of Variation	1.957		
Skewness	5.562		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.367	Shapiro Wilk Test Statistic	0.877
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	39.2	95% H-UCL	28.33
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	34.19
95% Adjusted-CLT UCL (Chen-1995)	45.72	97.5% Chebyshev (MVUE) UCL	39.62
95% Modified-t UCL (Johnson-1978)	40.26	99% Chebyshev (MVUE) UCL	50.3

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	1.065	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	24.69		
MLE of Mean	26.3		
MLE of Standard Deviation	25.49		
nu star	95.86		
Approximate Chi Square Value (.05)	74.28	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0447	95% CLT UCL	38.92
Adjusted Chi Square Value	73.65	95% Jackknife UCL	39.2
		95% Standard Bootstrap UCL	38.62
Anderson-Darling Test Statistic	4.374	95% Bootstrap-t UCL	66.32
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	81.19
Kolmogorov-Smirnov Test Statistic	0.254	95% Percentile Bootstrap UCL	39.54
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL	52.12
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	59.75
		97.5% Chebyshev(Mean, Sd) UCL	74.22
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	102.7
95% Approximate Gamma UCL (Use when n >= 40)	33.95		
95% Adjusted Gamma UCL (Use when n < 40)	34.24		

Potential UCL to Use	Use 95% Chebyshev (Mean, Sd) UCL	59.75

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

PCB Dioxin-like Congener TEQ (mammal)

General Statistics

Number of Valid Observations	31	Number of Distinct Observations	31

Raw Statistics		**Log-transformed Statistics**	
Minimum	1.867E-07	Minimum of Log Data	-15.49
Maximum	0.0001825	Maximum of Log Data	-8.609
Mean	2.52E-05	Mean of log Data	-11.84
Geometric Mean	7.218E-06	SD of log Data	1.76
Median	5.969E-06		
SD	4.21E-05		
Std. Error of Mean	7.561E-06		
Coefficient of Variation	N/A		
Skewness	2.583		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.629	Shapiro Wilk Test Statistic	0.978
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	3.804E-05	95% H-UCL	0.0001031
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.541E-05
95% Adjusted-CLT UCL (Chen-1995)	4.139E-05	97.5% Chebyshev (MVUE) UCL	0.0001092
95% Modified-t UCL (Johnson-1978)	3.862E-05	99% Chebyshev (MVUE) UCL	0.000156

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.479	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	5.258E-05		
MLE of Mean	2.52E-05		
MLE of Standard Deviation	3.64E-05		
nu star	29.72		
Approximate Chi Square Value (.05)	18.27	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0413	95% CLT UCL	3.764E-05
Adjusted Chi Square Value	17.77	95% Jackknife UCL	3.804E-05
		95% Standard Bootstrap UCL	3.77E-05
Anderson-Darling Test Statistic	0.689	95% Bootstrap-t UCL	4.687E-05
Anderson-Darling 5% Critical Value	0.809	95% Hall's Bootstrap UCL	4.521E-05
Kolmogorov-Smirnov Test Statistic	0.146	95% Percentile Bootstrap UCL	3.756E-05
Kolmogorov-Smirnov 5% Critical Value	0.167	95% BCA Bootstrap UCL	4.252E-05
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.816E-05
		97.5% Chebyshev(Mean, Sd) UCL	7.242E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0001004
95% Approximate Gamma UCL (Use when n >= 40)	4.099E-05		
95% Adjusted Gamma UCL (Use when n < 40)	4.214E-05		

Potential UCL to Use		
	Use 95% Approximate Gamma UCL	4.099E-05

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Total PCB Homologues

General Statistics

Number of Valid Observations	31	Number of Distinct Observations	31

Raw Statistics		Log-transformed Statistics	
Minimum	0.000672	Minimum of Log Data	-7.305
Maximum	4.8	Maximum of Log Data	1.569
Mean	0.92	Mean of log Data	-1.494
Geometric Mean	0.225	SD of log Data	2.068
Median	0.209		
SD	1.341		
Std. Error of Mean	0.241		
Coefficient of Variation	1.458		
Skewness	1.644		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.708	Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical Value	0.929	Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	1.329	95% H-UCL	8.369
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.075
95% Adjusted-CLT UCL (Chen-1995)	1.393	97.5% Chebyshev (MVUE) UCL	6.585
95% Modified-t UCL (Johnson-1978)	1.341	99% Chebyshev (MVUE) UCL	9.551

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.434	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	2.12		
MLE of Mean	0.92		
MLE of Standard Deviation	1.397		
nu star	26.91		
Approximate Chi Square Value (.05)	16.08	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0413	95% CLT UCL	1.317
Adjusted Chi Square Value	15.62	95% Jackknife UCL	1.329
		95% Standard Bootstrap UCL	1.316
Anderson-Darling Test Statistic	0.705	95% Bootstrap-t UCL	1.461
Anderson-Darling 5% Critical Value	0.819	95% Hall's Bootstrap UCL	1.372
Kolmogorov-Smirnov Test Statistic	0.137	95% Percentile Bootstrap UCL	1.311
Kolmogorov-Smirnov 5% Critical Value	0.168	95% BCA Bootstrap UCL	1.379
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.97
		97.5% Chebyshev(Mean, Sd) UCL	2.425
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3.317
95% Approximate Gamma UCL (Use when n >= 40)	1.54		
95% Adjusted Gamma UCL (Use when n < 40)	1.586		

Potential UCL to Use		
	Use 95% Adjusted Gamma UCL	1.586

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Vanadium

General Statistics

Number of Valid Observations	45	Number of Distinct Observations	44

Raw Statistics		**Log-transformed Statistics**	
Minimum	11.6	Minimum of Log Data	2.451
Maximum	72.7	Maximum of Log Data	4.286
Mean	22.78	Mean of log Data	3.052
Geometric Mean	21.15	SD of log Data	0.369
Median	20		
SD	10.4		
Std. Error of Mean	1.55		
Coefficient of Variation	0.456		
Skewness	2.723		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.779	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	25.39	95% H-UCL	25.07
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	28.19
95% Adjusted-CLT UCL (Chen-1995)	26	97.5% Chebyshev (MVUE) UCL	30.6
95% Modified-t UCL (Johnson-1978)	25.49	99% Chebyshev (MVUE) UCL	35.34

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	6.463	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	3.525		
MLE of Mean	22.78		
MLE of Standard Deviation	8.961		
nu star	581.7		
Approximate Chi Square Value (.05)	526.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0447	95% CLT UCL	25.33
Adjusted Chi Square Value	525	95% Jackknife UCL	25.39
		95% Standard Bootstrap UCL	25.27
Anderson-Darling Test Statistic	0.721	95% Bootstrap-t UCL	26.53
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	28.33
Kolmogorov-Smirnov Test Statistic	0.11	95% Percentile Bootstrap UCL	25.42
Kolmogorov-Smirnov 5% Critical Value	0.132	95% BCA Bootstrap UCL	26.28
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	29.54
		97.5% Chebyshev(Mean, Sd) UCL	32.46
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	38.2
95% Approximate Gamma UCL (Use when n >= 40)	25.16		
95% Adjusted Gamma UCL (Use when n < 40)	25.24		

Potential UCL to Use		
	Use 95% Approximate Gamma UCL	25.16

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

2,3,7,8-TCDD TEQ (mammal)

General Statistics

Number of Valid Data	54	Number of Detected Data	53
Number of Distinct Detected Data	53	Number of Non-Detect Data	1
		Percent Non-Detects	1.85%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.571E-07	Minimum Detected	-14.4
Maximum Detected	0.0004689	Maximum Detected	-7.665
Mean of Detected	4.013E-05	Mean of Detected	-11.48
SD of Detected	8.191E-05	SD of Detected	1.705
Minimum Non-Detect	9.589E-07	Minimum Non-Detect	-13.86
Maximum Non-Detect	9.589E-07	Maximum Non-Detect	-13.86

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.315	Lilliefors Test Statistic	0.0824
5% Lilliefors Critical Value	0.122	5% Lilliefors Critical Value	0.122
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.939E-05	Mean	-11.53
SD	8.131E-05	SD	1.74
95% DL/2 (t) UCL	5.792E-05	95% H-Stat (DL/2) UCL	9.797E-05
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.0000316	Mean in Log Scale	-11.53
SD	8.831E-05	SD in Log Scale	1.731
95% MLE (t) UCL	5.172E-05	Mean in Original Scale	3.94E-05
95% MLE (Tiku) UCL	5.056E-05	SD in Original Scale	8.131E-05
		95% t UCL	5.792E-05
		95% Percentile Bootstrap UCL	5.888E-05
		95% BCA Bootstrap UCL	6.473E-05
		95% H UCL	9.629E-05

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.459	**Data appear Lognormal at 5% Significance Level**	
Theta Star	8.739E-05		
nu star	48.67		
A-D Test Statistic	1.861	**Nonparametric Statistics**	
5% A-D Critical Value	0.821	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.821	Mean	3.94E-05
5% K-S Critical Value	0.13	SD	8.056E-05
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.107E-05
		95% KM (t) UCL	5.793E-05
Assuming Gamma Distribution		95% KM (z) UCL	5.76E-05
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.792E-05
Minimum	5.571E-07	95% KM (bootstrap t) UCL	7.301E-05
Maximum	0.0004689	95% KM (BCA) UCL	5.87E-05
Mean	3.94E-05	95% KM (Percentile Bootstrap) UCL	5.846E-05
Median	8.554E-06	95% KM (Chebyshev) UCL	8.764E-05
SD	8.131E-05	97.5% KM (Chebyshev) UCL	0.0001085
k star	0.452	99% KM (Chebyshev) UCL	0.0001495
Theta star	0.0000871		
Nu star	48.86	**Potential UCLs to Use**	
AppChi2	33.81	97.5% KM (Chebyshev) UCL	0.0001085
95% Gamma Approximate UCL (Use when n >= 40)	5.694E-05		
95% Adjusted Gamma UCL (Use when n < 40)	5.752E-05		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Aluminum

General Statistics

Number of Valid Observations	87	Number of Distinct Observations	87

Raw Statistics		**Log-transformed Statistics**	
Minimum	843	Minimum of Log Data	6.737
Maximum	12813	Maximum of Log Data	9.458
Mean	5114	Mean of log Data	8.405
Geometric Mean	4469	SD of log Data	0.561
Median	4918		
SD	2500		
Std. Error of Mean	268		
Coefficient of Variation	0.489		
Skewness	0.791		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.0851	Lilliefors Test Statistic	0.12
Lilliefors Critical Value	0.095	Lilliefors Critical Value	0.095
Data appear Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	5560	95% H-UCL	5861
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6680
95% Adjusted-CLT UCL (Chen-1995)	5579	97.5% Chebyshev (MVUE) UCL	7312
95% Modified-t UCL (Johnson-1978)	5564	99% Chebyshev (MVUE) UCL	8554

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	3.743	**Data appear Normal at 5% Significance Level**	
Theta Star	1366		
MLE of Mean	5114		
MLE of Standard Deviation	2643		
nu star	651.3		
Approximate Chi Square Value (.05)	593.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0472	95% CLT UCL	5555
Adjusted Chi Square Value	592.2	95% Jackknife UCL	5560
		95% Standard Bootstrap UCL	5554
Anderson-Darling Test Statistic	0.442	95% Bootstrap-t UCL	5582
Anderson-Darling 5% Critical Value	0.756	95% Hall's Bootstrap UCL	5570
Kolmogorov-Smirnov Test Statistic	0.085	95% Percentile Bootstrap UCL	5548
Kolmogorov-Smirnov 5% Critical Value	0.0963	95% BCA Bootstrap UCL	5559
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6283
		97.5% Chebyshev(Mean, Sd) UCL	6788
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	7781
95% Approximate Gamma UCL (Use when n >= 40)	5616		
95% Adjusted Gamma UCL (Use when n < 40)	5625		

Potential UCL to Use		
	Use 95% Student's-t UCL	5560

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Antimony

General Statistics

Number of Valid Data	87	Number of Detected Data	52
Number of Distinct Detected Data	34	Number of Non-Detect Data	35
		Percent Non-Detects	40.23%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.45	Minimum Detected	-0.799
Maximum Detected	580	Maximum Detected	6.363
Mean of Detected	27.15	Mean of Detected	1.236
SD of Detected	95.73	SD of Detected	1.587
Minimum Non-Detect	6	Minimum Non-Detect	1.792
Maximum Non-Detect	18.7	Maximum Non-Detect	2.929

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	81
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.10%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.436	Lilliefors Test Statistic	0.257
5% Lilliefors Critical Value	0.123	5% Lilliefors Critical Value	0.123
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	17.67	Mean	1.243
SD	74.64	SD	1.228
95% DL/2 (t) UCL	30.98	95% H-Stat (DL/2) UCL	10.22
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.017
		SD in Log Scale	1.308
		Mean in Original Scale	17.18
		SD in Original Scale	74.73
		95% t UCL	30.5
		95% Percentile Bootstrap UCL	31.16
		95% BCA Bootstrap UCL	39.59
		95% H-UCL	9.328

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.323	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	84.15		
nu star	33.56		
A-D Test Statistic	8.465	**Nonparametric Statistics**	
5% A-D Critical Value	0.856	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.856	Mean	17.01
5% K-S Critical Value	0.133	SD	74.34
Data not Gamma Distributed at 5% Significance Level		SE of Mean	8.048
		95% KM (t) UCL	30.39
Assuming Gamma Distribution		95% KM (z) UCL	30.25
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	30.34
Minimum	0.000001	95% KM (bootstrap t) UCL	78.94
Maximum	580	95% KM (BCA) UCL	31.94
Mean	18.1	95% KM (Percentile Bootstrap) UCL	31.65
Median	1.7	95% KM (Chebyshev) UCL	52.09
SD	74.79	97.5% KM (Chebyshev) UCL	67.27
k star	0.137	99% KM (Chebyshev) UCL	97.09
Theta star	132.2		
Nu star	23.84	**Potential UCLs to Use**	
AppChi2	13.72	97.5% KM (Chebyshev) UCL	67.27
95% Gamma Approximate UCL (Use when n >= 40)	31.44		
95% Adjusted Gamma UCL (Use when n < 40)	31.74		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Arsenic

General Statistics

Number of Valid Data	87	Number of Detected Data	84
Number of Distinct Detected Data	73	Number of Non-Detect Data	3
		Percent Non-Detects	3.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.93	Minimum Detected	-0.0726
Maximum Detected	281	Maximum Detected	5.638
Mean of Detected	19.63	Mean of Detected	2.143
SD of Detected	39.13	SD of Detected	1.15
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	3.1	Maximum Non-Detect	1.131

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	17
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	70
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	19.54%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.335	Lilliefors Test Statistic	0.12
5% Lilliefors Critical Value	0.0967	5% Lilliefors Critical Value	0.0967
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	18.99	Mean	2.072
SD	38.59	SD	1.193
95% DL/2 (t) UCL	25.87	95% H-Stat (DL/2) UCL	22.15
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	12.99	Mean in Log Scale	2.073
SD	44.11	SD in Log Scale	1.193
95% MLE (t) UCL	20.85	Mean in Original Scale	19
95% MLE (Tiku) UCL	20.64	SD in Original Scale	38.59
		95% t UCL	25.88
		95% Percentile Bootstrap UCL	26.46
		95% BCA Bootstrap UCL	28.4
		95% H UCL	22.15

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.704	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	27.88		
nu star	118.3		
A-D Test Statistic	5.52	**Nonparametric Statistics**	
5% A-D Critical Value	0.796	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.796	Mean	19.01
5% K-S Critical Value	0.102	SD	38.36
Data not Gamma Distributed at 5% Significance Level		SE of Mean	4.138
		95% KM (t) UCL	25.89
Assuming Gamma Distribution		95% KM (z) UCL	25.82
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	25.88
Minimum	0.000001	95% KM (bootstrap t) UCL	30.81
Maximum	281	95% KM (BCA) UCL	27.28
Mean	18.95	95% KM (Percentile Bootstrap) UCL	26.28
Median	6.5	95% KM (Chebyshev) UCL	37.05
SD	38.61	97.5% KM (Chebyshev) UCL	44.85
k star	0.466	99% KM (Chebyshev) UCL	60.18
Theta star	40.67		
Nu star	81.09	**Potential UCLs to Use**	
AppChi2	61.34	95% KM (Chebyshev) UCL	37.05
95% Gamma Approximate UCL (Use when n >= 40)	25.06		
95% Adjusted Gamma UCL (Use when n < 40)	25.17		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Barium

General Statistics

Number of Valid Observations	87	Number of Distinct Observations	83

Raw Statistics		Log-transformed Statistics	
Minimum	20.8	Minimum of Log Data	3.035
Maximum	2243	Maximum of Log Data	7.716
Mean	171.4	Mean of log Data	4.578
Geometric Mean	97.33	SD of log Data	0.887
Median	84.8		
SD	315.3		
Std. Error of Mean	33.81		
Coefficient of Variation	1.84		
Skewness	4.782		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.324	Lilliefors Test Statistic	0.121
Lilliefors Critical Value	0.095	Lilliefors Critical Value	0.095
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	227.6	95% H-UCL	176.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	212.1
95% Adjusted-CLT UCL (Chen-1995)	245.5	97.5% Chebyshev (MVUE) UCL	241.8
95% Modified-t UCL (Johnson-1978)	230.5	99% Chebyshev (MVUE) UCL	300.3

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.99	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	173.1		
MLE of Mean	171.4		
MLE of Standard Deviation	172.2		
nu star	172.3		
Approximate Chi Square Value (.05)	143	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0472	95% CLT UCL	227
Adjusted Chi Square Value	142.5	95% Jackknife UCL	227.6
		95% Standard Bootstrap UCL	226.9
Anderson-Darling Test Statistic	6.538	95% Bootstrap-t UCL	273.6
Anderson-Darling 5% Critical Value	0.782	95% Hall's Bootstrap UCL	253
Kolmogorov-Smirnov Test Statistic	0.217	95% Percentile Bootstrap UCL	236.2
Kolmogorov-Smirnov 5% Critical Value	0.0987	95% BCA Bootstrap UCL	262.8
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	318.8
		97.5% Chebyshev(Mean, Sd) UCL	382.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	507.8
95% Approximate Gamma UCL (Use when n >= 40)	206.6		
95% Adjusted Gamma UCL (Use when n < 40)	207.3		

Potential UCL to Use		
	Use 95% Chebyshev (Mean, Sd) UCL	318.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Benzo(A)Anthracene

General Statistics

Number of Valid Data	57	Number of Detected Data	38
Number of Distinct Detected Data	30	Number of Non-Detect Data	19
		Percent Non-Detects	33.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.089	Minimum Detected	-2.419
Maximum Detected	5	Maximum Detected	1.609
Mean of Detected	0.962	Mean of Detected	-0.569
SD of Detected	1.129	SD of Detected	1.043
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.23	Maximum Non-Detect	-1.47

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	29
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	49.12%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.714	Shapiro Wilk Test Statistic	0.971
5% Shapiro Wilk Critical Value	0.938	5% Shapiro Wilk Critical Value	0.938
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.674	Mean	-1.154
SD	1.006	SD	1.191
95% DL/2 (t) UCL	0.897	95% H-Stat (DL/2) UCL	0.977
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.0886	Mean in Log Scale	-1.116
SD	1.57	SD in Log Scale	1.186
95% MLE (t) UCL	0.437	Mean in Original Scale	0.682
95% MLE (Tiku) UCL	0.516	SD in Original Scale	1.002
		95% t UCL	0.904
		95% Percentile Bootstrap UCL	0.921
		95% BCA Bootstrap UCL	0.971
		95% H UCL	1.005

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.011	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.951		
nu star	76.87		
A-D Test Statistic	0.751	**Nonparametric Statistics**	
5% A-D Critical Value	0.776	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.776	Mean	0.684
5% K-S Critical Value	0.147	SD	0.991
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.133
		95% KM (t) UCL	0.907
Assuming Gamma Distribution		95% KM (z) UCL	0.903
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.906
Minimum	0.000001	95% KM (bootstrap t) UCL	1.006
Maximum	5	95% KM (BCA) UCL	0.929
Mean	0.644	95% KM (Percentile Bootstrap) UCL	0.915
Median	0.28	95% KM (Chebyshev) UCL	1.265
SD	1.024	97.5% KM (Chebyshev) UCL	1.516
k star	0.188	99% KM (Chebyshev) UCL	2.009
Theta star	3.423		
Nu star	21.44	**Potential UCLs to Use**	
AppChi2	11.92	95% KM (Percentile Bootstrap) UCL	0.915
95% Gamma Approximate UCL (Use when n >= 40)	1.158		
95% Adjusted Gamma UCL (Use when n < 40)	1.176		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(A)Pyrene

General Statistics

Number of Valid Data	57	Number of Detected Data	38
Number of Distinct Detected Data	28	Number of Non-Detect Data	19
		Percent Non-Detects	33.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.098	Minimum Detected	-2.323
Maximum Detected	4.3	Maximum Detected	1.459
Mean of Detected	0.953	Mean of Detected	-0.554
SD of Detected	1.02	SD of Detected	1.037
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.23	Maximum Non-Detect	-1.47

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	29
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	49.12%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.77	Shapiro Wilk Test Statistic	0.954
5% Shapiro Wilk Critical Value	0.938	5% Shapiro Wilk Critical Value	0.938
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.668	Mean	-1.145
SD	0.923	SD	1.192
95% DL/2 (t) UCL	0.872	95% H-Stat (DL/2) UCL	0.988
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.14	Mean in Log Scale	-1.03
SD	1.448	SD in Log Scale	1.115
95% MLE (t) UCL	0.461	Mean in Original Scale	0.686
95% MLE (Tiku) UCL	0.533	SD in Original Scale	0.913
		95% t UCL	0.888
		95% Percentile Bootstrap UCL	0.885
		95% BCA Bootstrap UCL	0.923
		95% H UCL	0.966

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.055	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.903		
nu star	80.17		
A-D Test Statistic	0.759	**Nonparametric Statistics**	
5% A-D Critical Value	0.775	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.775	Mean	0.685
5% K-S Critical Value	0.147	SD	0.905
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.122
		95% KM (t) UCL	0.888
Assuming Gamma Distribution		95% KM (z) UCL	0.885
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.887
Minimum	0.000001	95% KM (bootstrap t) UCL	0.928
Maximum	4.3	95% KM (BCA) UCL	0.877
Mean	0.651	95% KM (Percentile Bootstrap) UCL	0.889
Median	0.26	95% KM (Chebyshev) UCL	1.214
SD	0.936	97.5% KM (Chebyshev) UCL	1.444
k star	0.209	99% KM (Chebyshev) UCL	1.894
Theta star	3.11		
Nu star	23.85	**Potential UCLs to Use**	
AppChi2	13.73	95% KM (Percentile Bootstrap) UCL	0.889
95% Gamma Approximate UCL (Use when n >= 40)	1.13		
95% Adjusted Gamma UCL (Use when n < 40)	1.147		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Benzo(B)Fluoranthene

General Statistics

Number of Valid Data	57	Number of Detected Data	39
Number of Distinct Detected Data	35	Number of Non-Detect Data	18
		Percent Non-Detects	31.58%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.07	Minimum Detected	-2.659
Maximum Detected	4.5	Maximum Detected	1.504
Mean of Detected	0.921	Mean of Detected	-0.634
SD of Detected	1.014	SD of Detected	1.091
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.21	Maximum Non-Detect	-1.561

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	30
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	47.37%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.776	Shapiro Wilk Test Statistic	0.966
5% Shapiro Wilk Critical Value	0.939	5% Shapiro Wilk Critical Value	0.939
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.661	Mean	-1.171
SD	0.92	SD	1.202
95% DL/2 (t) UCL	0.865	95% H-Stat (DL/2) UCL	0.979
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.166	Mean in Log Scale	-1.151
SD	1.413	SD in Log Scale	1.216
95% MLE (t) UCL	0.48	Mean in Original Scale	0.667
95% MLE (Tiku) UCL	0.543	SD in Original Scale	0.917
		95% t UCL	0.87
		95% Percentile Bootstrap UCL	0.87
		95% BCA Bootstrap UCL	0.907
		95% H UCL	1.026

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.978	**Data appear Lognormal at 5% Significance Level**	
Theta Star	0.941		
nu star	76.3		
A-D Test Statistic	0.804	**Nonparametric Statistics**	
5% A-D Critical Value	0.777	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.777	Mean	0.667
5% K-S Critical Value	0.145	SD	0.908
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.122
		95% KM (t) UCL	0.871
Assuming Gamma Distribution		95% KM (z) UCL	0.868
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.87
Minimum	0.000001	95% KM (bootstrap t) UCL	0.939
Maximum	4.5	95% KM (BCA) UCL	0.881
Mean	0.634	95% KM (Percentile Bootstrap) UCL	0.876
Median	0.26	95% KM (Chebyshev) UCL	1.199
SD	0.937	97.5% KM (Chebyshev) UCL	1.429
k star	0.197	99% KM (Chebyshev) UCL	1.88
Theta star	3.211		
Nu star	22.51	**Potential UCLs to Use**	
AppChi2	12.72	95% KM (Chebyshev) UCL	1.199
95% Gamma Approximate UCL (Use when n >= 40)	1.122		
95% Adjusted Gamma UCL (Use when n < 40)	1.139		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(G,H,I)Perylene

General Statistics

Number of Valid Data	57	Number of Detected Data	37
Number of Distinct Detected Data	30	Number of Non-Detect Data	20
		Percent Non-Detects	35.09%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.083	Minimum Detected	-2.489
Maximum Detected	3.7	Maximum Detected	1.308
Mean of Detected	0.717	Mean of Detected	-0.941
SD of Detected	0.869	SD of Detected	1.109
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.24	Maximum Non-Detect	-1.427

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	34
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	59.65%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.729	Shapiro Wilk Test Statistic	0.934
5% Shapiro Wilk Critical Value	0.936	5% Shapiro Wilk Critical Value	0.936
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.501	Mean	-1.422
SD	0.758	SD	1.109
95% DL/2 (t) UCL	0.668	95% H-Stat (DL/2) UCL	0.646
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.367
		SD in Log Scale	1.101
		Mean in Original Scale	0.511
		SD in Original Scale	0.753
		95% t UCL	0.678
		95% Percentile Bootstrap UCL	0.677
		95% BCA Bootstrap UCL	0.703
		95% H-UCL	0.674

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.895	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.802		
nu star	66.2		
A-D Test Statistic	1.23	**Nonparametric Statistics**	
5% A-D Critical Value	0.779	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.779	Mean	0.508
5% K-S Critical Value	0.15	SD	0.748
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.1
		95% KM (t) UCL	0.676
Assuming Gamma Distribution		95% KM (z) UCL	0.673
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.675
Minimum	0.000001	95% KM (bootstrap t) UCL	0.725
Maximum	3.7	95% KM (BCA) UCL	0.671
Mean	0.491	95% KM (Percentile Bootstrap) UCL	0.676
Median	0.19	95% KM (Chebyshev) UCL	0.945
SD	0.766	97.5% KM (Chebyshev) UCL	1.135
k star	0.222	99% KM (Chebyshev) UCL	1.507
Theta star	2.214		
Nu star	25.28	**Potential UCLs to Use**	
AppChi2	14.83	95% KM (Chebyshev) UCL	0.945
95% Gamma Approximate UCL (Use when n >= 40)	0.837		
95% Adjusted Gamma UCL (Use when n < 40)	0.849		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(K)Fluoranthene

General Statistics

Number of Valid Data	57	Number of Detected Data	39
Number of Distinct Detected Data	30	Number of Non-Detect Data	18
		Percent Non-Detects	31.58%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.066	Minimum Detected	-2.718
Maximum Detected	3.5	Maximum Detected	1.253
Mean of Detected	0.817	Mean of Detected	-0.693
SD of Detected	0.852	SD of Detected	1.035
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.23	Maximum Non-Detect	-1.47

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	29
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	28
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.88%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.777	Shapiro Wilk Test Statistic	0.966
5% Shapiro Wilk Critical Value	0.939	5% Shapiro Wilk Critical Value	0.939
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.59	Mean	-1.209
SD	0.779	SD	1.147
95% DL/2 (t) UCL	0.762	95% H-Stat (DL/2) UCL	0.853
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.122	Mean in Log Scale	-1.103
SD	1.247	SD in Log Scale	1.077
95% MLE (t) UCL	0.398	Mean in Original Scale	0.606
95% MLE (Tiku) UCL	0.467	SD in Original Scale	0.77
		95% t UCL	0.777
		95% Percentile Bootstrap UCL	0.791
		95% BCA Bootstrap UCL	0.806
		95% H UCL	0.843

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.084	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.753		
nu star	84.59		
A-D Test Statistic	0.595	**Nonparametric Statistics**	
5% A-D Critical Value	0.774	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.774	Mean	0.602
5% K-S Critical Value	0.145	SD	0.765
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.103
		95% KM (t) UCL	0.774
Assuming Gamma Distribution		95% KM (z) UCL	0.771
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.773
Minimum	0.000001	95% KM (bootstrap t) UCL	0.835
Maximum	3.5	95% KM (BCA) UCL	0.781
Mean	0.583	95% KM (Percentile Bootstrap) UCL	0.77
Median	0.316	95% KM (Chebyshev) UCL	1.05
SD	0.786	97.5% KM (Chebyshev) UCL	1.243
k star	0.249	99% KM (Chebyshev) UCL	1.624
Theta star	2.339		
Nu star	28.41	**Potential UCLs to Use**	
AppChi2	17.25	95% KM (Percentile Bootstrap) UCL	0.77
95% Gamma Approximate UCL (Use when n >= 40)	0.96		
95% Adjusted Gamma UCL (Use when n < 40)	0.973		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Carbazole

General Statistics

Number of Valid Data	57	Number of Detected Data	13
Number of Distinct Detected Data	12	Number of Non-Detect Data	44
		Percent Non-Detects	77.19%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.054	Minimum Detected	-2.919
Maximum Detected	1.2	Maximum Detected	0.182
Mean of Detected	0.285	Mean of Detected	-1.766
SD of Detected	0.352	SD of Detected	0.961
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.47	Maximum Non-Detect	-0.755

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	54
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	94.74%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.843
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.146	Mean	-2.158
SD	0.181	SD	0.513
95% DL/2 (t) UCL	0.186	95% H-Stat (DL/2) UCL	0.15
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.092
		SD in Log Scale	0.655
		Mean in Original Scale	0.163
		SD in Original Scale	0.185
		95% t UCL	0.204
		95% Percentile Bootstrap UCL	0.207
		95% BCA Bootstrap UCL	0.217
		95% H-UCL	0.182

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.907	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.314		
nu star	23.59		
A-D Test Statistic	1.448	**Nonparametric Statistics**	
5% A-D Critical Value	0.756	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.756	Mean	0.149
5% K-S Critical Value	0.243	SD	0.18
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0262
		95% KM (t) UCL	0.192
Assuming Gamma Distribution		95% KM (z) UCL	0.192
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.192
Minimum	0.000001	95% KM (bootstrap t) UCL	0.225
Maximum	1.2	95% KM (BCA) UCL	0.195
Mean	0.211	95% KM (Percentile Bootstrap) UCL	0.195
Median	0.155	95% KM (Chebyshev) UCL	0.263
SD	0.216	97.5% KM (Chebyshev) UCL	0.312
k star	0.327	99% KM (Chebyshev) UCL	0.41
Theta star	0.645		
Nu star	37.31	**Potential UCLs to Use**	
AppChi2	24.32	95% KM (t) UCL	0.192
95% Gamma Approximate UCL (Use when n >= 40)	0.324	95% KM (% Bootstrap) UCL	0.195
95% Adjusted Gamma UCL (Use when n < 40)	0.327		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Chromium

General Statistics

Number of Valid Observations	87	Number of Distinct Observations	73

Raw Statistics		**Log-transformed Statistics**	
Minimum	2.4	Minimum of Log Data	0.875
Maximum	59.1	Maximum of Log Data	4.079
Mean	13.2	Mean of log Data	2.388
Geometric Mean	10.89	SD of log Data	0.578
Median	10.6		
SD	10.52		
Std. Error of Mean	1.128		
Coefficient of Variation	0.797		
Skewness	2.831		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.251	Lilliefors Test Statistic	0.119
Lilliefors Critical Value	0.095	Lilliefors Critical Value	0.095
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	15.08	95% H-UCL	14.49
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.57
95% Adjusted-CLT UCL (Chen-1995)	15.42	97.5% Chebyshev (MVUE) UCL	18.18
95% Modified-t UCL (Johnson-1978)	15.13	99% Chebyshev (MVUE) UCL	21.34

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	2.667	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	4.95		
MLE of Mean	13.2		
MLE of Standard Deviation	8.083		
nu star	464.1		
Approximate Chi Square Value (.05)	415.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0472	95% CLT UCL	15.06
Adjusted Chi Square Value	414.3	95% Jackknife UCL	15.08
		95% Standard Bootstrap UCL	15.02
Anderson-Darling Test Statistic	3.237	95% Bootstrap-t UCL	15.65
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	15.57
Kolmogorov-Smirnov Test Statistic	0.169	95% Percentile Bootstrap UCL	15.09
Kolmogorov-Smirnov 5% Critical Value	0.0967	95% BCA Bootstrap UCL	15.44
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	18.12
		97.5% Chebyshev(Mean, Sd) UCL	20.24
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.42
95% Approximate Gamma UCL (Use when n >= 40)	14.76		
95% Adjusted Gamma UCL (Use when n < 40)	14.79		

Potential UCL to Use	Use 95% Chebyshev (Mean, Sd) UCL	18.12

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Cobalt

General Statistics

Number of Valid Observations	87	Number of Distinct Observations	57

Raw Statistics		Log-transformed Statistics	
Minimum	1.2	Minimum of Log Data	0.182
Maximum	29.7	Maximum of Log Data	3.391
Mean	6.653	Mean of log Data	1.763
Geometric Mean	5.829	SD of log Data	0.509
Median	6.1		
SD	4.08		
Std. Error of Mean	0.437		
Coefficient of Variation	0.613		
Skewness	3.075		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.21	Lilliefors Test Statistic	0.106
Lilliefors Critical Value	0.095	Lilliefors Critical Value	0.095
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	7.381	95% H-UCL	7.346
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.29
95% Adjusted-CLT UCL (Chen-1995)	7.527	97.5% Chebyshev (MVUE) UCL	9.01
95% Modified-t UCL (Johnson-1978)	7.405	99% Chebyshev (MVUE) UCL	10.43

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.812	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	1.745		
MLE of Mean	6.653		
MLE of Standard Deviation	3.408		
nu star	663.3		
Approximate Chi Square Value (.05)	604.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0472	95% CLT UCL	7.373
Adjusted Chi Square Value	603.6	95% Jackknife UCL	7.381
		95% Standard Bootstrap UCL	7.358
Anderson-Darling Test Statistic	1.946	95% Bootstrap-t UCL	7.552
Anderson-Darling 5% Critical Value	0.756	95% Hall's Bootstrap UCL	7.689
Kolmogorov-Smirnov Test Statistic	0.132	95% Percentile Bootstrap UCL	7.398
Kolmogorov-Smirnov 5% Critical Value	0.0962	95% BCA Bootstrap UCL	7.556
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	8.56
		97.5% Chebyshev(Mean, Sd) UCL	9.385
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	11.01
95% Approximate Gamma UCL (Use when n >= 40)	7.3		
95% Adjusted Gamma UCL (Use when n < 40)	7.311		

Potential UCL to Use		
	Use 95% Chebyshev (Mean, Sd) UCL	8.56

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Dibenz(A,H)Anthracene

General Statistics

Number of Valid Data	57	Number of Detected Data	24
Number of Distinct Detected Data	18	Number of Non-Detect Data	33
		Percent Non-Detects	57.89%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.084	Minimum Detected	-2.477
Maximum Detected	1.6	Maximum Detected	0.47
Mean of Detected	0.406	Mean of Detected	-1.264
SD of Detected	0.393	SD of Detected	0.842
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.26	Maximum Non-Detect	-1.347

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	46
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	11
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	80.70%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.761	Shapiro Wilk Test Statistic	0.936
5% Shapiro Wilk Critical Value	0.916	5% Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.23	Mean	-1.859
SD	0.294	SD	0.747
95% DL/2 (t) UCL	0.295	95% H-Stat (DL/2) UCL	0.254
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.78
		SD in Log Scale	0.77
		Mean in Original Scale	0.244
		SD in Original Scale	0.29
		95% t UCL	0.308
		95% Percentile Bootstrap UCL	0.311
		95% BCA Bootstrap UCL	0.332
		95% H-UCL	0.282

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.364	**Data appear Lognormal at 5% Significance Level**	
Theta Star	0.297		
nu star	65.46		
A-D Test Statistic	0.914	**Nonparametric Statistics**	
5% A-D Critical Value	0.761	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.761	Mean	0.239
5% K-S Critical Value	0.181	SD	0.287
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0391
		95% KM (t) UCL	0.305
Assuming Gamma Distribution		95% KM (z) UCL	0.304
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.304
Minimum	0.000001	95% KM (bootstrap t) UCL	0.333
Maximum	1.6	95% KM (BCA) UCL	0.314
Mean	0.254	95% KM (Percentile Bootstrap) UCL	0.305
Median	0.169	95% KM (Chebyshev) UCL	0.41
SD	0.299	97.5% KM (Chebyshev) UCL	0.483
k star	0.317	99% KM (Chebyshev) UCL	0.628
Theta star	0.8		
Nu star	36.19	**Potential UCLs to Use**	
AppChi2	23.42	95% KM (t) UCL	0.305
95% Gamma Approximate UCL (Use when n >= 40)	0.392	95% KM (% Bootstrap) UCL	0.305
95% Adjusted Gamma UCL (Use when n < 40)	0.397		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Indeno(1,2,3-Cd)Pyrene

General Statistics

Number of Valid Data	57	Number of Detected Data	36
Number of Distinct Detected Data	28	Number of Non-Detect Data	21
		Percent Non-Detects	36.84%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.087	Minimum Detected	-2.442
Maximum Detected	3.5	Maximum Detected	1.253
Mean of Detected	0.735	Mean of Detected	-0.869
SD of Detected	0.827	SD of Detected	1.075
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.24	Maximum Non-Detect	-1.427

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	35
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	61.40%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.761	Shapiro Wilk Test Statistic	0.932
5% Shapiro Wilk Critical Value	0.935	5% Shapiro Wilk Critical Value	0.935
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.501	Mean	-1.401
SD	0.724	SD	1.104
95% DL/2 (t) UCL	0.661	95% H-Stat (DL/2) UCL	0.654
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.352
		SD in Log Scale	1.102
		Mean in Original Scale	0.511
		SD in Original Scale	0.719
		95% t UCL	0.67
		95% Percentile Bootstrap UCL	0.682
		95% BCA Bootstrap UCL	0.712
		95% H-UCL	0.685

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.958	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.768		
nu star	68.97		
A-D Test Statistic	1.292	**Nonparametric Statistics**	
5% A-D Critical Value	0.776	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.776	Mean	0.512
5% K-S Critical Value	0.151	SD	0.712
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0957
		95% KM (t) UCL	0.672
Assuming Gamma Distribution		95% KM (z) UCL	0.669
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.671
Minimum	0.000001	95% KM (bootstrap t) UCL	0.721
Maximum	3.5	95% KM (BCA) UCL	0.667
Mean	0.485	95% KM (Percentile Bootstrap) UCL	0.676
Median	0.2	95% KM (Chebyshev) UCL	0.929
SD	0.736	97.5% KM (Chebyshev) UCL	1.109
k star	0.203	99% KM (Chebyshev) UCL	1.464
Theta star	2.395		
Nu star	23.1	**Potential UCLs to Use**	
AppChi2	13.17	95% KM (Chebyshev) UCL	0.929
95% Gamma Approximate UCL (Use when n >= 40)	0.852		
95% Adjusted Gamma UCL (Use when n < 40)	0.864		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Iron

General Statistics

Number of Valid Observations	87	Number of Distinct Observations	87

Raw Statistics		Log-transformed Statistics	
Minimum	2108	Minimum of Log Data	7.653
Maximum	235011	Maximum of Log Data	12.37
Mean	24809	Mean of log Data	9.685
Geometric Mean	16081	SD of log Data	0.796
Median	15115		
SD	38315		
Std. Error of Mean	4108		
Coefficient of Variation	1.544		
Skewness	4.385		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.314	Lilliefors Test Statistic	0.129
Lilliefors Critical Value	0.095	Lilliefors Critical Value	0.095
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	31640	95% H-UCL	26357
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31223
95% Adjusted-CLT UCL (Chen-1995)	33630	97.5% Chebyshev (MVUE) UCL	35224
95% Modified-t UCL (Johnson-1978)	31962	99% Chebyshev (MVUE) UCL	43083

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.258	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	19728		
MLE of Mean	24809		
MLE of Standard Deviation	22123		
nu star	218.8		
Approximate Chi Square Value (.05)	185.6	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0472	95% CLT UCL	31566
Adjusted Chi Square Value	185.1	95% Jackknife UCL	31640
		95% Standard Bootstrap UCL	31493
Anderson-Darling Test Statistic	6.038	95% Bootstrap-t UCL	36358
Anderson-Darling 5% Critical Value	0.776	95% Hall's Bootstrap UCL	36742
Kolmogorov-Smirnov Test Statistic	0.214	95% Percentile Bootstrap UCL	32359
Kolmogorov-Smirnov 5% Critical Value	0.0981	95% BCA Bootstrap UCL	34344
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	42715
		97.5% Chebyshev(Mean, Sd) UCL	50463
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	65682
95% Approximate Gamma UCL (Use when n >= 40)	29252		
95% Adjusted Gamma UCL (Use when n < 40)	29333		

Potential UCL to Use		
	Use 95% Chebyshev (Mean, Sd) UCL	42715

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Lead

General Statistics

Number of Valid Data	87	Number of Detected Data	86
Number of Distinct Detected Data	84	Number of Non-Detect Data	1
		Percent Non-Detects	1.15%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	3.4	Minimum Detected	1.224
Maximum Detected	24438	Maximum Detected	10.1
Mean of Detected	662.5	Mean of Detected	4.348
SD of Detected	2788	SD of Detected	1.792
Minimum Non-Detect	21.3	Minimum Non-Detect	3.059
Maximum Non-Detect	21.3	Maximum Non-Detect	3.059

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Lilliefors Test Statistic	0.412	Lilliefors Test Statistic	0.122
5% Lilliefors Critical Value	0.0955	5% Lilliefors Critical Value	0.0955
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	655	Mean	4.325
SD	2773	SD	1.794
95% DL/2 (t) UCL	1149	95% H-Stat (DL/2) UCL	691.4
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	108.8	Mean in Log Scale	4.322
SD	3188	SD in Log Scale	1.798
95% MLE (t) UCL	677.2	Mean in Original Scale	654.9
95% MLE (Tiku) UCL	668.3	SD in Original Scale	2773
		95% t UCL	1149
		95% Percentile Bootstrap UCL	1221
		95% BCA Bootstrap UCL	1686
		95% H UCL	695.3

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.315	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	2105		
nu star	54.12		
A-D Test Statistic	9.405	**Nonparametric Statistics**	
5% A-D Critical Value	0.862	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.862	Mean	655
5% K-S Critical Value	0.104	SD	2757
Data not Gamma Distributed at 5% Significance Level		SE of Mean	297.3
		95% KM (t) UCL	1149
Assuming Gamma Distribution		95% KM (z) UCL	1144
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1149
Minimum	0.000001	95% KM (bootstrap t) UCL	2053
Maximum	24438	95% KM (BCA) UCL	1274
Mean	654.9	95% KM (Percentile Bootstrap) UCL	1208
Median	69.6	95% KM (Chebyshev) UCL	1951
SD	2773	97.5% KM (Chebyshev) UCL	2512
k star	0.292	99% KM (Chebyshev) UCL	3613
Theta star	2240		
Nu star	50.87	**Potential UCLs to Use**	
AppChi2	35.49	97.5% KM (Chebyshev) UCL	2512
95% Gamma Approximate UCL (Use when n >= 40)	938.6		
95% Adjusted Gamma UCL (Use when n < 40)	944.4		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Manganese

General Statistics

Number of Valid Observations	87	Number of Distinct Observations	75

Raw Statistics		Log-transformed Statistics	
Minimum	59.8	Minimum of Log Data	4.091
Maximum	1675	Maximum of Log Data	7.424
Mean	290.5	Mean of log Data	5.468
Geometric Mean	237.1	SD of log Data	0.621
Median	236		
SD	225.3		
Std. Error of Mean	24.16		
Coefficient of Variation	0.776		
Skewness	3.276		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.166	Lilliefors Test Statistic	0.062
Lilliefors Critical Value	0.095	Lilliefors Critical Value	0.095
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	330.6	95% H-UCL	327.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	376.9
95% Adjusted-CLT UCL (Chen-1995)	339.3	97.5% Chebyshev (MVUE) UCL	415.9
95% Modified-t UCL (Johnson-1978)	332	99% Chebyshev (MVUE) UCL	492.6

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.533	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	114.7		
MLE of Mean	290.5		
MLE of Standard Deviation	182.5		
nu star	440.7		
Approximate Chi Square Value (.05)	393	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0472	95% CLT UCL	330.2
Adjusted Chi Square Value	392.3	95% Jackknife UCL	330.6
		95% Standard Bootstrap UCL	329.9
Anderson-Darling Test Statistic	0.853	95% Bootstrap-t UCL	341.3
Anderson-Darling 5% Critical Value	0.761	95% Hall's Bootstrap UCL	354.9
Kolmogorov-Smirnov Test Statistic	0.0833	95% Percentile Bootstrap UCL	330.8
Kolmogorov-Smirnov 5% Critical Value	0.0968	95% BCA Bootstrap UCL	336.1
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	395.8
		97.5% Chebyshev(Mean, Sd) UCL	441.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	530.8
95% Approximate Gamma UCL (Use when n >= 40)	325.7		
95% Adjusted Gamma UCL (Use when n < 40)	326.3		

Potential UCL to Use		
	Use 95% Approximate Gamma UCL	325.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Mercury

General Statistics

Number of Valid Data	87	Number of Detected Data	77
Number of Distinct Detected Data	66	Number of Non-Detect Data	10
		Percent Non-Detects	11.49%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.055	Minimum Detected	-2.9
Maximum Detected	125	Maximum Detected	4.828
Mean of Detected	11.07	Mean of Detected	0.896
SD of Detected	24.69	SD of Detected	1.775
Minimum Non-Detect	0.11	Minimum Non-Detect	-2.207
Maximum Non-Detect	3.3	Maximum Non-Detect	1.194

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	54
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	33
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	62.07%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.328	Lilliefors Test Statistic	0.0896
5% Lilliefors Critical Value	0.101	5% Lilliefors Critical Value	0.101
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.818	Mean	0.505
SD	23.47	SD	2.023
95% DL/2 (t) UCL	14	95% H-Stat (DL/2) UCL	26.97
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.496
		SD in Log Scale	2.028
		Mean in Original Scale	9.807
		SD in Original Scale	23.47
		95% t UCL	13.99
		95% Percentile Bootstrap UCL	14.15
		95% BCA Bootstrap UCL	15.35
		95% H-UCL	27.1

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.423	**Data appear Lognormal at 5% Significance Level**	
Theta Star	26.16		
nu star	65.15		
A-D Test Statistic	3.222	**Nonparametric Statistics**	
5% A-D Critical Value	0.834	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.834	Mean	9.811
5% K-S Critical Value	0.109	SD	23.33
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.518
		95% KM (t) UCL	14
Assuming Gamma Distribution		95% KM (z) UCL	13.95
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	13.99
Minimum	0.000001	95% KM (bootstrap t) UCL	16.27
Maximum	125	95% KM (BCA) UCL	14.55
Mean	9.793	95% KM (Percentile Bootstrap) UCL	14.1
Median	1.6	95% KM (Chebyshev) UCL	20.79
SD	23.48	97.5% KM (Chebyshev) UCL	25.54
k star	0.233	99% KM (Chebyshev) UCL	34.87
Theta star	42.03		
Nu star	40.55	**Potential UCLs to Use**	
AppChi2	26.96	97.5% KM (Chebyshev) UCL	25.54
95% Gamma Approximate UCL (Use when n >= 40)	14.73		
95% Adjusted Gamma UCL (Use when n < 40)	14.83		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Nickel

General Statistics

Number of Valid Observations	87	Number of Distinct Observations	76

Raw Statistics		**Log-transformed Statistics**	
Minimum	2.5	Minimum of Log Data	0.916
Maximum	427	Maximum of Log Data	6.057
Mean	32.1	Mean of log Data	2.781
Geometric Mean	16.14	SD of log Data	0.937
Median	13.5		
SD	69.47		
Std. Error of Mean	7.448		
Coefficient of Variation	2.164		
Skewness	4.662		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Lilliefors Test Statistic	0.374	Lilliefors Test Statistic	0.14
Lilliefors Critical Value	0.095	Lilliefors Critical Value	0.095
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	44.49	95% H-UCL	31.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	37.64
95% Adjusted-CLT UCL (Chen-1995)	48.33	97.5% Chebyshev (MVUE) UCL	43.17
95% Modified-t UCL (Johnson-1978)	45.11	99% Chebyshev (MVUE) UCL	54.03

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.834	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	38.51		
MLE of Mean	32.1		
MLE of Standard Deviation	35.16		
nu star	145.1		
Approximate Chi Square Value (.05)	118.2	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0472	95% CLT UCL	44.35
Adjusted Chi Square Value	117.8	95% Jackknife UCL	44.49
		95% Standard Bootstrap UCL	44.24
Anderson-Darling Test Statistic	9.151	95% Bootstrap-t UCL	53.74
Anderson-Darling 5% Critical Value	0.789	95% Hall's Bootstrap UCL	44.42
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	45.58
Kolmogorov-Smirnov 5% Critical Value	0.0993	95% BCA Bootstrap UCL	48.72
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	64.57
		97.5% Chebyshev(Mean, Sd) UCL	78.62
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	106.2
95% Approximate Gamma UCL (Use when n >= 40)	39.39		
95% Adjusted Gamma UCL (Use when n < 40)	39.52		

Potential UCL to Use	Use 95% Chebyshev (Mean, Sd) UCL	64.57

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

PCB Dioxin-like Congener TEQ (mammal)

General Statistics

Number of Valid Data	54	Number of Detected Data	52
Number of Distinct Detected Data	52	Number of Non-Detect Data	2
		Percent Non-Detects	3.70%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	6.385E-08	Minimum Detected	-16.57
Maximum Detected	0.0004516	Maximum Detected	-7.703
Mean of Detected	2.475E-05	Mean of Detected	-12.57
SD of Detected	6.937E-05	SD of Detected	2.074
Minimum Non-Detect	2.232E-07	Minimum Non-Detect	-15.32
Maximum Non-Detect	2.445E-07	Maximum Non-Detect	-15.22

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	45
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	16.67%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.361	Lilliefors Test Statistic	0.0835
5% Lilliefors Critical Value	0.123	5% Lilliefors Critical Value	0.123
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.384E-05	Mean	-12.69
SD	6.821E-05	SD	2.135
95% DL/2 (t) UCL	3.938E-05	95% H-Stat (DL/2) UCL	9.273E-05
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.46E-05	Mean in Log Scale	-12.69
SD	7.577E-05	SD in Log Scale	2.134
95% MLE (t) UCL	3.186E-05	Mean in Original Scale	2.384E-05
95% MLE (Tiku) UCL	3.108E-05	SD in Original Scale	6.821E-05
		95% t UCL	3.938E-05
		95% Percentile Bootstrap UCL	3.953E-05
		95% BCA Bootstrap UCL	4.724E-05
		95% H UCL	9.255E-05

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.337	**Data appear Lognormal at 5% Significance Level**	
Theta Star	7.35E-05		
nu star	35.03		
A-D Test Statistic	2.338	**Nonparametric Statistics**	
5% A-D Critical Value	0.852	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.852	Mean	2.384E-05
5% K-S Critical Value	0.133	SD	6.758E-05
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.286E-06
		95% KM (t) UCL	3.939E-05
Assuming Gamma Distribution		95% KM (z) UCL	3.912E-05
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.938E-05
Minimum	6.385E-08	95% KM (bootstrap t) UCL	6.16E-05
Maximum	0.0004516	95% KM (BCA) UCL	4.139E-05
Mean	2.387E-05	95% KM (Percentile Bootstrap) UCL	4.254E-05
Median	2.906E-06	95% KM (Chebyshev) UCL	6.432E-05
SD	6.82E-05	97.5% KM (Chebyshev) UCL	8.183E-05
k star	0.336	99% KM (Chebyshev) UCL	0.0001162
Theta star	7.113E-05		
Nu star	36.25	**Potential UCLs to Use**	
AppChi2	23.47	99% KM (Chebyshev) UCL	0.0001162
95% Gamma Approximate UCL (Use when n >= 40)	3.687E-05		
95% Adjusted Gamma UCL (Use when n < 40)	3.732E-05		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Thallium

General Statistics

Number of Valid Data	87	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	86
		Percent Non-Detects	98.85%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Thallium was not processed!

Appendix E
ProUCL Output for Aggregate Soil - SFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Total PCB Homologues

General Statistics

Number of Valid Data	54	Number of Detected Data	53
Number of Distinct Detected Data	53	Number of Non-Detect Data	1
		Percent Non-Detects	1.85%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0000386	Minimum Detected	-10.16
Maximum Detected	15.8	Maximum Detected	2.76
Mean of Detected	0.865	Mean of Detected	-2.691
SD of Detected	2.364	SD of Detected	2.966
Minimum Non-Detect	0.000254	Minimum Non-Detect	-8.278
Maximum Non-Detect	0.000254	Maximum Non-Detect	-8.278

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.357	Lilliefors Test Statistic	0.126
5% Lilliefors Critical Value	0.122	5% Lilliefors Critical Value	0.122
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.849	Mean	-2.807
SD	2.344	SD	3.059
95% DL/2 (t) UCL	1.383	95% H-Stat (DL/2) UCL	59.83
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.723	Mean in Log Scale	-2.796
SD	2.438	SD in Log Scale	3.037
95% MLE (t) UCL	1.278	Mean in Original Scale	0.849
95% MLE (Tiku) UCL	1.228	SD in Original Scale	2.344
		95% t UCL	1.383
		95% Percentile Bootstrap UCL	1.407
		95% BCA Bootstrap UCL	1.711
		95% H UCL	54.8

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.272	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	3.183		
nu star	28.81		
A-D Test Statistic	1.203	**Nonparametric Statistics**	
5% A-D Critical Value	0.874	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.874	Mean	0.849
5% K-S Critical Value	0.133	SD	2.323
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.319
		95% KM (t) UCL	1.383
Assuming Gamma Distribution		95% KM (z) UCL	1.374
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.383
Minimum	0.000001	95% KM (bootstrap t) UCL	2.052
Maximum	15.8	95% KM (BCA) UCL	1.46
Mean	0.849	95% KM (Percentile Bootstrap) UCL	1.432
Median	0.0815	95% KM (Chebyshev) UCL	2.24
SD	2.344	97.5% KM (Chebyshev) UCL	2.842
k star	0.256	99% KM (Chebyshev) UCL	4.024
Theta star	3.31		
Nu star	27.7	**Potential UCLs to Use**	
AppChi2	16.69	99% KM (Chebyshev) UCL	4.024
95% Gamma Approximate UCL (Use when n >= 40)	1.409		
95% Adjusted Gamma UCL (Use when n < 40)	1.429		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Vanadium

General Statistics

Number of Valid Observations	87	Number of Distinct Observations	77

Raw Statistics		Log-transformed Statistics	
Minimum	3.3	Minimum of Log Data	1.194
Maximum	72.7	Maximum of Log Data	4.286
Mean	21.51	Mean of log Data	2.971
Geometric Mean	19.51	SD of log Data	0.451
Median	19.3		
SD	10.31		
Std. Error of Mean	1.106		
Coefficient of Variation	0.479		
Skewness	2.044		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.161	Lilliefors Test Statistic	0.0842
Lilliefors Critical Value	0.095	Lilliefors Critical Value	0.095
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	23.35	95% H-UCL	23.59
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	26.32
95% Adjusted-CLT UCL (Chen-1995)	23.59	97.5% Chebyshev (MVUE) UCL	28.37
95% Modified-t UCL (Johnson-1978)	23.39	99% Chebyshev (MVUE) UCL	32.41

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.089	**Data appear Lognormal at 5% Significance Level**	
Theta Star	4.228		
MLE of Mean	21.51		
MLE of Standard Deviation	9.537		
nu star	885.5		
Approximate Chi Square Value (.05)	817.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0472	95% CLT UCL	23.33
Adjusted Chi Square Value	816.3	95% Jackknife UCL	23.35
		95% Standard Bootstrap UCL	23.31
Anderson-Darling Test Statistic	0.957	95% Bootstrap-t UCL	23.7
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	23.85
Kolmogorov-Smirnov Test Statistic	0.103	95% Percentile Bootstrap UCL	23.46
Kolmogorov-Smirnov 5% Critical Value	0.0961	95% BCA Bootstrap UCL	23.6
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	26.34
		97.5% Chebyshev(Mean, Sd) UCL	28.42
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.52
95% Approximate Gamma UCL (Use when n >= 40)	23.31		
95% Adjusted Gamma UCL (Use when n < 40)	23.34		

Potential UCL to Use	
Use 95% Student's-t UCL	23.35
or 95% Modified-t UCL	23.39
or 95% H-UCL	23.59

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

2,3,7,8-TCDD TEQ (mammal)

General Statistics

Number of Valid Observations	11	Number of Distinct Observations	11

Raw Statistics		Log-transformed Statistics	
Minimum	4.864E-07	Minimum of Log Data	-14.54
Maximum	0.00272	Maximum of Log Data	-5.909
Mean	0.0003868	Mean of log Data	-11.25
Geometric Mean	1.299E-05	SD of log Data	3.02
Median	4.564E-06		
SD	0.0008604		
Std. Error of Mean	0.0002594		
Coefficient of Variation	2.225		
Skewness	2.475		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.538	Shapiro Wilk Test Statistic	0.881
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0008569	95% H-UCL	1.654
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.00165
95% Adjusted-CLT UCL (Chen-1995)	0.00102	97.5% Chebyshev (MVUE) UCL	0.00221
95% Modified-t UCL (Johnson-1978)	0.0008892	99% Chebyshev (MVUE) UCL	0.00331

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.217	**Data appear Lognormal at 5% Significance Level**	
Theta Star	0.00179		
MLE of Mean	0.0003868		
MLE of Standard Deviation	0.000831		
nu star	4.765		
Approximate Chi Square Value (.05)	1.045	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	0.0008134
Adjusted Chi Square Value	0.794	95% Jackknife UCL	0.0008569
		95% Standard Bootstrap UCL	0.0007944
Anderson-Darling Test Statistic	1.111	95% Bootstrap-t UCL	0.0055
Anderson-Darling 5% Critical Value	0.854	95% Hall's Bootstrap UCL	0.00642
Kolmogorov-Smirnov Test Statistic	0.325	95% Percentile Bootstrap UCL	0.0008311
Kolmogorov-Smirnov 5% Critical Value	0.281	95% BCA Bootstrap UCL	0.00111
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.00152
		97.5% Chebyshev(Mean, Sd) UCL	0.00201
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.00297
95% Approximate Gamma UCL (Use when n >= 40)	0.00176		
95% Adjusted Gamma UCL (Use when n < 40)	0.00232		

Potential UCL to Use		
	Use 95% Hall's Bootstrap UCL	0.00642

Recommended UCL exceeds the maximum observation

In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Aluminum

General Statistics

Number of Valid Observations	12	Number of Distinct Observations	12

Raw Statistics		Log-transformed Statistics	
Minimum	1307	Minimum of Log Data	7.175
Maximum	10774	Maximum of Log Data	9.285
Mean	5495	Mean of log Data	8.446
Geometric Mean	4655	SD of log Data	0.659
Median	5787		
SD	2856		
Std. Error of Mean	824.6		
Coefficient of Variation	0.52		
Skewness	0.199		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk Test Statistic	0.876
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	6975	95% H-UCL	9237
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10543
95% Adjusted-CLT UCL (Chen-1995)	6901	97.5% Chebyshev (MVUE) UCL	12653
95% Modified-t UCL (Johnson-1978)	6983	99% Chebyshev (MVUE) UCL	16800

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.434	**Data appear Normal at 5% Significance Level**	
Theta Star	2257		
MLE of Mean	5495		
MLE of Standard Deviation	3522		
nu star	58.42		
Approximate Chi Square Value (.05)	41.85	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	6851
Adjusted Chi Square Value	39.72	95% Jackknife UCL	6975
		95% Standard Bootstrap UCL	6797
Anderson-Darling Test Statistic	0.585	95% Bootstrap-t UCL	6990
Anderson-Darling 5% Critical Value	0.738	95% Hall's Bootstrap UCL	7128
Kolmogorov-Smirnov Test Statistic	0.213	95% Percentile Bootstrap UCL	6793
Kolmogorov-Smirnov 5% Critical Value	0.247	95% BCA Bootstrap UCL	6834
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9089
		97.5% Chebyshev(Mean, Sd) UCL	10644
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	13699
95% Approximate Gamma UCL (Use when n >= 40)	7670		
95% Adjusted Gamma UCL (Use when n < 40)	8082		

Potential UCL to Use		
	Use 95% Student's-t UCL	6975

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Antimony

General Statistics

Number of Valid Data	12	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	5
		Percent Non-Detects	41.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.45	Minimum Detected	-0.799
Maximum Detected	16.5	Maximum Detected	2.803
Mean of Detected	3.179	Mean of Detected	0.297
SD of Detected	5.885	SD of Detected	1.178
Minimum Non-Detect	6	Minimum Non-Detect	1.792
Maximum Non-Detect	13.3	Maximum Non-Detect	2.588

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.67%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.512	Shapiro Wilk Test Statistic	0.785
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.54	Mean	0.738
SD	4.459	SD	1.043
95% DL/2 (t) UCL	5.851	95% H-Stat (DL/2) UCL	9.243
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.182
		SD in Log Scale	0.882
		Mean in Original Scale	2.28
		SD in Original Scale	4.486
		95% t UCL	4.605
		95% Percentile Bootstrap UCL	4.845
		95% BCA Bootstrap UCL	6.092
		95% H-UCL	3.634

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.497	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	6.395		
nu star	6.958		
A-D Test Statistic	1.214	**Nonparametric Statistics**	
5% A-D Critical Value	0.739	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.739	Mean	2.253
5% K-S Critical Value	0.324	SD	4.309
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.347
		95% KM (t) UCL	4.672
Assuming Gamma Distribution		95% KM (z) UCL	4.469
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.595
Minimum	0.45	95% KM (bootstrap t) UCL	19.75
Maximum	16.5	95% KM (BCA) UCL	4.864
Mean	2.302	95% KM (Percentile Bootstrap) UCL	4.787
Median	1.075	95% KM (Chebyshev) UCL	8.125
SD	4.479	97.5% KM (Chebyshev) UCL	10.67
k star	0.749	99% KM (Chebyshev) UCL	15.66
Theta star	3.073		
Nu star	17.98	**Potential UCLs to Use**	
AppChi2	9.375	97.5% KM (Chebyshev) UCL	10.67
95% Gamma Approximate UCL (Use when n >= 40)	4.415		
95% Adjusted Gamma UCL (Use when n < 40)	4.903		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Arsenic

General Statistics

Number of Valid Observations	12	Number of Distinct Observations	12

Raw Statistics		Log-transformed Statistics	
Minimum	1.85	Minimum of Log Data	0.615
Maximum	38.7	Maximum of Log Data	3.656
Mean	10.03	Mean of log Data	1.769
Geometric Mean	5.865	SD of log Data	1.054
Median	3.7		
SD	11.58		
Std. Error of Mean	3.344		
Coefficient of Variation	1.155		
Skewness	1.747		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.745	Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	16.04	95% H-UCL	26.61
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	23.21
95% Adjusted-CLT UCL (Chen-1995)	17.34	97.5% Chebyshev (MVUE) UCL	29.11
95% Modified-t UCL (Johnson-1978)	16.32	99% Chebyshev (MVUE) UCL	40.7

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.856	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	11.72		
MLE of Mean	10.03		
MLE of Standard Deviation	10.85		
nu star	20.54		
Approximate Chi Square Value (.05)	11.25	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	15.53
Adjusted Chi Square Value	10.21	95% Jackknife UCL	16.04
		95% Standard Bootstrap UCL	15.29
Anderson-Darling Test Statistic	0.739	95% Bootstrap-t UCL	22.85
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	36.9
Kolmogorov-Smirnov Test Statistic	0.268	95% Percentile Bootstrap UCL	15.66
Kolmogorov-Smirnov 5% Critical Value	0.252	95% BCA Bootstrap UCL	17.33
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	24.61
		97.5% Chebyshev(Mean, Sd) UCL	30.92
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	43.3
95% Approximate Gamma UCL (Use when n >= 40)	18.32		
95% Adjusted Gamma UCL (Use when n < 40)	20.17		

Potential UCL to Use	
Use 95% Approximate Gamma UCL	18.32

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Benzo(A)Anthracene

General Statistics

Number of Valid Data	11	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	3
		Percent Non-Detects	27.27%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.037	Minimum Detected	-3.297
Maximum Detected	34.5	Maximum Detected	3.541
Mean of Detected	5.276	Mean of Detected	-0.125
SD of Detected	11.85	SD of Detected	2.107
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.45%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.491	Shapiro Wilk Test Statistic	0.962
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.862	Mean	-0.74
SD	10.2	SD	2.054
95% DL/2 (t) UCL	9.437	95% H-Stat (DL/2) UCL	121.2
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.86
		SD in Log Scale	2.166
		Mean in Original Scale	3.853
		SD in Original Scale	10.21
		95% t UCL	9.43
		95% Percentile Bootstrap UCL	9.985
		95% BCA Bootstrap UCL	13.11
		95% H-UCL	196.3

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.316	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	16.69		
nu star	5.056		
A-D Test Statistic	0.636	**Nonparametric Statistics**	
5% A-D Critical Value	0.785	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.785	Mean	3.86
5% K-S Critical Value	0.314	SD	9.728
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	3.136
		95% KM (t) UCL	9.543
Assuming Gamma Distribution		95% KM (z) UCL	9.017
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9.436
Minimum	0.000001	95% KM (bootstrap t) UCL	49.25
Maximum	34.5	95% KM (BCA) UCL	10.51
Mean	3.837	95% KM (Percentile Bootstrap) UCL	9.962
Median	0.24	95% KM (Chebyshev) UCL	17.53
SD	10.21	97.5% KM (Chebyshev) UCL	23.44
k star	0.168	99% KM (Chebyshev) UCL	35.06
Theta star	22.81		
Nu star	3.701	**Potential UCLs to Use**	
AppChi2	0.607	95% KM (Chebyshev) UCL	17.53
95% Gamma Approximate UCL (Use when n >= 40)	23.38		
95% Adjusted Gamma UCL (Use when n < 40)	32.33		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(A)Pyrene

General Statistics

Number of Valid Data	11	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	3
		Percent Non-Detects	27.27%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.048	Minimum Detected	-3.037
Maximum Detected	25	Maximum Detected	3.219
Mean of Detected	4.102	Mean of Detected	-0.0766
SD of Detected	8.492	SD of Detected	1.929
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.45%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.517	Shapiro Wilk Test Statistic	0.966
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.009	Mean	-0.705
SD	7.348	SD	1.94
95% DL/2 (t) UCL	7.024	95% H-Stat (DL/2) UCL	70.31
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.753
		SD in Log Scale	1.987
		Mean in Original Scale	3.005
		SD in Original Scale	7.35
		95% t UCL	7.021
		95% Percentile Bootstrap UCL	7.216
		95% BCA Bootstrap UCL	9.773
		95% H-UCL	84.71

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.356	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	11.53		
nu star	5.694		
A-D Test Statistic	0.556	**Nonparametric Statistics**	
5% A-D Critical Value	0.774	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.774	Mean	3.01
5% K-S Critical Value	0.312	SD	7.005
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.258
		95% KM (t) UCL	7.103
Assuming Gamma Distribution		95% KM (z) UCL	6.725
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.026
Minimum	0.000001	95% KM (bootstrap t) UCL	27.58
Maximum	25	95% KM (BCA) UCL	7.636
Mean	2.983	95% KM (Percentile Bootstrap) UCL	7.319
Median	0.32	95% KM (Chebyshev) UCL	12.85
SD	7.359	97.5% KM (Chebyshev) UCL	17.11
k star	0.174	99% KM (Chebyshev) UCL	25.48
Theta star	17.18		
Nu star	3.821	**Potential UCLs to Use**	
AppChi2	0.652	95% KM (Chebyshev) UCL	12.85
95% Gamma Approximate UCL (Use when n >= 40)	17.47		
95% Adjusted Gamma UCL (Use when n < 40)	24.02		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(B)Fluoranthene

General Statistics

Number of Valid Data	11	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	3
		Percent Non-Detects	27.27%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.056	Minimum Detected	-2.882
Maximum Detected	22.5	Maximum Detected	3.114
Mean of Detected	3.761	Mean of Detected	-0.0895
SD of Detected	7.622	SD of Detected	1.864
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.45%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.524	Shapiro Wilk Test Statistic	0.957
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.76	Mean	-0.714
SD	6.603	SD	1.891
95% DL/2 (t) UCL	6.369	95% H-Stat (DL/2) UCL	55.03
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.738
		SD in Log Scale	1.914
		Mean in Original Scale	2.758
		SD in Original Scale	6.604
		95% t UCL	6.367
		95% Percentile Bootstrap UCL	6.613
		95% BCA Bootstrap UCL	8.51
		95% H-UCL	60.05

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.368	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	10.21		
nu star	5.891		
A-D Test Statistic	0.573	**Nonparametric Statistics**	
5% A-D Critical Value	0.77	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.77	Mean	2.766
5% K-S Critical Value	0.311	SD	6.293
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.029
		95% KM (t) UCL	6.443
Assuming Gamma Distribution		95% KM (z) UCL	6.103
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.373
Minimum	0.000001	95% KM (bootstrap t) UCL	23.78
Maximum	22.5	95% KM (BCA) UCL	6.84
Mean	2.735	95% KM (Percentile Bootstrap) UCL	6.633
Median	0.26	95% KM (Chebyshev) UCL	11.61
SD	6.614	97.5% KM (Chebyshev) UCL	15.43
k star	0.175	99% KM (Chebyshev) UCL	22.95
Theta star	15.6		
Nu star	3.856	**Potential UCLs to Use**	
AppChi2	0.666	95% KM (Chebyshev) UCL	11.61
95% Gamma Approximate UCL (Use when n >= 40)	15.84		
95% Adjusted Gamma UCL (Use when n < 40)	21.74		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(G,H,I)Perylene

General Statistics

Number of Valid Data	11	Number of Detected Data	8
Number of Distinct Detected Data	7	Number of Non-Detect Data	3
		Percent Non-Detects	27.27%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	15	Maximum Detected	2.708
Mean of Detected	2.568	Mean of Detected	-0.326
SD of Detected	5.075	SD of Detected	1.633
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.45%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.54	Shapiro Wilk Test Statistic	0.916
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.893	Mean	-0.887
SD	4.4	SD	1.669
95% DL/2 (t) UCL	4.297	95% H-Stat (DL/2) UCL	17
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.87
		SD in Log Scale	1.654
		Mean in Original Scale	1.894
		SD in Original Scale	4.4
		95% t UCL	4.298
		95% Percentile Bootstrap UCL	4.492
		95% BCA Bootstrap UCL	5.847
		95% H-UCL	16.17

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.396	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	6.482		
nu star	6.338		
A-D Test Statistic	0.69	**Nonparametric Statistics**	
5% A-D Critical Value	0.762	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.762	Mean	1.905
5% K-S Critical Value	0.309	SD	4.19
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.351
		95% KM (t) UCL	4.353
Assuming Gamma Distribution		95% KM (z) UCL	4.127
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.307
Minimum	0.000001	95% KM (bootstrap t) UCL	16.22
Maximum	15	95% KM (BCA) UCL	4.615
Mean	1.867	95% KM (Percentile Bootstrap) UCL	4.487
Median	0.2	95% KM (Chebyshev) UCL	7.793
SD	4.412	97.5% KM (Chebyshev) UCL	10.34
k star	0.18	99% KM (Chebyshev) UCL	15.34
Theta star	10.39		
Nu star	3.955	**Potential UCLs to Use**	
AppChi2	0.704	95% KM (Chebyshev) UCL	7.793
95% Gamma Approximate UCL (Use when n >= 40)	10.49		
95% Adjusted Gamma UCL (Use when n < 40)	14.32		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(K)Fluoranthene

General Statistics

Number of Valid Data	11	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	3
		Percent Non-Detects	27.27%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.04	Minimum Detected	-3.219
Maximum Detected	25	Maximum Detected	3.219
Mean of Detected	3.886	Mean of Detected	-0.35
SD of Detected	8.565	SD of Detected	2.029
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	54.55%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.5	Shapiro Wilk Test Statistic	0.957
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.852	Mean	-0.904
SD	7.382	SD	1.945
95% DL/2 (t) UCL	6.886	95% H-Stat (DL/2) UCL	59.16
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.897
		SD in Log Scale	1.94
		Mean in Original Scale	2.852
		SD in Original Scale	7.382
		95% t UCL	6.886
		95% Percentile Bootstrap UCL	7.202
		95% BCA Bootstrap UCL	9.546
		95% H-UCL	57.98

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.325	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	11.94		
nu star	5.207		
A-D Test Statistic	0.628	**Nonparametric Statistics**	
5% A-D Critical Value	0.782	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.782	Mean	2.855
5% K-S Critical Value	0.313	SD	7.037
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.268
		95% KM (t) UCL	6.966
Assuming Gamma Distribution		95% KM (z) UCL	6.586
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.888
Minimum	0.000001	95% KM (bootstrap t) UCL	35.54
Maximum	25	95% KM (BCA) UCL	7.4
Mean	2.826	95% KM (Percentile Bootstrap) UCL	7.289
Median	0.16	95% KM (Chebyshev) UCL	12.74
SD	7.392	97.5% KM (Chebyshev) UCL	17.02
k star	0.171	99% KM (Chebyshev) UCL	25.42
Theta star	16.54		
Nu star	3.759	**Potential UCLs to Use**	
AppChi2	0.629	95% KM (Chebyshev) UCL	12.74
95% Gamma Approximate UCL (Use when n >= 40)	16.89		
95% Adjusted Gamma UCL (Use when n < 40)	23.29		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Carbazole

General Statistics

Number of Valid Data	11	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	9
		Percent Non-Detects	81.82%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.49	Minimum Detected	-0.713
Maximum Detected	1.7	Maximum Detected	0.531
Mean of Detected	1.095	Mean of Detected	-0.0914
SD of Detected	0.856	SD of Detected	0.88
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	2.3	Maximum Non-Detect	0.833
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).
Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!
It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.389	Mean	-1.594
SD	0.539	SD	1.086
95% DL/2 (t) UCL	0.684	95% H-Stat (DL/2) UCL	1.086
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.611
5% K-S Critical Value	N/A	SD	0.363
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.162
		95% KM (t) UCL	0.905
Assuming Gamma Distribution		95% KM (z) UCL	0.878
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.443
Minimum	N/A	95% KM (bootstrap t) UCL	0.627
Maximum	N/A	95% KM (BCA) UCL	1.7
Mean	N/A	95% KM (Percentile Bootstrap) UCL	1.7
Median	N/A	95% KM (Chebyshev) UCL	1.319
SD	N/A	97.5% KM (Chebyshev) UCL	1.625
k star	N/A	99% KM (Chebyshev) UCL	2.226
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	0.905
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (% Bootstrap) UCL	1.7
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Chromium

General Statistics

Number of Valid Observations	12	Number of Distinct Observations	11

Raw Statistics		Log-transformed Statistics	
Minimum	6.7	Minimum of Log Data	1.902
Maximum	20.2	Maximum of Log Data	3.006
Mean	10.29	Mean of log Data	2.284
Geometric Mean	9.817	SD of log Data	0.305
Median	9.625		
SD	3.696		
Std. Error of Mean	1.067		
Coefficient of Variation	0.359		
Skewness	1.966		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.805	Shapiro Wilk Test Statistic	0.918
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	12.21	95% H-UCL	12.29
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.22
95% Adjusted-CLT UCL (Chen-1995)	12.69	97.5% Chebyshev (MVUE) UCL	15.94
95% Modified-t UCL (Johnson-1978)	12.31	99% Chebyshev (MVUE) UCL	19.32

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	8.124	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	1.267		
MLE of Mean	10.29		
MLE of Standard Deviation	3.611		
nu star	195		
Approximate Chi Square Value (.05)	163.7	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	12.05
Adjusted Chi Square Value	159.3	95% Jackknife UCL	12.21
		95% Standard Bootstrap UCL	11.98
Anderson-Darling Test Statistic	0.521	95% Bootstrap-t UCL	13.83
Anderson-Darling 5% Critical Value	0.73	95% Hall's Bootstrap UCL	21
Kolmogorov-Smirnov Test Statistic	0.208	95% Percentile Bootstrap UCL	12.13
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	12.56
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.94
		97.5% Chebyshev(Mean, Sd) UCL	16.95
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	20.91
95% Approximate Gamma UCL (Use when n >= 40)	12.26		
95% Adjusted Gamma UCL (Use when n < 40)	12.6		

Potential UCL to Use	
Use 95% Approximate Gamma UCL	12.26

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Chrysene

General Statistics

Number of Valid Data	11	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	3
		Percent Non-Detects	27.27%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.048	Minimum Detected	-3.037
Maximum Detected	33.5	Maximum Detected	3.512
Mean of Detected	5.329	Mean of Detected	0.00839
SD of Detected	11.44	SD of Detected	2.063
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.45%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.506	Shapiro Wilk Test Statistic	0.952
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.901	Mean	-0.643
SD	9.876	SD	2.056
95% DL/2 (t) UCL	9.297	95% H-Stat (DL/2) UCL	134.7
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.708
		SD in Log Scale	2.118
		Mean in Original Scale	3.895
		SD in Original Scale	9.878
		95% t UCL	9.293
		95% Percentile Bootstrap UCL	9.604
		95% BCA Bootstrap UCL	12.73
		95% H-UCL	175.2

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.331	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	16.11		
nu star	5.293		
A-D Test Statistic	0.595	**Nonparametric Statistics**	
5% A-D Critical Value	0.781	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.781	Mean	3.902
5% K-S Critical Value	0.313	SD	9.415
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	3.035
		95% KM (t) UCL	9.403
Assuming Gamma Distribution		95% KM (z) UCL	8.894
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9.299
Minimum	0.000001	95% KM (bootstrap t) UCL	40.95
Maximum	33.5	95% KM (BCA) UCL	9.852
Mean	3.875	95% KM (Percentile Bootstrap) UCL	9.781
Median	0.23	95% KM (Chebyshev) UCL	17.13
SD	9.886	97.5% KM (Chebyshev) UCL	22.85
k star	0.17	99% KM (Chebyshev) UCL	34.1
Theta star	22.82		
Nu star	3.736	**Potential UCLs to Use**	
AppChi2	0.62	95% KM (Chebyshev) UCL	17.13
95% Gamma Approximate UCL (Use when n >= 40)	23.34		
95% Adjusted Gamma UCL (Use when n < 40)	32.21		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Cobalt

General Statistics

Number of Valid Observations	12	Number of Distinct Observations	11

Raw Statistics		Log-transformed Statistics	
Minimum	3.7	Minimum of Log Data	1.308
Maximum	8.5	Maximum of Log Data	2.14
Mean	5.858	Mean of log Data	1.735
Geometric Mean	5.669	SD of log Data	0.269
Median	6		
SD	1.562		
Std. Error of Mean	0.451		
Coefficient of Variation	0.267		
Skewness	0.348		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.942	Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	6.668	95% H-UCL	6.857
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.858
95% Adjusted-CLT UCL (Chen-1995)	6.649	97.5% Chebyshev (MVUE) UCL	8.723
95% Modified-t UCL (Johnson-1978)	6.676	99% Chebyshev (MVUE) UCL	10.42

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	11.58	**Data appear Normal at 5% Significance Level**	
Theta Star	0.506		
MLE of Mean	5.858		
MLE of Standard Deviation	1.722		
nu star	277.9		
Approximate Chi Square Value (.05)	240.3	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	6.6
Adjusted Chi Square Value	234.9	95% Jackknife UCL	6.668
		95% Standard Bootstrap UCL	6.574
Anderson-Darling Test Statistic	0.298	95% Bootstrap-t UCL	6.739
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	6.604
Kolmogorov-Smirnov Test Statistic	0.154	95% Percentile Bootstrap UCL	6.592
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	6.625
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.824
		97.5% Chebyshev(Mean, Sd) UCL	8.675
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10.35
95% Approximate Gamma UCL (Use when n >= 40)	6.775		
95% Adjusted Gamma UCL (Use when n < 40)	6.929		

Potential UCL to Use		
		Use 95% Student's-t UCL 6.668

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Dibenz(A,H)Anthracene

General Statistics

Number of Valid Data	11	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	8
		Percent Non-Detects	72.73%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.2	Minimum Detected	-1.609
Maximum Detected	4.85	Maximum Detected	1.579
Mean of Detected	1.853	Mean of Detected	-0.235
SD of Detected	2.6	SD of Detected	1.639
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.4	Maximum Non-Detect	-0.916

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	81.82%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!
It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.8	Shapiro Wilk Test Statistic	0.946
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.584	Mean	-1.712
SD	1.42	SD	1.22
95% DL/2 (t) UCL	1.36	95% H-Stat (DL/2) UCL	1.432
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.284
		SD in Log Scale	2.838
		Mean in Original Scale	0.509
		SD in Original Scale	1.448
		95% t UCL	1.3
		95% Percentile Bootstrap UCL	1.361
		95% BCA Bootstrap UCL	1.813
		95% H-UCL	454.2
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.651
5% K-S Critical Value	N/A	SD	1.331
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.491
		95% KM (t) UCL	1.542
Assuming Gamma Distribution		95% KM (z) UCL	1.459
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.329
Minimum	N/A	95% KM (bootstrap t) UCL	7.347
Maximum	N/A	95% KM (BCA) UCL	4.85
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	2.793
SD	N/A	97.5% KM (Chebyshev) UCL	3.72
k star	N/A	99% KM (Chebyshev) UCL	5.541
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	95% KM (t) UCL	1.542
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (Percentile Bootstrap) UCL	N/A
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Indeno(1,2,3-Cd)Pyrene

General Statistics

Number of Valid Data	11	Number of Detected Data	8
Number of Distinct Detected Data	7	Number of Non-Detect Data	3
		Percent Non-Detects	27.27%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.07	Minimum Detected	-2.659
Maximum Detected	22.5	Maximum Detected	3.114
Mean of Detected	3.604	Mean of Detected	-0.244
SD of Detected	7.676	SD of Detected	1.847
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	54.55%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.509	Shapiro Wilk Test Statistic	0.938
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.646	Mean	-0.827
SD	6.628	SD	1.839
95% DL/2 (t) UCL	6.268	95% H-Stat (DL/2) UCL	38.47
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.788
		SD in Log Scale	1.808
		Mean in Original Scale	2.651
		SD in Original Scale	6.627
		95% t UCL	6.272
		95% Percentile Bootstrap UCL	6.421
		95% BCA Bootstrap UCL	8.731
		95% H-UCL	34.62

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.35	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	10.29		
nu star	5.601		
A-D Test Statistic	0.697	**Nonparametric Statistics**	
5% A-D Critical Value	0.775	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.775	Mean	2.656
5% K-S Critical Value	0.312	SD	6.316
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.036
		95% KM (t) UCL	6.346
Assuming Gamma Distribution		95% KM (z) UCL	6.005
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.277
Minimum	0.000001	95% KM (bootstrap t) UCL	25.98
Maximum	22.5	95% KM (BCA) UCL	6.657
Mean	2.621	95% KM (Percentile Bootstrap) UCL	6.539
Median	0.18	95% KM (Chebyshev) UCL	11.53
SD	6.639	97.5% KM (Chebyshev) UCL	15.37
k star	0.174	99% KM (Chebyshev) UCL	22.91
Theta star	15.08		
Nu star	3.825	**Potential UCLs to Use**	
AppChi2	0.654	95% KM (Chebyshev) UCL	11.53
95% Gamma Approximate UCL (Use when n >= 40)	15.33		
95% Adjusted Gamma UCL (Use when n < 40)	21.07		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Iron

General Statistics

Number of Valid Observations	12	Number of Distinct Observations	12

Raw Statistics		**Log-transformed Statistics**	
Minimum	7051	Minimum of Log Data	8.861
Maximum	18552	Maximum of Log Data	9.828
Mean	11622	Mean of log Data	9.316
Geometric Mean	11114	SD of log Data	0.312
Median	10888		
SD	3657		
Std. Error of Mean	1056		
Coefficient of Variation	0.315		
Skewness	0.599		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.937	Shapiro Wilk Test Statistic	0.958
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	13517	95% H-UCL	14004
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16230
95% Adjusted-CLT UCL (Chen-1995)	13553	97.5% Chebyshev (MVUE) UCL	18224
95% Modified-t UCL (Johnson-1978)	13548	99% Chebyshev (MVUE) UCL	22143

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	8.569	**Data appear Normal at 5% Significance Level**	
Theta Star	1356		
MLE of Mean	11622		
MLE of Standard Deviation	3970		
nu star	205.7		
Approximate Chi Square Value (.05)	173.5	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	13358
Adjusted Chi Square Value	169	95% Jackknife UCL	13517
		95% Standard Bootstrap UCL	13265
Anderson-Darling Test Statistic	0.252	95% Bootstrap-t UCL	13784
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	13645
Kolmogorov-Smirnov Test Statistic	0.13	95% Percentile Bootstrap UCL	13350
Kolmogorov-Smirnov 5% Critical Value	0.245	95% BCA Bootstrap UCL	13551
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	16223
		97.5% Chebyshev(Mean, Sd) UCL	18214
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22124
95% Approximate Gamma UCL (Use when n >= 40)	13778		
95% Adjusted Gamma UCL (Use when n < 40)	14145		

Potential UCL to Use	Use 95% Student's-t UCL	13517

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Lead

General Statistics

Number of Valid Observations	12	Number of Distinct Observations	12

Raw Statistics		Log-transformed Statistics	
Minimum	10.1	Minimum of Log Data	2.313
Maximum	1177	Maximum of Log Data	7.071
Mean	136.9	Mean of log Data	3.641
Geometric Mean	38.15	SD of log Data	1.38
Median	24.25		
SD	330.6		
Std. Error of Mean	95.45		
Coefficient of Variation	2.415		
Skewness	3.354		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.426	Shapiro Wilk Test Statistic	0.85
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	308.3	95% H-UCL	451.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	251.6
95% Adjusted-CLT UCL (Chen-1995)	392.7	97.5% Chebyshev (MVUE) UCL	322.8
95% Modified-t UCL (Johnson-1978)	323.7	99% Chebyshev (MVUE) UCL	462.9

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.429	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	319.5		
MLE of Mean	136.9		
MLE of Standard Deviation	209.1		
nu star	10.29		
Approximate Chi Square Value (.05)	4.122	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	293.9
Adjusted Chi Square Value	3.546	95% Jackknife UCL	308.3
		95% Standard Bootstrap UCL	286.9
Anderson-Darling Test Statistic	1.56	95% Bootstrap-t UCL	1791
Anderson-Darling 5% Critical Value	0.785	95% Hall's Bootstrap UCL	1015
Kolmogorov-Smirnov Test Statistic	0.303	95% Percentile Bootstrap UCL	324.2
Kolmogorov-Smirnov 5% Critical Value	0.259	95% BCA Bootstrap UCL	425.5
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	553
		97.5% Chebyshev(Mean, Sd) UCL	733
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1087
95% Approximate Gamma UCL (Use when n >= 40)	341.7		
95% Adjusted Gamma UCL (Use when n < 40)	397.2		

Potential UCL to Use	
Use 95% Chebyshev (Mean, Sd) UCL	553

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Manganese

General Statistics

Number of Valid Observations	12	Number of Distinct Observations	12

Raw Statistics		Log-transformed Statistics	
Minimum	107	Minimum of Log Data	4.673
Maximum	716	Maximum of Log Data	6.574
Mean	293.5	Mean of log Data	5.582
Geometric Mean	265.7	SD of log Data	0.459
Median	258		
SD	151		
Std. Error of Mean	43.58		
Coefficient of Variation	0.514		
Skewness	2.101		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.783	Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	371.8	95% H-UCL	394.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	464.6
95% Adjusted-CLT UCL (Chen-1995)	393.4	97.5% Chebyshev (MVUE) UCL	539.1
95% Modified-t UCL (Johnson-1978)	376.2	99% Chebyshev (MVUE) UCL	685.4

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.945	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	74.4		
MLE of Mean	293.5		
MLE of Standard Deviation	147.8		
nu star	94.68		
Approximate Chi Square Value (.05)	73.24	**Nonparametric Statistics**	
Adjusted Level of Significance	0.029	95% CLT UCL	365.2
Adjusted Chi Square Value	70.37	95% Jackknife UCL	371.8
		95% Standard Bootstrap UCL	362.3
Anderson-Darling Test Statistic	0.566	95% Bootstrap-t UCL	424
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	735
Kolmogorov-Smirnov Test Statistic	0.187	95% Percentile Bootstrap UCL	366.2
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	397.7
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	483.5
		97.5% Chebyshev(Mean, Sd) UCL	565.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	727.1
95% Approximate Gamma UCL (Use when n >= 40)	379.4		
95% Adjusted Gamma UCL (Use when n < 40)	394.9		

Potential UCL to Use	
Use 95% Approximate Gamma UCL	379.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Mercury

General Statistics

Number of Valid Data	12	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	2
		Percent Non-Detects	16.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.075	Minimum Detected	-2.59
Maximum Detected	34.4	Maximum Detected	3.538
Mean of Detected	8.085	Mean of Detected	0.118
SD of Detected	12.1	SD of Detected	2.49
Minimum Non-Detect	0.11	Minimum Non-Detect	-2.207
Maximum Non-Detect	0.12	Maximum Non-Detect	-2.12

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	33.33%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.734	Shapiro Wilk Test Statistic	0.859
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.747	Mean	-0.378
SD	11.38	SD	2.533
95% DL/2 (t) UCL	12.65	95% H-Stat (DL/2) UCL	1843
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.238	Mean in Log Scale	-0.435
SD	14.59	SD in Log Scale	2.596
95% MLE (t) UCL	10.8	Mean in Original Scale	6.745
95% MLE (Tiku) UCL	11.32	SD in Original Scale	11.38
		95% t UCL	12.65
		95% Percentile Bootstrap UCL	12.33
		95% BCA Bootstrap UCL	13.53
		95% H UCL	2573

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.306	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	26.41		
nu star	6.124		
A-D Test Statistic	0.687	**Nonparametric Statistics**	
5% A-D Critical Value	0.806	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.806	Mean	6.751
5% K-S Critical Value	0.286	SD	10.9
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	3.315
		95% KM (t) UCL	12.7
Assuming Gamma Distribution		95% KM (z) UCL	12.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	12.65
Minimum	0.000001	95% KM (bootstrap t) UCL	17.14
Maximum	34.4	95% KM (BCA) UCL	12.56
Mean	6.738	95% KM (Percentile Bootstrap) UCL	12.26
Median	0.21	95% KM (Chebyshev) UCL	21.2
SD	11.39	97.5% KM (Chebyshev) UCL	27.46
k star	0.192	99% KM (Chebyshev) UCL	39.74
Theta star	35.13		
Nu star	4.603	**Potential UCLs to Use**	
AppChi2	0.973	95% KM (Chebyshev) UCL	21.2
95% Gamma Approximate UCL (Use when n >= 40)	31.86		
95% Adjusted Gamma UCL (Use when n < 40)	41.46		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Surface Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

PCB Dioxin-like Congener TEQ (mammal)

General Statistics

Number of Valid Observations	11	Number of Distinct Observations	11

Raw Statistics		Log-transformed Statistics	
Minimum	1.447E-07	Minimum of Log Data	-15.75
Maximum	2.017E-05	Maximum of Log Data	-10.81
Mean	2.737E-06	Mean of log Data	-13.86
Geometric Mean	9.531E-07	SD of log Data	1.342
Median	7.85E-07		
SD	5.836E-06		
Std. Error of Mean	1.76E-06		
Coefficient of Variation	N/A		
Skewness	3.211		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.462	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.926E-06	95% H-UCL	1.125E-05
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.965E-06
95% Adjusted-CLT UCL (Chen-1995)	7.451E-06	97.5% Chebyshev (MVUE) UCL	7.656E-06
95% Modified-t UCL (Johnson-1978)	6.21E-06	99% Chebyshev (MVUE) UCL	1.098E-05

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.488	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	5.609E-06		
MLE of Mean	2.737E-06		
MLE of Standard Deviation	3.918E-06		
nu star	10.73		
Approximate Chi Square Value (.05)	4.406	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	5.631E-06
Adjusted Chi Square Value	3.767	95% Jackknife UCL	5.926E-06
		95% Standard Bootstrap UCL	5.535E-06
Anderson-Darling Test Statistic	1.031	95% Bootstrap-t UCL	2.249E-05
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	1.742E-05
Kolmogorov-Smirnov Test Statistic	0.249	95% Percentile Bootstrap UCL	6.174E-06
Kolmogorov-Smirnov 5% Critical Value	0.268	95% BCA Bootstrap UCL	7.961E-06
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1.041E-05
		97.5% Chebyshev(Mean, Sd) UCL	1.373E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2.024E-05
95% Approximate Gamma UCL (Use when n >= 40)	6.668E-06		
95% Adjusted Gamma UCL (Use when n < 40)	7.798E-06		

Potential UCL to Use		
	Use 95% Approximate Gamma UCL	6.668E-06

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

2,3,7,8-TCDD TEQ (mammal)

General Statistics

Number of Valid Observations	17	Number of Distinct Observations	17

Raw Statistics		Log-transformed Statistics	
Minimum	4.864E-07	Minimum of Log Data	-14.54
Maximum	0.00337	Maximum of Log Data	-5.694
Mean	0.000465	Mean of log Data	-10.89
Geometric Mean	1.874E-05	SD of log Data	2.911
Median	5.186E-06		
SD	0.00102		
Std. Error of Mean	0.0002482		
Coefficient of Variation	2.201		
Skewness	2.326		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.525	Shapiro Wilk Test Statistic	0.907
Shapiro Wilk Critical Value	0.892	Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	0.0008983	95% H-UCL	0.111
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.00247
95% Adjusted-CLT UCL (Chen-1995)	0.00102	97.5% Chebyshev (MVUE) UCL	0.0033
95% Modified-t UCL (Johnson-1978)	0.0009216	99% Chebyshev (MVUE) UCL	0.00493

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.224	**Data appear Lognormal at 5% Significance Level**	
Theta Star	0.00207		
MLE of Mean	0.000465		
MLE of Standard Deviation	0.0009814		
nu star	7.632		
Approximate Chi Square Value (.05)	2.524	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0346	95% CLT UCL	0.0008732
Adjusted Chi Square Value	2.226	95% Jackknife UCL	0.0008983
		95% Standard Bootstrap UCL	0.0008559
Anderson-Darling Test Statistic	1.434	95% Bootstrap-t UCL	0.00168
Anderson-Darling 5% Critical Value	0.872	95% Hall's Bootstrap UCL	0.00107
Kolmogorov-Smirnov Test Statistic	0.253	95% Percentile Bootstrap UCL	0.0009018
Kolmogorov-Smirnov 5% Critical Value	0.23	95% BCA Bootstrap UCL	0.00109
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.00155
		97.5% Chebyshev(Mean, Sd) UCL	0.00201
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.00293
95% Approximate Gamma UCL (Use when n >= 40)	0.00141		
95% Adjusted Gamma UCL (Use when n < 40)	0.00159		

Potential UCL to Use		
	Use 99% Chebyshev (Mean, Sd) UCL	0.00293

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Aluminum

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	20

Raw Statistics		Log-transformed Statistics	
Minimum	834	Minimum of Log Data	6.726
Maximum	10774	Maximum of Log Data	9.285
Mean	4890	Mean of log Data	8.298
Geometric Mean	4017	SD of log Data	0.703
Median	4877		
SD	2756		
Std. Error of Mean	616.3		
Coefficient of Variation	0.564		
Skewness	0.368		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.953	Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	5956	95% H-UCL	7383
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8776
95% Adjusted-CLT UCL (Chen-1995)	5958	97.5% Chebyshev (MVUE) UCL	10380
95% Modified-t UCL (Johnson-1978)	5964	99% Chebyshev (MVUE) UCL	13532

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.327	**Data appear Normal at 5% Significance Level**	
Theta Star	2102		
MLE of Mean	4890		
MLE of Standard Deviation	3206		
nu star	93.07		
Approximate Chi Square Value (.05)	71.82	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	5904
Adjusted Chi Square Value	70.34	95% Jackknife UCL	5956
		95% Standard Bootstrap UCL	5873
Anderson-Darling Test Statistic	0.533	95% Bootstrap-t UCL	6010
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	5966
Kolmogorov-Smirnov Test Statistic	0.152	95% Percentile Bootstrap UCL	5892
Kolmogorov-Smirnov 5% Critical Value	0.195	95% BCA Bootstrap UCL	6017
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7577
		97.5% Chebyshev(Mean, Sd) UCL	8739
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	11022
95% Approximate Gamma UCL (Use when n >= 40)	6337		
95% Adjusted Gamma UCL (Use when n < 40)	6470		

Potential UCL to Use		
		Use 95% Student's-t UCL 5956

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

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ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Antimony

General Statistics

Number of Valid Data	20	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	7
		Percent Non-Detects	35.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.45	Minimum Detected	-0.799
Maximum Detected	16.5	Maximum Detected	2.803
Mean of Detected	2.769	Mean of Detected	0.406
SD of Detected	4.338	SD of Detected	1.019
Minimum Non-Detect	6	Minimum Non-Detect	1.792
Maximum Non-Detect	13.3	Maximum Non-Detect	2.588

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	19
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.552	Shapiro Wilk Test Statistic	0.912
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.186	Mean	0.734
SD	3.564	SD	0.942
95% DL/2 (t) UCL	4.564	95% H-Stat (DL/2) UCL	5.64
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.357
		SD in Log Scale	0.813
		Mean in Original Scale	2.257
		SD in Original Scale	3.521
		95% t UCL	3.618
		95% Percentile Bootstrap UCL	3.774
		95% BCA Bootstrap UCL	4.537
		95% H-UCL	3.097

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.78	**Data appear Lognormal at 5% Significance Level**	
Theta Star	3.549		
nu star	20.29		
A-D Test Statistic	0.995	**Nonparametric Statistics**	
5% A-D Critical Value	0.76	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.76	Mean	2.369
5% K-S Critical Value	0.244	SD	3.496
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.846
		95% KM (t) UCL	3.832
Assuming Gamma Distribution		95% KM (z) UCL	3.761
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.821
Minimum	0.45	95% KM (bootstrap t) UCL	5.879
Maximum	16.5	95% KM (BCA) UCL	3.945
Mean	2.53	95% KM (Percentile Bootstrap) UCL	3.819
Median	1.994	95% KM (Chebyshev) UCL	6.057
SD	3.464	97.5% KM (Chebyshev) UCL	7.653
k star	1.198	99% KM (Chebyshev) UCL	10.79
Theta star	2.112		
Nu star	47.94	**Potential UCLs to Use**	
AppChi2	33.04	97.5% KM (Chebyshev) UCL	7.653
95% Gamma Approximate UCL (Use when n >= 40)	3.671		
95% Adjusted Gamma UCL (Use when n < 40)	3.783		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Arsenic

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	20

Raw Statistics		Log-transformed Statistics	
Minimum	1.3	Minimum of Log Data	0.262
Maximum	54.7	Maximum of Log Data	4.002
Mean	13.6	Mean of log Data	1.957
Geometric Mean	7.079	SD of log Data	1.2
Median	5.05		
SD	15.52		
Std. Error of Mean	3.47		
Coefficient of Variation	1.141		
Skewness	1.416		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.783	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	19.6	95% H-UCL	32.62
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	32.26
95% Adjusted-CLT UCL (Chen-1995)	20.48	97.5% Chebyshev (MVUE) UCL	40.27
95% Modified-t UCL (Johnson-1978)	19.78	99% Chebyshev (MVUE) UCL	56.01

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.795	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	17.1		
MLE of Mean	13.6		
MLE of Standard Deviation	15.25		
nu star	31.81		
Approximate Chi Square Value (.05)	19.92	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	19.3
Adjusted Chi Square Value	19.17	95% Jackknife UCL	19.6
		95% Standard Bootstrap UCL	19.19
Anderson-Darling Test Statistic	0.833	95% Bootstrap-t UCL	21.46
Anderson-Darling 5% Critical Value	0.773	95% Hall's Bootstrap UCL	20.18
Kolmogorov-Smirnov Test Statistic	0.199	95% Percentile Bootstrap UCL	19
Kolmogorov-Smirnov 5% Critical Value	0.2	95% BCA Bootstrap UCL	20.12
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.72
		97.5% Chebyshev(Mean, Sd) UCL	35.26
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	48.12
95% Approximate Gamma UCL (Use when n >= 40)	21.71		
95% Adjusted Gamma UCL (Use when n < 40)	22.55		

Potential UCL to Use		
	Use 95% Approximate Gamma UCL	21.71

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Benzo(A)Anthracene

General Statistics

Number of Valid Data	17	Number of Detected Data	14
Number of Distinct Detected Data	14	Number of Non-Detect Data	3
		Percent Non-Detects	17.65%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.037	Minimum Detected	-3.297
Maximum Detected	34.5	Maximum Detected	3.541
Mean of Detected	5.844	Mean of Detected	0.323
SD of Detected	9.991	SD of Detected	1.994
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	12
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	29.41%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.635	Shapiro Wilk Test Statistic	0.977
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.829	Mean	-0.154
SD	9.285	SD	2.088
95% DL/2 (t) UCL	8.761	95% H-Stat (DL/2) UCL	81.52
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2.397	Mean in Log Scale	-0.238
SD	11.44	SD in Log Scale	2.188
95% MLE (t) UCL	7.241	Mean in Original Scale	4.823
95% MLE (Tiku) UCL	7.421	SD in Original Scale	9.289
		95% t UCL	8.756
		95% Percentile Bootstrap UCL	8.753
		95% BCA Bootstrap UCL	9.741
		95% H UCL	115.4

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.4	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	14.63		
nu star	11.19		
A-D Test Statistic	0.396	**Nonparametric Statistics**	
5% A-D Critical Value	0.803	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.803	Mean	4.828
5% K-S Critical Value	0.243	SD	9.009
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.267
		95% KM (t) UCL	8.786
Assuming Gamma Distribution		95% KM (z) UCL	8.557
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.76
Minimum	0.000001	95% KM (bootstrap t) UCL	18.04
Maximum	34.5	95% KM (BCA) UCL	8.775
Mean	4.813	95% KM (Percentile Bootstrap) UCL	8.93
Median	1.2	95% KM (Chebyshev) UCL	14.71
SD	9.294	97.5% KM (Chebyshev) UCL	18.99
k star	0.201	99% KM (Chebyshev) UCL	27.39
Theta star	23.89		
Nu star	6.85	**Potential UCLs to Use**	
AppChi2	2.089	95% KM (Chebyshev) UCL	14.71
95% Gamma Approximate UCL (Use when n >= 40)	15.78		
95% Adjusted Gamma UCL (Use when n < 40)	18.07		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Benzo(A)Pyrene

General Statistics

Number of Valid Data	17	Number of Detected Data	14
Number of Distinct Detected Data	14	Number of Non-Detect Data	3
		Percent Non-Detects	17.65%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.048	Minimum Detected	-3.037
Maximum Detected	25	Maximum Detected	3.219
Mean of Detected	4.548	Mean of Detected	0.253
SD of Detected	7.192	SD of Detected	1.856
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	11
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	35.29%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.67	Shapiro Wilk Test Statistic	0.972
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.762	Mean	-0.212
SD	6.715	SD	1.967
95% DL/2 (t) UCL	6.605	95% H-Stat (DL/2) UCL	47.09
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.457	Mean in Log Scale	-0.192
SD	8.845	SD in Log Scale	1.945
95% MLE (t) UCL	5.203	Mean in Original Scale	3.763
95% MLE (Tiku) UCL	5.509	SD in Original Scale	6.713
		95% t UCL	6.606
		95% Percentile Bootstrap UCL	6.421
		95% BCA Bootstrap UCL	7.692
		95% H UCL	44

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.443	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	10.27		
nu star	12.4		
A-D Test Statistic	0.359	**Nonparametric Statistics**	
5% A-D Critical Value	0.793	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.793	Mean	3.765
5% K-S Critical Value	0.242	SD	6.512
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.639
		95% KM (t) UCL	6.627
Assuming Gamma Distribution		95% KM (z) UCL	6.461
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.607
Minimum	0.000001	95% KM (bootstrap t) UCL	11.5
Maximum	25	95% KM (BCA) UCL	6.609
Mean	3.745	95% KM (Percentile Bootstrap) UCL	6.69
Median	1.1	95% KM (Chebyshev) UCL	10.91
SD	6.724	97.5% KM (Chebyshev) UCL	14
k star	0.209	99% KM (Chebyshev) UCL	20.07
Theta star	17.91		
Nu star	7.11	**Potential UCLs to Use**	
AppChi2	2.231	95% KM (Chebyshev) UCL	10.91
95% Gamma Approximate UCL (Use when n >= 40)	11.94		
95% Adjusted Gamma UCL (Use when n < 40)	13.62		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(B)Fluoranthene

General Statistics

Number of Valid Data	17	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	4
		Percent Non-Detects	23.53%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.056	Minimum Detected	-2.882
Maximum Detected	22.5	Maximum Detected	3.114
Mean of Detected	3.868	Mean of Detected	0.332
SD of Detected	6.062	SD of Detected	1.674
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.35	Maximum Non-Detect	-1.05

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	41.18%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.63	Shapiro Wilk Test Statistic	0.972
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.985	Mean	-0.269
SD	5.501	SD	1.835
95% DL/2 (t) UCL	5.314	95% H-Stat (DL/2) UCL	26.8
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.582	Mean in Log Scale	-0.27
SD	7.688	SD in Log Scale	1.833
95% MLE (t) UCL	3.838	Mean in Original Scale	2.984
95% MLE (Tiku) UCL	4.276	SD in Original Scale	5.501
		95% t UCL	5.313
		95% Percentile Bootstrap UCL	5.298
		95% BCA Bootstrap UCL	6.628
		95% H UCL	26.54

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.517	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	7.489		
nu star	13.43		
A-D Test Statistic	0.272	**Nonparametric Statistics**	
5% A-D Critical Value	0.782	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.782	Mean	2.986
5% K-S Critical Value	0.248	SD	5.336
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.347
		95% KM (t) UCL	5.338
Assuming Gamma Distribution		95% KM (z) UCL	5.202
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.315
Minimum	0.000001	95% KM (bootstrap t) UCL	9.23
Maximum	22.5	95% KM (BCA) UCL	5.937
Mean	2.958	95% KM (Percentile Bootstrap) UCL	5.399
Median	1.3	95% KM (Chebyshev) UCL	8.858
SD	5.516	97.5% KM (Chebyshev) UCL	11.4
k star	0.19	99% KM (Chebyshev) UCL	16.39
Theta star	15.59		
Nu star	6.453	**Potential UCLs to Use**	
AppChi2	1.876	95% KM (Chebyshev) UCL	8.858
95% Gamma Approximate UCL (Use when n >= 40)	10.18		
95% Adjusted Gamma UCL (Use when n < 40)	11.72		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(G,H,I)Perylene

General Statistics

Number of Valid Data	17	Number of Detected Data	13
Number of Distinct Detected Data	12	Number of Non-Detect Data	4
		Percent Non-Detects	23.53%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	15	Maximum Detected	2.708
Mean of Detected	2.351	Mean of Detected	-0.0604
SD of Detected	3.965	SD of Detected	1.443
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.35	Maximum Non-Detect	-1.05

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	47.06%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.558	Shapiro Wilk Test Statistic	0.931
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.824	Mean	-0.569
SD	3.57	SD	1.573
95% DL/2 (t) UCL	3.336	95% H-Stat (DL/2) UCL	8.075
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.551
		SD in Log Scale	1.55
		Mean in Original Scale	1.826
		SD in Original Scale	3.57
		95% t UCL	3.337
		95% Percentile Bootstrap UCL	3.319
		95% BCA Bootstrap UCL	4.169
		95% H-UCL	7.646

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.563	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	4.176		
nu star	14.64		
A-D Test Statistic	0.6	**Nonparametric Statistics**	
5% A-D Critical Value	0.777	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.777	Mean	1.832
5% K-S Critical Value	0.247	SD	3.46
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.873
		95% KM (t) UCL	3.357
Assuming Gamma Distribution		95% KM (z) UCL	3.268
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.342
Minimum	0.000001	95% KM (bootstrap t) UCL	6.513
Maximum	15	95% KM (BCA) UCL	3.538
Mean	1.798	95% KM (Percentile Bootstrap) UCL	3.459
Median	0.36	95% KM (Chebyshev) UCL	5.639
SD	3.584	97.5% KM (Chebyshev) UCL	7.286
k star	0.196	99% KM (Chebyshev) UCL	10.52
Theta star	9.152		
Nu star	6.678	**Potential UCLs to Use**	
AppChi2	1.996	95% KM (Chebyshev) UCL	5.639
95% Gamma Approximate UCL (Use when n >= 40)	6.016		
95% Adjusted Gamma UCL (Use when n < 40)	6.903		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(K)Fluoranthene

General Statistics

Number of Valid Data	17	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	4
		Percent Non-Detects	23.53%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.04	Minimum Detected	-3.219
Maximum Detected	25	Maximum Detected	3.219
Mean of Detected	4.524	Mean of Detected	0.249
SD of Detected	7.083	SD of Detected	1.921
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.35	Maximum Non-Detect	-1.05

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	47.06%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.676	Shapiro Wilk Test Statistic	0.976
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.486	Mean	-0.332
SD	6.43	SD	1.988
95% DL/2 (t) UCL	6.209	95% H-Stat (DL/2) UCL	45.28
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.339
		SD in Log Scale	1.991
		Mean in Original Scale	3.484
		SD in Original Scale	6.431
		95% t UCL	6.208
		95% Percentile Bootstrap UCL	6.189
		95% BCA Bootstrap UCL	7.506
		95% H-UCL	45.47

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.438	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	10.32		
nu star	11.4		
A-D Test Statistic	0.206	**Nonparametric Statistics**	
5% A-D Critical Value	0.79	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.79	Mean	3.486
5% K-S Critical Value	0.25	SD	6.238
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.575
		95% KM (t) UCL	6.235
Assuming Gamma Distribution		95% KM (z) UCL	6.076
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.209
Minimum	0.000001	95% KM (bootstrap t) UCL	9.906
Maximum	25	95% KM (BCA) UCL	6.047
Mean	3.459	95% KM (Percentile Bootstrap) UCL	6.126
Median	0.88	95% KM (Chebyshev) UCL	10.35
SD	6.445	97.5% KM (Chebyshev) UCL	13.32
k star	0.183	99% KM (Chebyshev) UCL	19.16
Theta star	18.9		
Nu star	6.224	**Potential UCLs to Use**	
AppChi2	1.756	95% KM (Chebyshev) UCL	10.35
95% Gamma Approximate UCL (Use when n >= 40)	12.27		
95% Adjusted Gamma UCL (Use when n < 40)	14.17		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Carbazole

General Statistics

Number of Valid Data	17	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	11
		Percent Non-Detects	64.71%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.16	Minimum Detected	-1.833
Maximum Detected	1.7	Maximum Detected	0.531
Mean of Detected	0.653	Mean of Detected	-0.728
SD of Detected	0.563	SD of Detected	0.867
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	2.3	Maximum Non-Detect	0.833

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	17
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.847	Shapiro Wilk Test Statistic	0.963
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.37	Mean	-1.513
SD	0.454	SD	0.971
95% DL/2 (t) UCL	0.563	95% H-Stat (DL/2) UCL	0.669
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.596
		SD in Log Scale	0.847
		Mean in Original Scale	0.315
		SD in Original Scale	0.407
		95% t UCL	0.488
		95% Percentile Bootstrap UCL	0.49
		95% BCA Bootstrap UCL	0.556
		95% H-UCL	0.485

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.012	**Data appear Normal at 5% Significance Level**	
Theta Star	0.646		
nu star	12.14		
A-D Test Statistic	0.249	**Nonparametric Statistics**	
5% A-D Critical Value	0.706	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.706	Mean	0.346
5% K-S Critical Value	0.336	SD	0.395
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.108
		95% KM (t) UCL	0.535
Assuming Gamma Distribution		95% KM (z) UCL	0.524
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.508
Minimum	0.000001	95% KM (bootstrap t) UCL	0.668
Maximum	1.7	95% KM (BCA) UCL	0.817
Mean	0.255	95% KM (Percentile Bootstrap) UCL	0.64
Median	0.105	95% KM (Chebyshev) UCL	0.817
SD	0.44	97.5% KM (Chebyshev) UCL	1.021
k star	0.151	99% KM (Chebyshev) UCL	1.421
Theta star	1.688		
Nu star	5.13	**Potential UCLs to Use**	
AppChi2	1.213	95% KM (t) UCL	0.535
95% Gamma Approximate UCL (Use when n >= 40)	1.078	95% KM (Percentile Bootstrap) UCL	0.64
95% Adjusted Gamma UCL (Use when n < 40)	1.272		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Chromium

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	18

Raw Statistics		**Log-transformed Statistics**	
Minimum	6.7	Minimum of Log Data	1.902
Maximum	27.6	Maximum of Log Data	3.318
Mean	11.83	Mean of log Data	2.383
Geometric Mean	10.84	SD of log Data	0.404
Median	9.9		
SD	5.803		
Std. Error of Mean	1.298		
Coefficient of Variation	0.491		
Skewness	1.756		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.77	Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	14.07	95% H-UCL	14.06
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.43
95% Adjusted-CLT UCL (Chen-1995)	14.51	97.5% Chebyshev (MVUE) UCL	18.47
95% Modified-t UCL (Johnson-1978)	14.16	99% Chebyshev (MVUE) UCL	22.49

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	5.023	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	2.355		
MLE of Mean	11.83		
MLE of Standard Deviation	5.278		
nu star	200.9		
Approximate Chi Square Value (.05)	169.1	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	13.96
Adjusted Chi Square Value	166.8	95% Jackknife UCL	14.07
		95% Standard Bootstrap UCL	13.91
Anderson-Darling Test Statistic	1.129	95% Bootstrap-t UCL	15.34
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	14.8
Kolmogorov-Smirnov Test Statistic	0.225	95% Percentile Bootstrap UCL	13.98
Kolmogorov-Smirnov 5% Critical Value	0.194	95% BCA Bootstrap UCL	14.53
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	17.49
		97.5% Chebyshev(Mean, Sd) UCL	19.93
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.74
95% Approximate Gamma UCL (Use when n >= 40)	14.05		
95% Adjusted Gamma UCL (Use when n < 40)	14.25		

Potential UCL to Use	
Use 95% Student's-t UCL	14.07
or 95% Modified-t UCL	14.16

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Chrysene

General Statistics

Number of Valid Data	17	Number of Detected Data	14
Number of Distinct Detected Data	14	Number of Non-Detect Data	3
		Percent Non-Detects	17.65%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.048	Minimum Detected	-3.037
Maximum Detected	33.5	Maximum Detected	3.512
Mean of Detected	6.333	Mean of Detected	0.46
SD of Detected	9.937	SD of Detected	1.994
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	12
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	29.41%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.681	Shapiro Wilk Test Statistic	0.961
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.232	Mean	-0.0412
SD	9.287	SD	2.116
95% DL/2 (t) UCL	9.164	95% H-Stat (DL/2) UCL	102.6
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2.826	Mean in Log Scale	-0.0957
SD	11.49	SD in Log Scale	2.182
95% MLE (t) UCL	7.692	Mean in Original Scale	5.227
95% MLE (Tiku) UCL	7.881	SD in Original Scale	9.289
		95% t UCL	9.161
		95% Percentile Bootstrap UCL	9.055
		95% BCA Bootstrap UCL	10.66
		95% H UCL	129.4

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.412	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	15.37		
nu star	11.54		
A-D Test Statistic	0.387	**Nonparametric Statistics**	
5% A-D Critical Value	0.8	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8	Mean	5.233
5% K-S Critical Value	0.243	SD	9.009
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.267
		95% KM (t) UCL	9.191
Assuming Gamma Distribution		95% KM (z) UCL	8.962
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9.165
Minimum	0.000001	95% KM (bootstrap t) UCL	14.55
Maximum	33.5	95% KM (BCA) UCL	8.929
Mean	5.215	95% KM (Percentile Bootstrap) UCL	9.213
Median	1.5	95% KM (Chebyshev) UCL	15.12
SD	9.297	97.5% KM (Chebyshev) UCL	19.39
k star	0.203	99% KM (Chebyshev) UCL	27.79
Theta star	25.72		
Nu star	6.893	**Potential UCLs to Use**	
AppChi2	2.112	95% KM (Chebyshev) UCL	15.12
95% Gamma Approximate UCL (Use when n >= 40)	17.02		
95% Adjusted Gamma UCL (Use when n < 40)	19.47		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Cobalt

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	16

Raw Statistics		Log-transformed Statistics	
Minimum	2.8	Minimum of Log Data	1.03
Maximum	12.6	Maximum of Log Data	2.534
Mean	5.86	Mean of log Data	1.711
Geometric Mean	5.534	SD of log Data	0.341
Median	5.7		
SD	2.176		
Std. Error of Mean	0.487		
Coefficient of Variation	0.371		
Skewness	1.573		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk Test Statistic	0.978
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	6.701	95% H-UCL	6.794
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.823
95% Adjusted-CLT UCL (Chen-1995)	6.843	97.5% Chebyshev (MVUE) UCL	8.678
95% Modified-t UCL (Johnson-1978)	6.73	99% Chebyshev (MVUE) UCL	10.36

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	7.599	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	0.771		
MLE of Mean	5.86		
MLE of Standard Deviation	2.126		
nu star	304		
Approximate Chi Square Value (.05)	264.6	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	6.66
Adjusted Chi Square Value	261.7	95% Jackknife UCL	6.701
		95% Standard Bootstrap UCL	6.649
Anderson-Darling Test Statistic	0.308	95% Bootstrap-t UCL	6.965
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	7.587
Kolmogorov-Smirnov Test Statistic	0.118	95% Percentile Bootstrap UCL	6.67
Kolmogorov-Smirnov 5% Critical Value	0.194	95% BCA Bootstrap UCL	6.795
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.981
		97.5% Chebyshev(Mean, Sd) UCL	8.899
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10.7
95% Approximate Gamma UCL (Use when n >= 40)	6.732		
95% Adjusted Gamma UCL (Use when n < 40)	6.807		

Potential UCL to Use	
Use 95% Approximate Gamma UCL	6.732

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Dibenz(A,H)Anthracene

General Statistics

Number of Valid Data	17	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	9
		Percent Non-Detects	52.94%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.1	Minimum Detected	-2.303
Maximum Detected	4.85	Maximum Detected	1.579
Mean of Detected	1.248	Mean of Detected	-0.496
SD of Detected	1.593	SD of Detected	1.335
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.4	Maximum Non-Detect	-0.916

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	70.59%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.748	Shapiro Wilk Test Statistic	0.96
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.648	Mean	-1.402
SD	1.204	SD	1.266
95% DL/2 (t) UCL	1.158	95% H-Stat (DL/2) UCL	1.457
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.622
		SD in Log Scale	1.442
		Mean in Original Scale	0.628
		SD in Original Scale	1.213
		95% t UCL	1.142
		95% Percentile Bootstrap UCL	1.159
		95% BCA Bootstrap UCL	1.37
		95% H-UCL	1.891

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.599	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	2.083		
nu star	9.581		
A-D Test Statistic	0.305	**Nonparametric Statistics**	
5% A-D Critical Value	0.742	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.742	Mean	0.647
5% K-S Critical Value	0.303	SD	1.169
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.303
		95% KM (t) UCL	1.176
Assuming Gamma Distribution		95% KM (z) UCL	1.146
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.134
Minimum	0.000001	95% KM (bootstrap t) UCL	1.799
Maximum	4.85	95% KM (BCA) UCL	1.301
Mean	0.587	95% KM (Percentile Bootstrap) UCL	1.216
Median	0.000001	95% KM (Chebyshev) UCL	1.968
SD	1.234	97.5% KM (Chebyshev) UCL	2.54
k star	0.133	99% KM (Chebyshev) UCL	3.663
Theta star	4.415		
Nu star	4.521	**Potential UCLs to Use**	
AppChi2	0.938	95% KM (t) UCL	1.176
95% Gamma Approximate UCL (Use when n >= 40)	2.83		
95% Adjusted Gamma UCL (Use when n < 40)	3.392		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Indeno(1,2,3-Cd)Pyrene

General Statistics

Number of Valid Data	17	Number of Detected Data	13
Number of Distinct Detected Data	11	Number of Non-Detect Data	4
		Percent Non-Detects	23.53%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.07	Minimum Detected	-2.659
Maximum Detected	22.5	Maximum Detected	3.114
Mean of Detected	3.288	Mean of Detected	0.0852
SD of Detected	5.992	SD of Detected	1.645
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	0.35	Maximum Non-Detect	-1.05

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	47.06%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.538	Shapiro Wilk Test Statistic	0.948
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.541	Mean	-0.458
SD	5.372	SD	1.751
95% DL/2 (t) UCL	4.816	95% H-Stat (DL/2) UCL	16.38
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.438
		SD in Log Scale	1.728
		Mean in Original Scale	2.543
		SD in Original Scale	5.371
		95% t UCL	4.818
		95% Percentile Bootstrap UCL	4.929
		95% BCA Bootstrap UCL	6.451
		95% H-UCL	15.4

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.485	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	6.777		
nu star	12.62		
A-D Test Statistic	0.553	**Nonparametric Statistics**	
5% A-D Critical Value	0.785	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.785	Mean	2.546
5% K-S Critical Value	0.249	SD	5.209
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.315
		95% KM (t) UCL	4.842
Assuming Gamma Distribution		95% KM (z) UCL	4.709
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.82
Minimum	0.000001	95% KM (bootstrap t) UCL	10.44
Maximum	22.5	95% KM (BCA) UCL	5.073
Mean	2.515	95% KM (Percentile Bootstrap) UCL	4.999
Median	0.51	95% KM (Chebyshev) UCL	8.279
SD	5.385	97.5% KM (Chebyshev) UCL	10.76
k star	0.189	99% KM (Chebyshev) UCL	15.63
Theta star	13.31		
Nu star	6.424	**Potential UCLs to Use**	
AppChi2	1.86	95% KM (Chebyshev) UCL	8.279
95% Gamma Approximate UCL (Use when n >= 40)	8.684		
95% Adjusted Gamma UCL (Use when n < 40)	10		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Iron

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	20

Raw Statistics		**Log-transformed Statistics**	
Minimum	5689	Minimum of Log Data	8.646
Maximum	36816	Maximum of Log Data	10.51
Mean	12409	Mean of log Data	9.333
Geometric Mean	11307	SD of log Data	0.412
Median	10821		
SD	6665		
Std. Error of Mean	1490		
Coefficient of Variation	0.537		
Skewness	2.779		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.712	Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	14986	95% H-UCL	14785
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17299
95% Adjusted-CLT UCL (Chen-1995)	15850	97.5% Chebyshev (MVUE) UCL	19482
95% Modified-t UCL (Johnson-1978)	15140	99% Chebyshev (MVUE) UCL	23771

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	4.742	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	2617		
MLE of Mean	12409		
MLE of Standard Deviation	5699		
nu star	189.7		
Approximate Chi Square Value (.05)	158.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	14860
Adjusted Chi Square Value	156.6	95% Jackknife UCL	14986
		95% Standard Bootstrap UCL	14867
Anderson-Darling Test Statistic	0.729	95% Bootstrap-t UCL	16876
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	25786
Kolmogorov-Smirnov Test Statistic	0.178	95% Percentile Bootstrap UCL	15004
Kolmogorov-Smirnov 5% Critical Value	0.194	95% BCA Bootstrap UCL	15919
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	18905
		97.5% Chebyshev(Mean, Sd) UCL	21716
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	27238
95% Approximate Gamma UCL (Use when n >= 40)	14820		
95% Adjusted Gamma UCL (Use when n < 40)	15031		

Potential UCL to Use	
Use 95% Approximate Gamma UCL	14820

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Lead

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	20

Raw Statistics		Log-transformed Statistics	
Minimum	9.4	Minimum of Log Data	2.241
Maximum	1177	Maximum of Log Data	7.071
Mean	115.8	Mean of log Data	3.726
Geometric Mean	41.52	SD of log Data	1.297
Median	34.75		
SD	258.6		
Std. Error of Mean	57.82		
Coefficient of Variation	2.232		
Skewness	4.014		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.428	Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	215.8	95% H-UCL	241.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	222.2
95% Adjusted-CLT UCL (Chen-1995)	266.4	97.5% Chebyshev (MVUE) UCL	279.6
95% Modified-t UCL (Johnson-1978)	224.5	99% Chebyshev (MVUE) UCL	392.2

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.545	**Data appear Lognormal at 5% Significance Level**	
Theta Star	212.6		
MLE of Mean	115.8		
MLE of Standard Deviation	156.9		
nu star	21.8		
Approximate Chi Square Value (.05)	12.19	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	210.9
Adjusted Chi Square Value	11.62	95% Jackknife UCL	215.8
		95% Standard Bootstrap UCL	210.8
Anderson-Darling Test Statistic	1.444	95% Bootstrap-t UCL	477.7
Anderson-Darling 5% Critical Value	0.793	95% Hall's Bootstrap UCL	527.3
Kolmogorov-Smirnov Test Statistic	0.211	95% Percentile Bootstrap UCL	222
Kolmogorov-Smirnov 5% Critical Value	0.203	95% BCA Bootstrap UCL	285.8
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	367.9
		97.5% Chebyshev(Mean, Sd) UCL	476.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	691.1
95% Approximate Gamma UCL (Use when n >= 40)	207.2		
95% Adjusted Gamma UCL (Use when n < 40)	217.3		

Potential UCL to Use		
	Use 95% Chebyshev (Mean, Sd) UCL	367.9

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Manganese

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	20

Raw Statistics		Log-transformed Statistics	
Minimum	97.8	Minimum of Log Data	4.583
Maximum	716	Maximum of Log Data	6.574
Mean	276.6	Mean of log Data	5.496
Geometric Mean	243.7	SD of log Data	0.513
Median	248		
SD	151.9		
Std. Error of Mean	33.97		
Coefficient of Variation	0.549		
Skewness	1.521		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.87	Shapiro Wilk Test Statistic	0.978
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	335.4	95% H-UCL	353.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	419.4
95% Adjusted-CLT UCL (Chen-1995)	344.9	97.5% Chebyshev (MVUE) UCL	481.4
95% Modified-t UCL (Johnson-1978)	337.3	99% Chebyshev (MVUE) UCL	603.3

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.519	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	78.61		
MLE of Mean	276.6		
MLE of Standard Deviation	147.5		
nu star	140.8		
Approximate Chi Square Value (.05)	114.4	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	332.5
Adjusted Chi Square Value	112.5	95% Jackknife UCL	335.4
		95% Standard Bootstrap UCL	330.7
Anderson-Darling Test Statistic	0.297	95% Bootstrap-t UCL	357.7
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	394.8
Kolmogorov-Smirnov Test Statistic	0.127	95% Percentile Bootstrap UCL	336.3
Kolmogorov-Smirnov 5% Critical Value	0.195	95% BCA Bootstrap UCL	338.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	424.7
		97.5% Chebyshev(Mean, Sd) UCL	488.8
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	614.6
95% Approximate Gamma UCL (Use when n >= 40)	340.5		
95% Adjusted Gamma UCL (Use when n < 40)	346.2		

Potential UCL to Use		
	Use 95% Approximate Gamma UCL	340.5

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

Mercury

General Statistics

Number of Valid Data	20	Number of Detected Data	17
Number of Distinct Detected Data	15	Number of Non-Detect Data	3
		Percent Non-Detects	15.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.075	Minimum Detected	-2.59
Maximum Detected	34.4	Maximum Detected	3.538
Mean of Detected	7.777	Mean of Detected	0.276
SD of Detected	11.59	SD of Detected	2.285
Minimum Non-Detect	0.11	Minimum Non-Detect	-2.207
Maximum Non-Detect	0.13	Maximum Non-Detect	-2.04

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	15
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	25.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.712	Shapiro Wilk Test Statistic	0.884
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.62	Mean	-0.188
SD	11.01	SD	2.383
95% DL/2 (t) UCL	10.88	95% H-Stat (DL/2) UCL	218.8
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	4.362	Mean in Log Scale	-0.272
SD	13.15	SD in Log Scale	2.487
95% MLE (t) UCL	9.446	Mean in Original Scale	6.616
95% MLE (Tiku) UCL	9.514	SD in Original Scale	11.01
		95% t UCL	10.87
		95% Percentile Bootstrap UCL	10.97
		95% BCA Bootstrap UCL	11.5
		95% H UCL	326.3

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.348	**Data Follow Appr. Gamma Distribution at 5% Significance Level**	
Theta Star	22.37		
nu star	11.82		
A-D Test Statistic	0.85	**Nonparametric Statistics**	
5% A-D Critical Value	0.825	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.825	Mean	6.622
5% K-S Critical Value	0.225	SD	10.73
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	2.473
		95% KM (t) UCL	10.9
Assuming Gamma Distribution		95% KM (z) UCL	10.69
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.88
Minimum	0.000001	95% KM (bootstrap t) UCL	13.17
Maximum	34.4	95% KM (BCA) UCL	10.85
Mean	6.611	95% KM (Percentile Bootstrap) UCL	10.88
Median	0.365	95% KM (Chebyshev) UCL	17.4
SD	11.01	97.5% KM (Chebyshev) UCL	22.06
k star	0.201	99% KM (Chebyshev) UCL	31.23
Theta star	32.81		
Nu star	8.059	**Potential UCLs to Use**	
AppChi2	2.769	95% KM (Chebyshev) UCL	17.4
95% Gamma Approximate UCL (Use when n >= 40)	19.24		
95% Adjusted Gamma UCL (Use when n < 40)	21.06		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Naphthalene

General Statistics

Number of Valid Data	17	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	13
		Percent Non-Detects	76.47%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.086	Minimum Detected	-2.453
Maximum Detected	4.5	Maximum Detected	1.504
Mean of Detected	1.389	Mean of Detected	-0.604
SD of Detected	2.083	SD of Detected	1.626
Minimum Non-Detect	0.18	Minimum Non-Detect	-1.715
Maximum Non-Detect	6.45	Maximum Non-Detect	1.864

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	17
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.717	Shapiro Wilk Test Statistic	0.963
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.671	Mean	-1.41
SD	1.251	SD	1.273
95% DL/2 (t) UCL	1.2	95% H-Stat (DL/2) UCL	1.471
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.171
		SD in Log Scale	1.187
		Mean in Original Scale	0.384
		SD in Original Scale	1.07
		95% t UCL	0.837
		95% Percentile Bootstrap UCL	0.892
		95% BCA Bootstrap UCL	1.17
		95% H-UCL	0.555

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.33	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	4.206		
nu star	2.642		
A-D Test Statistic	0.392	**Nonparametric Statistics**	
5% A-D Critical Value	0.674	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.674	Mean	0.417
5% K-S Critical Value	0.407	SD	1.063
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.307
		95% KM (t) UCL	0.954
Assuming Gamma Distribution		95% KM (z) UCL	0.923
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.842
Minimum	0.000001	95% KM (bootstrap t) UCL	2.405
Maximum	4.5	95% KM (BCA) UCL	4.5
Mean	0.327	95% KM (Percentile Bootstrap) UCL	1.347
Median	0.000001	95% KM (Chebyshev) UCL	1.756
SD	1.087	97.5% KM (Chebyshev) UCL	2.336
k star	0.11	99% KM (Chebyshev) UCL	3.474
Theta star	2.965		
Nu star	3.748	**Potential UCLs to Use**	
AppChi2	0.625	95% KM (t) UCL	0.954
95% Gamma Approximate UCL (Use when n >= 40)	1.961		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Aggregate Soil - EFSA
Chlor Alkali Superfund Site
Berlin, New Hampshire

PCB Dioxin-like Congener TEQ (mammal)

General Statistics

Number of Valid Observations	17	Number of Distinct Observations	17

Raw Statistics		Log-transformed Statistics	
Minimum	1.447E-07	Minimum of Log Data	-15.75
Maximum	2.017E-05	Maximum of Log Data	-10.81
Mean	2.759E-06	Mean of log Data	-13.7
Geometric Mean	1.121E-06	SD of log Data	1.269
Median	7.924E-07		
SD	5.059E-06		
Std. Error of Mean	1.227E-06		
Coefficient of Variation	N/A		
Skewness	3.047		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.528	Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical Value	0.892	Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	4.902E-06	95% H-UCL	6.699E-06
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.885E-06
95% Adjusted-CLT UCL (Chen-1995)	5.747E-06	97.5% Chebyshev (MVUE) UCL	7.425E-06
95% Modified-t UCL (Johnson-1978)	5.053E-06	99% Chebyshev (MVUE) UCL	1.045E-05

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.595	**Data appear Lognormal at 5% Significance Level**	
Theta Star	4.64E-06		
MLE of Mean	2.759E-06		
MLE of Standard Deviation	3.578E-06		
nu star	20.22		
Approximate Chi Square Value (.05)	11.01	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0346	95% CLT UCL	4.778E-06
Adjusted Chi Square Value	10.3	95% Jackknife UCL	4.902E-06
		95% Standard Bootstrap UCL	4.748E-06
Anderson-Darling Test Statistic	1.175	95% Bootstrap-t UCL	1.307E-05
Anderson-Darling 5% Critical Value	0.783	95% Hall's Bootstrap UCL	1.442E-05
Kolmogorov-Smirnov Test Statistic	0.227	95% Percentile Bootstrap UCL	4.858E-06
Kolmogorov-Smirnov 5% Critical Value	0.218	95% BCA Bootstrap UCL	5.963E-06
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	8.108E-06
		97.5% Chebyshev(Mean, Sd) UCL	1.042E-05
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.497E-05
95% Approximate Gamma UCL (Use when n >= 40)	5.066E-06		
95% Adjusted Gamma UCL (Use when n < 40)	5.414E-06		

Potential UCL to Use		
	Use 95% Chebyshev (Mean, Sd) UCL	8.108E-06

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Vanadium

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	20

Raw Statistics		**Log-transformed Statistics**	
Minimum	10.1	Minimum of Log Data	2.313
Maximum	39.2	Maximum of Log Data	3.669
Mean	20.04	Mean of log Data	2.949
Geometric Mean	19.09	SD of log Data	0.313
Median	19.1		
SD	6.767		
Std. Error of Mean	1.513		
Coefficient of Variation	0.338		
Skewness	1.354		

Relevant UCL Statistics

Normal Distribution Test		**Lognormal Distribution Test**	
Shapiro Wilk Test Statistic	0.896	Shapiro Wilk Test Statistic	0.974
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	22.65	95% H-UCL	22.91
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	26.19
95% Adjusted-CLT UCL (Chen-1995)	23.02	97.5% Chebyshev (MVUE) UCL	28.86
95% Modified-t UCL (Johnson-1978)	22.73	99% Chebyshev (MVUE) UCL	34.12

Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	8.993	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	2.228		
MLE of Mean	20.04		
MLE of Standard Deviation	6.682		
nu star	359.7		
Approximate Chi Square Value (.05)	316.8	**Nonparametric Statistics**	
Adjusted Level of Significance	0.038	95% CLT UCL	22.53
Adjusted Chi Square Value	313.6	95% Jackknife UCL	22.65
		95% Standard Bootstrap UCL	22.51
Anderson-Darling Test Statistic	0.385	95% Bootstrap-t UCL	23.43
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	24.2
Kolmogorov-Smirnov Test Statistic	0.124	95% Percentile Bootstrap UCL	22.53
Kolmogorov-Smirnov 5% Critical Value	0.194	95% BCA Bootstrap UCL	23.02
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	26.63
		97.5% Chebyshev(Mean, Sd) UCL	29.49
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	35.09
95% Approximate Gamma UCL (Use when n >= 40)	22.75		
95% Adjusted Gamma UCL (Use when n < 40)	22.99		

Potential UCL to Use		
	Use 95% Approximate Gamma UCL	22.75

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Sediment - Area 2
Chlor Alkali Superfund Site
Berlin, New Hampshire

Arsenic

General Statistics

Number of Valid Data	7	Number of Detected Data	4
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
		Percent Non-Detects	42.86%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.7	Minimum Detected	0.531
Maximum Detected	3.6	Maximum Detected	1.281
Mean of Detected	2.2	Mean of Detected	0.732
SD of Detected	0.935	SD of Detected	0.367
Minimum Non-Detect	18	Minimum Non-Detect	2.89
Maximum Non-Detect	19	Maximum Non-Detect	2.944

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.668	Shapiro Wilk Test Statistic	0.684
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.221	Mean	1.372
SD	3.829	SD	0.839
95% DL/2 (t) UCL	8.033	95% H-Stat (DL/2) UCL	17.09
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.732
		SD in Log Scale	0.259
		Mean in Original Scale	2.149
		SD in Original Scale	0.664
		95% t UCL	2.636
		95% Percentile Bootstrap UCL	2.597
		95% BCA Bootstrap UCL	2.692
		95% H-UCL	2.69

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.441	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	0.901		
nu star	19.53		
A-D Test Statistic	0.836	**Nonparametric Statistics**	
5% A-D Critical Value	0.657	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.657	Mean	2.2
5% K-S Critical Value	0.395	SD	0.809
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.467
		95% KM (t) UCL	3.108
Assuming Gamma Distribution		95% KM (z) UCL	2.969
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.171
Minimum	1.7	95% KM (bootstrap t) UCL	15.75
Maximum	3.6	95% KM (BCA) UCL	2.967
Mean	2.225	95% KM (Percentile Bootstrap) UCL	3
Median	2.259	95% KM (Chebyshev) UCL	4.237
SD	0.662	97.5% KM (Chebyshev) UCL	5.118
k star	9.1	99% KM (Chebyshev) UCL	6.849
Theta star	0.245		
Nu star	127.4	**Potential UCLs to Use**	
AppChi2	102.3	95% KM (t) UCL	3.108
95% Gamma Approximate UCL (Use when n >= 40)	2.771	95% KM (% Bootstrap) UCL	3
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(A)Anthracene

General Statistics

Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.79	Minimum Detected	-0.236
Maximum Detected	2	Maximum Detected	0.693
Mean of Detected	1.278	Mean of Detected	0.19
SD of Detected	0.479	SD of Detected	0.37
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	57.14%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.932	Shapiro Wilk Test Statistic	0.956
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.091	Mean	0.00133
SD	0.505	SD	0.443
95% DL/2 (t) UCL	1.462	95% H-Stat (DL/2) UCL	1.687
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.186	Mean in Log Scale	0.089
SD	0.444	SD in Log Scale	0.348
95% MLE (t) UCL	1.512	Mean in Original Scale	1.155
95% MLE (Tiku) UCL	1.631	SD in Original Scale	0.444
		95% t UCL	1.481
		95% Percentile Bootstrap UCL	1.42
		95% BCA Bootstrap UCL	1.493
		95% H UCL	1.603

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	3.827	**Data appear Normal at 5% Significance Level**	
Theta Star	0.334		
nu star	38.27		
A-D Test Statistic	0.262	**Nonparametric Statistics**	
5% A-D Critical Value	0.679	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.679	Mean	1.154
5% K-S Critical Value	0.358	SD	0.413
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.175
		95% KM (t) UCL	1.495
Assuming Gamma Distribution		95% KM (z) UCL	1.443
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.487
Minimum	0.79	95% KM (bootstrap t) UCL	1.622
Maximum	2	95% KM (BCA) UCL	1.514
Mean	1.158	95% KM (Percentile Bootstrap) UCL	1.486
Median	0.9	95% KM (Chebyshev) UCL	1.918
SD	0.441	97.5% KM (Chebyshev) UCL	2.249
k star	5.426	99% KM (Chebyshev) UCL	2.898
Theta star	0.213		
Nu star	75.96	**Potential UCLs to Use**	
AppChi2	56.89	95% KM (t) UCL	1.495
95% Gamma Approximate UCL (Use when n >= 40)	1.547	95% KM (Percentile Bootstrap) UCL	1.486
95% Adjusted Gamma UCL (Use when n < 40)	1.694		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(a)pyrene

General Statistics

Number of Valid Data	7	Number of Detected Data	6
Number of Distinct Detected Data	5	Number of Non-Detect Data	1
		Percent Non-Detects	14.29%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.8	Minimum Detected	-0.223
Maximum Detected	2	Maximum Detected	0.693
Mean of Detected	1.187	Mean of Detected	0.115
SD of Detected	0.458	SD of Detected	0.356
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	1.2	Maximum Non-Detect	0.182

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.836	Shapiro Wilk Test Statistic	0.877
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.103	Mean	0.026
SD	0.474	SD	0.402
95% DL/2 (t) UCL	1.451	95% H-Stat (DL/2) UCL	1.619
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.086	Mean in Log Scale	0.0778
SD	0.508	SD in Log Scale	0.34
95% MLE (t) UCL	1.459	Mean in Original Scale	1.14
95% MLE (Tiku) UCL	1.592	SD in Original Scale	0.436
		95% t UCL	1.461
		95% Percentile Bootstrap UCL	1.412
		95% BCA Bootstrap UCL	1.469
		95% H UCL	1.568

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	4.679	**Data appear Normal at 5% Significance Level**	
Theta Star	0.254		
nu star	56.15		
A-D Test Statistic	0.48	**Nonparametric Statistics**	
5% A-D Critical Value	0.698	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.698	Mean	1.137
5% K-S Critical Value	0.333	SD	0.406
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.168
		95% KM (t) UCL	1.464
Assuming Gamma Distribution		95% KM (z) UCL	1.414
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.46
Minimum	0.8	95% KM (bootstrap t) UCL	1.704
Maximum	2	95% KM (BCA) UCL	1.403
Mean	1.145	95% KM (Percentile Bootstrap) UCL	1.411
Median	0.896	95% KM (Chebyshev) UCL	1.871
SD	0.433	97.5% KM (Chebyshev) UCL	2.188
k star	5.655	99% KM (Chebyshev) UCL	2.812
Theta star	0.203		
Nu star	79.17	**Potential UCLs to Use**	
AppChi2	59.67	95% KM (t) UCL	1.464
95% Gamma Approximate UCL (Use when n >= 40)	1.519	95% KM (Percentile Bootstrap) UCL	1.411
95% Adjusted Gamma UCL (Use when n < 40)	1.661		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Benzo(B)Fluoranthene

General Statistics

Number of Valid Data	7	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	1
		Percent Non-Detects	14.29%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.93	Minimum Detected	-0.0726
Maximum Detected	2.7	Maximum Detected	0.993
Mean of Detected	1.572	Mean of Detected	0.386
SD of Detected	0.65	SD of Detected	0.392
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	1.2	Maximum Non-Detect	0.182

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.899	Shapiro Wilk Test Statistic	0.952
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.433	Mean	0.258
SD	0.698	SD	0.493
95% DL/2 (t) UCL	1.946	95% H-Stat (DL/2) UCL	2.391
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.315	Mean in Log Scale	0.327
SD	0.8	SD in Log Scale	0.39
95% MLE (t) UCL	1.903	Mean in Original Scale	1.486
95% MLE (Tiku) UCL	1.992	SD in Original Scale	0.635
		95% t UCL	1.953
		95% Percentile Bootstrap UCL	1.863
		95% BCA Bootstrap UCL	2.014
		95% H UCL	2.153

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	3.98	**Data appear Normal at 5% Significance Level**	
Theta Star	0.395		
nu star	47.75		
A-D Test Statistic	0.292	**Nonparametric Statistics**	
5% A-D Critical Value	0.698	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.698	Mean	1.492
5% K-S Critical Value	0.333	SD	0.584
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.242
		95% KM (t) UCL	1.963
Assuming Gamma Distribution		95% KM (z) UCL	1.891
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.959
Minimum	0.93	95% KM (bootstrap t) UCL	2.252
Maximum	2.7	95% KM (BCA) UCL	1.919
Mean	1.481	95% KM (Percentile Bootstrap) UCL	1.886
Median	1.2	95% KM (Chebyshev) UCL	2.548
SD	0.64	97.5% KM (Chebyshev) UCL	3.005
k star	4.209	99% KM (Chebyshev) UCL	3.903
Theta star	0.352		
Nu star	58.93	**Potential UCLs to Use**	
AppChi2	42.28	95% KM (t) UCL	1.963
95% Gamma Approximate UCL (Use when n >= 40)	2.064	95% KM (Percentile Bootstrap) UCL	1.886
95% Adjusted Gamma UCL (Use when n < 40)	2.293		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Carbazole

General Statistics

Number of Valid Data	7	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	3
		Percent Non-Detects	42.86%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.04	Minimum Detected	-3.219
Maximum Detected	0.088	Maximum Detected	-2.43
Mean of Detected	0.068	Mean of Detected	-2.734
SD of Detected	0.022	SD of Detected	0.361
Minimum Non-Detect	0.97	Minimum Non-Detect	-0.0305
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.923	Shapiro Wilk Test Statistic	0.9
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.287	Mean	-1.8
SD	0.278	SD	1.195
95% DL/2 (t) UCL	0.491	95% H-Stat (DL/2) UCL	2.705
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.734
		SD in Log Scale	0.255
		Mean in Original Scale	0.0667
		SD in Original Scale	0.0157
		95% t UCL	0.0782
		95% Percentile Bootstrap UCL	0.0761
		95% BCA Bootstrap UCL	0.0749
		95% H-UCL	0.0836

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	2.953	**Data appear Normal at 5% Significance Level**	
Theta Star	0.023		
nu star	23.63		
A-D Test Statistic	0.346	**Nonparametric Statistics**	
5% A-D Critical Value	0.657	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.657	Mean	0.068
5% K-S Critical Value	0.395	SD	0.0191
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.011
		95% KM (t) UCL	0.0894
Assuming Gamma Distribution		95% KM (z) UCL	0.0861
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0909
Minimum	0.04	95% KM (bootstrap t) UCL	0.0875
Maximum	0.088	95% KM (BCA) UCL	0.0855
Mean	0.0689	95% KM (Percentile Bootstrap) UCL	0.0855
Median	0.0701	95% KM (Chebyshev) UCL	0.116
SD	0.0156	97.5% KM (Chebyshev) UCL	0.137
k star	11.13	99% KM (Chebyshev) UCL	0.178
Theta star	0.00619		
Nu star	155.8	**Potential UCLs to Use**	
AppChi2	127.9	95% KM (t) UCL	0.0894
95% Gamma Approximate UCL (Use when n >= 40)	0.0839	95% KM (Percentile Bootstrap) UCL	0.0855
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Chromium

General Statistics

Number of Valid Observations	7	Number of Distinct Observations	7

Raw Statistics		Log-transformed Statistics	
Minimum	6	Minimum of Log Data	1.792
Maximum	16	Maximum of Log Data	2.773
Mean	11.2	Mean of log Data	2.379
Geometric Mean	10.79	SD of log Data	0.306
Median	11.2		
SD	3.098		
Std. Error of Mean	1.171		
Coefficient of Variation	0.277		
Skewness	-0.174		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.971	Shapiro Wilk Test Statistic	0.921
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	13.48	95% H-UCL	14.93
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.91
95% Adjusted-CLT UCL (Chen-1995)	13.04	97.5% Chebyshev (MVUE) UCL	19.37
95% Modified-t UCL (Johnson-1978)	13.46	99% Chebyshev (MVUE) UCL	24.2

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	7.876	**Data appear Normal at 5% Significance Level**	
Theta Star	1.422		
MLE of Mean	11.2		
MLE of Standard Deviation	3.991		
nu star	110.3		
Approximate Chi Square Value (.05)	87.02	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0158	95% CLT UCL	13.13
Adjusted Chi Square Value	80.8	95% Jackknife UCL	13.48
		95% Standard Bootstrap UCL	12.96
Anderson-Darling Test Statistic	0.302	95% Bootstrap-t UCL	13.41
Anderson-Darling 5% Critical Value	0.708	95% Hall's Bootstrap UCL	13.8
Kolmogorov-Smirnov Test Statistic	0.219	95% Percentile Bootstrap UCL	13.07
Kolmogorov-Smirnov 5% Critical Value	0.312	95% BCA Bootstrap UCL	13
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	16.3
		97.5% Chebyshev(Mean, Sd) UCL	18.51
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22.85
95% Approximate Gamma UCL (Use when n >= 40)	14.19		
95% Adjusted Gamma UCL (Use when n < 40)	15.28		

Potential UCL to Use		
	Use 95% Student's-t UCL	13.48

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Note: For highly negative-skewed data, confidence limits
(e.g., Chen, Johnson, Lognormal, and Gamma) may not be
reliable. Chen's and Johnson's methods provide
adjustments for positvely skewed data sets.

Dibenz(A,H)Anthracene

General Statistics

Number of Valid Data	7	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	3
		Percent Non-Detects	42.86%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.038	Minimum Detected	-3.27
Maximum Detected	0.066	Maximum Detected	-2.718
Mean of Detected	0.053	Mean of Detected	-2.961
SD of Detected	0.0128	SD of Detected	0.252
Minimum Non-Detect	0.97	Minimum Non-Detect	-0.0305
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk Test Statistic	0.938
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.278	Mean	-1.93
SD	0.285	SD	1.301
95% DL/2 (t) UCL	0.488	95% H-Stat (DL/2) UCL	3.852
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.961
		SD in Log Scale	0.178
		Mean in Original Scale	0.0525
		SD in Original Scale	0.0091
		95% t UCL	0.0592
		95% Percentile Bootstrap UCL	0.0578
		95% BCA Bootstrap UCL	0.0578
		95% H-UCL	0.0607

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	5.59	**Data appear Normal at 5% Significance Level**	
Theta Star	0.00948		
nu star	44.72		
A-D Test Statistic	0.298	**Nonparametric Statistics**	
5% A-D Critical Value	0.657	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.657	Mean	0.053
5% K-S Critical Value	0.394	SD	0.0111
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00642
		95% KM (t) UCL	0.0655
Assuming Gamma Distribution		95% KM (z) UCL	0.0636
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0663
Minimum	0.038	95% KM (bootstrap t) UCL	0.0654
Maximum	0.066	95% KM (BCA) UCL	0.0627
Mean	0.0536	95% KM (Percentile Bootstrap) UCL	0.0635
Median	0.0545	95% KM (Chebyshev) UCL	0.081
SD	0.00911	97.5% KM (Chebyshev) UCL	0.0931
k star	21.56	99% KM (Chebyshev) UCL	0.117
Theta star	0.00249		
Nu star	301.9	**Potential UCLs to Use**	
AppChi2	262.6	95% KM (t) UCL	0.0655
95% Gamma Approximate UCL (Use when n >= 40)	0.0617	95% KM (Percentile Bootstrap) UCL	0.0635
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Sediment - Area 2
Chlor Alkali Superfund Site
Berlin, New Hampshire

Indeno(1,2,3-Cd)Pyrene

General Statistics

Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.49	Minimum Detected	-0.713
Maximum Detected	1.1	Maximum Detected	0.0953
Mean of Detected	0.746	Mean of Detected	-0.33
SD of Detected	0.229	SD of Detected	0.3
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.958	Shapiro Wilk Test Statistic	0.993
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.711	Mean	-0.37
SD	0.197	SD	0.256
95% DL/2 (t) UCL	0.856	95% H-Stat (DL/2) UCL	0.889
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.33
		SD in Log Scale	0.245
		Mean in Original Scale	0.738
		SD in Original Scale	0.188
		95% t UCL	0.876
		95% Percentile Bootstrap UCL	0.85
		95% BCA Bootstrap UCL	0.861
		95% H-UCL	0.913

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	5.676	**Data appear Normal at 5% Significance Level**	
Theta Star	0.131		
nu star	56.76		
A-D Test Statistic	0.191	**Nonparametric Statistics**	
5% A-D Critical Value	0.679	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.679	Mean	0.746
5% K-S Critical Value	0.357	SD	0.205
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.103
		95% KM (t) UCL	0.945
Assuming Gamma Distribution		95% KM (z) UCL	0.915
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.952
Minimum	0.49	95% KM (bootstrap t) UCL	1.036
Maximum	1.1	95% KM (BCA) UCL	0.91
Mean	0.754	95% KM (Percentile Bootstrap) UCL	0.91
Median	0.774	95% KM (Chebyshev) UCL	1.193
SD	0.188	97.5% KM (Chebyshev) UCL	1.386
k star	11.08	99% KM (Chebyshev) UCL	1.766
Theta star	0.068		
Nu star	155.2	**Potential UCLs to Use**	
AppChi2	127.4	95% KM (t) UCL	0.945
95% Gamma Approximate UCL (Use when n >= 40)	0.919	95% KM (Percentile Bootstrap) UCL	0.91
95% Adjusted Gamma UCL (Use when n < 40)	0.977		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Appendix E
ProUCL Output for Sediment - Area 3
Chlor Alkali Superfund Site
Berlin, New Hampshire

Mercury

General Statistics

Number of Valid Data	16	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	3
		Percent Non-Detects	18.75%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.0234	Minimum Detected	-3.755
Maximum Detected	7.9	Maximum Detected	2.067
Mean of Detected	0.711	Mean of Detected	-2.149
SD of Detected	2.162	SD of Detected	1.488
Minimum Non-Detect	0.1	Minimum Non-Detect	-2.303
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.345	Shapiro Wilk Test Statistic	0.809
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.587	Mean	-2.307
SD	1.952	SD	1.374
95% DL/2 (t) UCL	1.442	95% H-Stat (DL/2) UCL	0.832
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.325
		SD in Log Scale	1.405
		Mean in Original Scale	0.587
		SD in Original Scale	1.952
		95% t UCL	1.443
		95% Percentile Bootstrap UCL	1.56
		95% BCA Bootstrap UCL	2.076
		95% H-UCL	0.892

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.335	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	2.122		
nu star	8.711		
A-D Test Statistic	2.4	**Nonparametric Statistics**	
5% A-D Critical Value	0.816	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.816	Mean	0.587
5% K-S Critical Value	0.254	SD	1.89
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.492
		95% KM (t) UCL	1.45
Assuming Gamma Distribution		95% KM (z) UCL	1.396
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.443
Minimum	0.000001	95% KM (bootstrap t) UCL	20.14
Maximum	7.9	95% KM (BCA) UCL	1.558
Mean	0.578	95% KM (Percentile Bootstrap) UCL	1.552
Median	0.0702	95% KM (Chebyshev) UCL	2.731
SD	1.955	97.5% KM (Chebyshev) UCL	3.659
k star	0.2	99% KM (Chebyshev) UCL	5.481
Theta star	2.885		
Nu star	6.405	**Potential UCLs to Use**	
AppChi2	1.85	97.5% KM (Chebyshev) UCL	3.659
95% Gamma Approximate UCL (Use when n >= 40)	1.999		
95% Adjusted Gamma UCL (Use when n < 40)	2.333		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX F

APPENDIX F

VAPOR INTRUSION EVALUATION

TABLE F-1
VAPOR INTRUSION EVALUATION - CHP - SHALLOW GROUNDWATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

CAS Number	Groundwater Chemical of Potential Concern	Units	Minimum Concentration	Arithmetic Mean (1)	Maximum Concentration	Frequency of Detection	Location of Maximum Concentration	Tier 1 Evaluation		Generic Target Groundwater Concentrations[2] ug/L			Tier 2 Evaluation
								Is Chemical Sufficiently Toxic?	Is Chemical Sufficiently Volatile?	HI=1.0 or Cancer Risk = 10^{-4}	HI=1.0 or Cancer Risk = 10^{-5}	HI=1.0 or Cancer Risk = 10^{-6}	Does Maximum Site Chemical Concentration exceed 10^{-6} Target Cancer Risk Level or HI of 1.0?
56235	Carbon tetrachloride	µg/L	4.4	5.00	6	2 / 36	MW-11A-1005-1610	YES	YES	36	3.6	0.36	YES
67663	Chloroform	µg/L	1.3	43.4	1000	16 / 36	MW-10B-1006-1355	YES	YES	71	7.1	0.71	YES
156592	cis-1,2-Dichloroethene	µg/L	0.17	3.51	5	15 / 36	MW-6-1006-1010	No Inhal. Tox. Info	No Inhal. Tox. Info	----	----	----	NO
87683	Hexachlorobutadiene	µg/L	0.29	4.39	3.7	6 / 36	MW-26B1-1009-0830	No VP	No VP	----	----	----	NO
127184	Tetrachloroethene	µg/L	0.1	10.9	73	12 / 36	MW-26B1-1009-0830	YES	YES	1300	130	13	YES
79016	Trichloroethene	µg/L	0.1	6.34	41	18 / 36	MW-26B1-1009-0830	YES	YES	5.2	5.2	1.1	YES
75014	Vinyl Chloride	µg/L	0.91	4.89	0.91	1 / 36	MW-6-1006-1010	YES	YES	14	1.4	0.14	YES
7439976	Mercury	µg/L	0.095	5.15	114	44 / 72	MW-26B1-1009-0830	YES	YES	0.67	0.67	0.67	YES

--- Indicates no VISLs are available.

(1) Due to inclusion of detection limits in the arithmetic mean concentrations, the arithmetic mean exceeds the maximum detected concentration and is therefore not used as a screening value.

(2) Generic target groundwater concentraions corresponding to Target Indoor Air Concentrations where the soil gas to indoor air attenuation factor = 0.001 and partitioning across the water table obeys Henry's Law. Source: EPA Residential Vapor Intrusion Screening Levels (VISLs) (May, 2012).

VP= Vapor pressure

TABLE F-2
VAPOR INTRUSION EVALUATION - SFSA - SHALLOW GROUNDWATER
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

CAS Number	Groundwater Chemical of Potential Concern	Units	Minimum Concentration	Arithmetic Mean (1)	Maximum Concentration	Frequency of Detection	Location of Maximum Concentration	Tier 1 Evaluation		Generic Target Groundwater Concentrations[2] ug/L			Tier 2 Evaluation
								Is Chemical Sufficiently Toxic?	Is Chemical Sufficiently Volatile?	HI=1.0 or Cancer Risk = 10^{-4}	HI=1.0 or Cancer Risk = 10^{-5}	HI=1.0 or Cancer Risk = 10^{-6}	Does Maximum Site Chemical Concentration exceed 10^{-6} Target Cancer Risk Level or HI of 1.0?
541731	1,3-Dichlorobenzene	µg/L	1.2	4.75	1.2	1 / 15	MW-35O1-1110-01A	No Inhal. Tox. Info	No Inhal. Tox. Info	----	----	----	NO
56235	Carbon tetrachloride	µg/L	0.4	4.69	0.4	1 / 15	MW-35O1-1110-01A	YES	YES	36	3.6	0.36	YES
156592	cis-1,2-Dichloroethene	µg/L	0.7	4.46	1.2	2 / 15	MW-12-1005-1600	No Inhal. Tox. Info	No Inhal. Tox. Info	----	----	----	NO
79016	Trichloroethene	µg/L	0.89	4.51	1.7	2 / 15	MW-35O1-1110-01A	YES	YES	5.2	5.2	1.1	YES

--- Indicates no VISLs are available.

(1) Due to inclusion of detection limits in the arithmetic mean concentrations, the arithmetic mean exceeds the maximum detected concentration and is therefore not used as a screening value.

(2) Generic target groundwater concentraions corresponding to Target Indoor Air Concentrations where the soil gas to indoor air attenuation factor = 0.001 and partitioning across the water table obeys Henry's Law. Source: EPA Residential Vapor Intrusion Screening Levels (VISLs) (May, 2012).

APPENDIX G

APPENDIX G

DERMAL ABSORPTION FACTORS

Table G-1
Dermal Absorption Factors for Soil Exposure
Chlor Alkali Superfund Site
Berlin, New Hampshire

COPC	Dermal Absorption Factor* (unitless)
Aldrin	0.1
Alpha-BHC	0.1
Delta-BHC	0.1
Gamma-BHC (Lindane)	0.04
1,1'-Biphenyl	NA
Bis(2-ethylhexyl)phthalate	0.1
1,3-Dichlorobenzene	NA
4,4'-DDE	0.1
4,4'-DDT	0.03
o,p'-DDT	0.1
Dibenzofuran	0.1
Dieldrin	0.1
Dimethyl phthalate	0.1
N-Nitrosodi-n-propylamine	0.1
Pentachloropheno	0.25
2,3,7,8-TCDD TEQ	0.03
PCB Dioxin-like Congener TEQ	0.14
Heptachlor epoxide	0.1
Benzo(a)anthracene	0.13
Benzo(a)pyrene	0.13
Benzo(b)fluoranthene	0.13
Benzo(g,h,i)perylene	0.13
Benzo(k)fluoranthene	0.13
Carbazole	0.13
Chrysene	0.13
Dibenz(a,h)anthracene	0.13
Fluoranthene	0.13
Indeno(1,2,3-c,d)pyrene	0.13
2-Methylnaphthalene	0.13
Naphthalene	0.13
Pyrene	0.13
Monochloronaphthalene, Tota	NA
Dichloronaphthalene, Tota	NA
Trichloronaphthalene, Tota	NA
Tetrachloronaphthalene, Tota	NA
Pentachloronaphthalene, Tota	NA
Hexachloronaphthalene, Tota	NA
Heptachloronaphthalene, Tota	NA
Total PCB Homologs	0.14
Aluminum	NA
Antimony	NA
Arsenic	0.03
Barium	NA
Cadmium	0.001
Chromium	NA
Cobalt	NA
Iron	NA
Lead	NA
Manganese	NA
Mercury	NA
Nickel	NA

Table G-1
Dermal Absorption Factors for Soil Exposure
Chlor Alkali Superfund Site
Berlin, New Hampshire

COPC	Dermal Absorption Factor* (unitless)
Thallium	NA
Vanadium	NA
Zinc	NA

* Exhibit 3-4, Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Part E – Supplemental Guidance for Dermal Risk Assessment (EPA, 2004a).

NA = Not available

APPENDIX H

APPENDIX H

INHALATION FACTORS – PARTICULATE EMISSION FACTORS (PEFS)

Table H-1

Calculation of the Construction Worker Particulate Emission Factor

$$PEF\ (m^3/kg) = Q/C_{sr}\ x\ \frac{1}{F_D}\ x\left[\frac{T\ x\ A_R}{556\ x\ (W/3)^{0.4}\ x\ \frac{(365\ d/yr\ -\ p)}{365 d/yr}\ x\ \sum VKT}\right]$$

Where:			Value
PEF	=	Particulate emission factor (m^3/kg).	1.4E+06
Q/C_{sr}	=	Inverse of 1-h average air concentration along a straight road segment bisecting a 0.5-acre square site (g/m^2-s per kg/m^3).	23.02 (EPA, 2002c)
F_D	=	Dispersion correction factor (unitless).	0.185 (EPA, 2002c)
T	=	Total time over which construction occurs (s).	3.74E+06[a]
A_R	=	Surface area of contaminated road segment (m^2).	274.213 (EPA, 2002c)
W	=	Mean vehicle weight (tons).	8[b]
p	=	Number of days with at least 0.01 inches of precipitation (days/yr).	130[c]
VKT	=	Sum of fleet vehicle kilometers traveled during the exposure duration (km).	175.5[d]

[a] RME assumes exposure of 130 days/year for 8 hours/day.
[b] W = ((20 cars x 2 tons/car) + (10 trucks x 20 tons/truck))/30 vehicles.
[c] Based on Figure 5-2 of EPA, 2002c.
[d] RME VKT = 30 vehicles x 0.045 km/day x 26 wks/year x 5 days/wk.

APPENDIX I

APPENDIX I

POLYCYCLIC AROMATIC HYDROCARBON (PAH)

ORDERS OF POTENTIAL POTENCY

TABLE I-1
ESTIMATED ORDERS OF POTENTIAL POTENCY FOR CARCINOGENIC PAHs*
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Chemical	Weight-of-Evidence	Order of Potential Potency
Benzo(a)anthracene	B2	0.1
Benzo(b)fluoranthene	B2	0.1
Benzo(k)fluoranthene	B2	0.01
Benzo(a)pyrene	B2	1.0
Chrysene	B2	0.001
Dibenz(a,h)anthracene	B2	1.0
Indeno(1,2,3-cd)pyrene	B2	0.1

* EPA, 1993.

APPENDIX J

APPENDIX J

MUTAGENIC MODE OF ACTION SPREADSHEETS

TABLE J-1

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.1			
IRS	mg/day	200	200	100	100
FI	unitless	1	1	1	1
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
EF	days/year	350	350	350	350
ED	years	2	4	10	14
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day	2800	2800	5700	5700
AF	mg/cm^2	0.2	0.2	0.07	0.07
ABS	unitless	See Appendix G			
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg	9.40E+09	9.40E+09	9.40E+09	9.40E+09
ET	hours/day	24	24	24	24
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	µg/mg	1000	1000	1000	1000
AT	hours	613200	613200	613200	613200
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10	3	3	1

	Incidential Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.67E+00	7.3E-01	4.5E-06	2.7E-06	7.2E-07	3.3E-07
Benzo(a)pyrene	1.53E+00	7.3E+00	4.1E-05	2.4E-05	6.5E-06	3.1E-06
Benzo(b)fluoranthene	1.65E+00	7.3E-01	4.4E-06	2.6E-06	7.1E-07	3.3E-07
Benzo(k)fluoranthene	1.53E+00	7.3E-02	4.1E-07	2.4E-07	6.6E-08	3.1E-08
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	1.1E-05	6.6E-06	1.8E-06	8.3E-07
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	2.3E-06	1.4E-06	3.7E-07	1.7E-07
Chromium	1.53E+01	5.0E-01	2.8E-05	1.7E-05	4.5E-06	2.1E-06

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.67E+00	7.3E-01	0.13	1.6E-06	9.7E-07	3.7E-07	1.7E-07
Benzo(a)pyrene	1.53E+00	7.3E+00	0.13	1.5E-05	8.9E-06	3.4E-06	1.6E-06
Benzo(b)fluoranthene	1.65E+00	7.3E-01	0.13	1.6E-06	9.6E-07	3.7E-07	1.7E-07
Benzo(k)fluoranthene	1.53E+00	7.3E-02	0.13	1.5E-07	8.9E-08	3.4E-08	1.6E-08
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	0.13	4.0E-06	2.4E-06	9.2E-07	4.3E-07
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	0.13	8.4E-07	5.0E-07	1.9E-07	9.0E-08
Chromium	1.53E+01	1.3E-02	NA	NA	NA	NA	NA

	Inhalation of Particulate Risks					
COPC	**EPC**	**URFi**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.67E+00	1.1E-04	5.4E-12	3.2E-12	8.0E-12	3.8E-12
Benzo(a)pyrene	1.53E+00	1.1E-03	4.9E-11	2.9E-11	7.3E-11	3.4E-11
Benzo(b)fluoranthene	1.65E+00	1.1E-04	5.3E-12	3.2E-12	7.9E-12	3.7E-12
Benzo(k)fluoranthene	1.53E+00	1.1E-04	4.9E-12	2.9E-12	7.4E-12	3.4E-12
Dibenz(a,h)anthracene	4.14E-01	1.2E-03	1.4E-11	8.7E-12	2.2E-11	1.0E-11
Indeno(1,2,3-cd)pyrene	8.63E-01	1.1E-04	2.8E-12	1.7E-12	4.2E-12	1.9E-12
Chromium	1.53E+01	8.4E-02	3.7E-08	2.2E-08	5.6E-08	2.6E-08

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	8.2E-06	3.1E-06	2.0E-11	**1.1E-05**
Benzo(a)pyrene	7.5E-05	2.9E-05	1.9E-10	**1.0E-04**
Benzo(b)fluoranthene	8.1E-06	3.1E-06	2.0E-11	**1.1E-05**
Benzo(k)fluoranthene	7.5E-07	2.9E-07	1.9E-11	**1.0E-06**
Dibenz(a,h)anthracene	2.0E-05	7.8E-06	5.5E-11	**2.8E-05**
Indeno(1,2,3-cd)pyrene	4.2E-06	1.6E-06	1.1E-11	**5.8E-06**
Chromium	5.1E-05	NA	1.4E-07	**5.1E-05**

TABLE J-2

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.2			
IRS	mg/day	200	200	100	100
FI	unitless	1	1	1	1
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
EF	days/year	350	350	350	350
ED	years	2	4	10	14
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFo	(mg/kg-day)$^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.2			
SA	cm^2/day	2800	2800	5700	5700
AF	mg/cm^2	0.2	0.2	0.07	0.07
ABS	unitless	See Appendix G			
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFd	(mg/kg-day)$^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.2			
PEF	m^3/kg	9.40E+09	9.40E+09	9.40E+09	9.40E+09
ET	hours/day	24	24	24	24
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	µg/mg	1000	1000	1000	1000
AT	hours	613200	613200	613200	613200
URF	(µg/m^3)$^{-1}$	See Table A-6.2			
ADAF	unitless	10	3	3	1

	Incidential Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.05E+02	7.3E-01	2.8E-04	1.7E-04	4.5E-05	2.1E-05
Benzo(a)pyrene	7.55E+01	7.3E+00	2.0E-03	1.2E-03	3.2E-04	1.5E-04
Benzo(b)fluoranthene	9.18E+01	7.3E-01	2.4E-04	1.5E-04	3.9E-05	1.8E-05
Benzo(k)fluoranthene	2.01E+01	7.3E-02	5.4E-06	3.2E-06	8.6E-07	4.0E-07
Chrysene	9.52E+01	7.3E-03	2.5E-06	1.5E-06	4.1E-07	1.9E-07
Dibenz(a,h)anthracene	5.82E+00	7.3E+00	1.6E-04	9.3E-05	2.5E-05	1.2E-05
Indeno(1,2,3-cd)pyrene	3.05E+01	7.3E-01	8.1E-05	4.9E-05	1.3E-05	6.1E-06
Chromium	1.32E+01	5.0E-01	2.4E-05	1.5E-05	3.9E-06	1.8E-06

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.05E+02	7.3E-01	0.13	1.0E-04	6.1E-05	2.3E-05	1.1E-05
Benzo(a)pyrene	7.55E+01	7.3E+00	0.13	7.3E-04	4.4E-04	1.7E-04	7.8E-05
Benzo(b)fluoranthene	9.18E+01	7.3E-01	0.13	8.9E-05	5.3E-05	2.0E-05	9.5E-06
Benzo(k)fluoranthene	2.01E+01	7.3E-02	0.13	2.0E-06	1.2E-06	4.5E-07	2.1E-07
Chrysene	9.52E+01	7.3E-03	0.13	9.2E-07	5.5E-07	2.1E-07	9.9E-08
Dibenz(a,h)anthracene	5.82E+00	7.3E+00	0.13	5.6E-05	3.4E-05	1.3E-05	6.0E-06
Indeno(1,2,3-cd)pyrene	3.05E+01	7.3E-01	0.13	3.0E-05	1.8E-05	6.8E-06	3.2E-06
Chromium	1.32E+01	1.3E-02	NA	NA	NA	NA	NA

	Inhalation of Particulate Risks					
COPC	**EPC**	**URFi**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.05E+02	1.1E-04	3.4E-10	2.0E-10	5.0E-10	2.4E-10
Benzo(a)pyrene	7.55E+01	1.1E-03	2.4E-09	1.5E-09	3.6E-09	1.7E-09
Benzo(b)fluoranthene	9.18E+01	1.1E-04	2.9E-10	1.8E-10	4.4E-10	2.1E-10
Benzo(k)fluoranthene	2.01E+01	1.1E-04	6.5E-11	3.9E-11	9.7E-11	4.5E-11
Chrysene	9.52E+01	1.1E-05	3.1E-11	1.8E-11	4.6E-11	2.1E-11
Dibenz(a,h)anthracene	5.82E+00	1.2E-03	2.0E-10	1.2E-10	3.1E-10	1.4E-10
Indeno(1,2,3-cd)pyrene	3.05E+01	1.1E-04	9.8E-11	5.9E-11	1.5E-10	6.9E-11
Chromium	1.32E+01	8.4E-02	3.2E-08	1.9E-08	4.9E-08	2.3E-08

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	5.1E-04	2.0E-04	1.3E-09	**7.1E-04**
Benzo(a)pyrene	3.7E-03	1.4E-03	9.2E-09	**5.1E-03**
Benzo(b)fluoranthene	4.5E-04	1.7E-04	1.1E-09	**6.2E-04**
Benzo(k)fluoranthene	9.8E-06	3.8E-06	2.5E-10	**1.4E-05**
Chrysene	4.7E-06	1.8E-06	1.2E-10	**6.4E-06**
Dibenz(a,h)anthracene	2.8E-04	1.1E-04	7.7E-10	**3.9E-04**
Indeno(1,2,3-cd)pyrene	1.5E-04	5.7E-05	3.7E-10	**2.1E-04**
Chromium	4.4E-05	NA	1.2E-07	**4.5E-05**

TABLE J-3

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RECREATIONAL CHILD VISITOR EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**		
EPC	mg/kg	See Table A-3.1			
IRS	mg/day	200	200		
FI	unitless	1	1		
CF	kg/mg	1E-06	1E-06		
EF	days/year	104	104		
ED	years	2	4		
BW	kg	15	15		
AT	days	25550	25550		
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

Incidential Soil Ingestion Risks						
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**		
Benzo(a)anthracene	1.67E+00	7.3E-01	1.3E-06	7.9E-07		
Benzo(a)pyrene	1.53E+00	7.3E+00	1.2E-05	7.3E-06		
Benzo(b)fluoranthene	1.65E+00	7.3E-01	1.3E-06	7.8E-07		
Benzo(k)fluoranthene	1.53E+00	7.3E-02	1.2E-07	7.3E-08		
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	3.3E-06	2.0E-06		
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	6.8E-07	4.1E-07		
Chromium	1.53E+01	5.0E-01	8.3E-06	5.0E-06		

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**		
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day	2800	2800		
AF	mg/cm^2	0.2	0.1		
ABS	unitless	See Appendix G			
EF	days/year	G	104		
ED	years	2	4		
CF	kg/mg	1E-06	1E-06		
BW	kg	15	15		
AT	days	25550	25550		
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

Dermal Contact Risks								
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**			
Benzo(a)anthracene	1.67E+00	7.3E-01	0.13	#VALUE!	1.4E-07			
Benzo(a)pyrene	1.53E+00	7.3E+00	0.13	#VALUE!	1.3E-06			
Benzo(b)fluoranthene	1.65E+00	7.3E-01	0.13	#VALUE!	1.4E-07			
Benzo(k)fluoranthene	1.53E+00	7.3E-02	0.13	#VALUE!	1.3E-08			
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	0.13	#VALUE!	3.6E-07			
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	0.13	#VALUE!	7.5E-08			
Chromium	1.53E+01	1.3E-02	NA	NA	NA			

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**		
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg	9.40E+09	9.40E+09		
ET	hours/day	2	2		
EF	days/year	104	104		
ED	years	2	4		
CF	µg/mg	1000	1000		
AT	hours	613200	613200		
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10	3		

Inhalation of Particulate Risks						
COPC	**EPC**	**URFi**	**0-<2**	**2-<6**		
Benzo(a)anthracene	1.67E+00	1.1E-04	1.3E-13	8.0E-14		
Benzo(a)pyrene	1.53E+00	1.1E-03	1.2E-12	7.3E-13		
Benzo(b)fluoranthene	1.65E+00	1.1E-04	1.3E-13	7.9E-14		
Benzo(k)fluoranthene	1.53E+00	1.1E-04	1.2E-13	7.3E-14		
Dibenz(a,h)anthracene	4.14E-01	1.2E-03	3.6E-13	2.2E-13		
Indeno(1,2,3-cd)pyrene	8.63E-01	1.1E-04	6.9E-14	4.1E-14		
Chromium	1.53E+01	8.4E-02	9.3E-10	5.6E-10		

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	2.1E-06	#VALUE!	2.1E-13	**#VALUE!**
Benzo(a)pyrene	1.9E-05	#VALUE!	1.9E-12	**#VALUE!**
Benzo(b)fluoranthene	2.1E-06	#VALUE!	2.1E-13	**#VALUE!**
Benzo(k)fluoranthene	1.9E-07	#VALUE!	1.9E-13	**#VALUE!**
Dibenz(a,h)anthracene	5.2E-06	#VALUE!	5.7E-13	**#VALUE!**
Indeno(1,2,3-cd)pyrene	1.1E-06	#VALUE!	1.1E-13	**#VALUE!**
Chromium	1.3E-05	NA	1.5E-09	**1.3E-05**

TABLE J-4

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - TRESPASSER EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**			**6-<16**	
EPC	mg/kg	See Table A-3.1			
IRS	mg/day			100	
FI	unitless			1	
CF	kg/mg			1E-06	
EF	days/year			78	
ED	years			10	
BW	kg			39	
AT	days			25550	
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless			3	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**			**6-<16**	
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day			4184	
AF	mg/cm^2			0.2	
ABS	unitless	See Appendix G			
EF	days/year			78	
ED	years			10	
CF	kg/mg			1E-06	
BW	kg			39	
AT	days			25550	
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless			3	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**			**6-<16**	
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg			9.40E+09	
ET	hours/day			4	
EF	days/year			78	
ED	years			10	
CF	µg/mg			1000	
AT	hours			613200	
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless			3	

	Incidential Soil Ingestion Risks				
COPC	**EPC**	**CSFo**			**6-<16**
Benzo(a)anthracene	1.67E+00	7.3E-01			2.9E-07
Benzo(a)pyrene	1.53E+00	7.3E+00			2.6E-06
Benzo(b)fluoranthene	1.65E+00	7.3E-01			2.8E-07
Benzo(k)fluoranthene	1.53E+00	7.3E-02			2.6E-08
Dibenz(a,h)anthracene	4.14E-01	7.3E+00			7.1E-07
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01			1.5E-07
Chromium	1.53E+01	5.0E-01			1.8E-06

	Dermal Contact Risks					
COPC	**EPC**	**CSFd**	**ABS**			**6-<16**
Benzo(a)anthracene	1.67E+00	7.3E-01	0.13			3.1E-07
Benzo(a)pyrene	1.53E+00	7.3E+00	0.13			2.8E-06
Benzo(b)fluoranthene	1.65E+00	7.3E-01	0.13			3.1E-07
Benzo(k)fluoranthene	1.53E+00	7.3E-02	0.13			2.9E-08
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	0.13			7.7E-07
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	0.13			1.6E-07
Chromium	1.53E+01	1.3E-02	NA			NA

	Inhalation of Particulate Risks				
COPC	**EPC**	**URFi**			**6-<16**
Benzo(a)anthracene	1.67E+00	1.1E-04			3.0E-13
Benzo(a)pyrene	1.53E+00	1.1E-03			2.7E-12
Benzo(b)fluoranthene	1.65E+00	1.1E-04			2.9E-13
Benzo(k)fluoranthene	1.53E+00	1.1E-04			2.7E-13
Dibenz(a,h)anthracene	4.14E-01	1.2E-03			8.1E-13
Indeno(1,2,3-cd)pyrene	8.63E-01	1.1E-04			1.5E-13
Chromium	1.53E+01	8.4E-02			2.1E-09

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	2.9E-07	3.1E-07	3.0E-13	**6.0E-07**
Benzo(a)pyrene	2.6E-06	2.8E-06	2.7E-12	**5.5E-06**
Benzo(b)fluoranthene	2.8E-07	3.1E-07	2.9E-13	**5.9E-07**
Benzo(k)fluoranthene	2.6E-08	2.9E-08	2.7E-13	**5.5E-08**
Dibenz(a,h)anthracene	7.1E-07	7.7E-07	8.1E-13	**1.5E-06**
Indeno(1,2,3-cd)pyrene	1.5E-07	1.6E-07	1.5E-13	**3.1E-07**
Chromium	1.8E-06	NA	2.1E-09	**1.8E-06**

TABLE J-5

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.1			
IRS	mg/day	200	200	100	100
FI	unitless	1	1	1	1
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
EF	days/year	350	350	350	350
ED	years	2	4	10	14
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day	2800	2800	5700	5700
AF	mg/cm^2	0.2	0.2	0.07	0.07
ABS	unitless	See Appendix G			
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg	9.40E+09	9.40E+09	9.40E+09	9.40E+09
ET	hours/day	24	24	24	24
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	µg/mg	1000	1000	1000	1000
AT	hours	613200	613200	613200	613200
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10	3	3	1

	Incidential Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.92E+00	7.3E-01	5.1E-06	3.1E-06	8.2E-07	3.8E-07
Benzo(a)pyrene	1.82E+00	7.3E+00	4.9E-05	2.9E-05	7.8E-06	3.6E-06
Benzo(b)fluoranthene	1.86E+00	7.3E-01	4.9E-06	3.0E-06	8.0E-07	3.7E-07
Benzo(k)fluoranthene	1.55E+00	7.3E-02	4.1E-07	2.5E-07	6.6E-08	3.1E-08
Dibenz(a,h)anthracene	4.37E-01	7.3E+00	1.2E-05	7.0E-06	1.9E-06	8.7E-07
Indeno(1,2,3-cd)pyrene	1.72E+00	7.3E-01	4.6E-06	2.8E-06	7.4E-07	3.4E-07
Chromium	2.25E+01	5.0E-01	4.1E-05	2.5E-05	6.6E-06	3.1E-06

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.92E+00	7.3E-01	0.13	1.9E-06	1.1E-06	4.3E-07	2.0E-07
Benzo(a)pyrene	1.82E+00	7.3E+00	0.13	1.8E-05	1.1E-05	4.0E-06	1.9E-06
Benzo(b)fluoranthene	1.86E+00	7.3E-01	0.13	1.8E-06	1.1E-06	4.1E-07	1.9E-07
Benzo(k)fluoranthene	1.55E+00	7.3E-02	0.13	1.5E-07	9.0E-08	3.4E-08	1.6E-08
Dibenz(a,h)anthracene	4.37E-01	7.3E+00	0.13	4.2E-06	2.5E-06	9.7E-07	4.5E-07
Indeno(1,2,3-cd)pyrene	1.72E+00	7.3E-01	0.13	1.7E-06	1.0E-06	3.8E-07	1.8E-07
Chromium	2.25E+01	1.3E-02	NA	NA	NA	NA	NA

	Inhalation of Particulate Risks						
COPC	**EPC**	**URFi**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.92E+00	1.1E-04	6.2E-12	3.7E-12	9.2E-12	4.3E-12
Benzo(a)pyrene	1.82E+00	1.1E-03	5.8E-11	3.5E-11	8.7E-11	4.1E-11
Benzo(b)fluoranthene	1.86E+00	1.1E-04	6.0E-12	3.6E-12	8.9E-12	4.2E-12
Benzo(k)fluoranthene	1.55E+00	1.1E-04	5.0E-12	3.0E-12	7.4E-12	3.5E-12
Dibenz(a,h)anthracene	4.37E-01	1.2E-03	1.5E-11	9.2E-12	2.3E-11	1.1E-11
Indeno(1,2,3-cd)pyrene	1.72E+00	1.1E-04	5.5E-12	3.3E-12	8.3E-12	3.9E-12
Chromium	2.25E+01	8.4E-02	5.5E-08	3.3E-08	8.3E-08	3.9E-08

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	9.4E-06	3.6E-06	2.3E-11	**1.3E-05**
Benzo(a)pyrene	8.9E-05	3.4E-05	2.2E-10	**1.2E-04**
Benzo(b)fluoranthene	9.1E-06	3.5E-06	2.3E-11	**1.3E-05**
Benzo(k)fluoranthene	7.6E-07	2.9E-07	1.9E-11	**1.0E-06**
Dibenz(a,h)anthracene	2.1E-05	8.2E-06	5.8E-11	**3.0E-05**
Indeno(1,2,3-cd)pyrene	8.4E-06	3.2E-06	2.1E-11	**1.2E-05**
Chromium	7.6E-05	NA	2.1E-07	**7.6E-05**

TABLE J-6

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.2			
IRS	mg/day	200	200	100	100
FI	unitless	1	1	1	1
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
EF	days/year	350	350	350	350
ED	years	2	4	10	14
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.2			
SA	cm^2/day	2800	2800	5700	5700
AF	mg/cm^2	0.2	0.2	0.07	0.07
ABS	unitless	See Appendix G			
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.2			
PEF	m^3/kg	9.40E+09	9.40E+09	9.40E+09	9.40E+09
ET	hours/day	24	24	24	24
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	µg/mg	1000	1000	1000	1000
AT	hours	613200	613200	613200	613200
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10	3	3	1

	Incidential Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	9.15E-01	7.3E-01	2.4E-06	1.5E-06	3.9E-07	1.8E-07
Benzo(a)pyrene	8.89E-01	7.3E+00	2.4E-05	1.4E-05	3.8E-06	1.8E-06
Benzo(b)fluoranthene	1.20E+00	7.3E-01	3.2E-06	1.9E-06	5.1E-07	2.4E-07
Benzo(k)fluoranthene	7.70E-01	7.3E-02	2.1E-07	1.2E-07	3.3E-08	1.5E-08
Dibenz(a,h)anthracene	3.05E-01	7.3E+00	8.1E-06	4.9E-06	1.3E-06	6.1E-07
Indeno(1,2,3-cd)pyrene	9.29E-01	7.3E-01	2.5E-06	1.5E-06	4.0E-07	1.9E-07
Chromium	1.81E+01	5.0E-01	3.3E-05	2.0E-05	5.3E-06	2.5E-06

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	9.15E-01	7.3E-01	0.13	8.9E-07	5.3E-07	2.0E-07	9.5E-08
Benzo(a)pyrene	8.89E-01	7.3E+00	0.13	8.6E-06	5.2E-06	2.0E-06	9.2E-07
Benzo(b)fluoranthene	1.20E+00	7.3E-01	0.13	1.2E-06	7.0E-07	2.7E-07	1.2E-07
Benzo(k)fluoranthene	7.70E-01	7.3E-02	0.13	7.5E-08	4.5E-08	1.7E-08	8.0E-09
Dibenz(a,h)anthracene	3.05E-01	7.3E+00	0.13	3.0E-06	1.8E-06	6.8E-07	3.2E-07
Indeno(1,2,3-cd)pyrene	9.29E-01	7.3E-01	0.13	9.0E-07	5.4E-07	2.1E-07	9.6E-08
Chromium	1.81E+01	1.3E-02	NA	NA	NA	NA	NA

	Inhalation of Particulate Risks						
COPC	**EPC**	**URFi**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	9.15E-01	1.1E-04	2.9E-12	1.8E-12	4.4E-12	2.1E-12
Benzo(a)pyrene	8.89E-01	1.1E-03	2.9E-11	1.7E-11	4.3E-11	2.0E-11
Benzo(b)fluoranthene	1.20E+00	1.1E-04	3.8E-12	2.3E-12	5.8E-12	2.7E-12
Benzo(k)fluoranthene	7.70E-01	1.1E-04	2.5E-12	1.5E-12	3.7E-12	1.7E-12
Dibenz(a,h)anthracene	3.05E-01	1.2E-03	1.1E-11	6.4E-12	1.6E-11	7.5E-12
Indeno(1,2,3-cd)pyrene	9.29E-01	1.1E-04	3.0E-12	1.8E-12	4.5E-12	2.1E-12
Chromium	1.81E+01	8.4E-02	4.4E-08	2.7E-08	6.7E-08	3.1E-08

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	4.5E-06	1.7E-06	1.1E-11	**6.2E-06**
Benzo(a)pyrene	4.4E-05	1.7E-05	1.1E-10	**6.0E-05**
Benzo(b)fluoranthene	5.9E-06	2.3E-06	1.5E-11	**8.1E-06**
Benzo(k)fluoranthene	3.8E-07	1.4E-07	9.4E-12	**5.2E-07**
Dibenz(a,h)anthracene	1.5E-05	5.7E-06	4.1E-11	**2.1E-05**
Indeno(1,2,3-cd)pyrene	4.5E-06	1.7E-06	1.1E-11	**6.3E-06**
Chromium	6.1E-05	NA	1.7E-07	**6.1E-05**

TABLE J-7

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - TRESPASSER EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units			6-<16	
EPC	mg/kg	See Table A-3.1			
IRS	mg/day			100	
FI	unitless			1	
CF	kg/mg			1E-06	
EF	days/year			78	
ED	years			10	
BW	kg			39	
AT	days			25550	
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless			3	

Incidential Soil Ingestion Risks						
COPC	EPC	CSFo			6-<16	
Benzo(a)anthracene	1.92E+00	7.3E-01			3.3E-07	
Benzo(a)pyrene	1.82E+00	7.3E+00			3.1E-06	
Benzo(b)fluoranthene	1.86E+00	7.3E-01			3.2E-07	
Benzo(k)fluoranthene	1.55E+00	7.3E-02			2.6E-08	
Dibenz(a,h)anthracene	4.37E-01	7.3E+00			7.5E-07	
Indeno(1,2,3-cd)pyrene	1.72E+00	7.3E-01			3.0E-07	
Chromium	2.25E+01	5.0E-01			2.6E-06	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units			6-<16	
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day			4184	
AF	mg/cm^2			0.2	
ABS	unitless	See Appendix G			
EF	days/year			78	
ED	years			10	
CF	kg/mg			1E-06	
BW	kg			39	
AT	days			25550	
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless			3	

Dermal Contact Risks							
COPC	EPC	CSFd	ABS			6-<16	
Benzo(a)anthracene	1.92E+00	7.3E-01	0.13			3.6E-07	
Benzo(a)pyrene	1.82E+00	7.3E+00	0.13			3.4E-06	
Benzo(b)fluoranthene	1.86E+00	7.3E-01	0.13			3.5E-07	
Benzo(k)fluoranthene	1.55E+00	7.3E-02	0.13			2.9E-08	
Dibenz(a,h)anthracene	4.37E-01	7.3E+00	0.13			8.1E-07	
Indeno(1,2,3-cd)pyrene	1.72E+00	7.3E-01	0.13			3.2E-07	
Chromium	2.25E+01	1.3E-02	NA			NA	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units			6-<16	
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg			9.40E+09	
ET	hours/day			4	
EF	days/year			78	
ED	years			10	
CF	µg/mg			1000	
AT	hours			613200	
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless			3	

Inhalation of Particulate Risks						
COPC	EPC	URFi			6-<16	
Benzo(a)anthracene	1.67E+00	1.1E-04			3.0E-13	
Benzo(a)pyrene	1.82E+00	1.1E-03			3.2E-12	
Benzo(b)fluoranthene	1.86E+00	1.1E-04			3.3E-13	
Benzo(k)fluoranthene	1.55E+00	1.1E-04			2.8E-13	
Dibenz(a,h)anthracene	4.37E-01	1.2E-03			8.5E-13	
Indeno(1,2,3-cd)pyrene	1.72E+00	1.1E-04			3.1E-13	
Chromium	2.25E+01	8.4E-02			3.1E-09	

	Total Cancer Risks			
COPC	Soil Ingestion	Dermal Contact	Inhalation	Total
Benzo(a)anthracene	3.3E-07	3.6E-07	3.0E-13	**6.9E-07**
Benzo(a)pyrene	3.1E-06	3.4E-06	3.2E-12	**6.5E-06**
Benzo(b)fluoranthene	3.2E-07	3.5E-07	3.3E-13	**6.6E-07**
Benzo(k)fluoranthene	2.6E-08	2.9E-08	2.8E-13	**5.5E-08**
Dibenz(a,h)anthracene	7.5E-07	8.1E-07	8.5E-13	**1.6E-06**
Indeno(1,2,3-cd)pyrene	3.0E-07	3.2E-07	3.1E-13	**6.2E-07**
Chromium	2.6E-06	NA	3.1E-09	**2.6E-06**

TABLE J-8

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.1			
IRS	mg/day	200	200	100	100
FI	unitless	1	1	1	1
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
EF	days/year	350	350	350	350
ED	years	2	4	10	14
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day	2800	2800	5700	5700
AF	mg/cm^2	0.2	0.2	0.07	0.07
ABS	unitless	See Appendix G			
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg	9.40E+09	9.40E+09	9.40E+09	9.40E+09
ET	hours/day	24	24	24	24
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	µg/mg	1000	1000	1000	1000
AT	hours	613200	613200	613200	613200
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10	3	3	1

	Incidential Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.75E+01	7.3E-01	4.7E-05	2.8E-05	7.5E-06	3.5E-06
Benzo(a)pyrene	1.29E+01	7.3E+00	3.4E-04	2.1E-04	5.5E-05	2.6E-05
Benzo(b)fluoranthene	1.16E+01	7.3E-01	3.1E-05	1.9E-05	5.0E-06	2.3E-06
Benzo(k)fluoranthene	1.27E+01	7.3E-02	3.4E-06	2.0E-06	5.5E-07	2.5E-07
Chrysene	1.71E+01	7.3E-03	4.6E-07	2.7E-07	7.3E-08	3.4E-08
Dibenz(a,h)anthracene	1.95E-01	7.3E+00	5.2E-06	3.1E-06	8.4E-07	3.9E-07
Indeno(1,2,3-cd)pyrene	1.15E+01	7.3E-01	3.1E-05	1.8E-05	4.9E-06	2.3E-06
Chromium	1.23E+01	5.0E-01	2.2E-05	1.3E-05	3.6E-06	1.7E-06

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.75E+01	7.3E-01	0.13	1.7E-05	1.0E-05	3.9E-06	1.8E-06
Benzo(a)pyrene	1.29E+01	7.3E+00	0.13	1.2E-04	7.5E-05	2.9E-05	1.3E-05
Benzo(b)fluoranthene	1.16E+01	7.3E-01	0.13	1.1E-05	6.8E-06	2.6E-06	1.2E-06
Benzo(k)fluoranthene	1.27E+01	7.3E-02	0.13	1.2E-06	7.4E-07	2.8E-07	1.3E-07
Chrysene	1.71E+01	7.3E-03	0.13	1.7E-07	1.0E-07	3.8E-08	1.8E-08
Dibenz(a,h)anthracene	1.95E-01	7.3E+00	0.13	1.9E-06	1.1E-06	4.3E-07	2.0E-07
Indeno(1,2,3-cd)pyrene	1.15E+01	7.3E-01	0.13	1.1E-05	6.7E-06	2.6E-06	1.2E-06
Chromium	1.23E+01	1.3E-02	NA	NA	NA	NA	NA

	Inhalation of Particulate Risks						
COPC	**EPC**	**URFi**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.75E+01	1.1E-04	5.6E-11	3.4E-11	8.4E-11	3.9E-11
Benzo(a)pyrene	1.29E+01	1.1E-03	4.1E-10	2.5E-10	6.2E-10	2.9E-10
Benzo(b)fluoranthene	1.16E+01	1.1E-04	3.7E-11	2.2E-11	5.6E-11	2.6E-11
Benzo(k)fluoranthene	1.27E+01	1.1E-04	4.1E-11	2.5E-11	6.1E-11	2.9E-11
Chrysene	1.71E+01	1.1E-05	5.5E-12	3.3E-12	8.2E-12	3.8E-12
Dibenz(a,h)anthracene	1.95E-01	1.2E-03	6.8E-12	4.1E-12	1.0E-11	4.8E-12
Indeno(1,2,3-cd)pyrene	1.15E+01	1.1E-04	3.7E-11	2.2E-11	5.5E-11	2.6E-11
Chromium	1.23E+01	8.4E-02	3.0E-08	1.8E-08	4.5E-08	2.1E-08

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	8.6E-05	3.3E-05	2.1E-10	**1.2E-04**
Benzo(a)pyrene	6.3E-04	2.4E-04	1.6E-09	**8.7E-04**
Benzo(b)fluoranthene	5.7E-05	2.2E-05	1.4E-10	**7.9E-05**
Benzo(k)fluoranthene	6.2E-06	2.4E-06	1.6E-10	**8.6E-06**
Chrysene	8.4E-07	3.2E-07	2.1E-11	**1.2E-06**
Dibenz(a,h)anthracene	9.5E-06	3.7E-06	2.6E-11	**1.3E-05**
Indeno(1,2,3-cd)pyrene	5.6E-05	2.2E-05	1.4E-10	**7.8E-05**
Chromium	4.1E-05	NA	1.1E-07	**4.1E-05**

TABLE J-9

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.2			
IRS	mg/day	200	200	100	100
FI	unitless	1	1	1	1
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
EF	days/year	350	350	350	350
ED	years	2	4	10	14
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.2			
SA	cm^2/day	2800	2800	5700	5700
AF	mg/cm^2	0.2	0.2	0.07	0.07
ABS	unitless	See Appendix G			
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	kg/mg	1E-06	1E-06	1E-06	1E-06
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.2			
PEF	m^3/kg	9.40E+09	9.40E+09	9.40E+09	9.40E+09
ET	hours/day	24	24	24	24
EF	days/year	350	350	350	350
ED	years	2	4	10	14
CF	µg/mg	1000	1000	1000	1000
AT	hours	613200	613200	613200	613200
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10	3	3	1

	Incidential Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.47E+01	7.3E-01	3.9E-05	2.4E-05	6.3E-06	2.9E-06
Benzo(a)pyrene	1.09E+01	7.3E+00	2.9E-04	1.7E-04	4.7E-05	2.2E-05
Benzo(b)fluoranthene	8.86E+00	7.3E-01	2.4E-05	1.4E-05	3.8E-06	1.8E-06
Benzo(k)fluoranthene	1.04E+01	7.3E-02	2.8E-06	1.7E-06	4.4E-07	2.1E-07
Chrysene	1.51E+01	7.3E-03	4.0E-07	2.4E-07	6.5E-08	3.0E-08
Dibenz(a,h)anthracene	1.18E+00	7.3E+00	3.1E-05	1.9E-05	5.0E-06	2.4E-06
Indeno(1,2,3-cd)pyrene	8.28E+00	7.3E-01	2.2E-05	1.3E-05	3.5E-06	1.7E-06
Chromium	1.42E+01	5.0E-01	2.6E-05	1.6E-05	4.2E-06	1.9E-06

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.47E+01	7.3E-01	0.13	1.4E-05	8.6E-06	3.3E-06	1.5E-06
Benzo(a)pyrene	1.09E+01	7.3E+00	0.13	1.1E-04	6.4E-05	2.4E-05	1.1E-05
Benzo(b)fluoranthene	8.86E+00	7.3E-01	0.13	8.6E-06	5.2E-06	2.0E-06	9.2E-07
Benzo(k)fluoranthene	1.04E+01	7.3E-02	0.13	1.0E-06	6.0E-07	2.3E-07	1.1E-07
Chrysene	1.51E+01	7.3E-03	0.13	1.5E-07	8.8E-08	3.4E-08	1.6E-08
Dibenz(a,h)anthracene	1.18E+00	7.3E+00	0.13	1.1E-05	6.8E-06	2.6E-06	1.2E-06
Indeno(1,2,3-cd)pyrene	8.28E+00	7.3E-01	0.13	8.0E-06	4.8E-06	1.8E-06	8.6E-07
Chromium	1.42E+01	1.3E-02	NA	NA	NA	NA	NA

	Inhalation of Particulate Risks					
COPC	**EPC**	**URFi**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Benzo(a)anthracene	1.47E+01	1.1E-04	4.7E-11	2.8E-11	7.1E-11	3.3E-11
Benzo(a)pyrene	1.09E+01	1.1E-03	3.5E-10	2.1E-10	5.2E-10	2.4E-10
Benzo(b)fluoranthene	8.86E+00	1.1E-04	2.8E-11	1.7E-11	4.3E-11	2.0E-11
Benzo(k)fluoranthene	1.04E+01	1.1E-04	3.3E-11	2.0E-11	5.0E-11	2.3E-11
Chrysene	1.51E+01	1.1E-05	4.8E-12	2.9E-12	7.3E-12	3.4E-12
Dibenz(a,h)anthracene	1.18E+00	1.2E-03	4.1E-11	2.5E-11	6.2E-11	2.9E-11
Indeno(1,2,3-cd)pyrene	8.28E+00	1.1E-04	2.7E-11	1.6E-11	4.0E-11	1.9E-11
Chromium	1.42E+01	8.4E-02	3.5E-08	2.1E-08	5.2E-08	2.4E-08

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	7.2E-05	2.8E-05	1.8E-10	**1.0E-04**
Benzo(a)pyrene	5.3E-04	2.1E-04	1.3E-09	**7.4E-04**
Benzo(b)fluoranthene	4.3E-05	1.7E-05	1.1E-10	**6.0E-05**
Benzo(k)fluoranthene	5.1E-06	1.9E-06	1.3E-10	**7.0E-06**
Chrysene	7.4E-07	2.8E-07	1.8E-11	**1.0E-06**
Dibenz(a,h)anthracene	5.8E-05	2.2E-05	1.6E-10	**8.0E-05**
Indeno(1,2,3-cd)pyrene	4.1E-05	1.6E-05	1.0E-10	**5.6E-05**
Chromium	4.7E-05	NA	1.3E-07	**4.8E-05**

TABLE J-10

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - TRESPASSER EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)		
Parameter	**Units**	**6-<16**
EPC	mg/kg	See Table A-3.1
IRS	mg/day	100
FI	unitless	1
CF	kg/mg	1E-06
EF	days/year	78
ED	years	10
BW	kg	39
AT	days	25550
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1
ADAF	unitless	3

Incidential Soil Ingestion Risks						
COPC	**EPC**	**CSFo**			**6-<16**	
Benzo(a)anthracene	1.75E+01	7.3E-01			3.0E-06	
Benzo(a)pyrene	1.29E+01	7.3E+00			2.2E-05	
Benzo(b)fluoranthene	1.16E+01	7.3E-01			2.0E-06	
Benzo(k)fluoranthene	1.27E+01	7.3E-02			2.2E-07	
Chrysene	1.71E+01	7.3E-03			2.9E-08	
Dibenz(a,h)anthracene	1.95E-01	7.3E+00			3.3E-07	
Indeno(1,2,3-cd)pyrene	1.15E+01	7.3E-01			2.0E-06	
Chromium	1.23E+01	5.0E-01			1.4E-06	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)		
Parameter	**Units**	**6-<16**
EPC	mg/kg	See Table A-3.1
SA	cm^2/day	4184
AF	mg/cm^2	0.2
ABS	unitless	See Appendix G
EF	days/year	78
ED	years	10
CF	kg/mg	1E-06
BW	kg	39
AT	days	25550
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1
ADAF	unitless	3

Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**		**6-<16**	
Benzo(a)anthracene	1.75E+01	7.3E-01	0.13		3.3E-06	
Benzo(a)pyrene	1.29E+01	7.3E+00	0.13		2.4E-05	
Benzo(b)fluoranthene	1.16E+01	7.3E-01	0.13		2.2E-06	
Benzo(k)fluoranthene	1.27E+01	7.3E-02	0.13		2.4E-07	
Chrysene	1.71E+01	7.3E-03	0.13		3.2E-08	
Dibenz(a,h)anthracene	1.95E-01	7.3E+00	0.13		3.6E-07	
Indeno(1,2,3-cd)pyrene	1.15E+01	7.3E-01	0.13		2.2E-06	
Chromium	1.23E+01	1.3E-02	NA		NA	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)		
Parameter	**Units**	**6-<16**
EPC	mg/kg	See Table A-3.1
PEF	m^3/kg	9.40E+09
ET	hours/day	4
EF	days/year	78
ED	years	10
CF	µg/mg	1000
AT	hours	613200
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2
ADAF	unitless	3

Inhalation of Particulate Risks						
COPC	**EPC**	**URFi**			**6-<16**	
Benzo(a)anthracene	1.75E+01	1.1E-04			3.1E-12	
Benzo(a)pyrene	1.29E+01	1.1E-03			2.3E-11	
Benzo(b)fluoranthene	1.16E+01	1.1E-04			2.1E-12	
Benzo(k)fluoranthene	1.27E+01	1.1E-04			2.3E-12	
Chrysene	1.71E+01	1.1E-05			3.1E-13	
Dibenz(a,h)anthracene	1.95E-01	1.2E-03			3.8E-13	
Indeno(1,2,3-cd)pyrene	1.15E+01	1.1E-04			2.1E-12	
Chromium	1.23E+01	8.4E-02			1.7E-09	

Total Cancer Risks				
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	3.0E-06	3.3E-06	3.1E-12	**6.3E-06**
Benzo(a)pyrene	2.2E-05	2.4E-05	2.3E-11	**4.6E-05**
Benzo(b)fluoranthene	2.0E-06	2.2E-06	2.1E-12	**4.2E-06**
Benzo(k)fluoranthene	2.2E-07	2.4E-07	2.3E-12	**4.6E-07**
Chrysene	2.9E-08	3.2E-08	3.1E-13	**6.1E-08**
Dibenz(a,h)anthracene	3.3E-07	3.6E-07	3.8E-13	**7.0E-07**
Indeno(1,2,3-cd)pyrene	2.0E-06	2.2E-06	2.1E-12	**4.1E-06**
Chromium	1.4E-06	NA	1.7E-09	**1.4E-06**

TABLE J-11

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RECREATIONAL CHILD VISITOR EXPOSURE TO SEDIMENT
CHLOR ALKALI SUPERFUND SITE - AREA 1 SEDIMENT
BERLIN, NEW HAMPSHIRE

Incidental Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)						
Parameter	**Units**	**0-<2**	**2-<6**			
EPC	mg/kg	See Table A-3.3				
IRS	mg/day	200	200			
FI	unitless	1	1			
CF	kg/mg	1E-06	1E-06			
EF	days/year	22	22			
ED	years	2	4			
BW	kg	15	15			
AT	days	25550	25550			
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1				
ADAF	unitless	10	3			

	Incidential Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**		
Benzo(a)anthracene	2.80E+00	7.3E-01	4.7E-07	2.8E-07		
Benzo(a)pyrene	2.70E+00	7.3E+00	4.5E-06	2.7E-06		
Benzo(b)fluoranthene	4.10E+00	7.3E-01	6.9E-07	4.1E-07		
Dibenz(a,h)anthracene	7.50E-02	7.3E+00	1.3E-07	7.5E-08		
Indeno(1,2,3-cd)pyrene	1.70E+00	7.3E-01	2.8E-07	1.7E-07		
Chromium	1.90E+01	5.0E-01	2.2E-06	1.3E-06		

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)						
Parameter	**Units**	**0-<2**	**2-<6**			
EPC	mg/kg	See Table A-3.3				
SA	cm^2/day	2800	2800			
AF	mg/cm^2	0.2	0.2			
ABS	unitless	See Appendix G				
EF	days/year	22	22			
ED	years	2	4			
CF	kg/mg	1E-06	1E-06			
BW	kg	15	15			
AT	days	25550	25550			
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1				
ADAF	unitless	10	3			

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**		
Benzo(a)anthracene	2.80E+00	7.3E-01	0.13	1.7E-07	1.0E-07		
Benzo(a)pyrene	2.70E+00	7.3E+00	0.13	1.6E-06	9.9E-07		
Benzo(b)fluoranthene	4.10E+00	7.3E-01	0.13	2.5E-07	1.5E-07		
Dibenz(a,h)anthracene	7.50E-02	7.3E+00	0.13	4.6E-08	2.7E-08		
Indeno(1,2,3-cd)pyrene	1.70E+00	7.3E-01	0.13	1.0E-07	6.2E-08		
Chromium	1.90E+01	1.3E-02	NA	NA	NA		

	Total Cancer Risks		
COPC	**Ingestion**	**Dermal Contact**	**Total**
Benzo(a)anthracene	7.5E-07	2.7E-07	**1.0E-06**
Benzo(a)pyrene	7.2E-06	2.6E-06	**9.9E-06**
Benzo(b)fluoranthene	1.1E-06	4.0E-07	**1.5E-06**
Dibenz(a,h)anthracene	2.0E-07	7.3E-08	**2.7E-07**
Indeno(1,2,3-cd)pyrene	4.6E-07	1.7E-07	**6.2E-07**
Chromium	3.5E-06	NA	**3.5E-06**

TABLE J-12

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RECREATIONAL CHILD VISITOR EXPOSURE TO SEDIMENT
CHLOR ALKALI SUPERFUND SITE - AREA 2 SEDIMENT
BERLIN, NEW HAMPSHIRE

Incidental Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)						
Parameter	**Units**	**0-<2**	**2-<6**			
EPC	mg/kg	See Table A-3.3				
IRS	mg/day	200	200			
FI	unitless	1	1			
CF	kg/mg	1E-06	1E-06			
EF	days/year	22	22			
ED	years	2	4			
BW	kg	15	15			
AT	days	25550	25550			
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1				
ADAF	unitless	10	3			

Incidential Ingestion Risks							
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**			
Benzo(a)anthracene	1.50E+00	7.3E-01	2.5E-07	1.5E-07			
Benzo(a)pyrene	1.46E+00	7.3E+00	2.5E-06	1.5E-06			
Benzo(b)fluoranthene	1.96E+00	7.3E-01	3.3E-07	2.0E-07			
Dibenz(a,h)anthracene	6.55E-02	7.3E+00	1.1E-07	6.6E-08			
Indeno(1,2,3-cd)pyrene	9.45E-01	7.3E-01	1.6E-07	9.5E-08			
Chromium	1.35E+01	5.0E-01	1.5E-06	9.3E-07			

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)						
Parameter	**Units**	**0-<2**	**2-<6**			
EPC	mg/kg	See Table A-3.3				
SA	cm^2/day	2800	2800			
AF	mg/cm^2	0.2	0.2			
ABS	unitless	See Appendix G				
EF	days/year	22	22			
ED	years	2	4			
CF	kg/mg	1E-06	1E-06			
BW	kg	15	15			
AT	days	25550	25550			
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1				
ADAF	unitless	10	3			

Dermal Contact Risks							
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**		
Benzo(a)anthracene	1.50E+00	7.3E-01	0.13	9.1E-08	5.5E-08		
Benzo(a)pyrene	1.46E+00	7.3E+00	0.13	8.9E-07	5.4E-07		
Benzo(b)fluoranthene	1.96E+00	7.3E-01	0.13	1.2E-07	7.2E-08		
Dibenz(a,h)anthracene	6.55E-02	7.3E+00	0.13	4.0E-08	2.4E-08		
Indeno(1,2,3-cd)pyrene	9.45E-01	7.3E-01	0.13	5.8E-08	3.5E-08		
Chromium	1.35E+01	1.3E-02	NA	NA	NA		

	Total Cancer Risks		
COPC	**Ingestion**	**Dermal Contact**	**Total**
Benzo(a)anthracene	4.0E-07	1.5E-07	**5.5E-07**
Benzo(a)pyrene	3.9E-06	1.4E-06	**5.4E-06**
Benzo(b)fluoranthene	5.3E-07	1.9E-07	**7.2E-07**
Dibenz(a,h)anthracene	1.8E-07	6.4E-08	**2.4E-07**
Indeno(1,2,3-cd)pyrene	2.5E-07	9.2E-08	**3.5E-07**
Chromium	2.5E-06	NA	**2.5E-06**

TABLE J-13

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RECREATIONAL CHILD VISITOR EXPOSURE TO SEDIMENT
CHLOR ALKALI SUPERFUND SITE - AREA3 SEDIMENT
BERLIN, NEW HAMPSHIRE

Incidental Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)						
Parameter	Units	0-<2	2-<6			
EPC	mg/kg	See Table A-3.3				
IRS	mg/day	200	200			
FI	unitless	1	1			
CF	kg/mg	1E-06	1E-06			
EF	days/year	22	22			
ED	years	2	4			
BW	kg	15	15			
AT	days	25550	25550			
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1				
ADAF	unitless	10	3			

Incidential Ingestion Risks							
COPC	EPC	CSFo	0-<2	2-<6			
Benzo(a)anthracene	2.40E+00	7.3E-01	4.0E-07	2.4E-07			
Benzo(a)pyrene	2.90E+00	7.3E+00	4.9E-06	2.9E-06			
Benzo(b)fluoranthene	3.80E+00	7.3E-01	6.4E-07	3.8E-07			
Dibenz(a,h)anthracene	3.50E-01	7.3E+00	5.9E-07	3.5E-07			
Indeno(1,2,3-cd)pyrene	1.60E+00	7.3E-01	2.7E-07	1.6E-07			
Chromium	1.07E+01	5.0E-01	1.2E-06	7.4E-07			

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)						
Parameter	Units	0-<2	2-<6			
EPC	mg/kg	See Table A-3.3				
SA	cm^2/day	2800	2800			
AF	mg/cm^2	0.2	0.2			
ABS	unitless	See Appendix G				
EF	days/year	22	22			
ED	years	2	4			
CF	kg/mg	1E-06	1E-06			
BW	kg	15	15			
AT	days	25550	25550			
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1				
ADAF	unitless	10	3			

Dermal Contact Risks							
COPC	EPC	CSFd	ABS	0-<2	2-<6		
Benzo(a)anthracene	2.40E+00	7.3E-01	0.13	1.5E-07	8.8E-08		
Benzo(a)pyrene	2.90E+00	7.3E+00	0.13	1.8E-06	1.1E-06		
Benzo(b)fluoranthene	3.80E+00	7.3E-01	0.13	2.3E-07	1.4E-07		
Dibenz(a,h)anthracene	3.50E-01	7.3E+00	0.13	2.1E-07	1.3E-07		
Indeno(1,2,3-cd)pyrene	1.60E+00	7.3E-01	0.13	9.8E-08	5.9E-08		
Chromium	1.07E+01	1.3E-02	NA	NA	NA		

	Total Cancer Risks		
COPC	Ingestion	Dermal Contact	Total
Benzo(a)anthracene	6.4E-07	2.3E-07	**8.8E-07**
Benzo(a)pyrene	7.8E-06	2.8E-06	**1.1E-05**
Benzo(b)fluoranthene	1.0E-06	3.7E-07	**1.4E-06**
Dibenz(a,h)anthracene	9.4E-07	3.4E-07	**1.3E-06**
Indeno(1,2,3-cd)pyrene	4.3E-07	1.6E-07	**5.9E-07**
Chromium	2.0E-06	NA	**2.0E-06**

TABLE J-14

CALCULATION OF REASONABLE MAXIMUM EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - FISH INGESTION
CHLOR ALKALI SUPERFUND SITE - ANDROSCOGGIN RIVER FISH
BERLIN, NEW HAMPSHIRE

Fish Ingestion Risk

Where:

$$Risk = EPC \times \sum_{i} \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
EPC	mg/kg	See Table A-3.4			
IRF	g/day	13	13	32	32
FI	unitless	1	1	1	1
CF	kg/g	1E-03	1E-03	1E-03	1E-03
EF	days/year	350	350	350	350
ED	years	2	4	10	14
BW	kg	15	15	70	70
AT	days	25550	25550	25550	25550
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3	3	1

	Incidential Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**	**6-<16**	**16-<30**
Indeno(1,2,3-cd)pyrene	7.20E-03	7.3E-01	1.2E-06	7.5E-07	9.9E-07	4.6E-07
Chromium	4.93E-01	5.0E-01	5.9E-05	3.5E-05	4.6E-05	2.2E-05

	Total Cancer Risks	
COPC	**Fish Ingestion**	**Total**
Indeno(1,2,3-cd)pyrene	3.4E-06	**3.4E-06**
Chromium	1.6E-04	**1.6E-04**

TABLE J-15

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.1			
IRS	mg/day	100		50	
FI	unitless	1		1	
CF	kg/mg	1E-06		1E-06	
EF	days/year	350		350	
ED	years	2		7	
BW	kg	15		70	
AT	days	25550		25550	
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Incidential Soil Ingestion Risks						
COPC	**EPC**	**CSFo**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.67E+00	7.3E-01	2.2E-06		2.5E-07	
Benzo(a)pyrene	1.53E+00	7.3E+00	2.0E-05		2.3E-06	
Benzo(b)fluoranthene	1.65E+00	7.3E-01	2.2E-06		2.5E-07	
Benzo(k)fluoranthene	1.53E+00	7.3E-02	2.0E-07		2.3E-08	
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	5.5E-06		6.2E-07	
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	1.2E-06		1.3E-07	
Chromium	1.53E+01	5.0E-01	1.4E-05		1.6E-06	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day	2800		5700	
AF	mg/cm^2	0.2		0.07	
ABS	unitless	See Appendix G			
EF	days/year	350		350	
ED	years	2		7	
CF	kg/mg	1E-06		1E-06	
BW	kg	15		70	
AT	days	25550		25550	
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Dermal Contact Risks							
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.67E+00	7.3E-01	0.13	1.6E-06		2.6E-07	
Benzo(a)pyrene	1.53E+00	7.3E+00	0.13	1.5E-05		2.4E-06	
Benzo(b)fluoranthene	1.65E+00	7.3E-01	0.13	1.6E-06		2.6E-07	
Benzo(k)fluoranthene	1.53E+00	7.3E-02	0.13	1.5E-07		2.4E-08	
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	0.13	4.0E-06		6.4E-07	
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	0.13	8.4E-07		1.3E-07	
Chromium	1.53E+01	1.3E-02	NA	NA		NA	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg	9.40E+09		9.40E+09	
ET	hours/day	24		24	
EF	days/year	350		350	
ED	years	2		7	
CF	µg/mg	1000		1000	
AT	hours	613200		613200	
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10		3	

Inhalation of Particulate Risks						
COPC	**EPC**	**URFi**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.67E+00	1.1E-04	5.4E-12		5.6E-12	
Benzo(a)pyrene	1.53E+00	1.1E-03	4.9E-11		5.1E-11	
Benzo(b)fluoranthene	1.65E+00	1.1E-04	5.3E-12		5.6E-12	
Benzo(k)fluoranthene	1.53E+00	1.1E-04	4.9E-12		5.1E-12	
Dibenz(a,h)anthracene	4.14E-01	1.2E-03	1.4E-11		1.5E-11	
Indeno(1,2,3-cd)pyrene	8.63E-01	1.1E-04	2.8E-12		2.9E-12	
Chromium	1.53E+01	8.4E-02	3.7E-08		3.9E-08	

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	2.5E-06	1.9E-06	1.1E-11	**4.4E-06**
Benzo(a)pyrene	2.3E-05	1.7E-05	1.0E-10	**4.0E-05**
Benzo(b)fluoranthene	2.4E-06	1.9E-06	1.1E-11	**4.3E-06**
Benzo(k)fluoranthene	2.3E-07	1.7E-07	1.0E-11	**4.0E-07**
Dibenz(a,h)anthracene	6.1E-06	4.7E-06	3.0E-11	**1.1E-05**
Indeno(1,2,3-cd)pyrene	1.3E-06	9.7E-07	5.7E-12	**2.3E-06**
Chromium	1.6E-05	NA	7.7E-08	**1.6E-05**

TABLE J-16

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.2			
IRS	mg/day	100		50	
FI	unitless	1		1	
CF	kg/mg	1E-06		1E-06	
EF	days/year	350		350	
ED	years	2		7	
BW	kg	15		70	
AT	days	25550		25550	
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.2			
SA	cm^2/day	2800		5700	
AF	mg/cm^2	0.2		0.07	
ABS	unitless	See Appendix G			
EF	days/year	350		350	
ED	years	2		7	
CF	kg/mg	1E-06		1E-06	
BW	kg	15		70	
AT	days	25550		25550	
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.2			
PEF	m^3/kg	9.40E+09		9.40E+09	
ET	hours/day	24		24	
EF	days/year	350		350	
ED	years	2		7	
CF	µg/mg	1000		1000	
AT	hours	613200		613200	
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10		3	

	Incidental Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.05E+02	7.3E-01	1.4E-04		1.6E-05	
Benzo(a)pyrene	7.55E+01	7.3E+00	1.0E-03		1.1E-04	
Benzo(b)fluoranthene	9.18E+01	7.3E-01	1.2E-04		1.4E-05	
Benzo(k)fluoranthene	2.01E+01	7.3E-02	2.7E-06		3.0E-07	
Chrysene	9.52E+01	7.3E-03	1.3E-06		1.4E-07	
Dibenz(a,h)anthracene	5.82E+00	7.3E+00	7.8E-05		8.7E-06	
Indeno(1,2,3-cd)pyrene	3.05E+01	7.3E-01	4.1E-05		4.6E-06	
Chromium	1.32E+01	5.0E-01	1.2E-05		1.4E-06	

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.05E+02	7.3E-01	0.13	1.0E-04		1.6E-05	
Benzo(a)pyrene	7.55E+01	7.3E+00	0.13	7.3E-04		1.2E-04	
Benzo(b)fluoranthene	9.18E+01	7.3E-01	0.13	8.9E-05		1.4E-05	
Benzo(k)fluoranthene	2.01E+01	7.3E-02	0.13	2.0E-06		3.1E-07	
Chrysene	9.52E+01	7.3E-03	0.13	9.2E-07		1.5E-07	
Dibenz(a,h)anthracene	5.82E+00	7.3E+00	0.13	5.6E-05		9.0E-06	
Indeno(1,2,3-cd)pyrene	3.05E+01	7.3E-01	0.13	3.0E-05		4.8E-06	
Chromium	1.32E+01	1.3E-02	NA	NA		NA	

	Inhalation of Particulate Risks				
COPC	**EPC**	**URFi**	**0-<2**		**6-<13**
Benzo(a)anthracene	1.05E+02	1.1E-04	3.4E-10		3.5E-10
Benzo(a)pyrene	7.55E+01	1.1E-03	2.4E-09		2.5E-09
Benzo(b)fluoranthene	9.18E+01	1.1E-04	2.9E-10		3.1E-10
Benzo(k)fluoranthene	2.01E+01	1.1E-04	6.5E-11		6.8E-11
Chrysene	9.52E+01	1.1E-05	3.1E-11		3.2E-11
Dibenz(a,h)anthracene	5.82E+00	1.2E-03	2.0E-10		2.1E-10
Indeno(1,2,3-cd)pyrene	3.05E+01	1.1E-04	9.8E-11		1.0E-10
Chromium	1.32E+01	8.4E-02	3.2E-08		3.4E-08

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	1.6E-04	1.2E-04	6.9E-10	**2.7E-04**
Benzo(a)pyrene	1.1E-03	8.5E-04	5.0E-09	**2.0E-03**
Benzo(b)fluoranthene	1.4E-04	1.0E-04	6.0E-10	**2.4E-04**
Benzo(k)fluoranthene	3.0E-06	2.3E-06	1.3E-10	**5.3E-06**
Chrysene	1.4E-06	1.1E-06	6.3E-11	**2.5E-06**
Dibenz(a,h)anthracene	8.6E-05	6.5E-05	4.2E-10	**1.5E-04**
Indeno(1,2,3-cd)pyrene	4.5E-05	3.4E-05	2.0E-10	**8.0E-05**
Chromium	1.3E-05	NA	6.6E-08	**1.4E-05**

TABLE J-17

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RECREATIONAL CHILD VISITOR EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units	0-<2	2-<6		
EPC	mg/kg	See Table A-3.1			
IRS	mg/day	100	100		
FI	unitless	1	1		
CF	kg/mg	1E-06	1E-06		
EF	days/year	52	52		
ED	years	2	4		
BW	kg	15	15		
AT	days	25550	25550		
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

	Incidential Soil Ingestion Risks					
COPC	EPC	CSFo	0-<2	2-<6		
Benzo(a)anthracene	1.67E+00	7.3E-01	3.3E-07	2.0E-07		
Benzo(a)pyrene	1.53E+00	7.3E+00	3.0E-06	1.8E-06		
Benzo(b)fluoranthene	1.65E+00	7.3E-01	3.3E-07	2.0E-07		
Benzo(k)fluoranthene	1.53E+00	7.3E-02	3.0E-08	1.8E-08		
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	8.2E-07	4.9E-07		
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	1.7E-07	1.0E-07		
Chromium	1.53E+01	5.0E-01	2.1E-06	1.2E-06		

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units	0-<2	2-<6		
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day	2800	2800		
AF	mg/cm^2	0.2	0.2		
ABS	unitless	See Appendix G			
EF	days/year	52	52		
ED	years	2	4		
CF	kg/mg	1E-06	1E-06		
BW	kg	15	15		
AT	days	25550	25550		
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

	Dermal Contact Risks						
COPC	EPC	CSFd	ABS	0-<2	2-<6		
Benzo(a)anthracene	1.67E+00	7.3E-01	0.13	2.4E-07	1.4E-07		
Benzo(a)pyrene	1.53E+00	7.3E+00	0.13	2.2E-06	1.3E-06		
Benzo(b)fluoranthene	1.65E+00	7.3E-01	0.13	2.4E-07	1.4E-07		
Benzo(k)fluoranthene	1.53E+00	7.3E-02	0.13	2.2E-08	1.3E-08		
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	0.13	6.0E-07	3.6E-07		
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	0.13	1.2E-07	7.5E-08		
Chromium	1.53E+01	1.3E-02	NA	NA	NA		

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units	0-<2	2-<6		
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg	9.40E+09	9.40E+09		
ET	hours/day	1	1		
EF	days/year	52	52		
ED	years	2	4		
CF	µg/mg	1000	1000		
AT	hours	613200	613200		
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10	3		

	Inhalation of Particulate Risks					
COPC	EPC	URFi	0-<2	2-<6		
Benzo(a)anthracene	1.67E+00	1.1E-04	3.3E-14	2.0E-14		
Benzo(a)pyrene	1.53E+00	1.1E-03	3.0E-13	1.8E-13		
Benzo(b)fluoranthene	1.65E+00	1.1E-04	3.3E-14	2.0E-14		
Benzo(k)fluoranthene	1.53E+00	1.1E-04	3.0E-14	1.8E-14		
Dibenz(a,h)anthracene	4.14E-01	1.2E-03	9.0E-14	5.4E-14		
Indeno(1,2,3-cd)pyrene	8.63E-01	1.1E-04	1.7E-14	1.0E-14		
Chromium	1.53E+01	8.4E-02	2.3E-10	1.4E-10		

	Total Cancer Risks			
COPC	Soil Ingestion	Dermal Contact	Inhalation	Total
Benzo(a)anthracene	5.3E-07	3.9E-07	5.3E-14	**9.2E-07**
Benzo(a)pyrene	4.8E-06	3.5E-06	4.8E-13	**8.4E-06**
Benzo(b)fluoranthene	5.2E-07	3.8E-07	5.2E-14	**9.0E-07**
Benzo(k)fluoranthene	4.8E-08	3.5E-08	4.9E-14	**8.4E-08**
Dibenz(a,h)anthracene	1.3E-06	9.6E-07	1.4E-13	**2.3E-06**
Indeno(1,2,3-cd)pyrene	2.7E-07	2.0E-07	2.7E-14	**4.7E-07**
Chromium	3.3E-06	NA	3.7E-10	**3.3E-06**

TABLE J-18

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - TRESPASSER EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units			6-<16	
EPC	mg/kg			See Table A-3.2	
IRS	mg/day			50	
FI	unitless			1	
CF	kg/mg			1E-06	
EF	days/year			18	
ED	years			10	
BW	kg			39	
AT	days			25550	
CSFo	$(mg/kg\text{-}day)^{-1}$			See Table A-6.2	
ADAF	unitless			3	

Incidental Soil Ingestion Risks						
COPC	EPC	CSFo			6-<16	
Benzo(a)anthracene	1.67E+00	7.3E-01			3.3E-08	
Benzo(a)pyrene	1.53E+00	7.3E+00			3.0E-07	
Benzo(b)fluoranthene	1.65E+00	7.3E-01			3.3E-08	
Benzo(k)fluoranthene	1.53E+00	7.3E-02			3.0E-09	
Dibenz(a,h)anthracene	4.14E-01	7.3E+00			8.2E-08	
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01			1.7E-08	
Chromium	1.53E+01	5.0E-01			2.1E-07	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

0

Exposure Parameters (by age interval, i)					
Parameter	Units			6-<16	
EPC	mg/kg			See Table A-3.2	
SA	cm^2/day			4184	
AF	mg/cm^2			0.2	
ABS	unitless			See Appendix G	
EF	days/year			18	
ED	years			10	
CF	kg/mg			1E-06	
BW	kg			39	
AT	days			25550	
CSFd	$(mg/kg\text{-}day)^{-1}$			See Table A-6.2	
ADAF	unitless			3	

Dermal Contact Risks							
COPC	EPC	CSFd	ABS			6-<16	
Benzo(a)anthracene	1.67E+00	7.3E-01	0.13			7.2E-08	
Benzo(a)pyrene	1.53E+00	7.3E+00	0.13			6.6E-07	
Benzo(b)fluoranthene	1.65E+00	7.3E-01	0.13			7.1E-08	
Benzo(k)fluoranthene	1.53E+00	7.3E-02	0.13			6.6E-09	
Dibenz(a,h)anthracene	4.14E-01	7.3E+00	0.13			1.8E-07	
Indeno(1,2,3-cd)pyrene	8.63E-01	7.3E-01	0.13			3.7E-08	
Chromium	1.53E+01	1.3E-02	NA			NA	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units			6-<16	
EPC	mg/kg			See Table A-3.2	
PEF	m^3/kg			9.40E+09	
ET	hours/day			2	
EF	days/year			18	
ED	years			10	
CF	µg/mg			1000	
AT	hours			613200	
URF	$(\mu g/m^3)^{-1}$			See Table A-6.3	
ADAF	unitless			3	

Inhalation of Particulate Risks						
COPC	EPC	URFi			6-<16	
Benzo(a)anthracene	1.67E+00	1.1E-04			3.4E-14	
Benzo(a)pyrene	1.53E+00	1.1E-03			3.1E-13	
Benzo(b)fluoranthene	1.65E+00	1.1E-04			3.4E-14	
Benzo(k)fluoranthene	1.53E+00	1.1E-04			3.2E-14	
Dibenz(a,h)anthracene	4.14E-01	1.2E-03			9.3E-14	
Indeno(1,2,3-cd)pyrene	8.63E-01	1.1E-04			1.8E-14	
Chromium	1.53E+01	8.4E-02			2.4E-10	

	Total Cancer Risks			
COPC	Soil Ingestion	Dermal Contact	Inhalation	Total
Benzo(a)anthracene	3.3E-08	7.2E-08	3.4E-14	**1.0E-07**
Benzo(a)pyrene	3.0E-07	6.6E-07	3.1E-13	**9.6E-07**
Benzo(b)fluoranthene	3.3E-08	7.1E-08	3.4E-14	**1.0E-07**
Benzo(k)fluoranthene	3.0E-09	6.6E-09	3.2E-14	**9.6E-09**
Dibenz(a,h)anthracene	8.2E-08	1.8E-07	9.3E-14	**2.6E-07**
Indeno(1,2,3-cd)pyrene	1.7E-08	3.7E-08	1.8E-14	**5.4E-08**
Chromium	2.1E-07	NA	2.4E-10	**2.1E-07**

TABLE J-19

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.1			
IRS	mg/day	100		50	
FI	unitless	1		1	
CF	kg/mg	1E-06		1E-06	
EF	days/year	350		350	
ED	years	2		7	
BW	kg	15		70	
AT	days	25550		25550	
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day	2800		5700	
AF	mg/cm^2	0.2		0.07	
ABS	unitless	See Appendix G			
EF	days/year	350		350	
ED	years	2		7	
CF	kg/mg	1E-06		1E-06	
BW	kg	15		70	
AT	days	25550		25550	
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg	9.40E+09		9.40E+09	
ET	hours/day	24		24	
EF	days/year	350		350	
ED	years	2		7	
CF	µg/mg	1000		1000	
AT	hours	613200		613200	
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10		3	

	Incidental Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.92E+00	7.3E-01	2.6E-06		2.9E-07	
Benzo(a)pyrene	1.82E+00	7.3E+00	2.4E-05		2.7E-06	
Benzo(b)fluoranthene	1.86E+00	7.3E-01	2.5E-06		2.8E-07	
Benzo(k)fluoranthene	1.55E+00	7.3E-02	2.1E-07		2.3E-08	
Dibenz(a,h)anthracene	4.37E-01	7.3E+00	5.8E-06		6.6E-07	
Indeno(1,2,3-cd)pyrene	1.72E+00	7.3E-01	2.3E-06		2.6E-07	
Chromium	2.25E+01	5.0E-01	2.1E-05		2.3E-06	

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.92E+00	7.3E-01	0.13	1.9E-06		3.0E-07	
Benzo(a)pyrene	1.82E+00	7.3E+00	0.13	1.8E-05		2.8E-06	
Benzo(b)fluoranthene	1.86E+00	7.3E-01	0.13	1.8E-06		2.9E-07	
Benzo(k)fluoranthene	1.55E+00	7.3E-02	0.13	1.5E-07		2.4E-08	
Dibenz(a,h)anthracene	4.37E-01	7.3E+00	0.13	4.2E-06		6.8E-07	
Indeno(1,2,3-cd)pyrene	1.72E+00	7.3E-01	0.13	1.7E-06		2.7E-07	
Chromium	2.25E+01	1.3E-02	NA	NA		NA	

	Inhalation of Particulate Risks					
COPC	**EPC**	**URFi**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.92E+00	1.1E-04	6.2E-12		6.5E-12	
Benzo(a)pyrene	1.82E+00	1.1E-03	5.8E-11		6.1E-11	
Benzo(b)fluoranthene	1.86E+00	1.1E-04	6.0E-12		6.2E-12	
Benzo(k)fluoranthene	1.55E+00	1.1E-04	5.0E-12		5.2E-12	
Dibenz(a,h)anthracene	4.37E-01	1.2E-03	1.5E-11		1.6E-11	
Indeno(1,2,3-cd)pyrene	1.72E+00	1.1E-04	5.5E-12		5.8E-12	
Chromium	2.25E+01	8.4E-02	5.5E-08		5.8E-08	

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	2.8E-06	2.2E-06	1.3E-11	**5.0E-06**
Benzo(a)pyrene	2.7E-05	2.0E-05	1.2E-10	**4.7E-05**
Benzo(b)fluoranthene	2.8E-06	2.1E-06	1.2E-11	**4.8E-06**
Benzo(k)fluoranthene	2.3E-07	1.7E-07	1.0E-11	**4.0E-07**
Dibenz(a,h)anthracene	6.5E-06	4.9E-06	3.1E-11	**1.1E-05**
Indeno(1,2,3-cd)pyrene	2.6E-06	1.9E-06	1.1E-11	**4.5E-06**
Chromium	2.3E-05	NA	1.1E-07	**2.3E-05**

TABLE J-20

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units	0-<2		6-<13	
EPC	mg/kg	See Table A-3.2			
IRS	mg/day	100		50	
FI	unitless	1		1	
CF	kg/mg	1E-06		1E-06	
EF	days/year	350		350	
ED	years	2		7	
BW	kg	15		70	
AT	days	25550		25550	
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units	0-<2		6-<13	
EPC	mg/kg	See Table A-3.2			
SA	cm^2/day	2800		5700	
AF	mg/cm^2	0.2		0.07	
ABS	unitless	See Appendix G			
EF	days/year	350		350	
ED	years	2		7	
CF	kg/mg	1E-06		1E-06	
BW	kg	15		70	
AT	days	25550		25550	
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	Units	0-<2		6-<13	
EPC	mg/kg	See Table A-3.2			
PEF	m^3/kg	9.40E+09		9.40E+09	
ET	hours/day	24		24	
EF	days/year	350		350	
ED	years	2		7	
CF	µg/mg	1000		1000	
AT	hours	613200		613200	
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10		3	

	Incidental Soil Ingestion Risks					
COPC	EPC	CSFo	0-<2		6-<13	
Benzo(a)anthracene	9.15E-01	7.3E-01	1.2E-06		1.4E-07	
Benzo(a)pyrene	8.89E-01	7.3E+00	1.2E-05		1.3E-06	
Benzo(b)fluoranthene	1.20E+00	7.3E-01	1.6E-06		1.8E-07	
Benzo(k)fluoranthene	7.70E-01	7.3E-02	1.0E-07		1.2E-08	
Dibenz(a,h)anthracene	3.05E-01	7.3E+00	4.1E-06		4.6E-07	
Indeno(1,2,3-cd)pyrene	9.29E-01	7.3E-01	1.2E-06		1.4E-07	
Chromium	1.81E+01	5.0E-01	1.7E-05		1.9E-06	

	Dermal Contact Risks						
COPC	EPC	CSFd	ABS	0-<2		6-<13	
Benzo(a)anthracene	9.15E-01	7.3E-01	0.13	8.9E-07		1.4E-07	
Benzo(a)pyrene	8.89E-01	7.3E+00	0.13	8.6E-06		1.4E-06	
Benzo(b)fluoranthene	1.20E+00	7.3E-01	0.13	1.2E-06		1.9E-07	
Benzo(k)fluoranthene	7.70E-01	7.3E-02	0.13	7.5E-08		1.2E-08	
Dibenz(a,h)anthracene	3.05E-01	7.3E+00	0.13	3.0E-06		4.7E-07	
Indeno(1,2,3-cd)pyrene	9.29E-01	7.3E-01	0.13	9.0E-07		1.4E-07	
Chromium	1.81E+01	1.3E-02	NA	NA		NA	

	Inhalation of Particulate Risks					
COPC	EPC	URFi	0-<2		6-<13	
Benzo(a)anthracene	9.15E-01	1.1E-04	2.9E-12		3.1E-12	
Benzo(a)pyrene	8.89E-01	1.1E-03	2.9E-11		3.0E-11	
Benzo(b)fluoranthene	1.20E+00	1.1E-04	3.8E-12		4.0E-12	
Benzo(k)fluoranthene	7.70E-01	1.1E-04	2.5E-12		2.6E-12	
Dibenz(a,h)anthracene	3.05E-01	1.2E-03	1.1E-11		1.1E-11	
Indeno(1,2,3-cd)pyrene	9.29E-01	1.1E-04	3.0E-12		3.1E-12	
Chromium	1.81E+01	8.4E-02	4.4E-08		4.7E-08	

	Total Cancer Risks			
COPC	Soil Ingestion	Dermal Contact	Inhalation	Total
Benzo(a)anthracene	1.4E-06	1.0E-06	6.0E-12	**2.4E-06**
Benzo(a)pyrene	1.3E-05	1.0E-05	5.8E-11	**2.3E-05**
Benzo(b)fluoranthene	1.8E-06	1.4E-06	7.9E-12	**3.1E-06**
Benzo(k)fluoranthene	1.1E-07	8.7E-08	5.1E-12	**2.0E-07**
Dibenz(a,h)anthracene	4.5E-06	3.4E-06	2.2E-11	**8.0E-06**
Indeno(1,2,3-cd)pyrene	1.4E-06	1.0E-06	6.1E-12	**2.4E-06**
Chromium	1.8E-05	NA	9.1E-08	**1.9E-05**

TABLE J-21

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - TRESPASSER EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)			
Parameter	**Units**		**6-<16**
EPC	mg/kg		See Table A-3.2
IRS	mg/day		50
FI	unitless		1
CF	kg/mg		1E-06
EF	days/year		18
ED	years		10
BW	kg		39
AT	days		25550
CSFo	$(mg/kg\text{-}day)^{-1}$		See Table A-6.2
ADAF	unitless		3

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)			
Parameter	**Units**		**6-<16**
EPC	mg/kg		See Table A-3.2
SA	cm^2/day		4184
AF	mg/cm^2		0.2
ABS	unitless		See Appendix G
EF	days/year		18
ED	years		10
CF	kg/mg		1E-06
BW	kg		39
AT	days		25550
CSFd	$(mg/kg\text{-}day)^{-1}$		See Table A-6.2
ADAF	unitless		3

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)			
Parameter	**Units**		**6-<16**
EPC	mg/kg		See Table A-3.2
PEF	m^3/kg		9.40E+09
ET	hours/day		2
EF	days/year		18
ED	years		10
CF	µg/mg		1000
AT	hours		613200
URF	$(\mu g/m^3)^{-1}$		See Table A-6.3
ADAF	unitless		3

	Incidental Soil Ingestion Risks					
COPC	**EPC**	**CSFo**			**6-<16**	
Benzo(a)anthracene	1.92E+00	7.3E-01			3.8E-08	
Benzo(a)pyrene	1.82E+00	7.3E+00			3.6E-07	
Benzo(b)fluoranthene	1.86E+00	7.3E-01			3.7E-08	
Benzo(k)fluoranthene	1.55E+00	7.3E-02			3.1E-09	
Dibenz(a,h)anthracene	4.37E-01	7.3E+00			8.6E-08	
Indeno(1,2,3-cd)pyrene	1.72E+00	7.3E-01			3.4E-08	
Chromium	2.25E+01	5.0E-01			3.1E-07	

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**			**6-<16**	
Benzo(a)anthracene	1.92E+00	7.3E-01	0.13			8.3E-08	
Benzo(a)pyrene	1.82E+00	7.3E+00	0.13			7.8E-07	
Benzo(b)fluoranthene	1.86E+00	7.3E-01	0.13			8.0E-08	
Benzo(k)fluoranthene	1.55E+00	7.3E-02	0.13			6.6E-09	
Dibenz(a,h)anthracene	4.37E-01	7.3E+00	0.13			1.9E-07	
Indeno(1,2,3-cd)pyrene	1.72E+00	7.3E-01	0.13			7.4E-08	
Chromium	2.25E+01	1.3E-02	NA			NA	

	Inhalation of Particulate Risks					
COPC	**EPC**	**URFi**			**6-<16**	
Benzo(a)anthracene	1.67E+00	1.1E-04			3.4E-14	
Benzo(a)pyrene	1.82E+00	1.1E-03			3.7E-13	
Benzo(b)fluoranthene	1.86E+00	1.1E-04			3.8E-14	
Benzo(k)fluoranthene	1.55E+00	1.1E-04			3.2E-14	
Dibenz(a,h)anthracene	4.37E-01	1.2E-03			9.8E-14	
Indeno(1,2,3-cd)pyrene	1.72E+00	1.1E-04			3.6E-14	
Chromium	2.25E+01	8.4E-02			3.5E-10	

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	3.8E-08	8.3E-08	3.4E-14	**1.2E-07**
Benzo(a)pyrene	3.6E-07	7.8E-07	3.7E-13	**1.1E-06**
Benzo(b)fluoranthene	3.7E-08	8.0E-08	3.8E-14	**1.2E-07**
Benzo(k)fluoranthene	3.1E-09	6.6E-09	3.2E-14	**9.7E-09**
Dibenz(a,h)anthracene	8.6E-08	1.9E-07	9.8E-14	**2.7E-07**
Indeno(1,2,3-cd)pyrene	3.4E-08	7.4E-08	3.6E-14	**1.1E-07**
Chromium	3.1E-07	NA	3.5E-10	**3.1E-07**

TABLE J-22

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_{i} \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.1			
IRS	mg/day	100		50	
FI	unitless	1		1	
CF	kg/mg	1E-06		1E-06	
EF	days/year	350		350	
ED	years	2		7	
BW	kg	15		70	
AT	days	25550		25550	
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Incidental Soil Ingestion Risks						
COPC	**EPC**	**CSFo**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.75E+01	7.3E-01	2.3E-05		2.6E-06	
Benzo(a)pyrene	1.29E+01	7.3E+00	1.7E-04		1.9E-05	
Benzo(b)fluoranthene	1.16E+01	7.3E-01	1.5E-05		1.7E-06	
Benzo(k)fluoranthene	1.27E+01	7.3E-02	1.7E-06		1.9E-07	
Chrysene	1.71E+01	7.3E-03	2.3E-07		2.6E-08	
Dibenz(a,h)anthracene	1.95E-01	7.3E+00	2.6E-06		2.9E-07	
Indeno(1,2,3-cd)pyrene	1.15E+01	7.3E-01	1.5E-05		1.7E-06	
Chromium	1.23E+01	5.0E-01	1.1E-05		1.3E-06	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_{i} \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.1			
SA	cm^2/day	2800		5700	
AF	mg/cm^2	0.2		0.07	
ABS	unitless	See Appendix G			
EF	days/year	350		350	
ED	years	2		7	
CF	kg/mg	1E-06		1E-06	
BW	kg	15		70	
AT	days	25550		25550	
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Dermal Contact Risks							
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.75E+01	7.3E-01	0.13	1.7E-05		2.7E-06	
Benzo(a)pyrene	1.29E+01	7.3E+00	0.13	1.2E-04		2.0E-05	
Benzo(b)fluoranthene	1.16E+01	7.3E-01	0.13	1.1E-05		1.8E-06	
Benzo(k)fluoranthene	1.27E+01	7.3E-02	0.13	1.2E-06		2.0E-07	
Chrysene	1.71E+01	7.3E-03	0.13	1.7E-07		2.7E-08	
Dibenz(a,h)anthracene	1.95E-01	7.3E+00	0.13	1.9E-06		3.0E-07	
Indeno(1,2,3-cd)pyrene	1.15E+01	7.3E-01	0.13	1.1E-05		1.8E-06	
Chromium	1.23E+01	1.3E-02	NA	NA		NA	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_{i} \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.1			
PEF	m^3/kg	9.40E+09		9.40E+09	
ET	hours/day	24		24	
EF	days/year	350		350	
ED	years	2		7	
CF	µg/mg	1000		1000	
AT	hours	613200		613200	
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10		3	

Inhalation of Particulate Risks						
COPC	**EPC**	**URFi**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.75E+01	1.1E-04	5.6E-11		5.9E-11	
Benzo(a)pyrene	1.29E+01	1.1E-03	4.1E-10		4.3E-10	
Benzo(b)fluoranthene	1.16E+01	1.1E-04	3.7E-11		3.9E-11	
Benzo(k)fluoranthene	1.27E+01	1.1E-04	4.1E-11		4.3E-11	
Chrysene	1.71E+01	1.1E-05	5.5E-12		5.8E-12	
Dibenz(a,h)anthracene	1.95E-01	1.2E-03	6.8E-12		7.2E-12	
Indeno(1,2,3-cd)pyrene	1.15E+01	1.1E-04	3.7E-11		3.9E-11	
Chromium	1.23E+01	8.4E-02	3.0E-08		3.2E-08	

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	2.6E-05	2.0E-05	1.2E-10	**4.6E-05**
Benzo(a)pyrene	1.9E-04	1.4E-04	8.4E-10	**3.4E-04**
Benzo(b)fluoranthene	1.7E-05	1.3E-05	7.6E-11	**3.0E-05**
Benzo(k)fluoranthene	1.9E-06	1.4E-06	8.4E-11	**3.3E-06**
Chrysene	2.5E-07	1.9E-07	1.1E-11	**4.5E-07**
Dibenz(a,h)anthracene	2.9E-06	2.2E-06	1.4E-11	**5.1E-06**
Indeno(1,2,3-cd)pyrene	1.7E-05	1.3E-05	7.6E-11	**3.0E-05**
Chromium	1.2E-05	NA	6.2E-08	**1.3E-05**

TABLE J-23

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RESIDENTIAL EXPOSURE TO AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.2			
IRS	mg/day	100		50	
FI	unitless	1		1	
CF	kg/mg	1E-06		1E-06	
EF	days/year	350		350	
ED	years	2		7	
BW	kg	15		70	
AT	days	25550		25550	
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Incidental Soil Ingestion Risks						
COPC	**EPC**	**CSFo**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.47E+01	7.3E-01	2.0E-05		2.2E-06	
Benzo(a)pyrene	1.09E+01	7.3E+00	1.5E-04		1.6E-05	
Benzo(b)fluoranthene	8.86E+00	7.3E-01	1.2E-05		1.3E-06	
Benzo(k)fluoranthene	1.04E+01	7.3E-02	1.4E-06		1.6E-07	
Chrysene	1.51E+01	7.3E-03	2.0E-07		2.3E-08	
Dibenz(a,h)anthracene	1.18E+00	7.3E+00	1.6E-05		1.8E-06	
Indeno(1,2,3-cd)pyrene	8.28E+00	7.3E-01	1.1E-05		1.2E-06	
Chromium	1.42E+01	5.0E-01	1.3E-05		1.5E-06	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.2			
SA	cm^2/day	2800		5700	
AF	mg/cm^2	0.2		0.07	
ABS	unitless	See Appendix G			
EF	days/year	350		350	
ED	years	2		7	
CF	kg/mg	1E-06		1E-06	
BW	kg	15		70	
AT	days	25550		25550	
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

Dermal Contact Risks							
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.47E+01	7.3E-01	0.13	1.4E-05		2.3E-06	
Benzo(a)pyrene	1.09E+01	7.3E+00	0.13	1.1E-04		1.7E-05	
Benzo(b)fluoranthene	8.86E+00	7.3E-01	0.13	8.6E-06		1.4E-06	
Benzo(k)fluoranthene	1.04E+01	7.3E-02	0.13	1.0E-06		1.6E-07	
Chrysene	1.51E+01	7.3E-03	0.13	1.5E-07		2.4E-08	
Dibenz(a,h)anthracene	1.18E+00	7.3E+00	0.13	1.1E-05		1.8E-06	
Indeno(1,2,3-cd)pyrene	8.28E+00	7.3E-01	0.13	8.0E-06		1.3E-06	
Chromium	1.42E+01	1.3E-02	NA	NA		NA	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.2			
PEF	m^3/kg	9.40E+09		9.40E+09	
ET	hours/day	24		24	
EF	days/year	350		350	
ED	years	2		7	
CF	µg/mg	1000		1000	
AT	hours	613200		613200	
URF	$(\mu g/m^3)^{-1}$	See Table A-6.2			
ADAF	unitless	10		3	

Inhalation of Particulate Risks						
COPC	**EPC**	**URFi**	**0-<2**		**6-<13**	
Benzo(a)anthracene	1.47E+01	1.1E-04	4.7E-11		5.0E-11	
Benzo(a)pyrene	1.09E+01	1.1E-03	3.5E-10		3.7E-10	
Benzo(b)fluoranthene	8.86E+00	1.1E-04	2.8E-11		3.0E-11	
Benzo(k)fluoranthene	1.04E+01	1.1E-04	3.3E-11		3.5E-11	
Chrysene	1.51E+01	1.1E-05	4.8E-12		5.1E-12	
Dibenz(a,h)anthracene	1.18E+00	1.2E-03	4.1E-11		4.3E-11	
Indeno(1,2,3-cd)pyrene	8.28E+00	1.1E-04	2.7E-11		2.8E-11	
Chromium	1.42E+01	8.4E-02	3.5E-08		3.6E-08	

Total Cancer Risks				
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	2.2E-05	1.7E-05	9.7E-11	**3.8E-05**
Benzo(a)pyrene	1.6E-04	1.2E-04	7.2E-10	**2.8E-04**
Benzo(b)fluoranthene	1.3E-05	1.0E-05	5.8E-11	**2.3E-05**
Benzo(k)fluoranthene	1.5E-06	1.2E-06	6.8E-11	**2.7E-06**
Chrysene	2.2E-07	1.7E-07	9.9E-12	**3.9E-07**
Dibenz(a,h)anthracene	1.7E-05	1.3E-05	8.4E-11	**3.1E-05**
Indeno(1,2,3-cd)pyrene	1.2E-05	9.3E-06	5.4E-11	**2.2E-05**
Chromium	1.4E-05	NA	7.1E-08	**1.4E-05**

TABLE J-24

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - TRESPASSER EXPOSURE TO SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Incidental Soil Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**			**6-<16**	
EPC	mg/kg			See Table A-3.2	
IRS	mg/day			50	
FI	unitless			1	
CF	kg/mg			1E-06	
EF	days/year			18	
ED	years			10	
BW	kg			39	
AT	days			25550	
CSFo	$(mg/kg\text{-}day)^{-1}$			See Table A-6.2	
ADAF	unitless			3	

Incidental Soil Ingestion Risks						
COPC	**EPC**	**CSFo**			**6-<16**	
Benzo(a)anthracene	1.75E+01	7.3E-01			3.5E-07	
Benzo(a)pyrene	1.29E+01	7.3E+00			2.5E-06	
Benzo(b)fluoranthene	1.16E+01	7.3E-01			2.3E-07	
Benzo(k)fluoranthene	1.27E+01	7.3E-02			2.5E-08	
Chrysene	1.71E+01	7.3E-03			3.4E-09	
Dibenz(a,h)anthracene	1.95E-01	7.3E+00			3.9E-08	
Indeno(1,2,3-cd)pyrene	1.15E+01	7.3E-01			2.3E-07	
Chromium	1.23E+01	5.0E-01			1.7E-07	

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**			**6-<16**	
EPC	mg/kg			See Table A-3.2	
SA	cm^2/day			4184	
AF	mg/cm^2			0.2	
ABS	unitless			See Appendix G	
EF	days/year			18	
ED	years			10	
CF	kg/mg			1E-06	
BW	kg			39	
AT	days			25550	
CSFd	$(mg/kg\text{-}day)^{-1}$			See Table A-6.2	
ADAF	unitless			3	

Dermal Contact Risks							
COPC	**EPC**	**CSFd**	**ABS**			**6-<16**	
Benzo(a)anthracene	1.75E+01	7.3E-01	0.13			7.5E-07	
Benzo(a)pyrene	1.29E+01	7.3E+00	0.13			5.5E-06	
Benzo(b)fluoranthene	1.16E+01	7.3E-01	0.13			5.0E-07	
Benzo(k)fluoranthene	1.27E+01	7.3E-02	0.13			5.5E-08	
Chrysene	1.71E+01	7.3E-03	0.13			7.4E-09	
Dibenz(a,h)anthracene	1.95E-01	7.3E+00	0.13			8.4E-08	
Indeno(1,2,3-cd)pyrene	1.15E+01	7.3E-01	0.13			5.0E-07	
Chromium	1.23E+01	1.3E-02	NA			NA	

Inhalation of Particulate Risk

Where:

$$Risk = EPC \times 1/PEF \times \sum_i \frac{ET \times EF \times ED \times CF}{AT} \times URF \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**			**6-<16**	
EPC	mg/kg			See Table A-3.2	
PEF	m^3/kg			9.40E+09	
ET	hours/day			2	
EF	days/year			18	
ED	years			10	
CF	µg/mg			1000	
AT	hours			613200	
URF	$(\mu g/m^3)^{-1}$			See Table A-6.3	
ADAF	unitless			3	

Inhalation of Particulate Risks						
COPC	**EPC**	**URFi**			**6-<16**	
Benzo(a)anthracene	1.75E+01	1.1E-04			3.6E-13	
Benzo(a)pyrene	1.29E+01	1.1E-03			2.6E-12	
Benzo(b)fluoranthene	1.16E+01	1.1E-04			2.4E-13	
Benzo(k)fluoranthene	1.27E+01	1.1E-04			2.6E-13	
Chrysene	1.71E+01	1.1E-05			3.5E-14	
Dibenz(a,h)anthracene	1.95E-01	1.2E-03			4.4E-14	
Indeno(1,2,3-cd)pyrene	1.15E+01	1.1E-04			2.4E-13	
Chromium	1.23E+01	8.4E-02			1.9E-10	

	Total Cancer Risks			
COPC	**Soil Ingestion**	**Dermal Contact**	**Inhalation**	**Total**
Benzo(a)anthracene	3.5E-07	7.5E-07	3.6E-13	**1.1E-06**
Benzo(a)pyrene	2.5E-06	5.5E-06	2.6E-12	**8.1E-06**
Benzo(b)fluoranthene	2.3E-07	5.0E-07	2.4E-13	**7.3E-07**
Benzo(k)fluoranthene	2.5E-08	5.5E-08	2.6E-13	**8.0E-08**
Chrysene	3.4E-09	7.4E-09	3.5E-14	**1.1E-08**
Dibenz(a,h)anthracene	3.9E-08	8.4E-08	4.4E-14	**1.2E-07**
Indeno(1,2,3-cd)pyrene	2.3E-07	5.0E-07	2.4E-13	**7.2E-07**
Chromium	1.7E-07	NA	1.9E-10	**1.7E-07**

TABLE J-25

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RECREATIONAL CHILD VISITOR EXPOSURE TO SEDIMENT
CHLOR ALKALI SUPERFUND SITE - AREA 1 SEDIMENT
BERLIN, NEW HAMPSHIRE

Incidental Ingestion Risk

Where:

$$Risk = EPC \times \sum_i \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**		
EPC	mg/kg	See Table A-3.3			
IRS	mg/day	100	100		
FI	unitless	1	1		
CF	kg/mg	1E-06	1E-06		
EF	days/year	11	11		
ED	years	2	4		
BW	kg	15	15		
AT	days	25550	25550		
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

	Incidential Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**		
Benzo(a)anthracene	2.80E+00	7.3E-01	1.2E-07	7.0E-08		
Benzo(a)pyrene	2.70E+00	7.3E+00	1.1E-06	6.8E-07		
Benzo(b)fluoranthene	4.10E+00	7.3E-01	1.7E-07	1.0E-07		
Dibenz(a,h)anthracene	7.50E-02	7.3E+00	3.1E-08	1.9E-08		
Indeno(1,2,3-cd)pyrene	1.70E+00	7.3E-01	7.1E-08	4.3E-08		
Chromium	1.90E+01	5.0E-01	5.5E-07	3.3E-07		

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_i \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**		
EPC	mg/kg	See Table A-3.3			
SA	cm^2/day	2800	2800		
AF	mg/cm^2	0.2	0.2		
ABS	unitless	See Appendix G			
EF	days/year	11	11		
ED	years	2	4		
CF	kg/mg	1E-06	1E-06		
BW	kg	15	15		
AT	days	25550	25550		
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**		
Benzo(a)anthracene	2.80E+00	7.3E-01	0.13	8.5E-08	5.1E-08		
Benzo(a)pyrene	2.70E+00	7.3E+00	0.13	8.2E-07	4.9E-07		
Benzo(b)fluoranthene	4.10E+00	7.3E-01	0.13	1.3E-07	7.5E-08		
Dibenz(a,h)anthracene	7.50E-02	7.3E+00	0.13	2.3E-08	1.4E-08		
Indeno(1,2,3-cd)pyrene	1.70E+00	7.3E-01	0.13	5.2E-08	3.1E-08		
Chromium	1.90E+01	1.3E-02	NA	NA	NA		

	Total Cancer Risks		
COPC	**Ingestion**	**Dermal Contact**	**Total**
Benzo(a)anthracene	1.9E-07	1.4E-07	**3.2E-07**
Benzo(a)pyrene	1.8E-06	1.3E-06	**3.1E-06**
Benzo(b)fluoranthene	2.7E-07	2.0E-07	**4.8E-07**
Dibenz(a,h)anthracene	5.0E-08	3.7E-08	**8.7E-08**
Indeno(1,2,3-cd)pyrene	1.1E-07	8.3E-08	**2.0E-07**
Chromium	8.7E-07	NA	**8.7E-07**

TABLE J-26

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RECREATIONAL CHILD VISITOR EXPOSURE TO SEDIMENT
CHLOR ALKALI SUPERFUND SITE - AREA 2 SEDIMENT
BERLIN, NEW HAMPSHIRE

Incidental Ingestion Risk

Where:

$$Risk = EPC \times \sum_{i} \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**		
EPC	mg/kg	See Table A-3.3			
IRS	mg/day	100	100		
FI	unitless	1	1		
CF	kg/mg	1E-06	1E-06		
EF	days/year	11	11		
ED	years	2	4		
BW	kg	15	15		
AT	days	25550	25550		
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

	Incidential Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**		
Benzo(a)anthracene	1.50E+00	7.3E-01	6.3E-08	3.8E-08		
Benzo(a)pyrene	1.46E+00	7.3E+00	6.1E-07	3.7E-07		
Benzo(b)fluoranthene	1.96E+00	7.3E-01	8.2E-08	4.9E-08		
Dibenz(a,h)anthracene	6.55E-02	7.3E+00	2.7E-08	1.6E-08		
Indeno(1,2,3-cd)pyrene	9.45E-01	7.3E-01	4.0E-08	2.4E-08		
Chromium	1.35E+01	5.0E-01	3.9E-07	2.3E-07		

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_{i} \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**		
EPC	mg/kg	See Table A-3.3			
SA	cm^2/day	2800	2800		
AF	mg/cm^2	0.2	0.2		
ABS	unitless	See Appendix G			
EF	days/year	11	11		
ED	years	2	4		
CF	kg/mg	1E-06	1E-06		
BW	kg	15	15		
AT	days	25550	25550		
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

	Dermal Contact Risks						
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**		
Benzo(a)anthracene	1.50E+00	7.3E-01	0.13	4.6E-08	2.7E-08		
Benzo(a)pyrene	1.46E+00	7.3E+00	0.13	4.5E-07	2.7E-07		
Benzo(b)fluoranthene	1.96E+00	7.3E-01	0.13	6.0E-08	3.6E-08		
Dibenz(a,h)anthracene	6.55E-02	7.3E+00	0.13	2.0E-08	1.2E-08		
Indeno(1,2,3-cd)pyrene	9.45E-01	7.3E-01	0.13	2.9E-08	1.7E-08		
Chromium	1.35E+01	1.3E-02	NA	NA	NA		

	Total Cancer Risks		
COPC	**Ingestion**	**Dermal Contact**	**Total**
Benzo(a)anthracene	1.0E-07	7.3E-08	**1.7E-07**
Benzo(a)pyrene	9.8E-07	7.1E-07	**1.7E-06**
Benzo(b)fluoranthene	1.3E-07	9.6E-08	**2.3E-07**
Dibenz(a,h)anthracene	4.4E-08	3.2E-08	**7.6E-08**
Indeno(1,2,3-cd)pyrene	6.3E-08	4.6E-08	**1.1E-07**
Chromium	6.2E-07	NA	**6.2E-07**

TABLE J-27

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - RECREATIONAL CHILD VISITOR EXPOSURE TO SEDIMENT
CHLOR ALKALI SUPERFUND SITE - AREA 3 SEDIMENT
BERLIN, NEW HAMPSHIRE

Incidental Ingestion Risk

Where:

$$Risk = EPC \times \sum_{i} \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**		
EPC	mg/kg	See Table A-3.3			
IRS	mg/day	100	100		
FI	unitless	1	1		
CF	kg/mg	1E-06	1E-06		
EF	days/year	11	11		
ED	years	2	4		
BW	kg	15	15		
AT	days	25550	25550		
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

	Incidential Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**	**2-<6**		
Benzo(a)anthracene	2.40E+00	7.3E-01	1.0E-07	6.0E-08		
Benzo(a)pyrene	2.90E+00	7.3E+00	1.2E-06	7.3E-07		
Benzo(b)fluoranthene	3.80E+00	7.3E-01	1.6E-07	9.6E-08		
Dibenz(a,h)anthracene	3.50E-01	7.3E+00	1.5E-07	8.8E-08		
Indeno(1,2,3-cd)pyrene	1.60E+00	7.3E-01	6.7E-08	4.0E-08		
Chromium	1.07E+01	5.0E-01	3.1E-07	1.8E-07		

Dermal Contact Risk

Where:

$$Risk = EPC \times \sum_{i} \frac{SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT} \times CSFd \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**	**2-<6**		
EPC	mg/kg	See Table A-3.3			
SA	cm^2/day	2800	2800		
AF	mg/cm^2	0.2	0.2		
ABS	unitless	See Appendix G			
EF	days/year	11	11		
ED	years	2	4		
CF	kg/mg	1E-06	1E-06		
BW	kg	15	15		
AT	days	25550	25550		
CSFd	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10	3		

	Dermal Contact Risks					
COPC	**EPC**	**CSFd**	**ABS**	**0-<2**	**2-<6**	
Benzo(a)anthracene	2.40E+00	7.3E-01	0.13	7.3E-08	4.4E-08	
Benzo(a)pyrene	2.90E+00	7.3E+00	0.13	8.8E-07	5.3E-07	
Benzo(b)fluoranthene	3.80E+00	7.3E-01	0.13	1.2E-07	7.0E-08	
Dibenz(a,h)anthracene	3.50E-01	7.3E+00	0.13	1.1E-07	6.4E-08	
Indeno(1,2,3-cd)pyrene	1.60E+00	7.3E-01	0.13	4.9E-08	2.9E-08	
Chromium	1.07E+01	1.3E-02	NA	NA	NA	

	Total Cancer Risks		
COPC	**Ingestion**	**Dermal Contact**	**Total**
Benzo(a)anthracene	1.6E-07	1.2E-07	**2.8E-07**
Benzo(a)pyrene	1.9E-06	1.4E-06	**3.4E-06**
Benzo(b)fluoranthene	2.5E-07	1.9E-07	**4.4E-07**
Dibenz(a,h)anthracene	2.3E-07	1.7E-07	**4.1E-07**
Indeno(1,2,3-cd)pyrene	1.1E-07	7.8E-08	**1.9E-07**
Chromium	4.9E-07	NA	**4.9E-07**

TABLE J-28

CALCULATION OF CENTRAL TENDENCY EXPOSURE CANCER RISKS - MUTAGENIC MODE OF ACTION - FISH INGESTION
CHLOR ALKALI SUPERFUND SITE - ANDROSCOGGIN RIVER FISH
BERLIN, NEW HAMPSHIRE

Fish Ingestion Risk

Where:

$$Risk = EPC \times \sum_{i} \frac{IRS \times FI \times CF \times EF \times ED}{BW \times AT} \times CSFo \times ADAF$$

Exposure Parameters (by age interval, i)					
Parameter	**Units**	**0-<2**		**6-<13**	
EPC	mg/kg	See Table A-3.4			
IRF	g/day	6.4		15	
FI	unitless	1		1	
CF	kg/g	1E-03		1E-03	
EF	days/year	350		350	
ED	years	2		7	
BW	kg	15		70	
AT	days	25550		25550	
CSFo	$(mg/kg\text{-}day)^{-1}$	See Table A-6.1			
ADAF	unitless	10		3	

	Incidential Soil Ingestion Risks					
COPC	**EPC**	**CSFo**	**0-<2**		**6-<13**	
Indeno(1,2,3-cd)pyrene	7.20E-03	7.3E-01	6.1E-07		3.2E-07	
Chromium	4.93E-01	5.0E-01	2.9E-05		1.5E-05	

	Total Cancer Risks	
COPC	**Fish Ingestion**	**Total**
Indeno(1,2,3-cd)pyrene	9.4E-07	**9.4E-07**
Chromium	4.4E-05	**4.4E-05**

APPENDIX K

APPENDIX K

EVALUATIONS OF LEAD EXPOSURES

APPENDIX K-1
IEUBK MODEL OUTPUTS - CHP AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

LEAD MODEL FOR WINDOWS Version 1.1

==========

Model Version: 1.1 Build11
Date: 11 December 2012
Site Name: Chlor Alkali Superfund Site
Operable Unit: CHP Aggregate Soil (Average Lead = 163 mg/kg)
Run Mode: Research

==========

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500

2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

******** Soil & Dust ********

Multiple Source Analysis Used
Average multiple source concentration: 124.100 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	163.000	124.100
1-2	163.000	124.100
2-3	163.000	124.100
3-4	163.000	124.100
4-5	163.000	124.100
5-6	163.000	124.100
6-7	163.000	124.100

******** Alternate Intake ********

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

******** Maternal Contribution: Infant Model ********

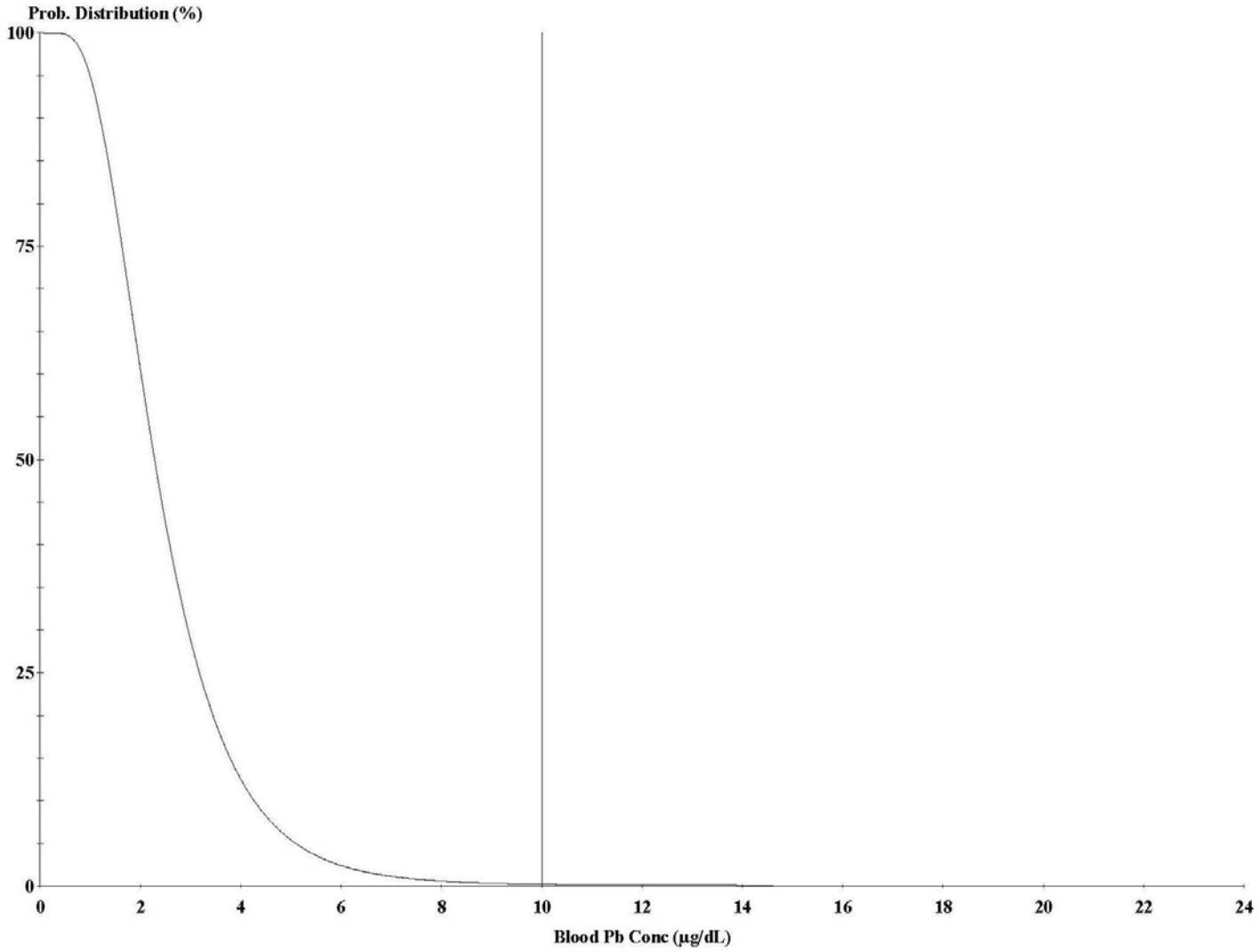
Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.069	0.000	0.378
1-2	0.034	0.920	0.000	0.939
2-3	0.062	1.008	0.000	0.984
3-4	0.067	0.973	0.000	1.011
4-5	0.067	0.943	0.000	1.064
5-6	0.093	0.996	0.000	1.128

6-7	0.093	1.082	0.000	1.150

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	3.417	4.885	2.7
1-2	5.382	7.275	3.0
2-3	5.427	7.481	2.8
3-4	5.470	7.521	2.6
4-5	4.109	6.182	2.2
5-6	3.717	5.934	1.9
6-7	3.520	5.845	1.7



Cutoff = 10.000 µg/dl
Geo Mean = 2.391
GSD = 1.600
% Above = 0.117

Age Range = 0 to 84 months

Run Mode = Research

APPENDIX K-2
IEUBK MODEL OUTPUTS - SFSA SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

LEAD MODEL FOR WINDOWS Version 1.1
==========
Model Version: 1.1 Build11
Date: 02/27/2013
Site Name: Chlor Alkali Superfund Site
Operable Unit: SFSA surface soil (average conc=1068 mg/kg)
Run Mode: Site Risk Assessment
==========

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

******** Soil & Dust ********

Multiple Source Analysis Used

Average multiple source concentration: 757.600 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1068.000	757.600
1-2	1068.000	757.600
2-3	1068.000	757.600
3-4	1068.000	757.600
4-5	1068.000	757.600
5-6	1068.000	757.600
6-7	1068.000	757.600

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

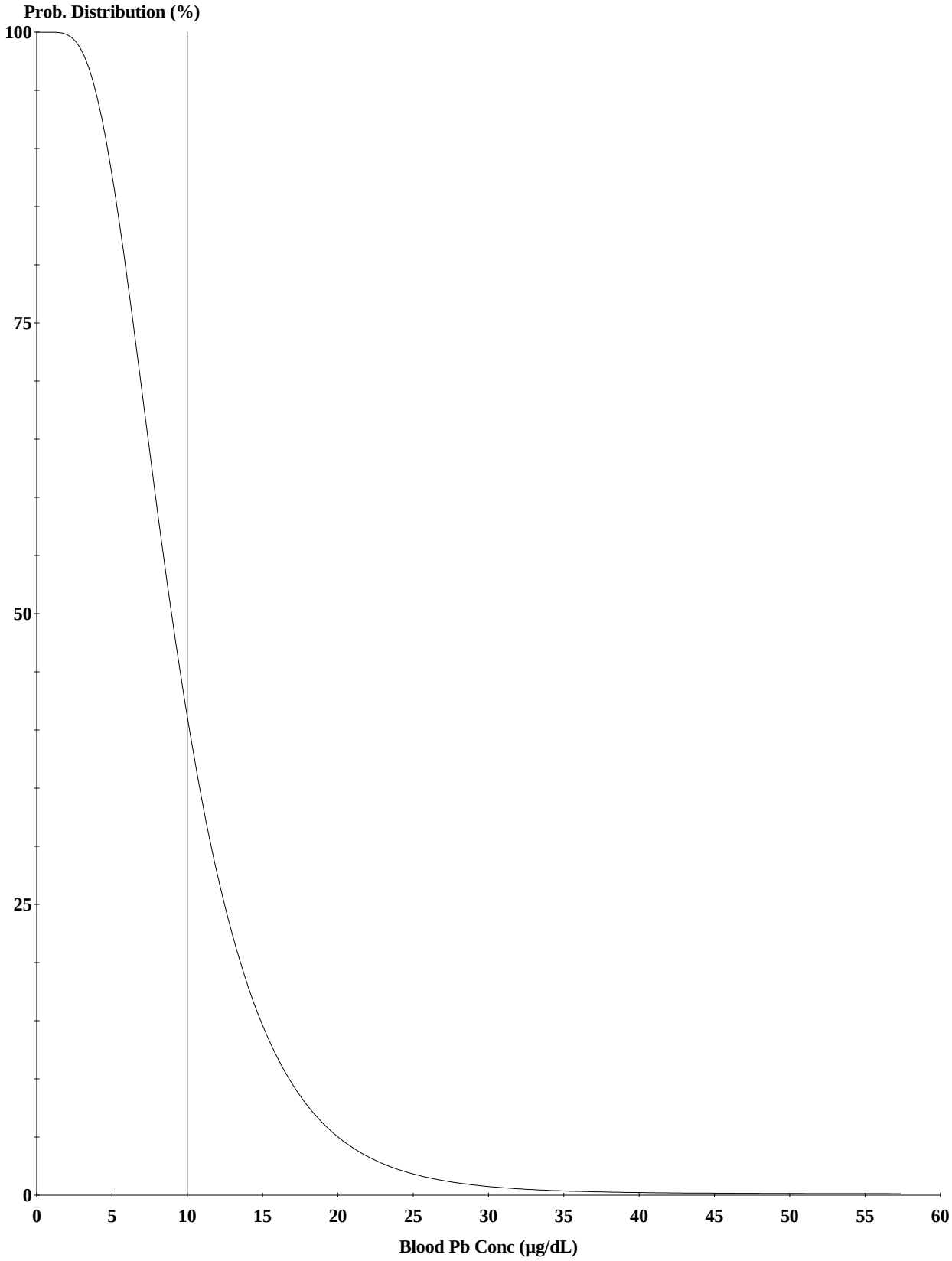
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	0.900	0.000	0.318
1-2	0.034	0.751	0.000	0.766
2-3	0.062	0.843	0.000	0.823
3-4	0.067	0.831	0.000	0.864
4-5	0.067	0.847	0.000	0.956
5-6	0.093	0.913	0.000	1.033
6-7	0.093	1.002	0.000	1.065

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	18.218	19.458	10.2
1-2	27.838	29.389	11.9
2-3	28.761	30.489	11.2
3-4	29.611	31.372	10.8
4-5	23.385	25.254	8.9
5-6	21.572	23.611	7.5
6-7	20.649	22.809	6.6



Cutoff = 10.000 µg/dl
Geo Mean = 9.386
GSD = 1.600
% Above = 44.637

Age Range = 0 to 84 months

Run Mode = Site Risk Assessment

APPENDIX K-3
IEUBK MODEL OUTPUTS - SFSA AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

LEAD MODEL FOR WINDOWS Version 1.1
==========
Model Version: 1.1 Build11
Date: 02/27/2013
Site Name: Chlor Alkali Superfund Site
Operable Unit: SFSA aggregate soil (average conc=655 mg/kg)
Run Mode: Site Risk Assessment
==========

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor. Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 468.500 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	655.000	468.500
1-2	655.000	468.500
2-3	655.000	468.500
3-4	655.000	468.500
4-5	655.000	468.500
5-6	655.000	468.500
6-7	655.000	468.500

****** Alternate Intake ******

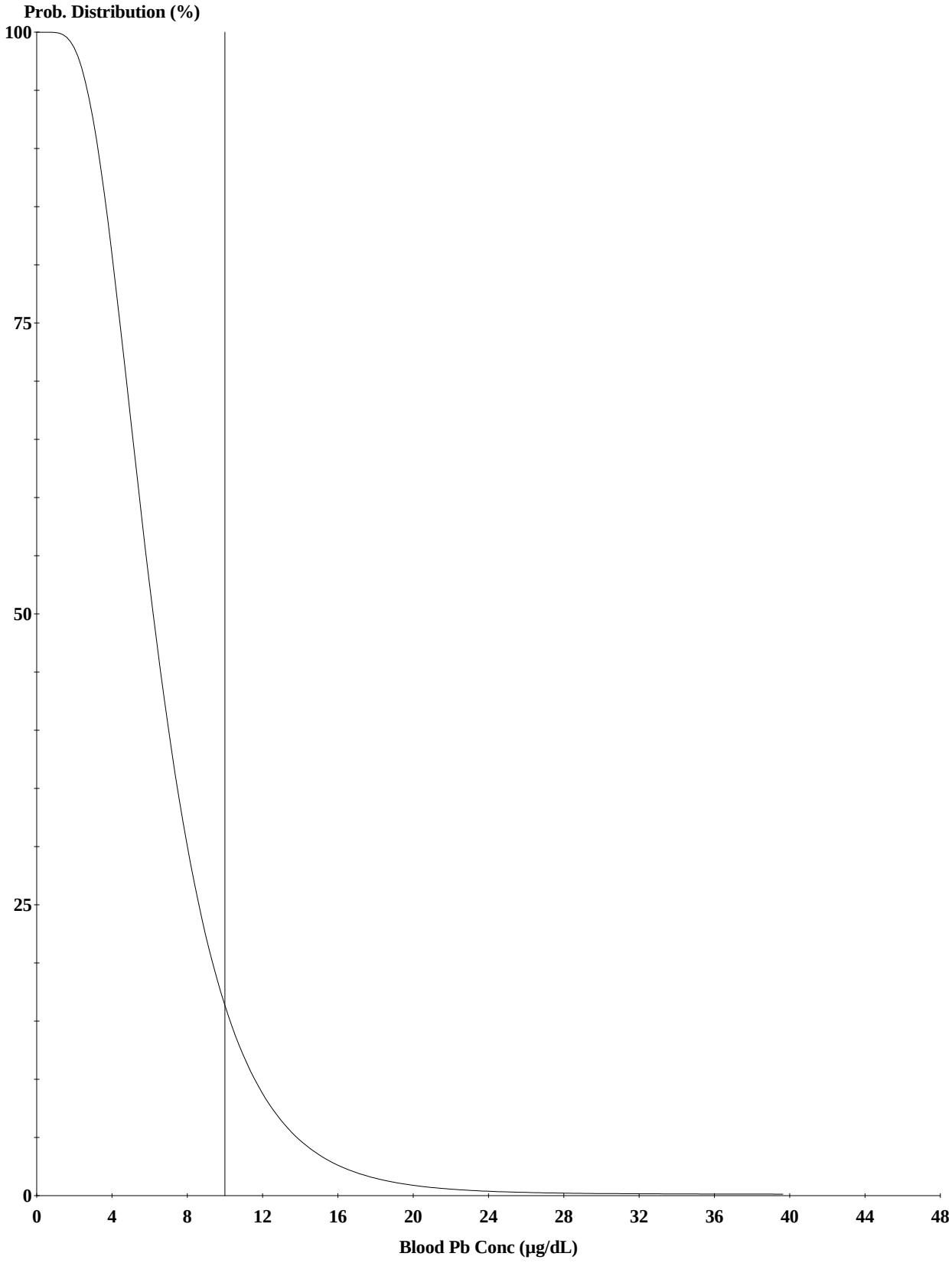
Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******
Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	0.968	0.000	0.343
1-2	0.034	0.817	0.000	0.834
2-3	0.062	0.909	0.000	0.887
3-4	0.067	0.889	0.000	0.924
4-5	0.067	0.888	0.000	1.001
5-6	0.093	0.949	0.000	1.074
6-7	0.093	1.036	0.000	1.102

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	12.064	13.395	7.1
1-2	18.649	20.334	8.3
2-3	19.091	20.949	7.7
3-4	19.494	21.373	7.4
4-5	15.086	17.042	6.1
5-6	13.803	15.919	5.1
6-7	13.153	15.385	4.5



Cutoff = 10.000 µg/dl
Geo Mean = 6.485
GSD = 1.600
% Above = 17.836

Age Range = 0 to 84 months

Run Mode = Site Risk Assessment

APPENDIX K-4
IEUBK MODEL OUTPUTS - EFSA SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

LEAD MODEL FOR WINDOWS Version 1.1
==========
Model Version: 1.1 Build11
Date: 02/27/2013
Site Name: Chlor Alkali Superfund Site
Operable Unit: EFSA surface soil (average conc=137 mg/kg)
Run Mode: Site Risk Assessment
==========

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

******** Diet ********

Age	Diet Intake (µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

******** Soil & Dust ********

Multiple Source Analysis Used

Average multiple source concentration: 105.900 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	137.000	105.900
1-2	137.000	105.900
2-3	137.000	105.900
3-4	137.000	105.900
4-5	137.000	105.900
5-6	137.000	105.900
6-7	137.000	105.900

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

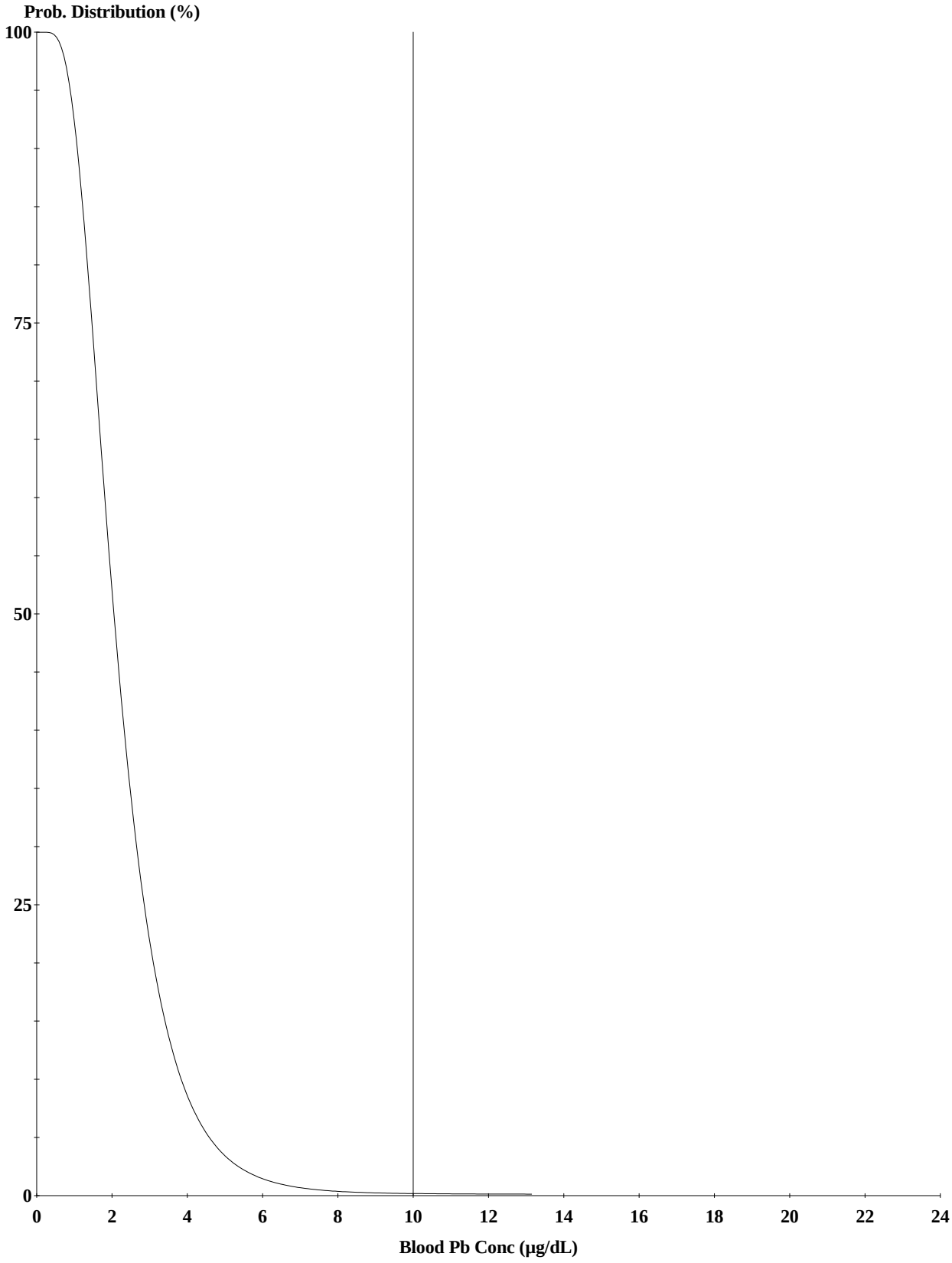
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.075	0.000	0.381
1-2	0.034	0.926	0.000	0.945
2-3	0.062	1.014	0.000	0.990
3-4	0.067	0.978	0.000	1.016
4-5	0.067	0.946	0.000	1.067
5-6	0.093	0.999	0.000	1.131
6-7	0.093	1.085	0.000	1.153

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	2.909	4.386	2.4
1-2	4.589	6.494	2.7
2-3	4.623	6.688	2.5
3-4	4.655	6.716	2.4
4-5	3.490	5.571	2.0
5-6	3.155	5.379	1.7
6-7	2.987	5.318	1.5



Cutoff = 10.000 µg/dl
Geo Mean = 2.150
GSD = 1.600
% Above = 0.054

Age Range = 0 to 84 months

Run Mode = Site Risk Assessment

APPENDIX K-5
IEUBK MODEL OUTPUTS - EFSA AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

LEAD MODEL FOR WINDOWS Version 1.1

==========

Model Version: 1.1 Build11
Date: 02/27/2013
Site Name: Chlor Alkali Superfund Site
Operable Unit: EFSA aggregate soil (conc=116 mg/kg) Run Mode: Site Risk Assessment

==========

******** Air ********

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

******** Diet ********

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

******** Drinking Water ********

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 91.200 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	116.000	91.200
1-2	116.000	91.200
2-3	116.000	91.200
3-4	116.000	91.200
4-5	116.000	91.200
5-6	116.000	91.200
6-7	116.000	91.200

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

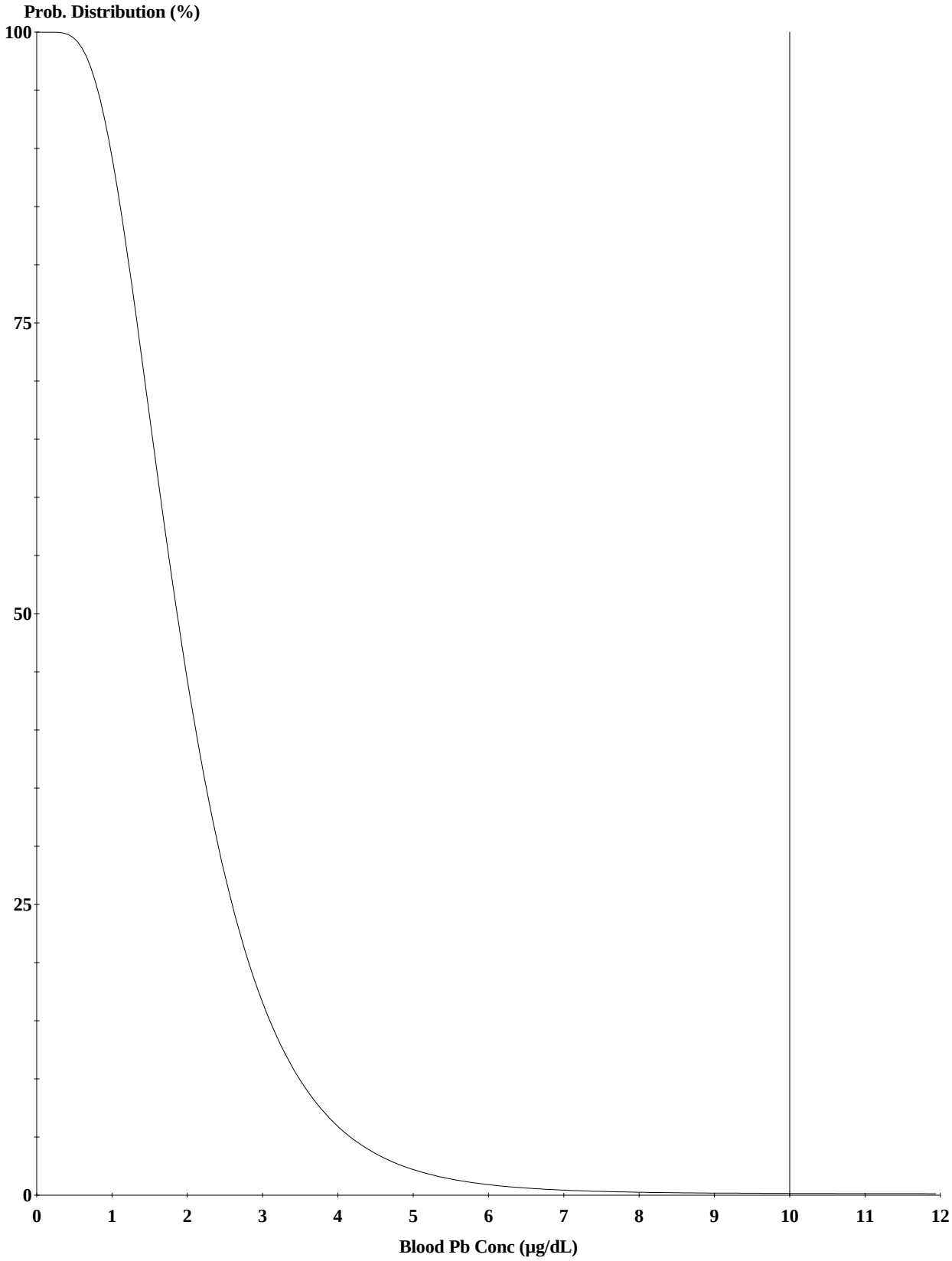
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.080	0.000	0.382
1-2	0.034	0.931	0.000	0.950
2-3	0.062	1.019	0.000	0.995
3-4	0.067	0.982	0.000	1.021
4-5	0.067	0.949	0.000	1.070
5-6	0.093	1.001	0.000	1.133
6-7	0.093	1.087	0.000	1.155

Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	2.496	3.979	2.2
1-2	3.940	5.856	2.4
2-3	3.966	6.041	2.3
3-4	3.991	6.060	2.1
4-5	2.988	5.074	1.8
5-6	2.700	4.928	1.6
6-7	2.555	4.890	1.4



Cutoff = 10.000 µg/dl
Geo Mean = 1.954
GSD = 1.600
% Above = 0.026

Age Range = 0 to 84 months

Run Mode = Site Risk Assessment

TABLE K-6

ADULT LEAD MODEL OUTPUTS - SFSA SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	ug/g or ppm	1068	1068
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	2.1
PbB_0	Baseline PbB	ug/dL	1.0	1.5
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
IR_{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--
W_S	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--
K_{SD}	Mass fraction of soil in dust	--	--	--
$AF_{S, D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S, D}$	Exposure frequency (same for soil and dust)	days/yr	219	219
$AT_{S, D}$	Averaging time (same for soil and dust)	days/yr	365	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**ug/dL**	**2.5**	**3.0**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	ug/dL	6.0	9.3
PbB_t	Target PbB level of concern (e.g., 10 ug/dL)	ug/dL	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**0.60%**	**4.0%**

Pb= Lead

PbB= Blood Lead

NHANES= National Health and Nutrition Examination Survey

United States Environmental Protection Agency (EPA). 2002d. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Examination Survey (NHANES III). OSWER #9285.7-52. March. Available from:

http://epa.gov/superfund/lead/products/nhanes.pdf

TABLE K-7

ADULT LEAD MODEL OUTPUTS - SFSA AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	ug/g or ppm	655	655
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	2.1
PbB_0	Baseline PbB	ug/dL	1.0	1.5
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
IR_{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--
W_S	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--
K_{SD}	Mass fraction of soil in dust	--	--	--
$AF_{S, D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S, D}$	Exposure frequency (same for soil and dust)	days/yr	219	219
$AT_{S, D}$	Averaging time (same for soil and dust)	days/yr	365	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**ug/dL**	**1.9**	**2.4**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	ug/dL	4.6	7.5
PbB_t	Target PbB level of concern (e.g., 10 ug/dL)	ug/dL	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**0.15%**	**2.1%**

Pb= Lead

PbB= Blood Lead

NHANES= National Health and Nutrition Examination Survey

United States Environmental Protection Agency (EPA). 2002d. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Examination Survey (NHANES III). OSWER #9285.7-52. March. Available from:

http://epa.gov/superfund/lead/products/nhanes.pdf

TABLE K-8

ADULT LEAD MODEL OUTPUTS - EFSA SURFACE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	ug/g or ppm	137	137
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	2.1
PbB_0	Baseline PbB	ug/dL	1.0	1.5
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
IR_{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--
W_S	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--
K_{SD}	Mass fraction of soil in dust	--	--	--
$AF_{S, D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S, D}$	Exposure frequency (same for soil and dust)	days/yr	219	219
$AT_{S, D}$	Averaging time (same for soil and dust)	days/yr	365	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**ug/dL**	**1.2**	**1.7**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	ug/dL	2.8	5.2
PbB_t	Target PbB level of concern (e.g., 10 ug/dL)	ug/dL	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**0.0075%**	**0.57%**

Pb= Lead

PbB= Blood Lead

NHANES= National Health and Nutrition Examination Survey

United States Environmental Protection Agency (EPA). 2002d. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Examination Survey (NHANES III). OSWER #9285.7-52. March. Available from:

http://epa.gov/superfund/lead/products/nhanes.pdf

TABLE K-9

ADULT LEAD MODEL OUTPUTS - EFSA AGGREGATE SOIL
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	ug/g or ppm	116	116
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	2.1
PbB_0	Baseline PbB	ug/dL	1.0	1.5
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
IR_{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--
W_S	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--
K_{SD}	Mass fraction of soil in dust	--	--	--
$AF_{S, D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S, D}$	Exposure frequency (same for soil and dust)	days/yr	219	219
$AT_{S, D}$	Averaging time (same for soil and dust)	days/yr	365	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**ug/dL**	**1.2**	**1.7**
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	ug/dL	2.8	5.1
PbB_t	Target PbB level of concern (e.g., 10 ug/dL)	ug/dL	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	**%**	**0.0063%**	**0.53%**

Pb= Lead

PbB= Blood Lead

NHANES= National Health and Nutrition Examination Survey

United States Environmental Protection Agency (EPA). 2002d. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Examination Survey (NHANES III). OSWER #9285.7-52. March. Available from:

http://epa.gov/superfund/lead/products/nhanes.pdf

APPENDIX L

APPENDIX L

POLYCHLORINATED NAPHTHALENE (PCN) EVALUATION

TABLE L-1
PCN EVALUATION
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Average Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Exposure Point Concentration				2,3,7,8-TCDD RSL	Relative risk to Future Residents based on ratio of PCN TEQ to 2,3,7,8-TCDD RSL
									Value	Units	Statistic	Rationale		
CHP Surface Soil	1321648	Pentachloronaphthalene, total	0.23		0.93	mg/kg	MW-25O1-0805-1415	3/9						
		Total PCN TEQ	0.000023	0.000041	0.000093	mg/kg	MW-25O1-0805-1415	3/9	0.00003	mg/kg	Median	At least 8 samples but less than 4 detected samples	0.0000045	6.7E-06
CHP Aggregate Soil	32241080	Heptachloronaphthalene, total	0.048		0.21	mg/kg	MW-25O1-0810-1140	3/29						
	1335871	Hexachloronaphthalene, total	0.11		0.11	mg/kg	SB-02O1-0807-0900	1/29						
	1321648	Pentachloronaphthalene, total	0.20		0.93	mg/kg	MW-25O1-0805-1415	8/29						
		Total PCN TEQ	0.000023	0.0011	0.0030	mg/kg	SB-04O1-0813-1155	8/29	0.00071055	mg/kg	95% KM (t) UCL	ProUCL Recommendation	0.0000045	1.6E-04

Notes/sources:

Relative Experimental Potencies (REP):

pentachloronaphtlenes - 0.0001

heptachloronaphtlenes - 0.003

hexachloronaphtlenes - 0.003

APPENDIX M

APPENDIX M

CENTRAL TENDENCY (CTE) RISK CALCULATIONS

APPENDIX M

This appendix presents the central tendency exposure (CTE) human health risk calculations conducted for the Chlor-alkali Superfund Site study area and the Androscoggin River. The appendix presents estimated CTE potential current and future human health risks from the presence of contamination in the soil, sediment, and edible fish tissue in support of the RI.

For the human health risk assessment (HHRA) and this addendum, the following potential soil exposure areas were used: the 4.6-acre Cell House Property (CHP), the 17.6-acre Southern Facility Study Area (SFSA), the 19.8-acre Eastern Facility Study Area (EFSA), and the River Study Area (RSA), comprising the Androscoggin River between Pontook Reservoir in Dummer, New Hampshire and the Shelburne Dam in Shelburne, New Hampshire. Sediment data obtained from the various river reaches were divided into the following subsets:

- Stretch 1 includes Reaches 3 through 5, fast flowing sections of the river immediately adjacent to and downstream of the CHP;
- Stretch 2 includes Reaches 6 through 8, fast flowing sections of the river further downstream; and
- Stretch 3 includes Reach 9, a relatively calm and broader section of the river furthest downstream from the CHP.

Fish tissue data obtained from the various river reaches were not divided into subsets.

For the CHP, the following receptors were evaluated quantitatively:

- future (adolescent) trespassers through soil contact during outdoor activities;
- future residents through soil contact during play or yard work; and
- future recreational visitors through soil contact during outdoor activities.

For the SFSA and EFSA, the following receptors were evaluated quantitatively:

- current and future (adolescent) trespassers through soil contact during outdoor activities;
- future residents through soil contact during play or yard work;
- future industrial/commercial workers through soil contact during work; and

- future construction/utility workers through soil contact during excavation activities.

For the RSA, the following receptors were evaluated quantitatively:

- current and future recreational visitors through sediment contact during river recreational activities such as wading, swimming, or fishing; and
- current and future recreational visitors through ingestion of fish tissue.

The appendix quantitatively evaluated CTE non-cancer health hazards and cancer risks. Exposure Point Concentrations (EPCs), cancer and non-cancer toxicity values, dermal absorption factors, and the methods of estimating cancer risks and hazard indices were unchanged from those used and described in the HHRA. Only the exposure assumptions were changed to reflect average exposures, rather than high end reasonable maximum exposures (RME). Tables M-4.1 CTE through M-4.13 CTE provide the CTE exposure assumptions. Details of the risk estimates are presented, as follows:

- Tables M-7.1 CTE through M-7.4 CTE, present CTE non-cancer and cancer risk estimates for each receptor and risk area.

- Tables M-9.1 CTE through M-9.4 CTE present summaries of CTE cancer risks and health hazard indices from all applicable media and pathways for each exposure scenario.

Tables J-15 through J-28 present the CTE risk calculations for the COPCs with a mutagenic mode of action for carcinogenesis. Note that these tables are included in Appendix J. These risks are then included in the Appendix M, Tables M-7.1 CTE through M-7.4 CTE.

Table M-10 presents a summary of the major CTE risk assessment findings for the Site. The following discussion focuses only on hazard indices (HIs) greater than 1.0 with individual contaminant hazard quotients (HQs) or organ-specific HIs exceeding 1.0 and cancer risks exceeding EPA targeted cancer risk range (10^{-4} to 10^{-6}). Primary contributors to cancer risks (exceeding 1×10^{-6}) and HIs (exceeding HQ of 1.0) are also listed.

Cell House Property

The cancer risk estimates for future residents and child recreational visitors exposed to CHP soils exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). The major contributors to cancer risk at the CHP are 2,3,7,8-tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD) toxicity equivalents (dioxin TEQs), benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, arsenic, chromium, PCBs, and several pesticides. The cancer risk estimates for adult recreational visitors and trespassers exposed to CHP soils are within the EPA targeted cancer risk range (10^{-4} to 10^{-6}).

Estimated HIs indicated potential adverse non-cancer effects for future residents, recreational visitors, and trespassers exposed to CHP soils. Dioxin TEQs, mercury, arsenic, PCBs, pesticides, and cobalt are the major contributors to hazard indices greater than 1. Target organ-specific HIs exceed 1 for the developmental system, kidney, skin, eyes, nervous system, immune system, liver, and thyroid.

Southern Facility Study Area

The cancer risk estimates for future residents exposed to SFSA surface soils exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). The major contributors to cancer risk at the SFSA are benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic, chromium, dioxin TEQs, and PCBs. The cancer risk estimates for future residents exposed to SFSA aggregate soils, industrial/commercial workers, construction workers, or trespassers exposed to SFSA soils are within or below the EPA targeted cancer risk range (10^{-4} to 10^{-6}).

Estimated HIs indicated potential adverse non-cancer effects for future residents and industrial/commercial workers exposed to SFSA soils. Mercury, vanadium, antimony, arsenic, PCBs, and dioxin TEQs are the major contributors to hazard indices greater than 1. Target organ-specific HIs exceed 1 for nervous system, kidney, blood, skin, eyes, immune system, and developmental system.

Eastern Facility Study Area

The cancer risk estimates for future residents exposed to EFSA soils exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). The major contributors to cancer risk at the EFSA are dioxin TEQs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic, and chromium. The cancer risk estimates for commercial/industrial workers, trespassers, and construction workers exposed to EFSA soils are within the EPA targeted cancer risk range (10^{-4} to 10^{-6}).

Estimated HIs indicated potential adverse non-cancer effects for future residents and industrial/commercial workers exposed to EFSA soils. Dioxin TEQs, mercury, and vanadium are the major contributors to hazard indices greater than 1. Target organ-specific HIs exceed 1 for developmental system, kidney, and nervous system.

River Study Area

Sediment

River recreational visitor contact with sediment was evaluated separately for three stretches of the river.

The CTE cancer risk estimates for each stretch are within or below the EPA targeted cancer risk range (10^{-4} to 10^{-6}). CTE hazard indices for each stretch are below 1.0. These results indicate that adverse non-carcinogenic health effects are unlikely for recreational visitors exposed to sediment.

Fish Tissue

The evaluation of risks from consumption of fish was based on maximum fish tissue concentrations from fish collected in Reaches 3 through 9 (adjacent to and downstream of the Cell House Property.

The cancer risk estimates for recreational anglers exceed the EPA targeted cancer risk range (10^{-4} to 10^{-6}). The major contributors to risk are PCBs, dioxin TEQ, arsenic, chromium, and 4,4'-DDT.

Estimated HIs indicated potential adverse non-cancer effects for recreational anglers from exposures to PCBs, mercury, and dioxin TEQ. Target organ-specific HIs exceed 1 for developmental system, kidney, eyes, and immune system.

TABLE M-4.1 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - ADULT RESIDENT CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil/Aggregate Soil
Exposure Point: Cell House - EA A, FSA - EAs B & C
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	50	EPA, 1997	CS x IR-S x FI x EF x ED x CF1/(BW x AT-N)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	7	EPA, 1997	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-N	Averaging Time (Non-Cancer)	days	2555	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	5700	(a)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT-N)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.07	(b)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	7	EPA, 1997	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-N	Averaging Time (Non-Cancer)	days	2555	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT-N
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	24	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	350	EPA, 2002b	or
	ED	Exposure Duration	years	7	EPA, 1997	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-N	Averaging Time (Non-Cancer)	days	2555	ED x 365 days/year	

(a) Surface area for adults represented by hands, head, forearms, and lower legs. EPA, 2004.

(b) Adult Soil to Skin Adherence Factor consistent with 50th percentile gardener. EPA, 2004.

TABLE M-4.2 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CHILD RESIDENT CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil/Aggregate Soil
Exposure Point: Cell House - EA A, FSA - EAs B & C
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	100	EPA, 1997	CS x IR-S x FI x EF x ED x CF1/(BW x AT-N)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	2	EPA, 1997	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	15	EPA, 2008	
	AT-N	Averaging Time (Non-Cancer)	days	730	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	2800	(a)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT-N)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.2	(b)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	2	EPA, 1997	
	BW	Body Weight	kg	15	EPA, 2008	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-N	Averaging Time (Non-Cancer)	days	730	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT-N
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	24	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	350	EPA, 2002b	or
	ED	Exposure Duration	years	2	EPA, 1997	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-N	Averaging Time (Non-Cancer)	days	730	ED x 365 days/year	

(a) Surface area represented by hands, head, feet, forearms, and lower legs of child (age 1-6). EPA, 2004.

(b) Child Soil to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE M-4.3 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - LIFETIME RESIDENT CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil/Aggregate Soil
Exposure Point: Cell House - EA A, FSA - EAs B & C
Receptor Population: Resident
Receptor Age: Adult/Child

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Intake (mg/kg-day) =
	IFSadj	Age-Adjusted Soil Ingestion Factor	mg-y/kg-day	18	Calculated	
	IRSa	Soil Ingestion Rate - adult	mg/day	50	EPA, 1997	$CS \times IFS_{adj} \times CF \times FI \times EF \times 1/AT\text{-}C$
	IRSc	Soil Ingestion Rate - child	mg/day	100	EPA, 1997	
	FI	Fraction Ingested	--	1	Professional judgment	Where
	EF	Exposure Frequency	days/year	350	EPA, 2002b	$IFS_{adj} = (IRS_c \times ED_c \times 1/BW_c) + (IRS_a \times ED_a \times 1/BW_a)$
	EDa	Exposure Duration - adult	years	7	EPA, 1997	
	EDc	Exposure Duration - child	years	2	EPA, 1997	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BWa	Body Weight - adult	kg	70	EPA, 2002b	
	BWc	Body Weight - child	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SFSadj	Age-Adjusted Soil Contact Factor	mg-y/kg-event	115	Calculated	
	SAa	Surface Area - adult	cm^2	5700	(a)	$CS \times SFSadj \times DABS \times EV \times EF \times CF1 \times 1/AT\text{-}C$
	SAc	Surface Area - child	cm^2	2800	(b)	
	SSAFa	Soil-to-Skin Adherence Factor - adult	mg/cm^2-event	0.07	(c)	Where
	SSAFc	Soil-to-Skin Adherence Factor - child	mg/cm^2-event	0.2	(d)	$SFS_{adj} = (SA_c \times SSAFc \times ED_c \times 1/BW_c) + (SAa \times SSAFa \times ED_a \times 1/BW_a)$
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	EDa	Exposure Duration - adult	years	7	EPA, 1997	
	EDc	Exposure Duration - child	years	2	EPA, 1997	
	BWa	Body Weight - adult	kg	70	EPA, 2002b	
	BWc	Body Weight - child	kg	15	EPA, 2008	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Tables A-3.1 and A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT-C
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	24	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	350	EPA, 2002b	or
	ED	Exposure Duration - adult & child	years	9	EPA, 1997	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	

(a) Surface area for adults represented by hands, head, forearms, and lower legs. EPA, 2004.
(b) Surface area represented by hands, head, feet, forearms, and lower legs of child (age 1-6). EPA, 2004.
(c) Adult Soil to Skin Adherence Factor consistent with 50th percentile gardener. EPA, 2004.
(d) Child Soil to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE M-4.4 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - ADULT RECREATIONAL VISITOR CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Cell House - EA A
Receptor Population: Recreational Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	50	EPA, 1997	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	52	(a)	
	ED	Exposure Duration	years	7	EPA, 1997	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2555	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	5700	(b)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.07	(c)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	(a)	
	EF	Exposure Frequency	days/year	52	(a)	
	ED	Exposure Duration	years	7	EPA, 1997	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2555	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	1	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	52	(a)	or
	ED	Exposure Duration	years	7	EPA, 1997	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2555	ED x 365 days/year	

(a) Professional judgment. EF assumes CTE 2 day/week, 6 months/year.

(b) Surface area for adults represented by hands, head, forearms, and lower legs. EPA, 2004.

(c) Adult Soil to Skin Adherence Factor consistent with 50th percentile gardener. EPA, 2004.

TABLE M-4.5 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CHILD RECREATIONAL VISITOR CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Cell House - EA A
Receptor Population: Recreational Visitor
Receptor Age: Child (0-6 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	100	EPA, 1997	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	52	(a)	
	ED	Exposure Duration	years	2	EPA, 1997	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	730	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	2,800	(b)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.20	(c)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	52	(a)	
	ED	Exposure Duration	years	2	EPA, 1997	
	BW	Body Weight	kg	15	EPA, 2008	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	730	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	1	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	52	(a)	or
	ED	Exposure Duration	years	2	EPA, 1997	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	730	ED x 365 days/year	

(a) Professional judgment. EF assumes CTE 2 day/week, 6 months/year.

(b) Surface area represented by hands, head, feet, forearms, and lower legs of child (age 1-6). EPA, 2004.

(c) Child Soil to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE M-4.6 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - COMMERCIAL/INDUSTRIAL WORKER CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface/Aggregate Soil
Exposure Point: FSA - EAs B & C
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1 and A-3.2	Intake (mg/kg-day) =
	IR-S	Ingestion Rate of Soil	mg/day	50	EPA, 1997	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	219	EPA, 2004	
	ED	Exposure Duration	years	9	EPA, 1997	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3285	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1 and A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	3300	(a)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.07	(b)	
	DABS	(Solid)	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	219	EPA, 2004	
	ED	Exposure Duration	years	9	EPA, 1997	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3285	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1 and A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-specific	Calculated	where:
	ET	Exposure Time	hours/day	8	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	219	EPA, 2004	or
	ED	Exposure Duration	years	9	EPA, 1997	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3285	ED x 365 days/year	

(a) Surface area for adult workers represented by hands, head, and forearms. EPA, 2004.

(b) Adult Soil to Skin Adherence Factor consistent with 50th percentile gardener. EPA, 2004.

TABLE M-4.7 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - TRESPASSER CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current/Future or Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: Cell House - EA A, FSA - EAs B, C
Receptor Population: Trespasser
Receptor Age: Adolescent (6-16 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Intake (mg/kg-day) =
	IR-S	Soil Ingestion Rate	mg/day	50	EPA, 2002b	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	18	(a)	
	ED	Exposure Duration	years	10	Professional judgment	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	39	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3650	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	4184	(b)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.2	(c)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	18	(a)	
	ED	Exposure Duration	years	10	Professional judgment	
	BW	Body Weight	kg	39	EPA, 2008	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3650	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.1	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	9.4E+09	Based on Climate Zone VIII; Portland	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-Specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-Specific	Calculated	where:
	ET	Exposure Time	hours/day	2	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	18	(a)	or
	ED	Exposure Duration	years	10	Professional judgment	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3650	ED x 365 days/year	

(a) Professional judgment. EF assumes CTE 2 day/month, 9 months/year..

(b) Surface area represented by hands, head, forearms, and lower legs. EPA, 2004.

(c) Soil to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE M-4.8 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CONSTRUCTION WORKER CONTACT WITH SOIL
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Aggregate Soil
Exposure Point: FSA - EAs B & C
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.2	Intake (mg/kg-day) =
	IR-S	Ingestion Rate of Soil	mg/day	100	EPA, 1997	CS x IR-S x FI x EF x ED x CF1/(BW x AT)
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	26	(a)	
	ED	Exposure Duration	years	1	Professional judgment	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	ED x 365 days/year	
Dermal	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.2	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	3300	(b)	CS x SA x SSAF x DABS x EV x EF x ED x CF1/(BW x AT)
	SSAF	Soil-to-Skin Adherence Factor	mg/cm^2-event	0.2	(c)	
	DABS	Dermal Absorption Factor	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	26	(a)	
	ED	Exposure Duration	years	1	Professional judgment	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor 1	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	ED x 365 days/year	
Inhalation	CS	Concentration in Soil	mg/kg	COPC-Specific	Table A-3.2	Average Daily Concentration ($\mu g/m^3$) =
	PEF	Particulate Emission Factor from Soil	m^3/kg	1.4E+06	Table H-1	(CA x ET x EF x ED x CF2)/AT
	VF	Volatilization Factor	m^3/kg	COPC-specific	EPA, 2002b	
	CA	Concentration in Air	$\mu g/m^3$	COPC-specific	Calculated	where:
	ET	Exposure Time	hours/day	8	Professional judgment	CA ($\mu g/m^3$) = (CS/PEF) x CF3
	EF	Exposure Frequency	days/year	26	(a)	or
	ED	Exposure Duration	years	1	Professional judgment	CA ($\mu g/m^3$) = (CS/VF) x CF3
	CF2	Conversion Factor 2	days/hour	0.042	--	
	CF3	Conversion Factor 3	µg/mg	1000	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	ED x 365 days/year	

(a) Professional judgment. EF assumes CTE 1 day/week, 6 months/year.

(b) Surface area for adult workers represented by hands, head, and forearms. EPA, 2004.

(c) Adult Soil to Skin Adherence Factor consistent with 50th percentile utility worker. EPA, 2004.

TABLE M-4.9 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - ADULT RIVER RECREATIONAL VISITOR CONTACT WITH SEDIMENT
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Androscoggin River Stretches 1, 2, 3*
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_{Sed}	Concentration in Sediment	mg/kg	COPC-Specific	Table A-3.3	Intake (mg/kg-day) =
	IR-SD	Sediment Ingestion Rate	mg/day	50	EPA, 1997	C_{Sed} x IR-Sd x FI x EF x ED x CF/(BW x AT)
	FI	Fraction Ingested From Contaminated Source	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	11	(a)	
	ED	Exposure Duration	years	7	Professional judgment	
	CF1	Conversion Factor	kg/mg	1E-06	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2555	ED x 365 days/year	
Dermal	C_{Sed}	Concentration in Sediment	mg/kg	COPC-Specific	Table A-3.3	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	6900	(b)	C_{Sed} x SA x SSAF x DABS x EV x EF x ED x CF/(BW x AT)
	SSAF	Sediment-to-Skin Adherence Factor	mg/cm^2-event	0.3	(c)	
	DABS	Dermal Absorption Factor (Solid)	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	11	(a)	
	ED	Exposure Duration	years	7	Professional judgment	
	BW	Body Weight	kg	70	EPA, 2002b	
	CF1	Conversion Factor	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2555	ED x 365 days/year	

*Androscoggin River Stretches: #1=AR reaches 3-5; #2=AR reaches 6-8; and #3=AR reach 9. AR reach 2=background

(a) Professional judgment. EF assumes CTE 1 day/week, 11 weeks/year.

(b) Surface area represented by hands, head, feet, forearms, and lower legs of adult. EPA, 2004.

(c) Sediment to Skin Adherence Factor consistent with 50th percentile reed gatherer. EPA, 2004.

TABLE M-4.10 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CHILD RIVER RECREATIONAL VISITOR CONTACT WITH SEDIMENT
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Androscoggin River Stretches 1, 2, 3*
Receptor Population: River Recreational Visitor
Receptor Age: Child (0-6 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_{Sed}	Concentration in Sediment	mg/kg	COPC-Specific	Table A-3.3	Intake (mg/kg-day) =
	IR-SD	Sediment Ingestion Rate	mg/day	100	EPA, 1997	C_{Sed} x IR-Sd x FI x EF x ED x CF/(BW x AT)
	FI	Fraction Ingested From Contaminated Source	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	11	(a)	
	ED	Exposure Duration	years	2	Professional judgment	
	CF1	Conversion Factor	kg/mg	1E-06	--	
	BW	Body Weight	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	730	ED x 365 days/year	
Dermal	C_{Sed}	Concentration in Sediment	mg/kg	COPC-Specific	Table A-3.3	Dermal Absorbed Dose (mg/kg-day) =
	SA	Surface Area	cm^2	2,800	(b)	C_{Sed} x SA x SSAF x DABS x EV x EF x ED x CF/(BW x AT)
	SSAF	Sediment-to-Skin Adherence Factor	mg/cm^2-event	0.2	(c)	
	DABS	Dermal Absorption Factor (Solid)	--	COPC-Specific	Table G-1	
	EV	Event Frequency	events/day	1	Professional judgment	
	EF	Exposure Frequency	days/year	11	(a)	
	ED	Exposure Duration	years	2	Professional judgment	
	BW	Body Weight	kg	15	EPA, 2008	
	CF1	Conversion Factor	kg/mg	1E-06	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	730	ED x 365 days/year	

*Androscoggin River Reaches: #1=AR 3-5; #2=AR 6-8; and #3=AR 9. AR2=background
(a) Professional judgment. EF assumes CTE 1 day/week, 11 weeks/year.
(b) Surface area represented by hands, head, feet, forearms, and lower legs of child (age 1-6). EPA, 2004.
(c) Child Sediment to Skin Adherence Factor consistent with 50th percentile older child playing in wet soil. EPA, 2004.

TABLE M-4.11 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - ADULT RECREATIONAL ANGLER CONTACT WITH FISH
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Fish
Exposure Medium: Fish
Exposure Point: Androscoggin River Reaches 3-9
Receptor Population: Recreational Angler
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_f	Concentration in Fish	mg/kg	COPC-Specific	Table A-3.4	Intake (mg/kg-day) =
	IR-Fa	Fish Ingestion Rate	g/day	15	All Waters - Ebert, 1993	C_f x IR-F x FI x EF x ED x CF/(BW x AT)
	FI	Fraction of Ingested Fish from Androscoggin River	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	7	EPA, 1997	
	CF	Conversion Factor	kg/g	1.00E-03	--	
	BW	Body Weight	kg	70	EPA, 2002b	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2555	ED x 365 days/year	

CTE fish ingestion rates represent arithmetic mean rates; adults assume no sharing, child assume sharing among all household members.

TABLE M-4.12 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - CHILD RECREATIONAL ANGLER CONTACT WITH FISH
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Fish
Exposure Medium: Fish
Exposure Point: Androscoggin River Reaches 3-9
Receptor Population: Recreational Angler
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_f	Concentration in Fish	mg/kg	COPC-Specific	Table A-3.4	Intake (mg/kg-day) =
	IR-Fc	Fish Ingestion Rate	g/day	6.4	All Waters - Ebert, 1993	C_f x IR-F x FI x EF x ED x CF/(BW x AT)
	FI	Fraction of Ingested Fish from Androscoggin River	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	ED	Exposure Duration	years	2	EPA, 1997	
	CF	Conversion Factor	kg/g	1.00E-03	--	
	BW	Body Weight	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	730	ED x 365 days/year	

CTE fish ingestion rates represent arithmetic mean rates; adults assume no sharing, child assume sharing among all household members.

TABLE M-4.13 CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS - LIFETIME RECREATIONAL CONTACT WITH FISH
CHLOR-ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Medium: Fish
Exposure Medium: Fish
Exposure Point: Androscoggin River Reaches 3-9
Receptor Population: Recreational Angler
Receptor Age: Adult/Child

Exposure Route	Parameter Code	Parameter Definition	Units	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	C_f	Concentration in Fish	mg/kg	COPC-Specific	Table A-3.4	Intake (mg/kg-day) =
	IFF_{adj}	Age-Adjusted Fish Ingestion Factor	g-y/kg-day	2.4	All Waters - Calculated	$C_f \times IFF_{adj} \times CF \times FI \times EF \times 1/AT\text{-}C$
	IR-Fa	Fish Ingestion Rate - adult	g/day	15	All Waters - Ebert, 1993	Where
	IR-Fc	Fish Ingestion Rate - child	g/day	6.4	All Waters - Ebert, 1993	$IFF_{adj} = (IR\text{-}F_c \times ED_c \times 1/BW_c) + (IR\text{-}F_a \times ED_a \times 1/BW_a)$
	FI	Fraction Ingested	--	1	Professional judgment	
	EF	Exposure Frequency	days/year	350	EPA, 2002b	
	EDa	Exposure Duration - adult	years	7	EPA, 1997	
	EDc	Exposure Duration - child	years	2	EPA, 1997	
	CF	Conversion Factor	kg/g	1.00E-03	--	
	BWa	Body Weight - adult	kg	70	EPA, 2002b	
	BWc	Body Weight - child	kg	15	EPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25550	EPA, 1989	

TABLE M-7.1A-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	1.0E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	1.0E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	8.3E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	2.8E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	5.9E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	2.8E-07	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	2.1E-07	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	3.2E-07	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	1.2E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	3.4E-08	mg/kg-day	7.0E-10	mg/kg-day	48
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	7.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.036
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	1.3E-11	mg/kg-day	7.0E-10	mg/kg-day	0.019
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	2.0E-06	mg/kg-day	4.0E-04	mg/kg-day	0.0050
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	4.1E-04	mg/kg-day	3.0E-04	mg/kg-day	1.4
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	1.0E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0035
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	8.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.027
				Iron	2.15E+04	mg/kg	---	---	---	---	---	1.5E-02	mg/kg-day	7.0E-01	mg/kg-day	0.021
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	1.5E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0021
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	9.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.33
			Ingestion Total								---					50
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	8.6E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	2.9E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	6.1E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	8.1E-09	mg/kg-day	7.0E-10	mg/kg-day	12
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	8.1E-07	mg/kg-day	2.0E-05	mg/kg-day	0.040
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	1.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.021
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	9.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.33
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA

TABLE M-7.1A-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								---					12
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	1.2E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	4.3E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	8.9E-11	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	4.2E-11	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	4.8E-11	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	1.7E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	5.0E-12	mg/m^3	4.0E-08	mg/m^3	0.00013
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	1.1E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	2.0E-15	mg/m^3	4.0E-08	mg/m^3	0.000000049
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	3.0E-10	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	6.2E-08	mg/m^3	1.5E-05	mg/m^3	0.0041
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	1.0E-04	mg/m^3	0.000016
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	6.0E-06	mg/m^3	0.00021
				Iron	2.15E+04	mg/kg	---	---	---	---	---	2.2E-06	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	2.3E-08	mg/m^3	5.0E-05	mg/m^3	0.00045
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	4.4E-03	mg/m^3	3.0E-04	mg/m^3	15
			Inhalation Total								---					15
	Surface Soil Total										---					76
Soil Total											---					76
											Total of Receptor Risks Across All Media ---					Total of Receptor Hazards Across All Media 76

TABLE M-7.1A-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	9.8E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	9.8E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	7.7E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	2.6E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	5.5E-06	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	2.6E-06	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	1.9E-06	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	3.0E-06	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	3.1E-07	mg/kg-day	7.0E-10	mg/kg-day	448
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	6.8E-06	mg/kg-day	2.0E-05	mg/kg-day	0.34
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	1.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.17
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	1.9E-05	mg/kg-day	4.0E-04	mg/kg-day	0.047
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	3.9E-03	mg/kg-day	3.0E-04	mg/kg-day	13
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	9.8E-05	mg/kg-day	3.0E-03	mg/kg-day	0.033
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	7.7E-05	mg/kg-day	3.0E-04	mg/kg-day	0.26
				Iron	2.15E+04	mg/kg	---	---	---	---	---	1.4E-01	mg/kg-day	7.0E-01	mg/kg-day	0.20
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	1.4E-03	mg/kg-day	7.0E-02	mg/kg-day	0.020
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	9.3E-04	mg/kg-day	3.0E-04	mg/kg-day	3.1
			Ingestion Total								---					465
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	7.8E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	7.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	7.7E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	7.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	5.6E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	1.9E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	4.0E-06	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	5.3E-08	mg/kg-day	7.0E-10	mg/kg-day	75
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	5.3E-06	mg/kg-day	2.0E-05	mg/kg-day	0.26
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	9.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.14
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	6.5E-04	mg/kg-day	3.0E-04	mg/kg-day	2.2
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA

TABLE M-7.1A-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								---					78
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	---	---	---	---	---	1.2E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	---	---	---	---	---	4.3E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	---	---	---	---	---	8.9E-11	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	---	---	---	---	---	4.2E-11	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	---	---	---	---	---	4.8E-11	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	---	---	---	---	---	1.7E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	---	---	---	---	---	5.0E-12	mg/m^3	4.0E-08	mg/m^3	0.00013
				Total PCB Homologs	1.06E+00	mg/kg	---	---	---	---	---	1.1E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	---	---	---	---	---	2.0E-15	mg/m^3	4.0E-08	mg/m^3	0.000000049
				Antimony	2.95E+00	mg/kg	---	---	---	---	---	3.0E-10	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	---	---	---	---	---	6.2E-08	mg/m^3	1.5E-05	mg/m^3	0.0041
				Chromium	1.53E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	1.0E-04	mg/m^3	0.000016
				Cobalt	1.20E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	6.0E-06	mg/m^3	0.00021
				Iron	2.15E+04	mg/kg	---	---	---	---	---	2.2E-06	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	---	---	---	---	---	2.3E-08	mg/m^3	5.0E-05	mg/m^3	0.00045
				Mercury	1.45E+02	mg/kg	---	---	---	---	---	4.4E-03	mg/m^3	3.0E-04	mg/m^3	15
			Inhalation Total								---					15
	Surface Soil Total										---					558
Soil Total											---					558
											Total of Receptor Risks Across All Media					---	Total of Receptor Hazards Across All Media				558

TABLE M-7.1A-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				2.5E-06	---	---	---	---	---
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				2.3E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				2.4E-06	---	---	---	---	---
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				2.3E-07	---	---	---	---	---
				Carbazole	1.21E-01	mg/kg	3.0E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				7.8E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.3E-06	---	---	---	---	---
				Dichloronaphthalene, Total	4.10E-01	mg/kg	1.0E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	7.5E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	1.2E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.70E-01	mg/kg	4.3E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	1.2E-08	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.6E-03	---	---	---	---	---
				Total PCB Homologs	1.06E+00	mg/kg	2.7E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	5.3E-07	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	4.8E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.2E-07	---	---	---	---	---
				Antimony	2.95E+00	mg/kg	7.4E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	6.03E+02	mg/kg	1.5E-04	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.3E-04	---	---	---	---	---
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.6E-05	---	---	---	---	---
				Cobalt	1.20E+01	mg/kg	3.0E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	2.15E+04	mg/kg	5.4E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	2.19E+02	mg/kg	5.5E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	1.45E+02	mg/kg	3.6E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								1.9E-03					---
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.9E-06	---	---	---	---	---
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.7E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.9E-06	---	---	---	---	---
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.7E-07	---	---	---	---	---
				Carbazole	1.21E-01	mg/kg	2.5E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				5.9E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				9.7E-07	---	---	---	---	---
				Dichloronaphthalene, Total	4.10E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.70E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	2.3E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.0E-04	---	---	---	---	---
				Total PCB Homologs	1.06E+00	mg/kg	2.3E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	4.6E-07	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	4.2E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.4E-07	---	---	---	---	---
				Antimony	2.95E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	6.03E+02	mg/kg	2.8E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.3E-05	---	---	---	---	---
				Chromium	1.53E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	1.20E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---

TABLE M-7.1A-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	2.19E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	1.45E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								3.7E-04					---
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.1E-11	---	---	---	---	---
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.0E-10	---	---	---	---	---
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.1E-11	---	---	---	---	---
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				1.0E-11	---	---	---	---	---
				Carbazole	1.21E-01	mg/kg	1.6E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				3.8E-11	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				5.7E-12	---	---	---	---	---
				Dichloronaphthalene, Total	4.10E-01	mg/kg	5.4E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	4.0E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	6.2E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.70E-01	mg/kg	2.2E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	6.5E-13	mg/m^3	3.8E+01	(µg/m3)^-1	2.5E-08	---	---	---	---	---
				Total PCB Homologs	1.06E+00	mg/kg	1.4E-11	mg/m^3	5.7E-04	(µg/m3)^-1	8.0E-12	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	2.5E-16	mg/m^3	3.8E+01	(µg/m3)^-1	9.6E-12	---	---	---	---	---
				Antimony	2.95E+00	mg/kg	3.9E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	6.03E+02	mg/kg	8.0E-09	mg/m^3	4.3E-03	(µg/m3)^-1	3.4E-08	---	---	---	---	---
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-15				7.7E-08	---	---	---	---	---
				Cobalt	1.20E+01	mg/kg	1.6E-10	mg/m^3	9.0E-03	(µg/m3)^-1	1.4E-09	---	---	---	---	---
				Iron	2.15E+04	mg/kg	2.8E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	2.19E+02	mg/kg	2.9E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	1.45E+02	mg/kg	5.6E-04	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								1.4E-07					---
	Surface Soil Total										2.3E-03					---
Soil Total											2.3E-03					---
										Total of Receptor Risks Across All Media	2.3E-03			Total of Receptor Hazards Across All Media		---

TABLE M-7.1A-4 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	1.7E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.2E-08	1.7E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	1.6E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.1E-07	1.6E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	1.7E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.2E-08	1.7E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	1.6E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	1.1E-09	1.6E-07	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	1.2E-09	mg/kg-day	NA	---	NA	1.2E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	4.2E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.1E-08	4.2E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	8.8E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	6.4E-09	8.8E-08	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	4.2E-09	mg/kg-day	NA	---	NA	4.2E-08	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	3.1E-09	mg/kg-day	NA	---	NA	3.1E-08	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	4.8E-09	mg/kg-day	NA	---	NA	4.8E-08	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	1.7E-09	mg/kg-day	NA	---	NA	1.7E-08	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	5.0E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.5E-05	5.0E-09	mg/kg-day	7.0E-10	mg/kg-day	7.1
				Total PCB Homologs	1.06E+00	mg/kg	1.1E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.2E-08	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	0.0054
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.5E-08	1.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0028
				Antimony	2.95E+00	mg/kg	3.0E-08	mg/kg-day	NA	---	NA	3.0E-07	mg/kg-day	4.0E-04	mg/kg-day	0.00075
				Arsenic	6.03E+02	mg/kg	6.1E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	9.2E-06	6.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.20
				Chromium	1.53E+01	mg/kg	1.6E-07	mg/kg-day	5.0E-01	(mg/kg-day)^-1	7.8E-08	1.6E-06	mg/kg-day	3.0E-03	mg/kg-day	0.00052
				Cobalt	1.20E+01	mg/kg	1.2E-07	mg/kg-day	NA	---	NA	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0041
				Iron	2.15E+04	mg/kg	2.2E-04	mg/kg-day	NA	---	NA	2.2E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0031
				Manganese	2.19E+02	mg/kg	2.2E-06	mg/kg-day	NA	---	NA	2.2E-05	mg/kg-day	7.0E-02	mg/kg-day	0.00032
				Mercury	1.45E+02	mg/kg	1.5E-06	mg/kg-day	NA	---	NA	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.049
			Ingestion Total								7.4E-05					7.4
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	1.8E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.3E-08	1.8E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	1.6E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.2E-07	1.6E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	1.7E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.3E-08	1.7E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	1.6E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	1.2E-09	1.6E-07	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	1.3E-09	mg/kg-day	NA	---	NA	1.3E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	4.4E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.2E-08	4.4E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	9.1E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	6.7E-09	9.1E-08	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	1.2E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.6E-05	1.2E-09	mg/kg-day	7.0E-10	mg/kg-day	1.7
				Total PCB Homologs	1.06E+00	mg/kg	1.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.4E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	0.0060
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	2.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.8E-08	2.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0031
				Antimony	2.95E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	1.5E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.2E-06	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.049
				Chromium	1.53E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA

TABLE M-7.1A-4 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								1.8E-05					1.8
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	1.1E-13	mg/m^3	1.1E-04	(µg/m3)^-1	1.2E-14	1.1E-12	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	9.7E-14	mg/m^3	1.1E-03	(µg/m3)^-1	1.1E-13	9.7E-13	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	1.0E-13	mg/m^3	1.1E-04	(µg/m3)^-1	1.2E-14	1.0E-12	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	9.7E-14	mg/m^3	1.1E-04	(µg/m3)^-1	1.1E-14	9.7E-13	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	7.7E-15	mg/m^3	NA	---	NA	7.7E-14	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	2.6E-14	mg/m^3	1.2E-03	(µg/m3)^-1	3.2E-14	2.6E-13	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	5.5E-14	mg/m^3	1.1E-04	(µg/m3)^-1	6.0E-15	5.5E-13	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	2.6E-14	mg/m^3	NA	---	NA	2.6E-13	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	1.9E-14	mg/m^3	NA	---	NA	1.9E-13	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	3.0E-14	mg/m^3	NA	---	NA	3.0E-13	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	1.1E-14	mg/m^3	NA	---	NA	1.1E-13	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	3.1E-15	mg/m^3	3.8E+01	(µg/m3)^-1	1.2E-10	3.1E-14	mg/m^3	4.0E-08	mg/m^3	0.00000078
				Total PCB Homologs	1.06E+00	mg/kg	6.7E-14	mg/m^3	5.7E-04	(µg/m3)^-1	3.8E-14	6.7E-13	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.2E-18	mg/m^3	3.8E+01	(µg/m3)^-1	4.6E-14	1.2E-17	mg/m^3	4.0E-08	mg/m^3	0.00000000030
				Antimony	2.95E+00	mg/kg	1.9E-13	mg/m^3	NA	---	NA	1.9E-12	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	3.8E-11	mg/m^3	4.3E-03	(µg/m3)^-1	1.6E-10	3.8E-10	mg/m^3	1.5E-05	mg/m^3	0.000026
				Chromium	1.53E+01	mg/kg	9.7E-13	mg/m^3	8.4E-02	(µg/m3)^-1	8.2E-11	9.7E-12	mg/m^3	1.0E-04	mg/m^3	0.00000010
				Cobalt	1.20E+01	mg/kg	7.7E-13	mg/m^3	9.0E-03	(µg/m3)^-1	6.9E-12	7.7E-12	mg/m^3	6.0E-06	mg/m^3	0.0000013
				Iron	2.15E+04	mg/kg	1.4E-09	mg/m^3	NA	---	NA	1.4E-08	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	1.4E-11	mg/m^3	NA	---	NA	1.4E-10	mg/m^3	5.0E-05	mg/m^3	0.0000028
				Mercury	1.45E+02	mg/kg	2.7E-06	mg/m^3	NA	---	NA	2.7E-05	mg/m^3	3.0E-04	mg/m^3	0.090
			Inhalation Total								3.7E-10					0.090
	Surface Soil Total										9.2E-05					9.3
Soil Total											9.2E-05					9.3
										Total of Receptor Risks Across All Media	9.2E-05			Total of Receptor Hazards Across All Media		9.3

TABLE M-7.1A-5 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				5.3E-07	1.6E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				4.8E-06	1.4E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				5.2E-07	1.6E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				4.8E-08	1.5E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	3.3E-09	mg/kg-day	NA	---	NA	1.1E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				1.7E-06	3.9E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				2.7E-07	8.2E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	1.1E-08	mg/kg-day	NA	---	NA	3.9E-07	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	8.1E-09	mg/kg-day	NA	---	NA	2.8E-07	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	1.3E-08	mg/kg-day	NA	---	NA	4.5E-07	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	4.6E-09	mg/kg-day	NA	---	NA	1.6E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	1.3E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.7E-04	4.7E-08	mg/kg-day	7.0E-10	mg/kg-day	67
				Total PCB Homologs	1.06E+00	mg/kg	2.9E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	5.7E-08	1.0E-06	mg/kg-day	2.0E-05	mg/kg-day	0.050
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	5.2E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.7E-08	1.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.026
				Antimony	2.95E+00	mg/kg	8.0E-08	mg/kg-day	NA	---	NA	2.8E-06	mg/kg-day	4.0E-04	mg/kg-day	0.0070
				Arsenic	6.03E+02	mg/kg	1.6E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.5E-05	5.7E-04	mg/kg-day	3.0E-04	mg/kg-day	1.9
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				3.3E-06	1.5E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0048
				Cobalt	1.20E+01	mg/kg	3.3E-07	mg/kg-day	NA	---	NA	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.038
				Iron	2.15E+04	mg/kg	5.8E-04	mg/kg-day	NA	---	NA	2.0E-02	mg/kg-day	7.0E-01	mg/kg-day	0.029
				Manganese	2.19E+02	mg/kg	6.0E-06	mg/kg-day	NA	---	NA	2.1E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0030
				Mercury	1.45E+02	mg/kg	3.9E-06	mg/kg-day	NA	---	NA	1.4E-04	mg/kg-day	3.0E-04	mg/kg-day	0.46
			Ingestion Total								2.1E-04					69
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				3.9E-07	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				3.5E-06	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				3.8E-07	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				3.5E-08	1.1E-06	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	2.4E-09	mg/kg-day	NA	---	NA	8.4E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				1.2E-06	2.9E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				2.0E-07	6.0E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	2.2E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.9E-05	7.8E-09	mg/kg-day	7.0E-10	mg/kg-day	11
				Total PCB Homologs	1.06E+00	mg/kg	2.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	4.5E-08	7.9E-07	mg/kg-day	2.0E-05	mg/kg-day	0.039
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	4.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.3E-08	1.4E-11	mg/kg-day	7.0E-10	mg/kg-day	0.020
				Antimony	2.95E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	2.7E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.1E-06	9.6E-05	mg/kg-day	3.0E-04	mg/kg-day	0.32
				Chromium	1.53E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA

TABLE M-7.1A-5 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								3.9E-05					12
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				5.3E-14	1.1E-12	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				4.8E-13	9.7E-13	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				5.2E-14	1.0E-12	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				4.9E-14	9.7E-13	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	2.2E-15	mg/m^3	NA	---	NA	7.7E-14	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				1.8E-13	2.6E-13	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				2.7E-14	5.5E-13	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	7.5E-15	mg/m^3	NA	---	NA	2.6E-13	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	5.5E-15	mg/m^3	NA	---	NA	1.9E-13	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	8.5E-15	mg/m^3	NA	---	NA	3.0E-13	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	3.1E-15	mg/m^3	NA	---	NA	1.1E-13	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	8.9E-16	mg/m^3	3.8E+01	(µg/m3)^-1	3.4E-11	3.1E-14	mg/m^3	4.0E-08	mg/m^3	0.00000078
				Total PCB Homologs	1.06E+00	mg/kg	1.9E-14	mg/m^3	5.7E-04	(µg/m3)^-1	1.1E-14	6.7E-13	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	3.5E-19	mg/m^3	3.8E+01	(µg/m3)^-1	1.3E-14	1.2E-17	mg/m^3	4.0E-08	mg/m^3	0.00000000030
				Antimony	2.95E+00	mg/kg	5.4E-14	mg/m^3	NA	---	NA	1.9E-12	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	1.1E-11	mg/m^3	4.3E-03	(µg/m3)^-1	4.7E-11	3.8E-10	mg/m^3	1.5E-05	mg/m^3	0.000026
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-17				3.7E-10	9.7E-12	mg/m^3	1.0E-04	mg/m^3	0.00000010
				Cobalt	1.20E+01	mg/kg	2.2E-13	mg/m^3	9.0E-03	(µg/m3)^-1	2.0E-12	7.7E-12	mg/m^3	6.0E-06	mg/m^3	0.0000013
				Iron	2.15E+04	mg/kg	3.9E-10	mg/m^3	NA	---	NA	1.4E-08	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	4.0E-12	mg/m^3	NA	---	NA	1.4E-10	mg/m^3	5.0E-05	mg/m^3	0.0000028
				Mercury	1.45E+02	mg/kg	7.7E-07	mg/m^3	NA	---	NA	2.7E-05	mg/m^3	3.0E-04	mg/m^3	0.090
			Inhalation Total								4.6E-10					0.090
	Surface Soil Total										2.5E-04					81
Soil Total											2.5E-04					81
											Total of Receptor Risks Across All Media	2.5E-04		Total of Receptor Hazards Across All Media		81

TABLE M-7.1A-7 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Ingestion	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				3.3E-08	1.1E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				3.0E-07	9.6E-08	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				3.3E-08	1.0E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				3.0E-09	9.7E-08	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	1.1E-09	mg/kg-day	NA	---	NA	7.7E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				1.0E-07	2.6E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				1.7E-08	5.5E-08	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	3.7E-09	mg/kg-day	NA	---	NA	2.6E-08	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	2.7E-09	mg/kg-day	NA	---	NA	1.9E-08	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	4.2E-09	mg/kg-day	NA	---	NA	3.0E-08	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	1.5E-09	mg/kg-day	NA	---	NA	1.1E-08	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	4.4E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.8E-05	3.1E-09	mg/kg-day	7.0E-10	mg/kg-day	4.4
				Total PCB Homologs	1.06E+00	mg/kg	9.5E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.9E-08	6.7E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0033
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.7E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.2E-08	1.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0017
				Antimony	2.95E+00	mg/kg	2.7E-08	mg/kg-day	NA	---	NA	1.9E-07	mg/kg-day	4.0E-04	mg/kg-day	0.00047
				Arsenic	6.03E+02	mg/kg	5.4E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.2E-06	3.8E-05	mg/kg-day	3.0E-04	mg/kg-day	0.13
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				2.1E-07	9.7E-07	mg/kg-day	3.0E-03	mg/kg-day	0.00032
				Cobalt	1.20E+01	mg/kg	1.1E-07	mg/kg-day	NA	---	NA	7.6E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0025
				Iron	2.15E+04	mg/kg	1.9E-04	mg/kg-day	NA	---	NA	1.4E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0019
				Manganese	2.19E+02	mg/kg	2.0E-06	mg/kg-day	NA	---	NA	1.4E-05	mg/kg-day	7.0E-02	mg/kg-day	0.00020
				Mercury	1.45E+02	mg/kg	1.3E-06	mg/kg-day	NA	---	NA	9.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.031
			Ingestion Total								6.7E-05					4.6
			Dermal	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				7.2E-08	2.3E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				6.6E-07	2.1E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				7.1E-08	2.3E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				6.6E-09	2.1E-07	mg/kg-day	NA	---	NA
				Carbazole	1.21E-01	mg/kg	2.4E-09	mg/kg-day	NA	---	NA	1.7E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				2.3E-07	5.7E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				3.7E-08	1.2E-07	mg/kg-day	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	2.2E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.9E-05	1.6E-09	mg/kg-day	7.0E-10	mg/kg-day	2.2
				Total PCB Homologs	1.06E+00	mg/kg	2.2E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	4.5E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	0.0078
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	4.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.2E-08	2.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0040
				Antimony	2.95E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.03E+02	mg/kg	2.7E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.1E-06	1.9E-05	mg/kg-day	3.0E-04	mg/kg-day	0.064
				Chromium	1.53E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.20E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA

TABLE M-7.1A-7 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	CHP Surface Soil	Dermal	Iron	2.15E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	2.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.45E+02	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								3.4E-05					2.3
			Inhalation	Benzo(a)anthracene	1.67E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				3.4E-14	7.4E-13	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				3.1E-13	6.7E-13	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.65E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				3.4E-14	7.3E-13	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.53E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				3.2E-14	6.7E-13	mg/m^3	NA	---	NA
				Carbazole	1.21E-01	mg/kg	7.6E-15	mg/m^3	NA	---	NA	5.3E-14	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.14E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				1.2E-13	1.8E-13	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.63E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				1.8E-14	3.8E-13	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	4.10E-01	mg/kg	2.6E-14	mg/m^3	NA	---	NA	1.8E-13	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.00E-01	mg/kg	1.9E-14	mg/m^3	NA	---	NA	1.3E-13	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.70E-01	mg/kg	3.0E-14	mg/m^3	NA	---	NA	2.1E-13	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.70E-01	mg/kg	1.1E-14	mg/m^3	NA	---	NA	7.5E-14	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	4.91E-02	mg/kg	3.1E-15	mg/m^3	3.8E+01	(µg/m3)^-1	1.2E-10	2.2E-14	mg/m^3	4.0E-08	mg/m^3	0.00000054
				Total PCB Homologs	1.06E+00	mg/kg	6.7E-14	mg/m^3	5.7E-04	(µg/m3)^-1	3.8E-14	4.7E-13	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.90E-05	mg/kg	1.2E-18	mg/m^3	3.8E+01	(µg/m3)^-1	4.6E-14	8.4E-18	mg/m^3	4.0E-08	mg/m^3	0.00000000021
				Antimony	2.95E+00	mg/kg	1.9E-13	mg/m^3	NA	---	NA	1.3E-12	mg/m^3	NA	---	NA
				Arsenic	6.03E+02	mg/kg	3.8E-11	mg/m^3	4.3E-03	(µg/m3)^-1	1.6E-10	2.7E-10	mg/m^3	1.5E-05	mg/m^3	0.000018
				Chromium	1.53E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-18				2.4E-10	6.7E-12	mg/m^3	1.0E-04	mg/m^3	0.000000067
				Cobalt	1.20E+01	mg/kg	7.6E-13	mg/m^3	9.0E-03	(µg/m3)^-1	6.8E-12	5.3E-12	mg/m^3	6.0E-06	mg/m^3	0.00000088
				Iron	2.15E+04	mg/kg	1.4E-09	mg/m^3	NA	---	NA	9.5E-09	mg/m^3	NA	---	NA
				Manganese	2.19E+02	mg/kg	1.4E-11	mg/m^3	NA	---	NA	9.7E-11	mg/m^3	5.0E-05	mg/m^3	0.0000019
				Mercury	1.45E+02	mg/kg	2.7E-06	mg/m^3	NA	---	NA	1.9E-05	mg/m^3	3.0E-04	mg/m^3	0.063
			Inhalation Total								5.3E-10					0.063
	Surface Soil Total										1.0E-04					7.0
Soil Total											1.0E-04					7.0
											Total of Receptor Risks Across All Media					
											1.0E-04	Total of Receptor Hazards Across All Media				7.0

TABLE M-7.1B-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	1.0E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	1.6E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	3.0E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	6.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.087
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	2.0E-05	mg/kg-day	0.054
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	2.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.040
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	3.4E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0034
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	8.6E-05	mg/kg-day	4.0E-04	mg/kg-day	0.22
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	4.2E-05	mg/kg-day	3.0E-04	mg/kg-day	0.14
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	1.5E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0051
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	5.4E-06	mg/kg-day	3.0E-04	mg/kg-day	0.018
				Iron	5.52E+04	mg/kg	---	---	---	---	---	3.8E-02	mg/kg-day	7.0E-01	mg/kg-day	0.054
				Lead	3.50E+03	mg/kg	---	---	---	---	---	2.4E-03	mg/kg-day	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	2.3E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0032
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	2.4E-05	mg/kg-day	3.0E-04	mg/kg-day	0.080
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	4.1E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0020
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	1.7E-05	mg/kg-day	7.0E-05	mg/kg-day	0.25
			Ingestion Total								---					0.95
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	1.4E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	1.0E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	1.7E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	3.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	1.4E-11	mg/kg-day	7.0E-10	mg/kg-day	0.021
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	0.061
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	3.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.045
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.034
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.52E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA

TABLE M-7.1B-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					0.16
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	2.0E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	1.9E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	1.9E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	1.5E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	2.4E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	4.5E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	1.8E-10	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	9.1E-15	mg/m^3	4.0E-08	mg/m^3	0.0000002
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	4.2E-15	mg/m^3	4.0E-08	mg/m^3	0.00000011
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	5.1E-07	mg/m^3	5.0E-03	mg/m^3	0.00010
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	1.3E-08	mg/m^3	NA	---	NA
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	6.4E-09	mg/m^3	1.5E-05	mg/m^3	0.00042
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	2.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000023
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	8.1E-10	mg/m^3	6.0E-06	mg/m^3	0.00013
				Iron	5.52E+04	mg/kg	---	---	---	---	---	5.7E-06	mg/m^3	NA	---	NA
				Lead	3.50E+03	mg/kg	---	---	---	---	---	3.6E-07	mg/m^3	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	3.4E-08	mg/m^3	5.0E-05	mg/m^3	0.00068
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	1.1E-03	mg/m^3	3.0E-04	mg/m^3	3.5
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	6.1E-09	mg/m^3	9.0E-05	mg/m^3	0.000068
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	2.6E-09	mg/m^3	1.0E-04	mg/m^3	0.000026
			Inhalation Total								---					3.5
	Surface Soil Total										---					4.6
Soil Total											---					4.6
											Total of Receptor Risks Across All Media ---					Total of Receptor Hazards Across All Media 4.6

TABLE M-7.1B-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	9.3E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	9.9E-06	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	1.5E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	2.8E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	5.7E-10	mg/kg-day	7.0E-10	mg/kg-day	0.81
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	1.0E-05	mg/kg-day	2.0E-05	mg/kg-day	0.51
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	2.6E-10	mg/kg-day	7.0E-10	mg/kg-day	0.37
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	3.2E-02	mg/kg-day	1.0E+00	mg/kg-day	0.032
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	8.0E-04	mg/kg-day	4.0E-04	mg/kg-day	2.0
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	4.0E-04	mg/kg-day	3.0E-04	mg/kg-day	1.3
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	3.0E-03	mg/kg-day	0.048
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	5.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.17
				Iron	5.52E+04	mg/kg	---	---	---	---	---	3.5E-01	mg/kg-day	7.0E-01	mg/kg-day	0.50
				Lead	3.50E+03	mg/kg	---	---	---	---	---	2.2E-02	mg/kg-day	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	2.1E-03	mg/kg-day	7.0E-02	mg/kg-day	0.030
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	2.2E-04	mg/kg-day	3.0E-04	mg/kg-day	0.74
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	3.8E-04	mg/kg-day	2.0E-02	mg/kg-day	0.019
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	1.6E-04	mg/kg-day	7.0E-05	mg/kg-day	2.3
			Ingestion Total								---					8.9
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	8.9E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	8.5E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	8.6E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	6.8E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	7.2E-06	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	1.1E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	2.0E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	8.0E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	9.5E-11	mg/kg-day	7.0E-10	mg/kg-day	0.14
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	7.9E-06	mg/kg-day	2.0E-05	mg/kg-day	0.40
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	2.1E-10	mg/kg-day	7.0E-10	mg/kg-day	0.29
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	6.6E-05	mg/kg-day	3.0E-04	mg/kg-day	0.22
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.52E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA

TABLE M-7.1B-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					1.0
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	---	---	---	---	---	2.0E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	---	---	---	---	---	1.9E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	---	---	---	---	---	1.9E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	---	---	---	---	---	1.5E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				Carbazole	2.34E-01	mg/kg	---	---	---	---	---	2.4E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	---	---	---	---	---	4.5E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	---	---	---	---	---	1.8E-10	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	---	---	---	---	---	9.1E-15	mg/m^3	4.0E-08	mg/m^3	0.0000002
				Total PCB Homologs	1.59E+00	mg/kg	---	---	---	---	---	1.6E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	---	---	---	---	---	4.2E-15	mg/m^3	4.0E-08	mg/m^3	0.00000011
				Aluminum	4.93E+03	mg/kg	---	---	---	---	---	5.1E-07	mg/m^3	5.0E-03	mg/m^3	0.00010
				Antimony	1.26E+02	mg/kg	---	---	---	---	---	1.3E-08	mg/m^3	NA	---	NA
				Arsenic	6.19E+01	mg/kg	---	---	---	---	---	6.4E-09	mg/m^3	1.5E-05	mg/m^3	0.00042
				Chromium	2.25E+01	mg/kg	---	---	---	---	---	2.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000023
				Cobalt	7.84E+00	mg/kg	---	---	---	---	---	8.1E-10	mg/m^3	6.0E-06	mg/m^3	0.00013
				Iron	5.52E+04	mg/kg	---	---	---	---	---	5.7E-06	mg/m^3	NA	---	NA
				Lead	3.50E+03	mg/kg	---	---	---	---	---	3.6E-07	mg/m^3	NA	---	NA
				Manganese	3.29E+02	mg/kg	---	---	---	---	---	3.4E-08	mg/m^3	5.0E-05	mg/m^3	0.00068
				Mercury	3.50E+01	mg/kg	---	---	---	---	---	1.1E-03	mg/m^3	3.0E-04	mg/m^3	3.5
				Nickel	5.98E+01	mg/kg	---	---	---	---	---	6.1E-09	mg/m^3	9.0E-05	mg/m^3	0.000068
				Vanadium	2.52E+01	mg/kg	---	---	---	---	---	2.6E-09	mg/m^3	1.0E-04	mg/m^3	0.000026
			Inhalation Total								---					3.5
	Surface Soil Total										---					13
Soil Total											---					13
											Total of Receptor Risks Across All Media	---		Total of Receptor Hazards Across All Media		13

TABLE M-7.1B-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				2.8E-06	---	---	---	---	---
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				2.7E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				2.8E-06	---	---	---	---	---
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	3.7E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				2.3E-07	---	---	---	---	---
				Carbazole	2.34E-01	mg/kg	5.9E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				6.5E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				2.6E-06	---	---	---	---	---
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	2.2E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.9E-06	---	---	---	---	---
				Total PCB Homologs	1.59E+00	mg/kg	4.0E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	8.0E-07	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	1.0E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.3E-06	---	---	---	---	---
				Aluminum	4.93E+03	mg/kg	1.2E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	1.26E+02	mg/kg	3.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	6.19E+01	mg/kg	1.6E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.3E-05	---	---	---	---	---
				Chromium	2.25E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				2.3E-05	---	---	---	---	---
				Cobalt	7.84E+00	mg/kg	2.0E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	5.52E+04	mg/kg	1.4E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	3.50E+03	mg/kg	8.8E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	3.29E+02	mg/kg	8.3E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	3.50E+01	mg/kg	8.8E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Nickel	5.98E+01	mg/kg	1.5E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Vanadium	2.52E+01	mg/kg	6.3E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								9.3E-05					---
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				2.2E-06	---	---	---	---	---
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				2.0E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				2.1E-06	---	---	---	---	---
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	3.0E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				1.7E-07	---	---	---	---	---
				Carbazole	2.34E-01	mg/kg	4.8E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				4.9E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				1.9E-06	---	---	---	---	---
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	4.2E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.4E-07	---	---	---	---	---
				Total PCB Homologs	1.59E+00	mg/kg	3.5E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	7.0E-07	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	9.0E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.2E-06	---	---	---	---	---
				Aluminum	4.93E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	1.26E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	6.19E+01	mg/kg	2.9E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.4E-06	---	---	---	---	---
				Chromium	2.25E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	7.84E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Iron	5.52E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---

TABLE M-7.1B-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	3.29E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	3.50E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Nickel	5.98E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Vanadium	2.52E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								3.9E-05					---
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				1.3E-11	---	---	---	---	---
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				1.2E-10	---	---	---	---	---
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				1.2E-11	---	---	---	---	---
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	1.9E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				1.0E-11	---	---	---	---	---
				Carbazole	2.34E-01	mg/kg	3.1E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				3.1E-11	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				1.1E-11	---	---	---	---	---
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	1.2E-15	mg/m^3	3.8E+01	(µg/m3)^-1	4.4E-11	---	---	---	---	---
				Total PCB Homologs	1.59E+00	mg/kg	2.1E-11	mg/m^3	5.7E-04	(µg/m3)^-1	1.2E-11	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	5.4E-16	mg/m^3	3.8E+01	(µg/m3)^-1	2.1E-11	---	---	---	---	---
				Aluminum	4.93E+03	mg/kg	6.5E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Antimony	1.26E+02	mg/kg	1.7E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	6.19E+01	mg/kg	8.2E-10	mg/m^3	4.3E-03	(µg/m3)^-1	3.5E-09	---	---	---	---	---
				Chromium	2.25E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-19				1.1E-07	---	---	---	---	---
				Cobalt	7.84E+00	mg/kg	1.0E-10	mg/m^3	9.0E-03	(µg/m3)^-1	9.3E-10	---	---	---	---	---
				Iron	5.52E+04	mg/kg	7.3E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	3.50E+03	mg/kg	4.6E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	3.29E+02	mg/kg	4.3E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	3.50E+01	mg/kg	1.4E-04	mg/m^3	NA	---	NA	---	---	---	---	---
				Nickel	5.98E+01	mg/kg	7.9E-10	mg/m^3	2.6E-04	(µg/m3)^-1	2.1E-10	---	---	---	---	---
				Vanadium	2.52E+01	mg/kg	3.3E-10	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								1.2E-07					---
	Surface Soil Total										1.3E-04					---
Soil Total											1.3E-04					---
											Total of Receptor Risks Across All Media	1.3E-04		Total of Receptor Hazards Across All Media		---

TABLE M-7.1B-6 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	7.7E-08	8.2E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	1.0E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	7.3E-07	7.8E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	1.0E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	7.5E-08	8.0E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	8.0E-08	mg/kg-day	NA	---	NA	6.2E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	8.5E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	6.2E-09	6.6E-07	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	1.3E-08	mg/kg-day	NA	---	NA	1.0E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	2.4E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.8E-07	1.9E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	9.5E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	6.9E-08	7.4E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	4.9E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.3E-07	3.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.054
				Total PCB Homologs	1.59E+00	mg/kg	8.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.7E-07	6.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.034
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	2.3E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.9E-07	1.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.025
				Aluminum	4.93E+03	mg/kg	2.7E-04	mg/kg-day	NA	---	NA	2.1E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0021
				Antimony	1.26E+02	mg/kg	6.9E-06	mg/kg-day	NA	---	NA	5.4E-05	mg/kg-day	4.0E-04	mg/kg-day	0.13
				Arsenic	6.19E+01	mg/kg	3.4E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	5.1E-06	2.7E-05	mg/kg-day	3.0E-04	mg/kg-day	0.088
				Chromium	2.25E+01	mg/kg	1.2E-06	mg/kg-day	5.0E-01	(mg/kg-day)^-1	6.2E-07	9.7E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0032
				Cobalt	7.84E+00	mg/kg	4.3E-07	mg/kg-day	NA	---	NA	3.4E-06	mg/kg-day	3.0E-04	mg/kg-day	0.011
				Iron	5.52E+04	mg/kg	3.0E-03	mg/kg-day	NA	---	NA	2.4E-02	mg/kg-day	7.0E-01	mg/kg-day	0.034
				Lead	3.50E+03	mg/kg	1.9E-04	mg/kg-day	NA	---	NA	1.5E-03	mg/kg-day	NA	---	NA
				Manganese	3.29E+02	mg/kg	1.8E-05	mg/kg-day	NA	---	NA	1.4E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0020
				Mercury	3.50E+01	mg/kg	1.9E-06	mg/kg-day	NA	---	NA	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.050
				Nickel	5.98E+01	mg/kg	3.3E-06	mg/kg-day	NA	---	NA	2.6E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0013
				Vanadium	2.52E+01	mg/kg	1.4E-06	mg/kg-day	NA	---	NA	1.1E-05	mg/kg-day	7.0E-05	mg/kg-day	0.15
			Ingestion Total								8.0E-06					0.59
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	6.4E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.6E-08	4.9E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	6.0E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.4E-07	4.7E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	6.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.5E-08	4.8E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	4.8E-08	mg/kg-day	NA	---	NA	3.7E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	5.1E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	3.7E-09	4.0E-07	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	7.7E-09	mg/kg-day	NA	---	NA	6.0E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	1.4E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.1E-07	1.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	5.7E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.2E-08	4.4E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	6.8E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.8E-08	5.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.008
				Total PCB Homologs	1.59E+00	mg/kg	5.7E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.1E-07	4.4E-07	mg/kg-day	2.0E-05	mg/kg-day	0.022
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	1.5E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.9E-07	1.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.016
				Aluminum	4.93E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.26E+02	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.19E+01	mg/kg	4.7E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	7.1E-07	3.7E-06	mg/kg-day	3.0E-04	mg/kg-day	0.012
				Chromium	2.25E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	7.84E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.52E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA

TABLE M-7.1B-6 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.29E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	3.50E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	5.98E+01	mg/kg	NA	---	NA	---	NA	NA	---	8.0E-04	mg/kg-day	NA
				Vanadium	2.52E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								1.8E-06					0.058
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	5.3E-12	mg/m^3	1.1E-04	(µg/m3)^-1	5.8E-13	4.1E-11	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	5.0E-12	mg/m^3	1.1E-03	(µg/m3)^-1	5.5E-12	3.9E-11	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	5.1E-12	mg/m^3	1.1E-04	(µg/m3)^-1	5.6E-13	4.0E-11	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	4.0E-12	mg/m^3	NA	---	NA	3.1E-11	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	4.3E-12	mg/m^3	1.1E-04	(µg/m3)^-1	4.7E-13	3.3E-11	mg/m^3	NA	---	NA
				Carbazole	2.34E-01	mg/kg	6.5E-13	mg/m^3	NA	---	NA	5.0E-12	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	1.2E-12	mg/m^3	1.2E-03	(µg/m3)^-1	1.4E-12	9.4E-12	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	4.8E-12	mg/m^3	1.1E-04	(µg/m3)^-1	5.2E-13	3.7E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	2.4E-16	mg/m^3	3.8E+01	(µg/m3)^-1	9.3E-12	1.9E-15	mg/m^3	4.0E-08	mg/m^3	0.00000005
				Total PCB Homologs	1.59E+00	mg/kg	4.4E-12	mg/m^3	5.7E-04	(µg/m3)^-1	2.5E-12	3.4E-11	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	1.1E-16	mg/m^3	3.8E+01	(µg/m3)^-1	4.3E-12	8.8E-16	mg/m^3	4.0E-08	mg/m^3	0.000000022
				Aluminum	4.93E+03	mg/kg	1.4E-08	mg/m^3	NA	---	NA	1.1E-07	mg/m^3	5.0E-03	mg/m^3	0.000021
				Antimony	1.26E+02	mg/kg	3.5E-10	mg/m^3	NA	---	NA	2.7E-09	mg/m^3	NA	---	NA
				Arsenic	6.19E+01	mg/kg	1.7E-10	mg/m^3	4.3E-03	(µg/m3)^-1	7.3E-10	1.3E-09	mg/m^3	1.5E-05	mg/m^3	0.000088
				Chromium	2.25E+01	mg/kg	6.2E-11	mg/m^3	8.4E-02	(µg/m3)^-1	5.2E-09	4.8E-10	mg/m^3	1.0E-04	mg/m^3	0.0000048
				Cobalt	7.84E+00	mg/kg	2.2E-11	mg/m^3	9.0E-03	(µg/m3)^-1	1.9E-10	1.7E-10	mg/m^3	6.0E-06	mg/m^3	0.000028
				Iron	5.52E+04	mg/kg	1.5E-07	mg/m^3	NA	---	NA	1.2E-06	mg/m^3	NA	---	NA
				Lead	3.50E+03	mg/kg	9.7E-09	mg/m^3	NA	---	NA	7.5E-08	mg/m^3	NA	---	NA
				Manganese	3.29E+02	mg/kg	9.1E-10	mg/m^3	NA	---	NA	7.0E-09	mg/m^3	5.0E-05	mg/m^3	0.00014
				Mercury	3.50E+01	mg/kg	2.8E-05	mg/m^3	NA	---	NA	2.2E-04	mg/m^3	3.0E-04	mg/m^3	0.73
				Nickel	5.98E+01	mg/kg	1.6E-10	mg/m^3	2.6E-04	(µg/m3)^-1	4.3E-11	1.3E-09	mg/m^3	9.0E-05	mg/m^3	0.000014
				Vanadium	2.52E+01	mg/kg	6.9E-11	mg/m^3	NA	---	NA	5.4E-10	mg/m^3	1.0E-04	mg/m^3	0.000005
			Inhalation Total								6.2E-09					0.73
	Surface Soil Total										9.8E-06					1.4
Soil Total											9.8E-06					1.4
											Total of Receptor Risks Across All Media	9.8E-06		Total of Receptor Hazards Across All Media		1.4

TABLE M-7.1B-7 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.8E-08	1.2E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.6E-07	1.2E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.7E-08	1.2E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	1.3E-08	mg/kg-day	NA	---	NA	9.2E-08	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.1E-09	9.8E-08	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	2.1E-09	mg/kg-day	NA	---	NA	1.5E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				8.6E-08	2.8E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.4E-08	1.1E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	8.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.0E-07	5.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0080
				Total PCB Homologs	1.59E+00	mg/kg	1.4E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.9E-08	1.0E-07	mg/kg-day	2.0E-05	mg/kg-day	0.0050
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	3.7E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.8E-08	2.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0037
				Aluminum	4.93E+03	mg/kg	4.5E-05	mg/kg-day	NA	---	NA	3.1E-04	mg/kg-day	1.0E+00	mg/kg-day	0.00031
				Antimony	1.26E+02	mg/kg	1.1E-06	mg/kg-day	NA	---	NA	8.0E-06	mg/kg-day	4.0E-04	mg/kg-day	0.020
				Arsenic	6.19E+01	mg/kg	5.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.4E-07	3.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.013
				Chromium	2.25E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.1E-07	1.4E-06	mg/kg-day	3.0E-03	mg/kg-day	0.00047
				Cobalt	7.84E+00	mg/kg	7.1E-08	mg/kg-day	NA	---	NA	5.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0017
				Iron	5.52E+04	mg/kg	5.0E-04	mg/kg-day	NA	---	NA	3.5E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0050
				Lead	3.50E+03	mg/kg	3.2E-05	mg/kg-day	NA	---	NA	2.2E-04	mg/kg-day	NA	---	NA
				Manganese	3.29E+02	mg/kg	3.0E-06	mg/kg-day	NA	---	NA	2.1E-05	mg/kg-day	7.0E-02	mg/kg-day	0.00030
				Mercury	3.50E+01	mg/kg	3.2E-07	mg/kg-day	NA	---	NA	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0074
				Nickel	5.98E+01	mg/kg	5.4E-07	mg/kg-day	NA	---	NA	3.8E-06	mg/kg-day	2.0E-02	mg/kg-day	0.00019
				Vanadium	2.52E+01	mg/kg	2.3E-07	mg/kg-day	NA	---	NA	1.6E-06	mg/kg-day	7.0E-05	mg/kg-day	0.023
			Ingestion Total								1.9E-06					0.088
			Dermal	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				8.3E-08	2.6E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				7.8E-07	2.5E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				8.0E-08	2.6E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	2.9E-08	mg/kg-day	NA	---	NA	2.0E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				6.6E-09	2.1E-07	mg/kg-day	NA	---	NA
				Carbazole	2.34E-01	mg/kg	4.6E-09	mg/kg-day	NA	---	NA	3.2E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				1.9E-07	6.0E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				7.4E-08	2.4E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	4.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.2E-08	2.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0040
				Total PCB Homologs	1.59E+00	mg/kg	3.4E-08	mg/kg-day	2.0E+00	(mg/kg-day)^-1	6.7E-08	2.3E-07	mg/kg-day	2.0E-05	mg/kg-day	0.012
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	8.7E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.1E-07	6.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0087
				Aluminum	4.93E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.26E+02	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	6.19E+01	mg/kg	2.8E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.2E-07	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0065
				Chromium	2.25E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	7.84E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.52E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA

TABLE M-7.1B-7 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	SFSA Surface Soil	Dermal	Lead	3.50E+03	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.29E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	3.50E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	5.98E+01	mg/kg	NA	---	NA	---	NA	NA	---	8.0E-04	mg/kg-day	NA
				Vanadium	2.52E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								1.9E-06					0.031
			Inhalation	Benzo(a)anthracene	1.92E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.4E-14	8.5E-13	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.7E-13	8.0E-13	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.8E-14	8.2E-13	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	1.46E+00	mg/kg	9.2E-14	mg/m^3	NA	---	NA	6.4E-13	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.55E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.2E-14	6.8E-13	mg/m^3	NA	---	NA
				Carbazole	2.34E-01	mg/kg	1.5E-14	mg/m^3	NA	---	NA	1.0E-13	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	4.37E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				9.8E-14	1.9E-13	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.72E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.6E-14	7.6E-13	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	8.84E-05	mg/kg	5.6E-18	mg/m^3	3.8E+01	(µg/m3)^-1	2.1E-13	3.9E-17	mg/m^3	4.0E-08	mg/m^3	0.000000001
				Total PCB Homologs	1.59E+00	mg/kg	1.0E-13	mg/m^3	5.7E-04	(µg/m3)^-1	5.7E-14	7.0E-13	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	4.10E-05	mg/kg	2.6E-18	mg/m^3	3.8E+01	(µg/m3)^-1	9.8E-14	1.8E-17	mg/m^3	4.0E-08	mg/m^3	0.00000000045
				Aluminum	4.93E+03	mg/kg	3.1E-10	mg/m^3	NA	---	NA	2.2E-09	mg/m^3	5.0E-03	mg/m^3	0.00000043
				Antimony	1.26E+02	mg/kg	7.9E-12	mg/m^3	NA	---	NA	5.5E-11	mg/m^3	NA	---	NA
				Arsenic	6.19E+01	mg/kg	3.9E-12	mg/m^3	4.3E-03	(µg/m3)^-1	1.7E-11	2.7E-11	mg/m^3	1.5E-05	mg/m^3	0.0000018
				Chromium	2.25E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-21				3.5E-10	9.9E-12	mg/m^3	1.0E-04	mg/m^3	0.000000099
				Cobalt	7.84E+00	mg/kg	4.9E-13	mg/m^3	9.0E-03	(µg/m3)^-1	4.4E-12	3.5E-12	mg/m^3	6.0E-06	mg/m^3	0.00000058
				Iron	5.52E+04	mg/kg	3.5E-09	mg/m^3	NA	---	NA	2.4E-08	mg/m^3	NA	---	NA
				Lead	3.50E+03	mg/kg	2.2E-10	mg/m^3	NA	---	NA	1.5E-09	mg/m^3	NA	---	NA
				Manganese	3.29E+02	mg/kg	2.1E-11	mg/m^3	NA	---	NA	1.4E-10	mg/m^3	5.0E-05	mg/m^3	0.0000029
				Mercury	3.50E+01	mg/kg	6.5E-07	mg/m^3	NA	---	NA	4.5E-06	mg/m^3	3.0E-04	mg/m^3	0.015
				Nickel	5.98E+01	mg/kg	3.8E-12	mg/m^3	2.6E-04	(µg/m3)^-1	9.8E-13	2.6E-11	mg/m^3	9.0E-05	mg/m^3	0.00000029
				Vanadium	2.52E+01	mg/kg	1.6E-12	mg/m^3	NA	---	NA	1.1E-11	mg/m^3	1.0E-04	mg/m^3	0.00000011
			Inhalation Total								3.8E-10					0.015
	Surface Soil Total										3.7E-06					0.13
Soil Total											3.7E-06					0.13
											Total of Receptor Risks Across All Media					
											3.7E-06	Total of Receptor Hazards Across All Media				0.13

TABLE M-7.1C-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	8.8E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	8.0E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	5.3E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	8.7E-06	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	1.4E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	1.3E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	7.9E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	1.9E-09	mg/kg-day	7.0E-10	mg/kg-day	2.7
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	4.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0065
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	4.8E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0048
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	7.3E-06	mg/kg-day	4.0E-04	mg/kg-day	0.018
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	1.3E-05	mg/kg-day	3.0E-04	mg/kg-day	0.042
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	8.4E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0028
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	4.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.015
				Iron	1.35E+04	mg/kg	---	---	---	---	---	9.3E-03	mg/kg-day	7.0E-01	mg/kg-day	0.013
				Lead	5.53E+02	mg/kg	---	---	---	---	---	3.8E-04	mg/kg-day	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	2.6E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0037
				Mercury	2.12E+01	mg/kg	---	---	---	---	---	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.048
			Ingestion Total								---					2.8
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	9.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	8.2E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	5.5E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	9.1E-06	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	1.5E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	1.4E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	8.2E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	4.5E-10	mg/kg-day	7.0E-10	mg/kg-day	0.64
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	5.1E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0073
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	3.0E-06	mg/kg-day	3.0E-04	mg/kg-day	0.010
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.35E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	5.53E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA

TABLE M-7.1C-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								---					0.65
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	1.8E-09	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	8.0E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	2.1E-11	mg/m^3	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	1.8E-09	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	2.0E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	2.8E-13	mg/m^3	4.0E-08	mg/m^3	0.0000070
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	6.9E-16	mg/m^3	4.0E-08	mg/m^3	0.00000002
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	7.2E-07	mg/m^3	5.0E-03	mg/m^3	0.00014
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	1.9E-09	mg/m^3	1.5E-05	mg/m^3	0.00013
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000013
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	6.9E-10	mg/m^3	6.0E-06	mg/m^3	0.00011
				Iron	1.35E+04	mg/kg	---	---	---	---	---	1.4E-06	mg/m^3	NA	---	NA
				Lead	5.53E+02	mg/kg	---	---	---	---	---	5.7E-08	mg/m^3	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	3.9E-08	mg/m^3	5.0E-05	mg/m^3	0.00078
				Mercury	2.12E+01	mg/kg	---	---	---	---	---	6.4E-04	mg/m^3	3.0E-04	mg/m^3	2.1
			Inhalation Total								---					2.1
	Surface Soil Total										---					5.6
Soil Total											---					5.6
											Total of Receptor Risks Across All Media					---					Total of Receptor Hazards Across All Media	5.6

TABLE M-7.1C-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	1.1E-04	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	8.2E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	7.4E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	5.0E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	8.1E-05	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	1.3E-06	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	1.1E-04	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	7.4E-05	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	1.7E-08	mg/kg-day	7.0E-10	mg/kg-day	25
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	4.3E-11	mg/kg-day	7.0E-10	mg/kg-day	0.061
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	4.5E-02	mg/kg-day	1.0E+00	mg/kg-day	0.045
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	6.8E-05	mg/kg-day	4.0E-04	mg/kg-day	0.17
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	1.2E-04	mg/kg-day	3.0E-04	mg/kg-day	0.39
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	7.8E-05	mg/kg-day	3.0E-03	mg/kg-day	0.026
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	4.3E-05	mg/kg-day	3.0E-04	mg/kg-day	0.14
				Iron	1.35E+04	mg/kg	---	---	---	---	---	8.6E-02	mg/kg-day	7.0E-01	mg/kg-day	0.12
				Lead	5.53E+02	mg/kg	---	---	---	---	---	3.5E-03	mg/kg-day	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	2.4E-03	mg/kg-day	7.0E-02	mg/kg-day	0.035
				Mercury	2.12E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	3.0E-04	mg/kg-day	0.45
			Ingestion Total								---					26
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	8.2E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	6.0E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	5.4E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	3.6E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	5.9E-05	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	9.5E-07	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	8.0E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	9.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	5.4E-05	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	2.9E-09	mg/kg-day	7.0E-10	mg/kg-day	4.2
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	3.3E-11	mg/kg-day	7.0E-10	mg/kg-day	0.048
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.066
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.35E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	5.53E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA

TABLE M-7.1C-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								---					4.3
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	---	---	---	---	---	1.8E-09	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	---	---	---	---	---	8.0E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	NA	---	NA
				Carbazole	2.05E-01	mg/kg	---	---	---	---	---	2.1E-11	mg/m^3	NA	---	NA
				Chrysene	1.71E+01	mg/kg	---	---	---	---	---	1.8E-09	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	---	---	---	---	---	2.0E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	---	---	---	---	---	2.8E-13	mg/m^3	4.0E-08	mg/m^3	0.000007
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	---	---	---	---	---	6.9E-16	mg/m^3	4.0E-08	mg/m^3	0.00000002
				Aluminum	6.98E+03	mg/kg	---	---	---	---	---	7.2E-07	mg/m^3	5.0E-03	mg/m^3	0.00014
				Antimony	1.07E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Arsenic	1.83E+01	mg/kg	---	---	---	---	---	1.9E-09	mg/m^3	1.5E-05	mg/m^3	0.00013
				Chromium	1.23E+01	mg/kg	---	---	---	---	---	1.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000013
				Cobalt	6.67E+00	mg/kg	---	---	---	---	---	6.9E-10	mg/m^3	6.0E-06	mg/m^3	0.00011
				Iron	1.35E+04	mg/kg	---	---	---	---	---	1.4E-06	mg/m^3	NA	---	NA
				Lead	5.53E+02	mg/kg	---	---	---	---	---	5.7E-08	mg/m^3	NA	---	NA
				Manganese	3.79E+02	mg/kg	---	---	---	---	---	3.9E-08	mg/m^3	5.0E-05	mg/m^3	0.00078
				Mercury	2.12E+01	mg/kg	---	---	---	---	---	6.4E-04	mg/m^3	3.0E-04	mg/m^3	2.1
			Inhalation Total								---					2.1
	Surface Soil Total										---					33
Soil Total											---					33
											Total of Receptor Risks Across All Media					---					Total of Receptor Hazards Across All Media	33

TABLE M-7.1C-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				2.6E-05	---	---	---	---	---
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.9E-04	---	---	---	---	---
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.7E-05	---	---	---	---	---
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	2.0E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.9E-06	---	---	---	---	---
				Carbazole	2.05E-01	mg/kg	5.1E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				2.5E-07	---	---	---	---	---
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				2.9E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.7E-05	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	6.8E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.9E-05	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	1.7E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.2E-07	---	---	---	---	---
				Aluminum	6.98E+03	mg/kg	1.8E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	1.07E+01	mg/kg	2.7E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	1.83E+01	mg/kg	4.6E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	6.9E-06	---	---	---	---	---
				Chromium	1.23E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.2E-05	---	---	---	---	---
				Cobalt	6.67E+00	mg/kg	1.7E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	1.35E+04	mg/kg	3.4E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	5.53E+02	mg/kg	1.4E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	3.79E+02	mg/kg	9.5E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	2.12E+01	mg/kg	5.3E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								3.6E-04					---
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				2.0E-05	---	---	---	---	---
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.4E-04	---	---	---	---	---
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.3E-05	---	---	---	---	---
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	1.6E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.4E-06	---	---	---	---	---
				Carbazole	2.05E-01	mg/kg	4.2E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.9E-07	---	---	---	---	---
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				2.2E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.3E-05	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	1.3E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.7E-05	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	1.5E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.9E-07	---	---	---	---	---
				Aluminum	6.98E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	1.07E+01	mg/kg	NA	---	NA	---	NA					
				Arsenic	1.83E+01	mg/kg	8.6E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.3E-06	---	---	---	---	---
				Chromium	1.23E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	6.67E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Iron	1.35E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Lead	5.53E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	3.79E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---

TABLE M-7.1C-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								2.1E-04					---
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.2E-10	---	---	---	---	---
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				8.4E-10	---	---	---	---	---
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				7.6E-11	---	---	---	---	---
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	1.0E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				8.4E-11	---	---	---	---	---
				Carbazole	2.05E-01	mg/kg	2.7E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.1E-11	---	---	---	---	---
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				1.4E-11	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				7.6E-11	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	3.6E-14	mg/m^3	3.8E+01	(µg/m3)^-1	1.4E-09	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	8.8E-17	mg/m^3	3.8E+01	(µg/m3)^-1	3.4E-12	---	---	---	---	---
				Aluminum	6.98E+03	mg/kg	9.2E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Antimony	1.07E+01	mg/kg	1.4E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	1.83E+01	mg/kg	2.4E-10	mg/m^3	4.3E-03	(µg/m3)^-1	1.0E-09	---	---	---	---	---
				Chromium	1.23E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-22				6.2E-08	---	---	---	---	---
				Cobalt	6.67E+00	mg/kg	8.8E-11	mg/m^3	9.0E-03	(µg/m3)^-1	7.9E-10	---	---	---	---	---
				Iron	1.35E+04	mg/kg	1.8E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	5.53E+02	mg/kg	7.3E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	3.79E+02	mg/kg	5.0E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	2.12E+01	mg/kg	8.2E-05	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								6.6E-08					---
	Surface Soil Total										5.8E-04					---
Soil Total											5.8E-04					---
											Total of Receptor Risks Across All Media	5.8E-04			Total of Receptor Hazards Across All Media	---

TABLE M-7.1C-6 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	9.7E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	7.1E-07	7.5E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	7.1E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	5.2E-06	5.5E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	6.4E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.7E-07	5.0E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	4.3E-07	mg/kg-day	NA	---	NA	3.3E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	7.0E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	5.1E-08	5.5E-06	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	1.1E-08	mg/kg-day	NA	---	NA	8.8E-08	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	9.4E-07	mg/kg-day	7.3E-03	(mg/kg-day)^-1	6.9E-09	7.3E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	1.1E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	7.8E-08	8.4E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	6.4E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.6E-07	4.9E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	1.5E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.9E-05	1.2E-09	mg/kg-day	7.0E-10	mg/kg-day	1.7
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	3.7E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.8E-08	2.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0041
				Aluminum	6.98E+03	mg/kg	3.8E-04	mg/kg-day	NA	---	NA	3.0E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0030
				Antimony	1.07E+01	mg/kg	5.9E-07	mg/kg-day	NA	---	NA	4.6E-06	mg/kg-day	4.0E-04	mg/kg-day	0.011
				Arsenic	1.83E+01	mg/kg	1.0E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.5E-06	7.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.026
				Chromium	1.23E+01	mg/kg	6.8E-07	mg/kg-day	5.0E-01	(mg/kg-day)^-1	3.4E-07	5.3E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0018
				Cobalt	6.67E+00	mg/kg	3.7E-07	mg/kg-day	NA	---	NA	2.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.010
				Iron	1.35E+04	mg/kg	7.4E-04	mg/kg-day	NA	---	NA	5.8E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0083
				Lead	5.53E+02	mg/kg	3.0E-05	mg/kg-day	NA	---	NA	2.4E-04	mg/kg-day	NA	---	NA
				Manganese	3.79E+02	mg/kg	2.1E-05	mg/kg-day	NA	---	NA	1.6E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0023
				Mercury	2.12E+01	mg/kg	1.2E-06	mg/kg-day	NA	---	NA	9.1E-06	mg/kg-day	3.0E-04	mg/kg-day	0.030
			Ingestion Total								2.8E-05					1.8
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	5.8E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.2E-07	4.5E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	4.3E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.1E-06	3.3E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	3.8E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.8E-07	3.0E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	2.6E-07	mg/kg-day	NA	---	NA	2.0E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	4.2E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	3.1E-08	3.3E-06	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	6.8E-09	mg/kg-day	NA	---	NA	5.3E-08	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	5.7E-07	mg/kg-day	7.3E-03	(mg/kg-day)^-1	4.1E-09	4.4E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	6.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.7E-08	5.0E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	3.8E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.8E-07	3.0E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	2.1E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.7E-06	1.6E-10	mg/kg-day	7.0E-10	mg/kg-day	0.23
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	2.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.1E-08	1.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0026
				Aluminum	6.98E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.07E+01	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.83E+01	mg/kg	1.4E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.1E-07	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0036
				Chromium	1.23E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.67E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.35E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	5.53E+02	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.79E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA

TABLE M-7.1C-6 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								7.1E-06					0.24
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	4.8E-11	mg/m^3	1.1E-04	(µg/m3)^-1	5.3E-12	3.8E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	3.5E-11	mg/m^3	1.1E-03	(µg/m3)^-1	3.9E-11	2.8E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	3.2E-11	mg/m^3	1.1E-04	(µg/m3)^-1	3.5E-12	2.5E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	2.1E-11	mg/m^3	NA	---	NA	1.7E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	3.5E-11	mg/m^3	1.1E-04	(µg/m3)^-1	3.9E-12	2.7E-10	mg/m^3	NA	---	NA
				Carbazole	2.05E-01	mg/kg	5.7E-13	mg/m^3	NA	---	NA	4.4E-12	mg/m^3	NA	---	NA
				Chrysene	1.71E+01	mg/kg	4.7E-11	mg/m^3	1.1E-05	(µg/m3)^-1	5.2E-13	3.7E-10	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	5.4E-13	mg/m^3	1.2E-03	(µg/m3)^-1	6.5E-13	4.2E-12	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	3.2E-11	mg/m^3	1.1E-04	(µg/m3)^-1	3.5E-12	2.5E-10	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	7.5E-15	mg/m^3	3.8E+01	(µg/m3)^-1	2.8E-10	5.8E-14	mg/m^3	4.0E-08	mg/m^3	0.0000015
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	1.8E-17	mg/m^3	3.8E+01	(µg/m3)^-1	7.0E-13	1.4E-16	mg/m^3	4.0E-08	mg/m^3	0.000000004
				Aluminum	6.98E+03	mg/kg	1.9E-08	mg/m^3	NA	---	NA	1.5E-07	mg/m^3	5.0E-03	mg/m^3	0.000030
				Antimony	1.07E+01	mg/kg	2.9E-11	mg/m^3	NA	---	NA	2.3E-10	mg/m^3	NA	---	NA
				Arsenic	1.83E+01	mg/kg	5.1E-11	mg/m^3	4.3E-03	(µg/m3)^-1	2.2E-10	3.9E-10	mg/m^3	1.5E-05	mg/m^3	0.00003
				Chromium	1.23E+01	mg/kg	3.4E-11	mg/m^3	8.4E-02	(µg/m3)^-1	2.8E-09	2.6E-10	mg/m^3	1.0E-04	mg/m^3	0.0000026
				Cobalt	6.67E+00	mg/kg	1.8E-11	mg/m^3	9.0E-03	(µg/m3)^-1	1.7E-10	1.4E-10	mg/m^3	6.0E-06	mg/m^3	0.000024
				Iron	1.35E+04	mg/kg	3.7E-08	mg/m^3	NA	---	NA	2.9E-07	mg/m^3	NA	---	NA
				Lead	5.53E+02	mg/kg	1.5E-09	mg/m^3	NA	---	NA	1.2E-08	mg/m^3	NA	---	NA
				Manganese	3.79E+02	mg/kg	1.0E-09	mg/m^3	NA	---	NA	8.1E-09	mg/m^3	5.0E-05	mg/m^3	0.00016
				Mercury	2.12E+01	mg/kg	1.7E-05	mg/m^3	NA	---	NA	1.3E-04	mg/m^3	3.0E-04	mg/m^3	0.45
			Inhalation Total								3.6E-09					0.45
	Surface Soil Total										3.5E-05					2.4
Soil Total											3.5E-05					2.4
											Total of Receptor Risks Across All Media					3.5E-05
																Total of Receptor Hazards Across All Media	2.4

TABLE M-7.1C-7 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Ingestion	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				3.5E-07	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				2.5E-06	8.1E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				2.3E-07	7.3E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	7.0E-08	mg/kg-day	NA	---	NA	4.9E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				2.5E-08	8.1E-07	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	1.9E-09	mg/kg-day	NA	---	NA	1.3E-08	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				3.4E-09	1.1E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				3.9E-08	1.2E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				2.3E-07	7.3E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	2.5E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.2E-06	1.7E-10	mg/kg-day	7.0E-10	mg/kg-day	0.25
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	6.0E-14	mg/kg-day	1.3E+05	(mg/kg-day)^-1	7.8E-09	4.2E-13	mg/kg-day	7.0E-10	mg/kg-day	0.00060
				Aluminum	6.98E+03	mg/kg	6.3E-05	mg/kg-day	NA	---	NA	4.4E-04	mg/kg-day	1.0E+00	mg/kg-day	0.00044
				Antimony	1.07E+01	mg/kg	9.6E-08	mg/kg-day	NA	---	NA	6.7E-07	mg/kg-day	4.0E-04	mg/kg-day	0.0017
				Arsenic	1.83E+01	mg/kg	1.7E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.5E-07	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0039
				Chromium	1.23E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				1.7E-07	7.8E-07	mg/kg-day	3.0E-03	mg/kg-day	0.00026
				Cobalt	6.67E+00	mg/kg	6.0E-08	mg/kg-day	NA	---	NA	4.2E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0014
				Iron	1.35E+04	mg/kg	1.2E-04	mg/kg-day	NA	---	NA	8.5E-04	mg/kg-day	7.0E-01	mg/kg-day	0.0012
				Lead	5.53E+02	mg/kg	5.0E-06	mg/kg-day	NA	---	NA	3.5E-05	mg/kg-day	NA	---	NA
				Manganese	3.79E+02	mg/kg	3.4E-06	mg/kg-day	NA	---	NA	2.4E-05	mg/kg-day	7.0E-02	mg/kg-day	0.00034
				Mercury	2.12E+01	mg/kg	1.9E-07	mg/kg-day	NA	---	NA	1.3E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0045
			Ingestion Total								7.0E-06					0.26
			Dermal	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				7.5E-07	2.4E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				5.5E-06	1.8E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				5.0E-07	1.6E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	1.5E-07	mg/kg-day	NA	---	NA	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				5.5E-08	1.8E-06	mg/kg-day	NA	---	NA
				Carbazole	2.05E-01	mg/kg	4.0E-09	mg/kg-day	NA	---	NA	2.8E-08	mg/kg-day	NA	---	NA
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				7.4E-09	2.4E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				8.4E-08	2.7E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				5.0E-07	1.6E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	1.2E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.6E-06	8.6E-11	mg/kg-day	7.0E-10	mg/kg-day	0.12
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	1.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.8E-08	9.9E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0014
				Aluminum	6.98E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	1.07E+01	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.83E+01	mg/kg	8.3E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.2E-07	5.8E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0019
				Chromium	1.23E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.67E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.35E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	5.53E+02	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.79E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA

TABLE M-7.1C-7 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	EFSA Surface Soil	Dermal	Mercury	2.12E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								9.2E-06					0.13
			Inhalation	Benzo(a)anthracene	1.75E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				3.6E-13	7.7E-12	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.29E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				2.6E-12	5.7E-12	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.16E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				2.4E-13	5.1E-12	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	7.79E+00	mg/kg	4.9E-13	mg/m^3	NA	---	NA	3.4E-12	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.27E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				2.6E-13	5.6E-12	mg/m^3	NA	---	NA
				Carbazole	2.05E-01	mg/kg	1.3E-14	mg/m^3	NA	---	NA	9.0E-14	mg/m^3	NA	---	NA
				Chrysene	1.71E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				3.5E-14	7.5E-12	mg/m^2	NA	---	NA
				Dibenz(a,h)anthracene	1.95E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				4.4E-14	8.6E-14	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.15E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				2.4E-13	5.1E-12	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	2.72E-03	mg/kg	1.7E-16	mg/m^3	3.8E+01	(µg/m3)^-1	6.5E-12	1.2E-15	mg/m^3	4.0E-08	mg/m^3	0.000000030
				PCB Dioxin-like Congener TEQ	6.68E-06	mg/kg	4.2E-19	mg/m^3	3.8E+01	(µg/m3)^-1	1.6E-14	2.9E-18	mg/m^3	4.0E-08	mg/m^3	0.00000000007
				Aluminum	6.98E+03	mg/kg	4.4E-10	mg/m^3	NA	---	NA	3.1E-09	mg/m^3	5.0E-03	mg/m^3	0.00000061
				Antimony	1.07E+01	mg/kg	6.7E-13	mg/m^3	NA	---	NA	4.7E-12	mg/m^3	NA	---	NA
				Arsenic	1.83E+01	mg/kg	1.2E-12	mg/m^3	4.3E-03	(µg/m3)^-1	5.0E-12	8.1E-12	mg/m^3	1.5E-05	mg/m^3	0.0000005
				Chromium	1.23E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-24				1.9E-10	5.4E-12	mg/m^3	1.0E-04	mg/m^3	0.00000005
				Cobalt	6.67E+00	mg/kg	4.2E-13	mg/m^3	9.0E-03	(µg/m3)^-1	3.8E-12	2.9E-12	mg/m^3	6.0E-06	mg/m^3	0.00000049
				Iron	1.35E+04	mg/kg	8.5E-10	mg/m^3	NA	---	NA	6.0E-09	mg/m^3	NA	---	NA
				Lead	5.53E+02	mg/kg	3.5E-11	mg/m^3	NA	---	NA	2.4E-10	mg/m^3	NA	---	NA
				Manganese	3.79E+02	mg/kg	2.4E-11	mg/m^3	NA	---	NA	1.7E-10	mg/m^3	5.0E-05	mg/m^3	0.0000033
				Mercury	2.12E+01	mg/kg	3.9E-07	mg/m^3	NA	---	NA	2.7E-06	mg/m^3	3.0E-04	mg/m^3	0.0091
			Inhalation Total								2.1E-10					0.0092
	Surface Soil Total										1.6E-05					0.40
Soil Total											1.6E-05					0.40
											Total of Receptor Risks Across All Media	1.6E-05				Total of Receptor Hazards Across All Media	0.40

TABLE M-7.2A-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	1.3E-07	mg/kg-day	5.0E-02	mg/kg-day	0.0000026
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	3.4E-09	mg/kg-day	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	2.7E-05	mg/kg-day	1.0E-03	mg/kg-day	0.027
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	1.6E-08	mg/kg-day	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	2.5E-07	mg/kg-day	5.0E-03	mg/kg-day	0.000051
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	9.5E-06	mg/kg-day	4.0E-03	mg/kg-day	0.0024
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	7.2E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	5.2E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	6.3E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	2.1E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	1.4E-05	mg/kg-day	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	5.9E-06	mg/kg-day	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	6.5E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	4.0E-06	mg/kg-day	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	2.3E-04	mg/kg-day	4.0E-02	mg/kg-day	0.0057
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	2.1E-05	mg/kg-day	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	9.1E-06	mg/kg-day	2.0E-02	mg/kg-day	0.00046
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	1.5E-04	mg/kg-day	3.0E-02	mg/kg-day	0.0051
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	9.7E-08	mg/kg-day	NA	---	NA
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	8.9E-08	mg/kg-day	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	7.5E-08	mg/kg-day	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	4.0E-08	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	2.1E-07	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	2.9E-07	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	1.3E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	5.0E-08	mg/kg-day	7.0E-10	mg/kg-day	71
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	2.1E-06	mg/kg-day	5.0E-04	mg/kg-day	0.0042
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	8.2E-06	mg/kg-day	3.0E-05	mg/kg-day	0.27
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	8.0E-03	mg/kg-day	0.00015
				Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	1.8E-06	mg/kg-day	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	5.8E-06	mg/kg-day	5.0E-05	mg/kg-day	0.12
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	9.6E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0032
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	3.2E-06	mg/kg-day	1.3E-05	mg/kg-day	0.25
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	2.2E-06	mg/kg-day	2.0E-05	mg/kg-day	0.11
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	5.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.74
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	4.0E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0040
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	1.8E-06	mg/kg-day	4.0E-04	mg/kg-day	0.0045
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	1.2E-04	mg/kg-day	3.0E-04	mg/kg-day	0.41
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	3.3E-06	mg/kg-day	1.0E-03	mg/kg-day	0.0033

TABLE M-7.2A-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	Chromium	1.32E+01	mg/kg	---	---	---	---	---	9.1E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0030
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	4.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.14
				Iron	5.15E+04	mg/kg	---	---	---	---	---	3.5E-02	mg/kg-day	7.0E-01	mg/kg-day	0.050
				Lead	2.88E+02	mg/kg	---	---	---	---	---	2.0E-04	mg/kg-day	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	1.6E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0023
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	3.2E-03	mg/kg-day	3.0E-04	mg/kg-day	11
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	5.2E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0026
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	6.0E-07	mg/kg-day	1.0E-05	mg/kg-day	0.060
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	9.2E-04	mg/kg-day	3.0E-01	mg/kg-day	0.0031
			Ingestion Total								---					84
			Dermal	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	NA	---	5.0E-02	mg/kg-day	NA
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	2.2E-05	mg/kg-day	1.0E-03	mg/kg-day	0.022
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	1.3E-08	mg/kg-day	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	5.1E-07	mg/kg-day	5.0E-03	mg/kg-day	0.00010
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	9.9E-06	mg/kg-day	4.0E-03	mg/kg-day	0.0025
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	7.5E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	5.4E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	6.5E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	2.2E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	1.4E-05	mg/kg-day	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	6.1E-06	mg/kg-day	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	6.8E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	4.1E-06	mg/kg-day	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	2.4E-04	mg/kg-day	4.0E-02	mg/kg-day	0.0060
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	2.2E-05	mg/kg-day	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	9.4E-06	mg/kg-day	2.0E-02	mg/kg-day	0.00047
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	1.6E-04	mg/kg-day	3.0E-02	mg/kg-day	0.0053
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	1.2E-08	mg/kg-day	7.0E-10	mg/kg-day	17
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	8.7E-06	mg/kg-day	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	5.1E-07	mg/kg-day	5.0E-04	mg/kg-day	0.0010
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	6.6E-06	mg/kg-day	3.0E-05	mg/kg-day	0.22
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	9.3E-07	mg/kg-day	8.0E-03	mg/kg-day	0.00012

TABLE M-7.2A-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Dermal	Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	1.5E-06	mg/kg-day	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	4.6E-06	mg/kg-day	5.0E-05	mg/kg-day	0.093
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	3.1E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0010
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	2.6E-06	mg/kg-day	1.3E-05	mg/kg-day	0.20
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	2.5E-06	mg/kg-day	2.0E-05	mg/kg-day	0.12
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	5.8E-10	mg/kg-day	7.0E-10	mg/kg-day	0.83
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	3.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.099
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	2.6E-08	mg/kg-day	2.5E-05	mg/kg-day	0.0010
				Chromium	1.32E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.15E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.88E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	NA	---	1.0E-05	mg/kg-day	NA
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	NA	---	3.0E-01	mg/kg-day	NA
			Dermal Total								---					19
			Inhalation	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	1.5E-06	mg/m^3	4.0E-04	mg/m^3	0.0038
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	5.1E-13	mg/m^3	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	1.8E-04	mg/m^3	NA	---	NA
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	2.5E-12	mg/m^3	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	3.8E-11	mg/m^3	NA	---	NA
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	2.2E-04	mg/m^3	NA	---	NA
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	1.1E-08	mg/m^3	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	7.8E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	9.4E-09	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	3.2E-09	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	2.1E-09	mg/m^3	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	8.8E-10	mg/m^3	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	9.8E-09	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	6.0E-10	mg/m^3	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	3.5E-08	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	3.1E-09	mg/m^3	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	2.6E-04	mg/m^3	3.0E-03	mg/m^3	0.086
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	8.3E-05	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	1.5E-11	mg/m^3	NA	---	NA
Soil	Aggregate Soil	CHP Aggregate Soil	Inhalation	Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	1.3E-11	mg/m^3	NA	---	NA

TABLE M-7.2A-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	1.1E-11	mg/m^3	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	6.0E-12	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	4.3E-11	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	1.9E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	7.5E-12	mg/m^3	4.0E-08	mg/m^3	0.00019
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	3.2E-10	mg/m^3	NA	---	NA
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	2.8E-10	mg/m^3	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	8.7E-10	mg/m^3	NA	---	NA
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	1.4E-10	mg/m^3	NA	---	NA
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	4.8E-10	mg/m^3	NA	---	NA
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	3.3E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	7.8E-14	mg/m^3	4.0E-08	mg/m^3	0.0000019
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	6.0E-07	mg/m^3	5.0E-03	mg/m^3	0.00012
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	2.7E-10	mg/m^3	NA	---	NA
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	1.9E-08	mg/m^3	1.5E-05	mg/m^3	0.0012
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	4.9E-10	mg/m^3	2.0E-05	mg/m^3	0.000024
				Chromium	1.32E+01	mg/kg	---	---	---	---	---	1.4E-09	mg/m^3	1.0E-04	mg/m^3	0.000014
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	6.2E-09	mg/m^3	6.0E-06	mg/m^3	0.0010
				Iron	5.15E+04	mg/kg	---	---	---	---	---	5.3E-06	mg/m^3	NA	---	NA
				Lead	2.88E+02	mg/kg	---	---	---	---	---	3.0E-08	mg/m^3	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	2.4E-08	mg/m^3	5.0E-05	mg/m^3	0.00047
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	1.4E-01	mg/m^3	3.0E-04	mg/m^3	467
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	7.8E-09	mg/m^3	9.0E-05	mg/m^3	0.000086
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	9.0E-11	mg/m^3	NA	---	NA
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	1.4E-07	mg/m^3	NA	---	NA
			Inhalation Total								---					467
	Aggregate Soil Total										---					570
Soil Total											---					570
											Total of Receptor Risks Across All Media ---					Total of Receptor Hazards Across All Media 570

TABLE M-7.2A-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	5.0E-02	mg/kg-day	0.000024
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	3.2E-08	mg/kg-day	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	2.5E-04	mg/kg-day	1.0E-03	mg/kg-day	0.25
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	1.5E-07	mg/kg-day	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	2.4E-06	mg/kg-day	5.0E-03	mg/kg-day	0.00047
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	8.9E-05	mg/kg-day	4.0E-03	mg/kg-day	0.022
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	6.7E-04	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	4.8E-04	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	5.9E-04	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	2.0E-04	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	1.3E-04	mg/kg-day	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	5.5E-05	mg/kg-day	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	6.1E-04	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	3.7E-05	mg/kg-day	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	2.1E-03	mg/kg-day	4.0E-02	mg/kg-day	0.054
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	2.0E-04	mg/kg-day	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	8.5E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0042
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	1.4E-03	mg/kg-day	3.0E-02	mg/kg-day	0.047
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	9.1E-07	mg/kg-day	NA	---	NA
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	8.3E-07	mg/kg-day	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	7.0E-07	mg/kg-day	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	3.7E-07	mg/kg-day	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	1.9E-06	mg/kg-day	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	2.7E-06	mg/kg-day	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	4.7E-07	mg/kg-day	7.0E-10	mg/kg-day	665
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	1.0E-04	mg/kg-day	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	5.0E-04	mg/kg-day	0.040
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	7.7E-05	mg/kg-day	3.0E-05	mg/kg-day	2.6
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	8.0E-03	mg/kg-day	0.0014
				Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	1.7E-05	mg/kg-day	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	5.4E-05	mg/kg-day	5.0E-05	mg/kg-day	1.1
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	8.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.030
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	3.0E-05	mg/kg-day	1.3E-05	mg/kg-day	2.3
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	2.1E-05	mg/kg-day	2.0E-05	mg/kg-day	1.0
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	4.8E-09	mg/kg-day	7.0E-10	mg/kg-day	6.9
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	3.7E-02	mg/kg-day	1.0E+00	mg/kg-day	0.037
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	1.7E-05	mg/kg-day	4.0E-04	mg/kg-day	0.042
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	1.2E-03	mg/kg-day	3.0E-04	mg/kg-day	3.9
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	3.0E-05	mg/kg-day	1.0E-03	mg/kg-day	0.030

TABLE M-7.2A-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	Chromium	1.32E+01	mg/kg	---	---	---	---	---	8.5E-05	mg/kg-day	3.0E-03	mg/kg-day	0.028
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	3.8E-04	mg/kg-day	3.0E-04	mg/kg-day	1.3
				Iron	5.15E+04	mg/kg	---	---	---	---	---	3.3E-01	mg/kg-day	7.0E-01	mg/kg-day	0.47
				Lead	2.88E+02	mg/kg	---	---	---	---	---	1.8E-03	mg/kg-day	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	1.5E-03	mg/kg-day	7.0E-02	mg/kg-day	0.021
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	3.0E-02	mg/kg-day	3.0E-04	mg/kg-day	99
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	4.8E-04	mg/kg-day	2.0E-02	mg/kg-day	0.024
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	5.6E-06	mg/kg-day	1.0E-05	mg/kg-day	0.56
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	8.6E-03	mg/kg-day	3.0E-01	mg/kg-day	0.029
			Ingestion Total								---					784
			Dermal	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	NA	---	5.0E-02	mg/kg-day	NA
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	1.0E-03	mg/kg-day	0.14
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	8.6E-08	mg/kg-day	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	3.3E-06	mg/kg-day	5.0E-03	mg/kg-day	0.00066
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	6.5E-05	mg/kg-day	4.0E-03	mg/kg-day	0.016
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	4.9E-04	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	3.5E-04	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	4.3E-04	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	9.4E-05	mg/kg-day	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	4.0E-05	mg/kg-day	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	4.4E-04	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	2.7E-05	mg/kg-day	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	1.6E-03	mg/kg-day	4.0E-02	mg/kg-day	0.039
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	6.2E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0031
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	1.0E-03	mg/kg-day	3.0E-02	mg/kg-day	0.034
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	7.8E-08	mg/kg-day	7.0E-10	mg/kg-day	112
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	5.7E-05	mg/kg-day	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	3.3E-06	mg/kg-day	5.0E-04	mg/kg-day	0.0067
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	4.3E-05	mg/kg-day	3.0E-05	mg/kg-day	1.4
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	6.1E-06	mg/kg-day	8.0E-03	mg/kg-day	0.00076

TABLE M-7.2A-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Dermal	Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	9.7E-06	mg/kg-day	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	3.0E-05	mg/kg-day	5.0E-05	mg/kg-day	0.61
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0067
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	1.7E-05	mg/kg-day	1.3E-05	mg/kg-day	1.3
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	1.6E-05	mg/kg-day	2.0E-05	mg/kg-day	0.82
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	3.8E-09	mg/kg-day	7.0E-10	mg/kg-day	5.4
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	1.9E-04	mg/kg-day	3.0E-04	mg/kg-day	0.65
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	1.7E-07	mg/kg-day	2.5E-05	mg/kg-day	0.0068
				Chromium	1.32E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	5.15E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.88E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	NA	---	1.0E-05	mg/kg-day	NA
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	NA	---	3.0E-01	mg/kg-day	NA
			Dermal Total								---					122
			Inhalation	1,1'-Biphenyl	1.90E-01	mg/kg	---	---	---	---	---	1.5E-06	mg/m^3	4.0E-04	mg/m^3	0.0038
				1,3-Dichlorobenzene	5.00E-03	mg/kg	---	---	---	---	---	5.1E-13	mg/m^3	NA	---	NA
				Dibenzofuran	3.99E+01	mg/kg	---	---	---	---	---	1.8E-04	mg/m^3	NA	---	NA
				Di-n-octyl phthalate	2.40E-02	mg/kg	---	---	---	---	---	2.5E-12	mg/m^3	NA	---	NA
				Pentachlorophenol	3.70E-01	mg/kg	---	---	---	---	---	3.8E-11	mg/m^3	NA	---	NA
				2-Methylnaphthalene	1.39E+01	mg/kg	---	---	---	---	---	2.2E-04	mg/m^3	NA	---	NA
				Benzo(a)anthracene	1.05E+02	mg/kg	---	---	---	---	---	1.1E-08	mg/m^3	NA	---	NA
				Benzo(a)pyrene	7.55E+01	mg/kg	---	---	---	---	---	7.8E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	9.18E+01	mg/kg	---	---	---	---	---	9.4E-09	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	---	---	---	---	---	3.2E-09	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	2.01E+01	mg/kg	---	---	---	---	---	2.1E-09	mg/m^3	NA	---	NA
				Carbazole	8.56E+00	mg/kg	---	---	---	---	---	8.8E-10	mg/m^3	NA	---	NA
				Chrysene	9.52E+01	mg/kg	---	---	---	---	---	9.8E-09	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	---	---	---	---	---	6.0E-10	mg/m^3	NA	---	NA
				Fluoranthene	3.36E+02	mg/kg	---	---	---	---	---	3.5E-08	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	---	---	---	---	---	3.1E-09	mg/m^3	NA	---	NA
				Naphthalene	1.33E+01	mg/kg	---	---	---	---	---	2.6E-04	mg/m^3	3.0E-03	mg/m^3	0.086
				Pyrene	2.22E+02	mg/kg	---	---	---	---	---	8.3E-05	mg/m^3	NA	---	NA
				Dichloronaphthalene, Total	1.42E-01	mg/kg	---	---	---	---	---	1.5E-11	mg/m^3	NA	---	NA
Soil	Aggregate Soil	CHP Aggregate Soil	Inhalation	Heptachloronaphthalene, Total	1.30E-01	mg/kg	---	---	---	---	---	1.3E-11	mg/m^3	NA	---	NA

TABLE M-7.2A-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	---	---	---	---	---	1.1E-11	mg/m^3	NA	---	NA
				Monochloronaphthalene, Total	5.80E-02	mg/kg	---	---	---	---	---	6.0E-12	mg/m^3	NA	---	NA
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	---	---	---	---	---	4.3E-11	mg/m^3	NA	---	NA
				Trichloronaphthalene, Total	1.84E-01	mg/kg	---	---	---	---	---	1.9E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	---	---	---	---	---	7.5E-12	mg/m^3	4.0E-08	mg/m^3	0.00019
				4,4'-DDE	1.60E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	NA	---	NA
				4,4'-DDT	3.10E+00	mg/kg	---	---	---	---	---	3.2E-10	mg/m^3	NA	---	NA
				Aldrin	1.20E+01	mg/kg	---	---	---	---	---	1.2E-09	mg/m^3	NA	---	NA
				Alpha-BHC	1.70E+00	mg/kg	---	---	---	---	---	1.7E-10	mg/m^3	NA	---	NA
				Delta-BHC	2.70E+00	mg/kg	---	---	---	---	---	2.8E-10	mg/m^3	NA	---	NA
				Dieldrin	8.50E+00	mg/kg	---	---	---	---	---	8.7E-10	mg/m^3	NA	---	NA
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	---	---	---	---	---	1.4E-10	mg/m^3	NA	---	NA
				Heptachlor Epoxide	4.70E+00	mg/kg	---	---	---	---	---	4.8E-10	mg/m^3	NA	---	NA
				Total PCB Homologs	3.26E+00	mg/kg	---	---	---	---	---	3.3E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	---	---	---	---	---	7.8E-14	mg/m^3	4.0E-08	mg/m^3	0.0000019
				Aluminum	5.85E+03	mg/kg	---	---	---	---	---	6.0E-07	mg/m^3	5.0E-03	mg/m^3	0.00012
				Antimony	2.60E+00	mg/kg	---	---	---	---	---	2.7E-10	mg/m^3	NA	---	NA
				Arsenic	1.81E+02	mg/kg	---	---	---	---	---	1.9E-08	mg/m^3	1.5E-05	mg/m^3	0.0012
				Cadmium	4.76E+00	mg/kg	---	---	---	---	---	4.9E-10	mg/m^3	2.0E-05	mg/m^3	0.000024
				Chromium	1.32E+01	mg/kg	---	---	---	---	---	1.4E-09	mg/m^3	1.0E-04	mg/m^3	0.000014
				Cobalt	6.02E+01	mg/kg	---	---	---	---	---	6.2E-09	mg/m^3	6.0E-06	mg/m^3	0.0010
				Iron	5.15E+04	mg/kg	---	---	---	---	---	5.3E-06	mg/m^3	NA	---	NA
				Lead	2.88E+02	mg/kg	---	---	---	---	---	3.0E-08	mg/m^3	NA	---	NA
				Manganese	2.30E+02	mg/kg	---	---	---	---	---	2.4E-08	mg/m^3	5.0E-05	mg/m^3	0.00047
				Mercury	4.64E+03	mg/kg	---	---	---	---	---	1.4E-01	mg/m^3	3.0E-04	mg/m^3	467
				Nickel	7.57E+01	mg/kg	---	---	---	---	---	7.8E-09	mg/m^3	9.0E-05	mg/m^3	0.000086
				Thallium	8.80E-01	mg/kg	---	---	---	---	---	9.0E-11	mg/m^3	NA	---	NA
				Zinc	1.34E+03	mg/kg	---	---	---	---	---	1.4E-07	mg/m^3	NA	---	NA
			Inhalation Total								---					467
	Aggregate Soil Total										---					1374
Soil Total											---					1374
											Total of Receptor Risks Across All Media ---				Total of Receptor Hazards Across All Media	1374

TABLE M-7.2A-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	1,1'-Biphenyl	1.90E-01	mg/kg	4.8E-08	mg/kg-day	8.0E-03	(mg/kg-day)^-1	3.8E-10	---	---	---	---	---
				1,3-Dichlorobenzene	5.00E-03	mg/kg	1.3E-09	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenzofuran	3.99E+01	mg/kg	1.0E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Di-n-octyl phthalate	2.40E-02	mg/kg	6.0E-09	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pentachlorophenol	3.70E-01	mg/kg	9.3E-08	mg/kg-day	4.0E-01	(mg/kg-day)^-1	3.7E-08	---	---	---	---	---
				2-Methylnaphthalene	1.39E+01	mg/kg	3.5E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(a)anthracene	1.05E+02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				1.6E-04	---	---	---	---	---
				Benzo(a)pyrene	7.55E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				1.1E-03	---	---	---	---	---
				Benzo(b)fluoranthene	9.18E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				1.4E-04	---	---	---	---	---
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	7.7E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	2.01E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				3.0E-06	---	---	---	---	---
				Carbazole	8.56E+00	mg/kg	2.2E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	9.52E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				1.4E-06	---	---	---	---	---
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				5.8E-05	---	---	---	---	---
				Fluoranthene	3.36E+02	mg/kg	8.4E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				4.5E-05	---	---	---	---	---
				Naphthalene	1.33E+01	mg/kg	3.3E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pyrene	2.22E+02	mg/kg	5.6E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dichloronaphthalene, Total	1.42E-01	mg/kg	3.6E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	3.3E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	2.8E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Monochloronaphthalene, Total	5.80E-02	mg/kg	1.5E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	7.7E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	1.1E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.84E-01	mg/kg	4.6E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	1.8E-08	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.4E-03	---	---	---	---	---
				4,4'-DDE	1.60E+01	mg/kg	4.0E-06	mg/kg-day	3.4E-01	(mg/kg-day)^-1	1.4E-06	---	---	---	---	---
				4,4'-DDT	3.10E+00	mg/kg	7.8E-07	mg/kg-day	3.4E-01	(mg/kg-day)^-1	2.6E-07	---	---	---	---	---
				Aldrin	1.20E+01	mg/kg	3.0E-06	mg/kg-day	1.7E+01	(mg/kg-day)^-1	5.1E-05	---	---	---	---	---
				Alpha-BHC	1.70E+00	mg/kg	4.3E-07	mg/kg-day	6.3E+00	(mg/kg-day)^-1	2.7E-06	---	---	---	---	---
				Delta-BHC	2.70E+00	mg/kg	6.8E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dieldrin	8.50E+00	mg/kg	2.1E-06	mg/kg-day	1.6E+01	(mg/kg-day)^-1	3.4E-05	---	---	---	---	---
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	3.5E-07	mg/kg-day	1.1E+00	(mg/kg-day)^-1	3.9E-07	---	---	---	---	---
				Heptachlor Epoxide	4.70E+00	mg/kg	1.2E-06	mg/kg-day	9.1E+00	(mg/kg-day)^-1	1.1E-05	---	---	---	---	---
				Total PCB Homologs	3.26E+00	mg/kg	8.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.6E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	1.9E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.5E-05	---	---	---	---	---
				Aluminum	5.85E+03	mg/kg	1.5E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	2.60E+00	mg/kg	6.5E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	1.81E+02	mg/kg	4.6E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	6.8E-05	---	---	---	---	---
				Cadmium	4.76E+00	mg/kg	1.2E-06	mg/kg-day	NA	---	NA	---	---	---	---	---

TABLE M-7.2A-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Ingestion	Chromium	1.32E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				1.3E-05	---	---	---	---	---
				Cobalt	6.02E+01	mg/kg	1.5E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	5.15E+04	mg/kg	1.3E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	2.88E+02	mg/kg	7.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	2.30E+02	mg/kg	5.8E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	4.64E+03	mg/kg	1.2E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Nickel	7.57E+01	mg/kg	1.9E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Thallium	8.80E-01	mg/kg	2.2E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Zinc	1.34E+03	mg/kg	3.4E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								4.1E-03					---
			Dermal	1,1'-Biphenyl	1.90E-01	mg/kg	NA	---	8.0E-03	(mg/kg-day)^-1	NA	---	---	---	---	---
				1,3-Dichlorobenzene	5.00E-03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Dibenzofuran	3.99E+01	mg/kg	6.3E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Di-n-octyl phthalate	2.40E-02	mg/kg	3.8E-09	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pentachlorophenol	3.70E-01	mg/kg	1.5E-07	mg/kg-day	4.0E-01	(mg/kg-day)^-1	5.8E-08	---	---	---	---	---
				2-Methylnaphthalene	1.39E+01	mg/kg	2.8E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(a)anthracene	1.05E+02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				1.2E-04	---	---	---	---	---
				Benzo(a)pyrene	7.55E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				8.5E-04	---	---	---	---	---
				Benzo(b)fluoranthene	9.18E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				1.0E-04	---	---	---	---	---
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	6.3E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	2.01E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				2.3E-06	---	---	---	---	---
				Carbazole	8.56E+00	mg/kg	1.7E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	9.52E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				1.1E-06	---	---	---	---	---
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				4.4E-05	---	---	---	---	---
				Fluoranthene	3.36E+02	mg/kg	6.8E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				3.4E-05	---	---	---	---	---
				Naphthalene	1.33E+01	mg/kg	2.7E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Pyrene	2.22E+02	mg/kg	4.5E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dichloronaphthalene, Total	1.42E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Hexachloronaphthalene, Total	1.10E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Monochloronaphthalene, Total	5.80E-02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.84E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	3.4E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.5E-04	---	---	---	---	---
				4,4'-DDE	1.60E+01	mg/kg	2.5E-06	mg/kg-day	3.4E-01	(mg/kg-day)^-1	8.5E-07	---	---	---	---	---
				4,4'-DDT	3.10E+00	mg/kg	1.5E-07	mg/kg-day	3.4E-01	(mg/kg-day)^-1	5.0E-08	---	---	---	---	---
				Aldrin	1.20E+01	mg/kg	1.9E-06	mg/kg-day	1.7E+01	(mg/kg-day)^-1	3.2E-05	---	---	---	---	---
				Alpha-BHC	1.70E+00	mg/kg	2.7E-07	mg/kg-day	6.3E+00	(mg/kg-day)^-1	1.7E-06	---	---	---	---	---

TABLE M-7.2A-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Dermal	Delta-BHC	2.70E+00	mg/kg	4.2E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dieldrin	8.50E+00	mg/kg	1.3E-06	mg/kg-day	1.6E+01	(mg/kg-day)^-1	2.1E-05	---	---	---	---	---
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	8.8E-08	mg/kg-day	1.1E+00	(mg/kg-day)^-1	9.7E-08	---	---	---	---	---
				Heptachlor Epoxide	4.70E+00	mg/kg	7.4E-07	mg/kg-day	9.1E+00	(mg/kg-day)^-1	6.7E-06	---	---	---	---	---
				Total PCB Homologs	3.26E+00	mg/kg	7.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.4E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	1.7E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.2E-05	---	---	---	---	---
				Aluminum	5.85E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	2.60E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	1.81E+02	mg/kg	8.5E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.3E-05	---	---	---	---	---
				Cadmium	4.76E+00	mg/kg	7.5E-09	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chromium	1.32E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	6.02E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Iron	5.15E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Lead	2.88E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	2.30E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	4.64E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Nickel	7.57E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Thallium	8.80E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Zinc	1.34E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								1.7E-03					---
			Inhalation	1,1'-Biphenyl	1.90E-01	mg/kg	2.0E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				1,3-Dichlorobenzene	5.00E-03	mg/kg	6.6E-14	mg/m^3	NA	---	NA	---	---	---	---	---
				Dibenzofuran	3.99E+01	mg/kg	2.4E-05	mg/m^3	NA	---	NA	---	---	---	---	---
				Di-n-octyl phthalate	2.40E-02	mg/kg	3.2E-13	mg/m^3	NA	---	NA	---	---	---	---	---
				Pentachlorophenol	3.70E-01	mg/kg	4.9E-12	mg/m^3	5.1E-06	(µg/m3)^-1	2.5E-14	---	---	---	---	---
				2-Methylnaphthalene	1.39E+01	mg/kg	2.8E-05	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(a)anthracene	1.05E+02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				6.9E-10	---	---	---	---	---
				Benzo(a)pyrene	7.55E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				5.0E-09	---	---	---	---	---
				Benzo(b)fluoranthene	9.18E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				6.0E-10	---	---	---	---	---
				Benzo(g,h,i)perylene	3.07E+01	mg/kg	4.1E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	2.01E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				1.3E-10	---	---	---	---	---
				Carbazole	8.56E+00	mg/kg	1.1E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Chrysene	9.52E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				6.3E-11	---	---	---	---	---
				Dibenz(a,h)anthracene	5.82E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				2.8E-10	---	---	---	---	---
				Fluoranthene	3.36E+02	mg/kg	4.4E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	3.05E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				2.0E-10	---	---	---	---	---
				Naphthalene	1.33E+01	mg/kg	3.3E-05	mg/m^3	3.4E-05	(µg/m3)^-1	1.1E-06	---	---	---	---	---
				Pyrene	2.22E+02	mg/kg	1.1E-05	mg/m^3	NA	---	NA	---	---	---	---	---
				Dichloronaphthalene, Total	1.42E-01	mg/kg	1.9E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Heptachloronaphthalene, Total	1.30E-01	mg/kg	1.7E-12	mg/m^3	NA	---	NA	---	---	---	---	---

TABLE M-7.2A-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	CHP Aggregate Soil	Inhalation	Hexachloronaphthalene, Total	1.10E-01	mg/kg	1.5E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Monochloronaphthalene, Total	5.80E-02	mg/kg	7.7E-13	mg/m^3	NA	---	NA	---	---	---	---	---
				Pentachloronaphthalene, Total	3.05E-01	mg/kg	4.0E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Tetrachloronaphthalene, Total	4.21E-01	mg/kg	5.6E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Trichloronaphthalene, Total	1.84E-01	mg/kg	2.4E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	7.28E-02	mg/kg	9.6E-13	mg/m^3	3.8E+01	(µg/m3)^-1	3.7E-08	---	---	---	---	---
				4,4'-DDE	1.60E+01	mg/kg	2.1E-10	mg/m^3	9.7E-05	(µg/m3)^-1	2.1E-11	---	---	---	---	---
				4,4'-DDT	3.10E+00	mg/kg	4.1E-11	mg/m^3	9.7E-05	(µg/m3)^-1	4.0E-12	---	---	---	---	---
				Aldrin	1.20E+01	mg/kg	1.6E-10	mg/m^3	4.9E-03	(µg/m3)^-1	7.8E-10	---	---	---	---	---
				Alpha-BHC	1.70E+00	mg/kg	2.2E-11	mg/m^3	1.8E-03	(µg/m3)^-1	4.0E-11	---	---	---	---	---
				Delta-BHC	2.70E+00	mg/kg	3.6E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Dieldrin	8.50E+00	mg/kg	1.1E-10	mg/m^3	4.6E-03	(µg/m3)^-1	5.2E-10	---	---	---	---	---
				Gamma-BHC (Lindane)	1.40E+00	mg/kg	1.9E-11	mg/m^3	3.1E-04	(µg/m3)^-1	5.7E-12	---	---	---	---	---
				Heptachlor Epoxide	4.70E+00	mg/kg	6.2E-11	mg/m^3	2.6E-03	(µg/m3)^-1	1.6E-10	---	---	---	---	---
				Total PCB Homologs	3.26E+00	mg/kg	4.3E-11	mg/m^3	5.7E-04	(µg/m3)^-1	2.5E-11	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	7.57E-04	mg/kg	1.0E-14	mg/m^3	3.8E+01	(µg/m3)^-1	3.8E-10	---	---	---	---	---
				Aluminum	5.85E+03	mg/kg	7.7E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Antimony	2.60E+00	mg/kg	3.4E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	1.81E+02	mg/kg	2.4E-09	mg/m^3	4.3E-03	(µg/m3)^-1	1.0E-08	---	---	---	---	---
				Cadmium	4.76E+00	mg/kg	6.3E-11	mg/m^3	1.8E-03	(µg/m3)^-1	1.1E-10	---	---	---	---	---
				Chromium	1.32E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-16				6.6E-08	---	---	---	---	---
				Cobalt	6.02E+01	mg/kg	8.0E-10	mg/m^3	9.0E-03	(µg/m3)^-1	7.2E-09	---	---	---	---	---
				Iron	5.15E+04	mg/kg	6.8E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	2.88E+02	mg/kg	3.8E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	2.30E+02	mg/kg	3.0E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	4.64E+03	mg/kg	1.8E-02	mg/m^3	NA	---	NA	---	---	---	---	---
				Nickel	7.57E+01	mg/kg	1.0E-09	mg/m^3	2.6E-04	(µg/m3)^-1	2.6E-10	---	---	---	---	---
				Thallium	8.80E-01	mg/kg	1.2E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Zinc	1.34E+03	mg/kg	1.8E-08	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								1.3E-06					---
	Aggregate Soil Total										5.8E-03					---
Soil Total											5.8E-03					---
											Total of Receptor Risks Across All Media 5.8E-03					Total of Receptor Hazards Across All Media ---

TABLE M-7.2B-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	6.3E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	6.1E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	8.2E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	6.5E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	5.3E-07	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	1.3E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	2.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	6.4E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	7.4E-11	mg/kg-day	7.0E-10	mg/kg-day	0.11
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	2.8E-06	mg/kg-day	2.0E-05	mg/kg-day	0.14
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	8.0E-11	mg/kg-day	7.0E-10	mg/kg-day	0.11
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	3.8E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0038
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	4.6E-05	mg/kg-day	4.0E-04	mg/kg-day	0.12
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	2.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.085
				Barium	3.19E+02	mg/kg	---	---	---	---	---	2.2E-04	mg/kg-day	2.0E-01	mg/kg-day	0.0011
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	3.0E-03	mg/kg-day	0.0041
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	5.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.020
				Iron	4.27E+04	mg/kg	---	---	---	---	---	2.9E-02	mg/kg-day	7.0E-01	mg/kg-day	0.042
				Lead	2.51E+03	mg/kg	---	---	---	---	---	1.7E-03	mg/kg-day	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	2.2E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0032
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	1.7E-05	mg/kg-day	3.0E-04	mg/kg-day	0.058
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	4.4E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0022
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	1.2E-07	mg/kg-day	1.0E-05	mg/kg-day	0.012
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	1.6E-05	mg/kg-day	7.0E-05	mg/kg-day	0.23
			Ingestion Total								---					0.93
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	6.5E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	6.3E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	8.5E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	6.7E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	5.5E-07	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	1.4E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	2.2E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	6.6E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.025
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	3.1E-06	mg/kg-day	2.0E-05	mg/kg-day	0.15
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	8.9E-11	mg/kg-day	7.0E-10	mg/kg-day	0.13
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	6.1E-06	mg/kg-day	3.0E-04	mg/kg-day	0.020

TABLE M-7.2B-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Barium	3.19E+02	mg/kg	---	---	---	---	---	NA	---	1.4E-02	mg/kg-day	NA
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	4.27E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.51E+03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	NA	---	1.0E-05	mg/kg-day	NA
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					0.33
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	9.4E-11	mg/m^3	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	9.1E-11	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	1.2E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	9.7E-11	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	7.9E-11	mg/m^3	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	2.0E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	9.6E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.1E-14	mg/m^3	4.0E-08	mg/m^3	0.0000003
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	4.1E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	1.2E-14	mg/m^3	4.0E-08	mg/m^3	0.00000030
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	5.7E-07	mg/m^3	5.0E-03	mg/m^3	0.00011
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	6.9E-09	mg/m^3	NA	---	NA
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	3.8E-09	mg/m^3	1.5E-05	mg/m^3	0.00025
				Barium	3.19E+02	mg/kg	---	---	---	---	---	3.3E-08	mg/m^4	5.0E-04	mg/m^3	0.00007
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	1.9E-09	mg/m^3	1.0E-04	mg/m^3	0.000019
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	8.8E-10	mg/m^3	6.0E-06	mg/m^3	0.00015
				Iron	4.27E+04	mg/kg	---	---	---	---	---	4.4E-06	mg/m^3	NA	---	NA
				Lead	2.51E+03	mg/kg	---	---	---	---	---	2.6E-07	mg/m^3	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	3.3E-08	mg/m^3	5.0E-05	mg/m^3	0.00067
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	7.7E-04	mg/m^3	3.0E-04	mg/m^3	2.6
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	6.6E-09	mg/m^1	9.0E-05	mg/m^3	0.000074
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	1.9E-11	mg/m^2	NA	---	NA
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	2.4E-09	mg/m^3	1.0E-04	mg/m^3	0.000024
			Inhalation Total								---					2.6
	Aggregate Soil Total										---					3.8
Soil Total											---					3.8
											Total of Receptor Risks Across All Media					3.8

TABLE M-7.2B-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	5.8E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	5.7E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	7.7E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	6.0E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	4.9E-06	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	1.9E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	5.9E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	6.9E-10	mg/kg-day	7.0E-10	mg/kg-day	0.99
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	2.6E-05	mg/kg-day	2.0E-05	mg/kg-day	1.3
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	7.4E-10	mg/kg-day	7.0E-10	mg/kg-day	1.1
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	3.6E-02	mg/kg-day	1.0E+00	mg/kg-day	0.036
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	4.3E-04	mg/kg-day	4.0E-04	mg/kg-day	1.1
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	2.4E-04	mg/kg-day	3.0E-04	mg/kg-day	0.79
				Barium	3.19E+02	mg/kg	---	---	---	---	---	2.0E-03	mg/kg-day	2.0E-01	mg/kg-day	0.010
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	1.2E-04	mg/kg-day	3.0E-03	mg/kg-day	0.039
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	5.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.18
				Iron	4.27E+04	mg/kg	---	---	---	---	---	2.7E-01	mg/kg-day	7.0E-01	mg/kg-day	0.39
				Lead	2.51E+03	mg/kg	---	---	---	---	---	1.6E-02	mg/kg-day	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	2.1E-03	mg/kg-day	7.0E-02	mg/kg-day	0.030
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	1.6E-04	mg/kg-day	3.0E-04	mg/kg-day	0.54
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	4.1E-04	mg/kg-day	2.0E-02	mg/kg-day	0.021
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	1.2E-06	mg/kg-day	1.0E-05	mg/kg-day	0.12
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	1.5E-04	mg/kg-day	7.0E-05	mg/kg-day	2.1
			Ingestion Total								---					8.7
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	4.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	4.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	5.6E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	4.4E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	3.6E-06	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	9.1E-07	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	1.4E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	4.3E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.2E-10	mg/kg-day	7.0E-10	mg/kg-day	0.17
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	2.0E-05	mg/kg-day	2.0E-05	mg/kg-day	1.0
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	5.8E-10	mg/kg-day	7.0E-10	mg/kg-day	0.83
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	4.0E-05	mg/kg-day	3.0E-04	mg/kg-day	0.13

TABLE M-7.2B-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Barium	3.19E+02	mg/kg	---	---	---	---	---	NA	---	1.4E-02	mg/kg-day	NA
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	4.27E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.51E+03	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	NA	---	1.0E-05	mg/kg-day	NA
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					2.1
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	---	---	---	---	---	9.4E-11	mg/m^3	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	---	---	---	---	---	9.1E-11	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	---	---	---	---	---	1.2E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	---	---	---	---	---	9.7E-11	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	---	---	---	---	---	7.9E-11	mg/m^3	NA	---	NA
				Carbazole	1.95E-01	mg/kg	---	---	---	---	---	2.0E-11	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	---	---	---	---	---	3.1E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	---	---	---	---	---	9.6E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	---	---	---	---	---	1.1E-14	mg/m^3	4.0E-08	mg/m^3	0.0000003
				Total PCB Homologs	4.02E+00	mg/kg	---	---	---	---	---	4.1E-10	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	---	---	---	---	---	1.2E-14	mg/m^3	4.0E-08	mg/m^3	0.00000030
				Aluminum	5.56E+03	mg/kg	---	---	---	---	---	5.7E-07	mg/m^3	5.0E-03	mg/m^3	0.00011
				Antimony	6.73E+01	mg/kg	---	---	---	---	---	6.9E-09	mg/m^3	NA	---	NA
				Arsenic	3.71E+01	mg/kg	---	---	---	---	---	3.8E-09	mg/m^3	1.5E-05	mg/m^3	0.00025
				Barium	3.19E+02	mg/kg	---	---	---	---	---	3.3E-08	mg/m^3	5.0E-04	mg/m^3	0.00007
				Chromium	1.81E+01	mg/kg	---	---	---	---	---	1.9E-09	mg/m^3	1.0E-04	mg/m^3	0.000019
				Cobalt	8.56E+00	mg/kg	---	---	---	---	---	8.8E-10	mg/m^3	6.0E-06	mg/m^3	0.00015
				Iron	4.27E+04	mg/kg	---	---	---	---	---	4.4E-06	mg/m^3	NA	---	NA
				Lead	2.51E+03	mg/kg	---	---	---	---	---	2.6E-07	mg/m^3	NA	---	NA
				Manganese	3.26E+02	mg/kg	---	---	---	---	---	3.3E-08	mg/m^3	5.0E-05	mg/m^3	0.00067
				Mercury	2.55E+01	mg/kg	---	---	---	---	---	7.7E-04	mg/m^3	3.0E-04	mg/m^3	2.6
				Nickel	6.46E+01	mg/kg	---	---	---	---	---	6.6E-09	mg/m^3	9.0E-05	mg/m^3	0.000074
				Thallium	1.80E-01	mg/kg	---	---	---	---	---	1.9E-11	mg/m^3	NA	---	NA
				Vanadium	2.34E+01	mg/kg	---	---	---	---	---	2.4E-09	mg/m^3	1.0E-04	mg/m^3	0.000024
			Inhalation Total								---					2.6
	Aggregate Soil Total										---					13
Soil Total											---					13
											Total of Receptor Risks Across All Media					---
																Total of Receptor Hazards Across All Media
																13

TABLE M-7.2B-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.4E-06	---	---	---	---	---
				Benzo(a)pyrene	8.89E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.3E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.20E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.8E-06	---	---	---	---	---
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	2.4E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	7.70E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.1E-07	---	---	---	---	---
				Carbazole	1.95E-01	mg/kg	4.9E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				4.5E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.4E-06	---	---	---	---	---
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	2.7E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.5E-06	---	---	---	---	---
				Total PCB Homologs	4.02E+00	mg/kg	1.0E-06	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.0E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	2.9E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.8E-06	---	---	---	---	---
				Aluminum	5.56E+03	mg/kg	1.4E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	6.73E+01	mg/kg	1.7E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	3.71E+01	mg/kg	9.3E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.4E-05	---	---	---	---	---
				Barium	3.19E+02	mg/kg	8.0E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chromium	1.81E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.8E-05	---	---	---	---	---
				Cobalt	8.56E+00	mg/kg	2.1E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	4.27E+04	mg/kg	1.1E-02	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	2.51E+03	mg/kg	6.3E-04	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	3.26E+02	mg/kg	8.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	2.55E+01	mg/kg	6.4E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Nickel	6.46E+01	mg/kg	1.6E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Thallium	1.80E-01	mg/kg	4.5E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Vanadium	2.34E+01	mg/kg	5.9E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								6.4E-05					---
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.0E-06	---	---	---	---	---
				Benzo(a)pyrene	8.89E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.0E-05	---	---	---	---	---
				Benzo(b)fluoranthene	1.20E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.4E-06	---	---	---	---	---
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	1.9E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	7.70E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				8.7E-08	---	---	---	---	---
				Carbazole	1.95E-01	mg/kg	4.0E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				3.4E-06	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				1.0E-06	---	---	---	---	---
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	5.1E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	6.6E-07	---	---	---	---	---
				Total PCB Homologs	4.02E+00	mg/kg	8.8E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.8E-06	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	2.6E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.3E-06	---	---	---	---	---
				Aluminum	5.56E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	6.73E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	3.71E+01	mg/kg	1.7E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.6E-06	---	---	---	---	---

TABLE M-7.2B-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Barium	3.19E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Chromium	1.81E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	8.56E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Iron	4.27E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Lead	2.51E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	3.26E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	2.55E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Nickel	6.46E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Thallium	1.80E-01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Vanadium	2.34E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								2.5E-05					---
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				6.0E-12	---	---	---	---	---
				Benzo(a)pyrene	8.89E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				5.8E-11	---	---	---	---	---
				Benzo(b)fluoranthene	1.20E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				7.9E-12	---	---	---	---	---
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	1.2E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	7.70E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				5.1E-12	---	---	---	---	---
				Carbazole	1.95E-01	mg/kg	2.6E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				2.2E-11	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				6.1E-12	---	---	---	---	---
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	1.4E-15	mg/m^3	3.8E+01	(µg/m3)^-1	5.5E-11	---	---	---	---	---
				Total PCB Homologs	4.02E+00	mg/kg	5.3E-11	mg/m^3	5.7E-04	(µg/m3)^-1	3.0E-11	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	1.5E-15	mg/m^3	3.8E+01	(µg/m3)^-1	5.8E-11	---	---	---	---	---
				Aluminum	5.56E+03	mg/kg	7.4E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Antimony	6.73E+01	mg/kg	8.9E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	3.71E+01	mg/kg	4.9E-10	mg/m^3	4.3E-03	(µg/m3)^-1	2.1E-09	---	---	---	---	---
				Barium	3.19E+02	mg/kg	4.2E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Chromium	1.81E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-20				9.1E-08	---	---	---	---	---
				Cobalt	8.56E+00	mg/kg	1.1E-10	mg/m^3	9.0E-03	(µg/m3)^-1	1.0E-09	---	---	---	---	---
				Iron	4.27E+04	mg/kg	5.6E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	2.51E+03	mg/kg	3.3E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	3.26E+02	mg/kg	4.3E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	2.55E+01	mg/kg	9.9E-05	mg/m^3	NA	---	NA	---	---	---	---	---
				Nickel	6.46E+01	mg/kg	8.5E-10	mg/m^3	2.6E-04	(µg/m3)^-1	2.2E-10	---	---	---	---	---
				Thallium	1.80E-01	mg/kg	2.4E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Vanadium	2.34E+01	mg/kg	3.1E-10	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								9.5E-08					---
	Aggregate Soil Total										8.9E-05					---
Soil Total											8.9E-05					---
											Total of Receptor Risks Across All Media	8.9E-05		Total of Receptor Hazards Across All Media		---

TABLE M-7.2B-6 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	5.0E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.7E-08	3.9E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	4.9E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.6E-07	3.8E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	6.6E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.8E-08	5.1E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	5.2E-08	mg/kg-day	NA	---	NA	4.1E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	4.2E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	3.1E-09	3.3E-07	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	1.1E-08	mg/kg-day	NA	---	NA	8.4E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	1.7E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.2E-07	1.3E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	5.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.7E-08	4.0E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	6.0E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	7.8E-07	4.7E-11	mg/kg-day	7.0E-10	mg/kg-day	0.066
				Total PCB Homologs	4.02E+00	mg/kg	2.2E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	4.4E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	0.086
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	6.4E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.3E-07	5.0E-11	mg/kg-day	7.0E-10	mg/kg-day	0.071
				Aluminum	5.56E+03	mg/kg	3.1E-04	mg/kg-day	NA	---	NA	2.4E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0024
				Antimony	6.73E+01	mg/kg	3.7E-06	mg/kg-day	NA	---	NA	2.9E-05	mg/kg-day	4.0E-04	mg/kg-day	0.072
				Arsenic	3.71E+01	mg/kg	2.0E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	3.1E-06	1.6E-05	mg/kg-day	3.0E-04	mg/kg-day	0.053
				Barium	3.19E+02	mg/kg	1.8E-05	mg/kg-day	NA	---	NA	1.4E-04	mg/kg-day	2.0E-01	mg/kg-day	0.00068
				Chromium	1.81E+01	mg/kg	1.0E-06	mg/kg-day	5.0E-01	(mg/kg-day)^-1	5.0E-07	7.8E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0026
				Cobalt	8.56E+00	mg/kg	4.7E-07	mg/kg-day	NA	---	NA	3.7E-06	mg/kg-day	3.0E-04	mg/kg-day	0.012
				Iron	4.27E+04	mg/kg	2.4E-03	mg/kg-day	NA	---	NA	1.8E-02	mg/kg-day	7.0E-01	mg/kg-day	0.026
				Lead	2.51E+03	mg/kg	1.4E-04	mg/kg-day	NA	---	NA	1.1E-03	mg/kg-day	NA	---	NA
				Manganese	3.26E+02	mg/kg	1.8E-05	mg/kg-day	NA	---	NA	1.4E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0020
				Mercury	2.55E+01	mg/kg	1.4E-06	mg/kg-day	NA	---	NA	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	0.036
				Nickel	6.46E+01	mg/kg	3.6E-06	mg/kg-day	NA	---	NA	2.8E-05	mg/kg-day	2.0E-02	mg/kg-day	0.0014
				Thallium	1.80E-01	mg/kg	9.9E-09	mg/kg-day	NA	---	NA	7.7E-08	mg/kg-day	1.0E-05	mg/kg-day	0.0077
				Vanadium	2.34E+01	mg/kg	1.3E-06	mg/kg-day	NA	---	NA	1.0E-05	mg/kg-day	7.0E-05	mg/kg-day	0.14
			Ingestion Total								6.2E-06					0.58
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	3.0E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.2E-08	2.4E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	2.9E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.1E-07	2.3E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	4.0E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.9E-08	3.1E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	3.1E-08	mg/kg-day	NA	---	NA	2.4E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	2.5E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	1.9E-09	2.0E-07	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	6.5E-09	mg/kg-day	NA	---	NA	5.0E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	1.0E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	7.4E-08	7.9E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	3.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.2E-08	2.4E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	8.3E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.1E-07	6.4E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0092
				Total PCB Homologs	4.02E+00	mg/kg	1.4E-07	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.9E-07	1.1E-06	mg/kg-day	2.0E-05	mg/kg-day	0.056
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	4.1E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.4E-07	3.2E-11	mg/kg-day	7.0E-10	mg/kg-day	0.046
				Aluminum	5.56E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	6.73E+01	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	3.71E+01	mg/kg	2.8E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.2E-07	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0073

TABLE M-7.2B-6 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Barium	3.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	1.4E-02	mg/kg-day	NA
				Chromium	1.81E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	8.56E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	4.27E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.51E+03	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.26E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	2.55E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	6.46E+01	mg/kg	NA	---	NA	---	NA	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	1.80E-01	mg/kg	NA	---	NA	---	NA	NA	---	1.0E-05	mg/kg-day	NA
				Vanadium	2.34E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								1.7E-06					0.12
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	2.5E-12	mg/m^3	1.1E-04	(µg/m3)^-1	2.8E-13	2.0E-11	mg/m^3	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	2.5E-12	mg/m^3	1.1E-03	(µg/m3)^-1	2.7E-12	1.9E-11	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	3.3E-12	mg/m^3	1.1E-04	(µg/m3)^-1	3.6E-13	2.6E-11	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	2.6E-12	mg/m^3	NA	---	NA	2.0E-11	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	2.1E-12	mg/m^3	1.1E-04	(µg/m3)^-1	2.3E-13	1.7E-11	mg/m^3	NA	---	NA
				Carbazole	1.95E-01	mg/kg	5.4E-13	mg/m^3	NA	---	NA	4.2E-12	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	8.4E-13	mg/m^3	1.2E-03	(µg/m3)^-1	1.0E-12	6.5E-12	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	2.6E-12	mg/m^3	1.1E-04	(µg/m3)^-1	2.8E-13	2.0E-11	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	3.0E-16	mg/m^3	3.8E+01	(µg/m3)^-1	1.1E-11	2.3E-15	mg/m^3	4.0E-08	mg/m^3	0.0000001
				Total PCB Homologs	4.02E+00	mg/kg	1.1E-11	mg/m^3	5.7E-04	(µg/m3)^-1	6.3E-12	8.6E-11	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	3.2E-16	mg/m^3	3.8E+01	(µg/m3)^-1	1.2E-11	2.5E-15	mg/m^3	4.0E-08	mg/m^3	0.00000006
				Aluminum	5.56E+03	mg/kg	1.5E-08	mg/m^3	NA	---	NA	1.2E-07	mg/m^3	5.0E-03	mg/m^3	0.000024
				Antimony	6.73E+01	mg/kg	1.9E-10	mg/m^3	NA	---	NA	1.4E-09	mg/m^3	NA	---	NA
				Arsenic	3.71E+01	mg/kg	1.0E-10	mg/m^3	4.3E-03	(µg/m3)^-1	4.4E-10	7.9E-10	mg/m^3	1.5E-05	mg/m^3	0.000053
				Barium	3.19E+02	mg/kg	8.8E-10	mg/m^3	NA	---	NA	6.8E-09	mg/m^3	5.0E-04	mg/m^3	0.000014
				Chromium	1.81E+01	mg/kg	5.0E-11	mg/m^3	8.4E-02	(µg/m3)^-1	4.2E-09	3.9E-10	mg/m^3	1.0E-04	mg/m^3	0.0000039
				Cobalt	8.56E+00	mg/kg	2.4E-11	mg/m^3	9.0E-03	(µg/m3)^-1	2.1E-10	1.8E-10	mg/m^3	6.0E-06	mg/m^3	0.000031
				Iron	4.27E+04	mg/kg	1.2E-07	mg/m^3	NA	---	NA	9.2E-07	mg/m^3	NA	---	NA
				Lead	2.51E+03	mg/kg	6.9E-09	mg/m^3	NA	---	NA	5.4E-08	mg/m^3	NA	---	NA
				Manganese	3.26E+02	mg/kg	9.0E-10	mg/m^3	NA	---	NA	7.0E-09	mg/m^3	5.0E-05	mg/m^3	0.00014
				Mercury	2.55E+01	mg/kg	2.1E-05	mg/m^3	NA	---	NA	1.6E-04	mg/m^3	3.0E-04	mg/m^3	0.54
				Nickel	6.46E+01	mg/kg	1.8E-10	mg/m^3	2.6E-04	(µg/m3)^-1	4.6E-11	1.4E-09	mg/m^3	9.0E-05	mg/m^3	0.000015
				Thallium	1.80E-01	mg/kg	5.0E-13	mg/m^3	NA	---	NA	3.9E-12	mg/m^3	NA	---	NA
				Vanadium	2.34E+01	mg/kg	6.4E-11	mg/m^3	NA	---	NA	5.0E-10	mg/m^3	1.0E-04	mg/m^3	0.0000050
			Inhalation Total								4.9E-09					0.54
	Aggregate Soil Total										7.9E-06					1.2
Soil Total											7.9E-06					1.2
											Total of Receptor Risks Across All Media					
											7.9E-06	Total of Receptor Hazards Across All Media				1.2

TABLE M-7.2B-8 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	9.15E-01	mg/kg	1.3E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	9.7E-10	9.3E-08	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	1.3E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	9.4E-09	9.0E-08	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	1.7E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.3E-09	1.2E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	1.4E-09	mg/kg-day	NA	---	NA	9.6E-08	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	1.1E-09	mg/kg-day	7.3E-02	(mg/kg-day)^-1	8.2E-11	7.8E-08	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	2.8E-10	mg/kg-day	NA	---	NA	2.0E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	4.4E-10	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.2E-09	3.1E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	1.4E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	9.9E-10	9.5E-08	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	1.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.1E-08	1.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.016
				Total PCB Homologs	4.02E+00	mg/kg	5.8E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.2E-08	4.1E-07	mg/kg-day	2.0E-05	mg/kg-day	0.020
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	1.7E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.2E-08	1.2E-11	mg/kg-day	7.0E-10	mg/kg-day	0.017
				Aluminum	5.56E+03	mg/kg	8.1E-06	mg/kg-day	NA	---	NA	5.7E-04	mg/kg-day	1.0E+00	mg/kg-day	0.00057
				Antimony	6.73E+01	mg/kg	9.8E-08	mg/kg-day	NA	---	NA	6.8E-06	mg/kg-day	4.0E-04	mg/kg-day	0.017
				Arsenic	3.71E+01	mg/kg	5.4E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.1E-08	3.8E-06	mg/kg-day	3.0E-04	mg/kg-day	0.013
				Barium	3.19E+02	mg/kg	4.6E-07	mg/kg-day	NA	---	NA	3.2E-05	mg/kg-day	2.0E-01	mg/kg-day	0.0002
				Chromium	1.81E+01	mg/kg	2.6E-08	mg/kg-day	5.0E-01	(mg/kg-day)^-1	1.3E-08	1.8E-06	mg/kg-day	3.0E-03	mg/kg-day	0.00061
				Cobalt	8.56E+00	mg/kg	1.2E-08	mg/kg-day	NA	---	NA	8.7E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0029
				Iron	4.27E+04	mg/kg	6.2E-05	mg/kg-day	NA	---	NA	4.3E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0062
				Lead	2.51E+03	mg/kg	3.7E-06	mg/kg-day	NA	---	NA	2.6E-04	mg/kg-day	NA	---	NA
				Manganese	3.26E+02	mg/kg	4.7E-07	mg/kg-day	NA	---	NA	3.3E-05	mg/kg-day	7.0E-02	mg/kg-day	0.00047
				Mercury	2.55E+01	mg/kg	3.7E-08	mg/kg-day	NA	---	NA	2.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0087
				Nickel	6.46E+01	mg/kg	9.4E-08	mg/kg-day	NA	---	NA	6.6E-06	mg/kg-day	2.0E-02	mg/kg-day	0.00033
				Thallium	1.80E-01	mg/kg	2.6E-10	mg/kg-day	NA	---	NA	1.8E-08	mg/kg-day	1.0E-05	mg/kg-day	0.0018
				Vanadium	2.34E+01	mg/kg	3.4E-08	mg/kg-day	NA	---	NA	2.4E-06	mg/kg-day	7.0E-05	mg/kg-day	0.034
			Ingestion Total								1.6E-07					0.14
			Dermal	Benzo(a)anthracene	9.15E-01	mg/kg	1.1E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.3E-10	8.0E-08	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	1.1E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	8.1E-09	7.8E-08	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	1.5E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.1E-09	1.0E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	1.2E-09	mg/kg-day	NA	---	NA	8.3E-08	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	9.6E-10	mg/kg-day	7.3E-02	(mg/kg-day)^-1	7.0E-11	6.7E-08	mg/kg-day	NA	---	NA
				Carbazole	1.95E-01	mg/kg	2.4E-10	mg/kg-day	NA	---	NA	1.7E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	3.8E-10	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.8E-09	2.7E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	1.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.5E-10	8.1E-08	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	3.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.1E-09	2.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0031
				Total PCB Homologs	4.02E+00	mg/kg	5.4E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.1E-08	3.8E-07	mg/kg-day	2.0E-05	mg/kg-day	0.019
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	1.6E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.0E-08	1.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.016
				Aluminum	5.56E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	6.73E+01	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	3.71E+01	mg/kg	1.1E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.6E-08	7.5E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0025

TABLE M-7.2B-8 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	SFSA Aggregate Soil	Dermal	Barium	3.19E+02	mg/kg	NA	---	NA	---	NA	NA	---	1.4E-02	mg/kg-day	NA
				Chromium	1.81E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	8.56E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	4.27E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	2.51E+03	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.26E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	2.55E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Nickel	6.46E+01	mg/kg	NA	---	NA	---	NA	NA	---	8.0E-04	mg/kg-day	NA
				Thallium	1.80E-01	mg/kg	NA	---	NA	---	NA	NA	---	1.0E-05	mg/kg-day	NA
				Vanadium	2.34E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								6.5E-08					0.040
			Inhalation	Benzo(a)anthracene	9.15E-01	mg/kg	2.2E-10	mg/m^3	1.1E-04	(µg/m3)^-1	2.5E-11	1.6E-08	mg/m^3	NA	---	NA
				Benzo(a)pyrene	8.89E-01	mg/kg	2.2E-10	mg/m^3	1.1E-03	(µg/m3)^-1	2.4E-10	1.5E-08	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	1.20E+00	mg/kg	2.9E-10	mg/m^3	1.1E-04	(µg/m3)^-1	3.2E-11	2.0E-08	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	9.45E-01	mg/kg	2.3E-10	mg/m^3	NA	---	NA	1.6E-08	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	7.70E-01	mg/kg	1.9E-10	mg/m^3	1.1E-04	(µg/m3)^-1	2.1E-11	1.3E-08	mg/m^3	NA	---	NA
				Carbazole	1.95E-01	mg/kg	4.8E-11	mg/m^3	NA	---	NA	3.3E-09	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	3.05E-01	mg/kg	7.4E-11	mg/m^3	1.2E-03	(µg/m3)^-1	8.9E-11	5.2E-09	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.29E-01	mg/kg	2.3E-10	mg/m^3	1.1E-04	(µg/m3)^-1	2.5E-11	1.6E-08	mg/m^3	NA	---	NA
				2,3,7,8-TCDD TEQ	1.09E-04	mg/kg	2.6E-14	mg/m^3	3.8E+01	(µg/m3)^-1	1.0E-09	1.9E-12	mg/m^3	4.0E-08	mg/m^3	0.000046
				Total PCB Homologs	4.02E+00	mg/kg	9.8E-10	mg/m^3	5.7E-04	(µg/m3)^-1	5.6E-10	6.9E-08	mg/m^3	NA	---	NA
				PCB Dioxin-like Congener TEQ	1.16E-04	mg/kg	2.8E-14	mg/m^3	3.8E+01	(µg/m3)^-1	1.1E-09	2.0E-12	mg/m^3	4.0E-08	mg/m^3	0.000050
				Aluminum	5.56E+03	mg/kg	1.4E-06	mg/m^3	NA	---	NA	9.5E-05	mg/m^3	5.0E-03	mg/m^3	0.019
				Antimony	6.73E+01	mg/kg	1.6E-08	mg/m^3	NA	---	NA	1.2E-06	mg/m^3	NA	---	NA
				Arsenic	3.71E+01	mg/kg	9.0E-09	mg/m^3	4.3E-03	(µg/m3)^-1	3.9E-08	6.3E-07	mg/m^3	1.5E-05	mg/m^3	0.042
				Barium	3.19E+02	mg/kg	7.8E-08	mg/m^3	NA	---	NA	5.5E-06	mg/m^3	5.0E-04	mg/m^3	0.011
				Chromium	1.81E+01	mg/kg	4.4E-09	mg/m^3	8.4E-02	(µg/m3)^-1	3.7E-07	3.1E-07	mg/m^3	1.0E-04	mg/m^3	0.0031
				Cobalt	8.56E+00	mg/kg	2.1E-09	mg/m^3	9.0E-03	(µg/m3)^-1	1.9E-08	1.5E-07	mg/m^3	6.0E-06	mg/m^3	0.024
				Iron	4.27E+04	mg/kg	1.0E-05	mg/m^3	NA	---	NA	7.3E-04	mg/m^3	NA	---	NA
				Lead	2.51E+03	mg/kg	6.1E-07	mg/m^3	NA	---	NA	4.3E-05	mg/m^3	NA	---	NA
				Manganese	3.26E+02	mg/kg	8.0E-08	mg/m^3	NA	---	NA	5.6E-06	mg/m^3	5.0E-05	mg/m^3	0.11
				Mercury	2.55E+01	mg/kg	2.7E-07	mg/m^3	NA	---	NA	1.9E-05	mg/m^3	3.0E-04	mg/m^3	0.064
				Nickel	6.46E+01	mg/kg	1.6E-08	mg/m^3	2.6E-04	(µg/m3)^-1	4.1E-09	1.1E-06	mg/m^3	9.0E-05	mg/m^3	0.012
				Thallium	1.80E-01	mg/kg	4.4E-11	mg/m^3	NA	---	NA	3.1E-09	mg/m^3	NA	---	NA
				Vanadium	2.34E+01	mg/kg	5.7E-09	mg/m^3	NA	---	NA	4.0E-07	mg/m^3	1.0E-04	mg/m^3	0.0040
			Inhalation Total								4.4E-07					0.29
	Aggregate Soil Total										6.7E-07					0.47
Soil Total											6.7E-07					0.47
											Total of Receptor Risks Across All Media					6.7E-07
																Total of Receptor Hazards Across All Media	0.47

TABLE M-7.2C-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	1.0E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	7.5E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	6.1E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	3.9E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	7.1E-06	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	3.7E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	1.0E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	8.1E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	5.7E-06	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	6.5E-07	mg/kg-day	2.0E-02	mg/kg-day	0.000033
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	2.0E-09	mg/kg-day	7.0E-10	mg/kg-day	2.9
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	5.6E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0079
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	4.1E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0041
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	5.2E-06	mg/kg-day	4.0E-04	mg/kg-day	0.013
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	0.050
				Chromium	1.42E+01	mg/kg	---	---	---	---	---	9.7E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0032
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	4.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.015
				Iron	1.48E+04	mg/kg	---	---	---	---	---	1.0E-02	mg/kg-day	7.0E-01	mg/kg-day	0.015
				Lead	3.68E+02	mg/kg	---	---	---	---	---	2.5E-04	mg/kg-day	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	2.3E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0033
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	3.0E-04	mg/kg-day	0.040
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	1.6E-05	mg/kg-day	7.0E-05	mg/kg-day	0.22
			Ingestion Total								---					3.2
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	1.0E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	7.8E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	6.3E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	4.0E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	7.4E-06	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	3.8E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	1.1E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	8.4E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	5.9E-06	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	6.8E-07	mg/kg-day	2.0E-02	mg/kg-day	0.000034
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	4.8E-10	mg/kg-day	7.0E-10	mg/kg-day	0.69
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	6.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0089
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	3.6E-06	mg/kg-day	3.0E-04	mg/kg-day	0.012

TABLE M-7.2C-1 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Chromium	1.42E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.48E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	3.68E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					0.71
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	1.5E-09	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	9.1E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	5.8E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	5.5E-11	mg/m^3	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	1.2E-10	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	8.5E-10	mg/m^3	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	9.8E-11	mg/m^3	3.0E-03	mg/m^3	0.00000003
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	3.0E-13	mg/m^3	4.0E-08	mg/m^3	0.000008
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	8.3E-16	mg/m^3	4.0E-08	mg/m^3	0.00000002
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	6.1E-07	mg/m^3	5.0E-03	mg/m^3	0.00012
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	7.9E-10	mg/m^3	NA	---	NA
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	2.2E-09	mg/m^3	1.5E-05	mg/m^3	0.00015
				Chromium	1.42E+01	mg/kg	---	---	---	---	---	1.5E-09	mg/m^3	1.0E-04	mg/m^3	0.000015
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	6.9E-10	mg/m^3	6.0E-06	mg/m^3	0.00012
				Iron	1.48E+04	mg/kg	---	---	---	---	---	1.5E-06	mg/m^3	NA	---	NA
				Lead	3.68E+02	mg/kg	---	---	---	---	---	3.8E-08	mg/m^3	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	3.5E-08	mg/m^3	5.0E-05	mg/m^3	0.00070
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	5.3E-04	mg/m^3	3.0E-04	mg/m^3	1.8
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	2.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000023
			Inhalation Total								---					1.8
	Aggregate Soil Total										---					5.7
Soil Total											---					5.7
											Total of Receptor Risks Across All Media	---		Total of Receptor Hazards Across All Media		5.7

TABLE M-7.2C-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	9.4E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	7.0E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	5.7E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	3.6E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	6.6E-05	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	3.4E-06	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	9.7E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	7.5E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	5.3E-05	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	6.1E-06	mg/kg-day	2.0E-02	mg/kg-day	0.00030
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	1.9E-08	mg/kg-day	7.0E-10	mg/kg-day	27
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	5.2E-11	mg/kg-day	7.0E-10	mg/kg-day	0.074
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	3.8E-02	mg/kg-day	1.0E+00	mg/kg-day	0.038
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	4.9E-05	mg/kg-day	4.0E-04	mg/kg-day	0.12
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	1.4E-04	mg/kg-day	3.0E-04	mg/kg-day	0.46
				Chromium	1.42E+01	mg/kg	---	---	---	---	---	9.1E-05	mg/kg-day	3.0E-03	mg/kg-day	0.030
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	4.3E-05	mg/kg-day	3.0E-04	mg/kg-day	0.14
				Iron	1.48E+04	mg/kg	---	---	---	---	---	9.5E-02	mg/kg-day	7.0E-01	mg/kg-day	0.14
				Lead	3.68E+02	mg/kg	---	---	---	---	---	2.4E-03	mg/kg-day	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	2.2E-03	mg/kg-day	7.0E-02	mg/kg-day	0.031
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	1.1E-04	mg/kg-day	3.0E-04	mg/kg-day	0.37
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	1.5E-04	mg/kg-day	7.0E-05	mg/kg-day	2.1
			Ingestion Total								---					30
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	6.8E-05	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	5.1E-05	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	4.1E-05	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	2.6E-05	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	4.8E-05	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	2.5E-06	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	7.0E-05	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	5.5E-06	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	3.9E-05	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	4.4E-06	mg/kg-day	2.0E-02	mg/kg-day	0.00022
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	3.1E-09	mg/kg-day	7.0E-10	mg/kg-day	4.5
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	4.1E-11	mg/kg-day	7.0E-10	mg/kg-day	0.058
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	2.3E-05	mg/kg-day	3.0E-04	mg/kg-day	0.078

TABLE M-7.2C-2 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Chromium	1.42E+01	mg/kg	---	---	---	---	---	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.48E+04	mg/kg	---	---	---	---	---	NA	---	7.0E-01	mg/kg-day	NA
				Lead	3.68E+02	mg/kg	---	---	---	---	---	NA	---	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	NA	---	2.1E-05	mg/kg-day	NA
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								---					4.6
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	---	---	---	---	---	1.5E-09	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	---	---	---	---	---	9.1E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	---	---	---	---	---	5.8E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	---	---	---	---	---	1.1E-09	mg/m^3	NA	---	NA
				Carbazole	5.35E-01	mg/kg	---	---	---	---	---	5.5E-11	mg/m^3	NA	---	NA
				Chrysene	1.51E+01	mg/kg	---	---	---	---	---	1.6E-09	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	---	---	---	---	---	1.2E-10	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	---	---	---	---	---	8.5E-10	mg/m^3	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	---	---	---	---	---	9.8E-11	mg/m^3	3.0E-03	mg/m^3	0.00000003
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	---	---	---	---	---	3.0E-13	mg/m^3	4.0E-08	mg/m^3	0.000008
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	---	---	---	---	---	8.3E-16	mg/m^3	4.0E-08	mg/m^3	0.00000002
				Aluminum	5.96E+03	mg/kg	---	---	---	---	---	6.1E-07	mg/m^3	5.0E-03	mg/m^3	0.00012
				Antimony	7.65E+00	mg/kg	---	---	---	---	---	7.9E-10	mg/m^3	NA	---	NA
				Arsenic	2.17E+01	mg/kg	---	---	---	---	---	2.2E-09	mg/m^3	1.5E-05	mg/m^3	0.00015
				Chromium	1.42E+01	mg/kg	---	---	---	---	---	1.5E-09	mg/m^3	1.0E-04	mg/m^3	0.000015
				Cobalt	6.73E+00	mg/kg	---	---	---	---	---	6.9E-10	mg/m^3	6.0E-06	mg/m^3	0.00012
				Iron	1.48E+04	mg/kg	---	---	---	---	---	1.5E-06	mg/m^3	NA	---	NA
				Lead	3.68E+02	mg/kg	---	---	---	---	---	3.8E-08	mg/m^3	NA	---	NA
				Manganese	3.41E+02	mg/kg	---	---	---	---	---	3.5E-08	mg/m^3	5.0E-05	mg/m^3	0.00070
				Mercury	1.74E+01	mg/kg	---	---	---	---	---	5.3E-04	mg/m^3	3.0E-04	mg/m^3	1.8
				Vanadium	2.28E+01	mg/kg	---	---	---	---	---	2.3E-09	mg/m^3	1.0E-04	mg/m^3	0.000023
			Inhalation Total								---					1.8
	Aggregate Soil Total										---					37
Soil Total											---					37
											Total of Receptor Risks Across All Media					---	Total of Receptor Hazards Across All Media				37

TABLE M-7.2C-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				2.2E-05	---	---	---	---	---
				Benzo(a)pyrene	1.09E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.6E-04	---	---	---	---	---
				Benzo(b)fluoranthene	8.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.3E-05	---	---	---	---	---
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	1.4E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.04E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.5E-06	---	---	---	---	---
				Carbazole	5.35E-01	mg/kg	1.3E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	1.51E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				2.2E-07	---	---	---	---	---
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.7E-05	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.2E-05	---	---	---	---	---
				Naphthalene	9.54E-01	mg/kg	2.4E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	7.4E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	9.6E-05	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	2.0E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.6E-07	---	---	---	---	---
				Aluminum	5.96E+03	mg/kg	1.5E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Antimony	7.65E+00	mg/kg	1.9E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Arsenic	2.17E+01	mg/kg	5.5E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.2E-06	---	---	---	---	---
				Chromium	1.42E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.4E-05	---	---	---	---	---
				Cobalt	6.73E+00	mg/kg	1.7E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Iron	1.48E+04	mg/kg	3.7E-03	mg/kg-day	NA	---	NA	---	---	---	---	---
				Lead	3.68E+02	mg/kg	9.2E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Manganese	3.41E+02	mg/kg	8.6E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury	1.74E+01	mg/kg	4.4E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Vanadium	2.28E+01	mg/kg	5.7E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								3.5E-04					---
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.7E-05	---	---	---	---	---
				Benzo(a)pyrene	1.09E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.2E-04	---	---	---	---	---
				Benzo(b)fluoranthene	8.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.0E-05	---	---	---	---	---
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	1.2E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.04E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.2E-06	---	---	---	---	---
				Carbazole	5.35E-01	mg/kg	1.1E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Chrysene	1.51E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.7E-07	---	---	---	---	---
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				1.3E-05	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				9.3E-06	---	---	---	---	---
				Naphthalene	9.54E-01	mg/kg	1.9E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	1.4E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.8E-05	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	1.8E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.3E-07	---	---	---	---	---
				Aluminum	5.96E+03	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Antimony	7.65E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Arsenic	2.17E+01	mg/kg	1.0E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.5E-06	---	---	---	---	---
				Chromium	1.42E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	---	---	---	---	---
				Cobalt	6.73E+00	mg/kg	NA	---	NA	---	NA	---	---	---	---	---

TABLE M-7.2C-3 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Iron	1.48E+04	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Lead	3.68E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Manganese	3.41E+02	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Mercury	1.74E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
				Vanadium	2.28E+01	mg/kg	NA	---	NA	---	NA	---	---	---	---	---
			Dermal Total								1.9E-04					---
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				9.7E-11	---	---	---	---	---
				Benzo(a)pyrene	1.09E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				7.2E-10	---	---	---	---	---
				Benzo(b)fluoranthene	8.86E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				5.8E-11	---	---	---	---	---
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	7.5E-11	mg/m^3	NA	---	NA	---	---	---	---	---
				Benzo(k)fluoranthene	1.04E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				6.8E-11	---	---	---	---	---
				Carbazole	5.35E-01	mg/kg	7.1E-12	mg/m^3	NA	---	NA	---	---	---	---	---
				Chrysene	1.51E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				9.9E-12	---	---	---	---	---
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				8.4E-11	---	---	---	---	---
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				5.4E-11	---	---	---	---	---
				Naphthalene	9.54E-01	mg/kg	1.3E-11	mg/m^3	3.4E-05	(µg/m3)^-1	4.3E-13	---	---	---	---	---
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	3.9E-14	mg/m^3	3.8E+01	(µg/m3)^-1	1.5E-09	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	1.1E-16	mg/m^3	3.8E+01	(µg/m3)^-1	4.1E-12	---	---	---	---	---
				Aluminum	5.96E+03	mg/kg	7.9E-08	mg/m^3	NA	---	NA	---	---	---	---	---
				Antimony	7.65E+00	mg/kg	1.0E-10	mg/m^3	NA	---	NA	---	---	---	---	---
				Arsenic	2.17E+01	mg/kg	2.9E-10	mg/m^3	4.3E-03	(µg/m3)^-1	1.2E-09	---	---	---	---	---
				Chromium	1.42E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-23				7.1E-08	---	---	---	---	---
				Cobalt	6.73E+00	mg/kg	8.9E-11	mg/m^3	9.0E-03	(µg/m3)^-1	8.0E-10	---	---	---	---	---
				Iron	1.48E+04	mg/kg	2.0E-07	mg/m^3	NA	---	NA	---	---	---	---	---
				Lead	3.68E+02	mg/kg	4.9E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Manganese	3.41E+02	mg/kg	4.5E-09	mg/m^3	NA	---	NA	---	---	---	---	---
				Mercury	1.74E+01	mg/kg	6.8E-05	mg/m^3	NA	---	NA	---	---	---	---	---
				Vanadium	2.28E+01	mg/kg	3.0E-10	mg/m^3	NA	---	NA	---	---	---	---	---
			Inhalation Total								7.6E-08					---
	Aggregate Soil Total										5.4E-04					---
Soil Total											5.4E-04					---
											Total of Receptor Risks Across All Media	5.4E-04				Total of Receptor Hazards Across All Media	---

TABLE M-7.2C-6 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	8.1E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	5.9E-07	6.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	6.0E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.4E-06	4.7E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	4.9E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.6E-07	3.8E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	3.1E-07	mg/kg-day	NA	---	NA	2.4E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	5.7E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	4.2E-08	4.4E-06	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	2.9E-08	mg/kg-day	NA	---	NA	2.3E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	8.3E-07	mg/kg-day	7.3E-03	(mg/kg-day)^-1	6.1E-09	6.5E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	6.5E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.7E-07	5.0E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	4.6E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.3E-07	3.5E-06	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	5.3E-08	mg/kg-day	NA	---	NA	4.1E-07	mg/kg-day	2.0E-02	mg/kg-day	0.000020
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	1.6E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.1E-05	1.3E-09	mg/kg-day	7.0E-10	mg/kg-day	1.8
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	4.5E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.8E-08	3.5E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0050
				Aluminum	5.96E+03	mg/kg	3.3E-04	mg/kg-day	NA	---	NA	2.6E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0026
				Antimony	7.65E+00	mg/kg	4.2E-07	mg/kg-day	NA	---	NA	3.3E-06	mg/kg-day	4.0E-04	mg/kg-day	0.0082
				Arsenic	2.17E+01	mg/kg	1.2E-06	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.8E-06	9.3E-06	mg/kg-day	3.0E-04	mg/kg-day	0.031
				Chromium	1.42E+01	mg/kg	7.8E-07	mg/kg-day	5.0E-01	(mg/kg-day)^-1	3.9E-07	6.1E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0020
				Cobalt	6.73E+00	mg/kg	3.7E-07	mg/kg-day	NA	---	NA	2.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.010
				Iron	1.48E+04	mg/kg	8.2E-04	mg/kg-day	NA	---	NA	6.4E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0091
				Lead	3.68E+02	mg/kg	2.0E-05	mg/kg-day	NA	---	NA	1.6E-04	mg/kg-day	NA	---	NA
				Manganese	3.41E+02	mg/kg	1.9E-05	mg/kg-day	NA	---	NA	1.5E-04	mg/kg-day	7.0E-02	mg/kg-day	0.0021
				Mercury	1.74E+01	mg/kg	9.6E-07	mg/kg-day	NA	---	NA	7.5E-06	mg/kg-day	3.0E-04	mg/kg-day	0.025
				Vanadium	2.28E+01	mg/kg	1.3E-06	mg/kg-day	NA	---	NA	9.8E-06	mg/kg-day	7.0E-05	mg/kg-day	0.14
			Ingestion Total								2.9E-05					2.0
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	4.9E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.6E-07	3.8E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	3.6E-07	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.6E-06	2.8E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	2.9E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.1E-07	2.3E-06	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	1.9E-07	mg/kg-day	NA	---	NA	1.5E-06	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	3.4E-07	mg/kg-day	7.3E-02	(mg/kg-day)^-1	2.5E-08	2.7E-06	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	1.8E-08	mg/kg-day	NA	---	NA	1.4E-07	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	5.0E-07	mg/kg-day	7.3E-03	(mg/kg-day)^-1	3.7E-09	3.9E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	3.9E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.8E-07	3.0E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	2.7E-07	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.0E-07	2.1E-06	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	3.2E-08	mg/kg-day	NA	---	NA	2.5E-07	mg/kg-day	2.0E-02	mg/kg-day	0.000012
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	2.2E-11	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.9E-06	1.7E-10	mg/kg-day	7.0E-10	mg/kg-day	0.25
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	2.9E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.8E-08	2.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0032
				Aluminum	5.96E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	7.65E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	2.17E+01	mg/kg	1.7E-07	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.5E-07	1.3E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0043
				Chromium	1.42E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.73E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA

TABLE M-7.2C-6 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Iron	1.48E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	3.68E+02	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.41E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.74E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Vanadium	2.28E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								6.9E-06					0.26
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	4.1E-11	mg/m^3	1.1E-04	(µg/m3)^-1	4.5E-12	3.2E-10	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	3.0E-11	mg/m^3	1.1E-03	(µg/m3)^-1	3.3E-11	2.3E-10	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	2.4E-11	mg/m^3	1.1E-04	(µg/m3)^-1	2.7E-12	1.9E-10	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	1.6E-11	mg/m^3	NA	---	NA	1.2E-10	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	2.9E-11	mg/m^3	1.1E-04	(µg/m3)^-1	3.1E-12	2.2E-10	mg/m^3	NA	---	NA
				Carbazole	5.35E-01	mg/kg	1.5E-12	mg/m^3	NA	---	NA	1.1E-11	mg/m^3	NA	---	NA
				Chrysene	1.51E+01	mg/kg	4.2E-11	mg/m^4	1.1E-05	(µg/m3)^-1	4.6E-13	3.2E-10	mg/m^4	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	3.2E-12	mg/m^3	1.2E-03	(µg/m3)^-1	3.9E-12	2.5E-11	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	2.3E-11	mg/m^3	1.1E-04	(µg/m3)^-1	2.5E-12	1.8E-10	mg/m^3	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	2.6E-12	mg/m^4	3.4E-05	(µg/m3)^-1	8.9E-14	2.0E-11	mg/m^4	3.0E-03	mg/m^3	0.000000007
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	8.1E-15	mg/m^3	3.8E+01	(µg/m3)^-1	3.1E-10	6.3E-14	mg/m^3	4.0E-08	mg/m^3	0.0000016
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	2.2E-17	mg/m^3	3.8E+01	(µg/m3)^-1	8.5E-13	1.7E-16	mg/m^3	4.0E-08	mg/m^3	0.000000004
				Aluminum	5.96E+03	mg/kg	1.6E-08	mg/m^3	NA	---	NA	1.3E-07	mg/m^3	5.0E-03	mg/m^3	0.000026
				Antimony	7.65E+00	mg/kg	2.1E-11	mg/m^3	NA	---	NA	1.6E-10	mg/m^3	NA	---	NA
				Arsenic	2.17E+01	mg/kg	6.0E-11	mg/m^3	4.3E-03	(µg/m3)^-1	2.6E-10	4.7E-10	mg/m^3	1.5E-05	mg/m^3	0.000031
				Chromium	1.42E+01	mg/kg	3.9E-11	mg/m^3	8.4E-02	(µg/m3)^-1	3.3E-09	3.0E-10	mg/m^3	1.0E-04	mg/m^3	0.0000030
				Cobalt	6.73E+00	mg/kg	1.9E-11	mg/m^3	9.0E-03	(µg/m3)^-1	1.7E-10	1.4E-10	mg/m^3	6.0E-06	mg/m^3	0.000024
				Iron	1.48E+04	mg/kg	4.1E-08	mg/m^3	NA	---	NA	3.2E-07	mg/m^3	NA	---	NA
				Lead	3.68E+02	mg/kg	1.0E-09	mg/m^3	NA	---	NA	7.9E-09	mg/m^3	NA	---	NA
				Manganese	3.41E+02	mg/kg	9.4E-10	mg/m^3	NA	---	NA	7.3E-09	mg/m^3	5.0E-05	mg/m^3	0.00015
				Mercury	1.74E+01	mg/kg	1.4E-05	mg/m^3	NA	---	NA	1.1E-04	mg/m^3	3.0E-04	mg/m^3	0.37
				Vanadium	2.28E+01	mg/kg	6.3E-11	mg/m^3	NA	---	NA	4.9E-10	mg/m^3	1.0E-04	mg/m^3	0.0000049
			Inhalation Total								4.1E-09					0.37
	Aggregate Soil Total										3.6E-05					2.6
Soil Total											3.6E-05					2.6
											Total of Receptor Risks Across All Media 3.6E-05					Total of Receptor Hazards Across All Media 2.6

TABLE M-7.2C-8 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Ingestion	Benzo(a)anthracene	1.47E+01	mg/kg	2.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.6E-08	1.5E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	1.6E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.2E-07	1.1E-06	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	1.3E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	9.4E-09	9.0E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	8.2E-09	mg/kg-day	NA	---	NA	5.7E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	1.5E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	1.1E-09	1.1E-06	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	7.8E-10	mg/kg-day	NA	---	NA	5.4E-08	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	2.2E-08	mg/kg-day	7.3E-03	(mg/kg-day)^-1	1.6E-10	1.5E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	1.7E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.2E-08	1.2E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	1.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.8E-09	8.4E-07	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	1.4E-09	mg/kg-day	NA	---	NA	9.7E-08	mg/kg-day	2.0E-02	mg/kg-day	0.0000049
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	4.3E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	5.5E-07	3.0E-10	mg/kg-day	7.0E-10	mg/kg-day	0.43
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	1.2E-14	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.5E-09	8.3E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0012
				Aluminum	5.96E+03	mg/kg	8.7E-06	mg/kg-day	NA	---	NA	6.1E-04	mg/kg-day	1.0E+00	mg/kg-day	0.00061
				Antimony	7.65E+00	mg/kg	1.1E-08	mg/kg-day	NA	---	NA	7.8E-07	mg/kg-day	4.0E-04	mg/kg-day	0.0019
				Arsenic	2.17E+01	mg/kg	3.2E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.7E-08	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0074
				Chromium	1.42E+01	mg/kg	2.1E-08	mg/kg-day	5.0E-01	(mg/kg-day)^-1	1.0E-08	1.4E-06	mg/kg-day	3.0E-03	mg/kg-day	0.00048
				Cobalt	6.73E+00	mg/kg	9.8E-09	mg/kg-day	NA	---	NA	6.9E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0023
				Iron	1.48E+04	mg/kg	2.2E-05	mg/kg-day	NA	---	NA	1.5E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0022
				Lead	3.68E+02	mg/kg	5.3E-07	mg/kg-day	NA	---	NA	3.7E-05	mg/kg-day	NA	---	NA
				Manganese	3.41E+02	mg/kg	4.9E-07	mg/kg-day	NA	---	NA	3.5E-05	mg/kg-day	7.0E-02	mg/kg-day	0.00049
				Mercury	1.74E+01	mg/kg	2.5E-08	mg/kg-day	NA	---	NA	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0059
				Vanadium	2.28E+01	mg/kg	3.3E-08	mg/kg-day	NA	---	NA	2.3E-06	mg/kg-day	7.0E-05	mg/kg-day	0.033
			Ingestion Total								7.8E-07					0.48
			Dermal	Benzo(a)anthracene	1.47E+01	mg/kg	1.8E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.3E-08	1.3E-06	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	1.4E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	9.9E-08	9.5E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	1.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.1E-09	7.7E-07	mg/kg-day	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	7.0E-09	mg/kg-day	NA	---	NA	4.9E-07	mg/kg-day	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	1.3E-08	mg/kg-day	7.3E-02	(mg/kg-day)^-1	9.4E-10	9.0E-07	mg/kg-day	NA	---	NA
				Carbazole	5.35E-01	mg/kg	6.7E-10	mg/kg-day	NA	---	NA	4.7E-08	mg/kg-day	NA	---	NA
				Chrysene	1.51E+01	mg/kg	1.9E-08	mg/kg-day	7.3E-03	(mg/kg-day)^-1	1.4E-10	1.3E-06	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	1.5E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.1E-08	1.0E-07	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	1.0E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	7.5E-09	7.2E-07	mg/kg-day	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	1.2E-09	mg/kg-day	NA	---	NA	8.3E-08	mg/kg-day	2.0E-02	mg/kg-day	0.0000042
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	8.4E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.1E-07	5.9E-11	mg/kg-day	7.0E-10	mg/kg-day	0.084
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	1.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.4E-09	7.6E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0011
				Aluminum	5.96E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Antimony	7.65E+00	mg/kg	NA	---	NA	---	NA	NA	---	6.0E-05	mg/kg-day	NA
				Arsenic	2.17E+01	mg/kg	6.2E-09	mg/kg-day	1.5E+00	(mg/kg-day)^-1	9.4E-09	4.4E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0015

TABLE M-7.2C-8 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Aggregate Soil	EFSA Aggregate Soil	Dermal	Chromium	1.42E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	6.73E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.48E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Lead	3.68E+02	mg/kg	NA	---	NA	---	NA	NA	---	NA	---	NA
				Manganese	3.41E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
				Mercury	1.74E+01	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
				Vanadium	2.28E+01	mg/kg	NA	---	NA	---	NA	NA	---	1.8E-06	mg/kg-day	NA
			Dermal Total								2.6E-07					0.087
			Inhalation	Benzo(a)anthracene	1.47E+01	mg/kg	3.6E-09	mg/m^3	1.1E-04	(µg/m3)^-1	4.0E-10	2.5E-07	mg/m^3	NA	---	NA
				Benzo(a)pyrene	1.09E+01	mg/kg	2.7E-09	mg/m^3	1.1E-03	(µg/m3)^-1	2.9E-09	1.9E-07	mg/m^3	NA	---	NA
				Benzo(b)fluoranthene	8.86E+00	mg/kg	2.2E-09	mg/m^3	1.1E-04	(µg/m3)^-1	2.4E-10	1.5E-07	mg/m^3	NA	---	NA
				Benzo(g,h,i)perylene	5.64E+00	mg/kg	1.4E-09	mg/m^3	NA	---	NA	9.6E-08	mg/m^3	NA	---	NA
				Benzo(k)fluoranthene	1.04E+01	mg/kg	2.5E-09	mg/m^3	1.1E-04	(µg/m3)^-1	2.8E-10	1.8E-07	mg/m^3	NA	---	NA
				Carbazole	5.35E-01	mg/kg	1.3E-10	mg/m^3	NA	---	NA	9.1E-09	mg/m^3	NA	---	NA
				Chrysene	1.51E+01	mg/kg	3.7E-09	mg/m^3	1.1E-05	(µg/m3)^-1	4.1E-11	2.6E-07	mg/m^3	NA	---	NA
				Dibenz(a,h)anthracene	1.18E+00	mg/kg	2.9E-10	mg/m^3	1.2E-03	(µg/m3)^-1	3.4E-10	2.0E-08	mg/m^3	NA	---	NA
				Indeno(1,2,3-cd)pyrene	8.28E+00	mg/kg	2.0E-09	mg/m^3	1.1E-04	(µg/m3)^-1	2.2E-10	1.4E-07	mg/m^3	NA	---	NA
				Naphthalene	9.54E-01	mg/kg	2.3E-10	mg/m^3	3.4E-05	(µg/m3)^-1	7.9E-12	1.6E-08	mg/m^3	3.0E-03	mg/m^3	0.000005
				2,3,7,8-TCDD TEQ	2.93E-03	mg/kg	7.2E-13	mg/m^3	3.8E+01	(µg/m3)^-1	2.7E-08	5.0E-11	mg/m^3	4.0E-08	mg/m^3	0.0013
				PCB Dioxin-like Congener TEQ	8.11E-06	mg/kg	2.0E-15	mg/m^3	3.8E+01	(µg/m3)^-1	7.5E-11	1.4E-13	mg/m^3	4.0E-08	mg/m^3	0.000003
				Aluminum	5.96E+03	mg/kg	1.5E-06	mg/m^3	NA	---	NA	1.0E-04	mg/m^3	5.0E-03	mg/m^3	0.020
				Antimony	7.65E+00	mg/kg	1.9E-09	mg/m^3	NA	---	NA	1.3E-07	mg/m^3	NA	---	NA
				Arsenic	2.17E+01	mg/kg	5.3E-09	mg/m^3	4.3E-03	(µg/m3)^-1	2.3E-08	3.7E-07	mg/m^3	1.5E-05	mg/m^3	0.025
				Chromium	1.42E+01	mg/kg	3.5E-09	mg/m^3	8.4E-02	(µg/m3)^-1	2.9E-07	2.4E-07	mg/m^3	1.0E-04	mg/m^3	0.0024
				Cobalt	6.73E+00	mg/kg	1.6E-09	mg/m^3	9.0E-03	(µg/m3)^-1	1.5E-08	1.2E-07	mg/m^3	6.0E-06	mg/m^3	0.019
				Iron	1.48E+04	mg/kg	3.6E-06	mg/m^3	NA	---	NA	2.5E-04	mg/m^3	NA	---	NA
				Lead	3.68E+02	mg/kg	9.0E-08	mg/m^3	NA	---	NA	6.3E-06	mg/m^3	NA	---	NA
				Manganese	3.41E+02	mg/kg	8.3E-08	mg/m^3	NA	---	NA	5.8E-06	mg/m^3	5.0E-05	mg/m^3	0.12
				Mercury	1.74E+01	mg/kg	1.9E-07	mg/m^3	NA	---	NA	1.3E-05	mg/m^3	3.0E-04	mg/m^3	0.043
				Vanadium	2.28E+01	mg/kg	5.6E-09	mg/m^3	NA	---	NA	3.9E-07	mg/m^3	1.0E-04	mg/m^3	0.0039
			Inhalation Total								3.6E-07					0.23
	Aggregate Soil Total										1.4E-06					0.80
Soil Total											1.4E-06					0.80
										Total of Receptor Risks Across All Media	1.4E-06			Total of Receptor Hazards Across All Media		0.80

TABLE M-7.3D-9 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 1
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 1 Sediment	Ingestion	Benzo(a)anthracene	2.80E+00	mg/kg	6.0E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	4.4E-09	6.0E-08	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.70E+00	mg/kg	5.8E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.2E-08	5.8E-08	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	4.10E+00	mg/kg	8.8E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	6.4E-09	8.8E-08	mg/kg-day	NA	---	NA
				Carbazole	2.80E-02	mg/kg	6.0E-11	mg/kg-day	NA	---	NA	6.0E-10	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	7.50E-02	mg/kg	1.6E-10	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.2E-09	1.6E-09	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.70E+00	mg/kg	3.7E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.7E-09	3.7E-08	mg/kg-day	NA	---	NA
				Aluminum	1.20E+04	mg/kg	2.6E-05	mg/kg-day	NA	---	NA	2.6E-04	mg/kg-day	1.0E+00	mg/kg-day	0.00026
				Arsenic	9.90E-01	mg/kg	2.1E-09	mg/kg-day	1.5E+00	(mg/kg-day)^-1	3.2E-09	2.1E-08	mg/kg-day	3.0E-04	mg/kg-day	0.000071
				Chromium	1.90E+01	mg/kg	4.1E-08	mg/kg-day	5.0E-01	(mg/kg-day)^-1	2.0E-08	4.1E-07	mg/kg-day	3.0E-03	mg/kg-day	0.00014
				Cobalt	1.10E+01	mg/kg	2.4E-08	mg/kg-day	NA	---	NA	2.4E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00079
				Iron	1.70E+04	mg/kg	3.7E-05	mg/kg-day	NA	---	NA	3.7E-04	mg/kg-day	7.0E-01	mg/kg-day	0.00052
				Manganese	3.80E+02	mg/kg	8.2E-07	mg/kg-day	NA	---	NA	8.2E-06	mg/kg-day	7.0E-02	mg/kg-day	0.00012
			Ingestion Total								8.1E-08					0.0019
			Dermal	Benzo(a)anthracene	2.80E+00	mg/kg	3.2E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.4E-08	3.2E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.70E+00	mg/kg	3.1E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.3E-07	3.1E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	4.10E+00	mg/kg	4.8E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.5E-08	4.8E-07	mg/kg-day	NA	---	NA
				Carbazole	2.80E-02	mg/kg	3.2E-10	mg/kg-day	NA	---	NA	3.2E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	7.50E-02	mg/kg	8.7E-10	mg/kg-day	7.3E+00	(mg/kg-day)^-1	6.3E-09	8.7E-09	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.70E+00	mg/kg	2.0E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.4E-08	2.0E-07	mg/kg-day	NA	---	NA
				Aluminum	1.20E+04	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Arsenic	9.90E-01	mg/kg	2.6E-09	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.0E-09	2.6E-08	mg/kg-day	3.0E-04	mg/kg-day	0.000088
				Chromium	1.90E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.10E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.70E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	3.80E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
			Dermal Total								3.1E-07					0.000088
Sediment Total											3.9E-07					0.0020
											Total of Receptor Risks Across All Media 3.9E-07					Total of Receptor Hazards Across All Media 0.0020

TABLE M-7.3D-10 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 1
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 1 Sediment	Ingestion	Benzo(a)anthracene	2.80E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				1.9E-07	5.6E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.70E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				1.8E-06	5.4E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	4.10E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				2.7E-07	8.2E-07	mg/kg-day	NA	---	NA
				Carbazole	2.80E-02	mg/kg	1.6E-10	mg/kg-day	NA	---	NA	5.6E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	7.50E-02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				5.0E-08	1.5E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.70E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				1.1E-07	3.4E-07	mg/kg-day	NA	---	NA
				Aluminum	1.20E+04	mg/kg	6.9E-05	mg/kg-day	NA	---	NA	2.4E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0024
				Arsenic	9.90E-01	mg/kg	5.7E-09	mg/kg-day	1.5E+00	(mg/kg-day)^-1	8.5E-09	2.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00066
				Chromium	1.90E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				8.7E-07	3.8E-06	mg/kg-day	3.0E-03	mg/kg-day	0.0013
				Cobalt	1.10E+01	mg/kg	6.3E-08	mg/kg-day	NA	---	NA	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0074
				Iron	1.70E+04	mg/kg	9.8E-05	mg/kg-day	NA	---	NA	3.4E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0049
				Manganese	3.80E+02	mg/kg	2.2E-06	mg/kg-day	NA	---	NA	7.6E-05	mg/kg-day	7.0E-02	mg/kg-day	0.0011
			Ingestion Total								3.3E-06					0.018
			Dermal	Benzo(a)anthracene	2.80E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				1.4E-07	4.1E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.70E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				1.3E-06	3.9E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	4.10E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				2.0E-07	6.0E-07	mg/kg-day	NA	---	NA
				Carbazole	2.80E-02	mg/kg	1.2E-10	mg/kg-day	NA	---	NA	4.1E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	7.50E-02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				3.7E-08	1.1E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.70E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-25				8.3E-08	2.5E-07	mg/kg-day	NA	---	NA
				Aluminum	1.20E+04	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Arsenic	9.90E-01	mg/kg	9.5E-10	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.4E-09	3.3E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00011
				Chromium	1.90E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	1.10E+01	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.70E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	3.80E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
			Dermal Total								1.8E-06					0.00011
Sediment Total											5.1E-06					0.018
											Total of Receptor Risks Across All Media	5.1E-06		Total of Receptor Hazards Across All Media		0.018

TABLE M-7.3E-9 CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2

BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 2 Sediment	Ingestion	Benzo(a)anthracene	1.50E+00	mg/kg	3.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.3E-09	3.2E-08	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.46E+00	mg/kg	3.2E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.3E-08	3.2E-08	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.96E+00	mg/kg	4.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.1E-09	4.2E-08	mg/kg-day	NA	---	NA
				Carbazole	8.80E-02	mg/kg	1.9E-10	mg/kg-day	NA	---	NA	1.9E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	6.55E-02	mg/kg	1.4E-10	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.0E-09	1.4E-09	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.45E-01	mg/kg	2.0E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.5E-09	2.0E-08	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	3.42E-05	mg/kg	7.4E-14	mg/kg-day	1.3E+05	(mg/kg-day)^-1	9.6E-09	7.4E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0011
				o,p'-DDT	4.40E-03	mg/kg	9.5E-12	mg/kg-day	NA	---	NA	9.5E-11	mg/kg-day	NA	---	NA
				Total PCB Homologs	2.02E-01	mg/kg	4.3E-10	mg/kg-day	2.0E+00	(mg/kg-day)^-1	8.7E-10	4.3E-09	mg/kg-day	2.0E-05	mg/kg-day	0.00022
				Aluminum	9.00E+03	mg/kg	1.9E-05	mg/kg-day	NA	---	NA	1.9E-04	mg/kg-day	1.0E+00	mg/kg-day	0.00019
				Arsenic	3.11E+00	mg/kg	6.7E-09	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.0E-08	6.7E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00022
				Chromium	1.35E+01	mg/kg	2.9E-08	mg/kg-day	5.0E-01	(mg/kg-day)^-1	1.5E-08	2.9E-07	mg/kg-day	3.0E-03	mg/kg-day	0.00010
				Cobalt	9.40E+00	mg/kg	2.0E-08	mg/kg-day	NA	---	NA	2.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00067
				Iron	1.50E+04	mg/kg	3.2E-05	mg/kg-day	NA	---	NA	3.2E-04	mg/kg-day	7.0E-01	mg/kg-day	0.00046
				Manganese	3.30E+02	mg/kg	7.1E-07	mg/kg-day	NA	---	NA	7.1E-06	mg/kg-day	7.0E-02	mg/kg-day	0.00010
			Ingestion Total								6.6E-08					0.0030
			Dermal	Benzo(a)anthracene	1.50E+00	mg/kg	1.7E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.3E-08	1.7E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.46E+00	mg/kg	1.7E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	1.2E-07	1.7E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.96E+00	mg/kg	2.3E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.7E-08	2.3E-07	mg/kg-day	NA	---	NA
				Carbazole	8.80E-02	mg/kg	1.0E-09	mg/kg-day	NA	---	NA	1.0E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	6.55E-02	mg/kg	7.6E-10	mg/kg-day	7.3E+00	(mg/kg-day)^-1	5.5E-09	7.6E-09	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.45E-01	mg/kg	1.1E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	8.0E-09	1.1E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	3.42E-05	mg/kg	9.1E-14	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.2E-08	9.1E-13	mg/kg-day	7.0E-10	mg/kg-day	0.0013
				o,p'-DDT	4.40E-03	mg/kg	3.9E-11	mg/kg-day	NA	---	NA	3.9E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	2.02E-01	mg/kg	2.5E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	5.0E-09	2.5E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0013
				Aluminum	9.00E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Arsenic	3.11E+00	mg/kg	8.3E-09	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.2E-08	8.3E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00028
				Chromium	1.35E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	9.40E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.50E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	3.30E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
			Dermal Total								2.0E-07					0.0028
Sediment Total											2.6E-07					0.0059
										Total of Receptor Risks Across All Media	2.6E-07			Total of Receptor Hazards Across All Media		0.0059

TABLE M-7.3E-10 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 2 Sediment	Ingestion	Benzo(a)anthracene	1.50E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				1.0E-07	3.0E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.46E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				9.8E-07	2.9E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.96E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				1.3E-07	3.9E-07	mg/kg-day	NA	---	NA
				Carbazole	8.80E-02	mg/kg	5.1E-10	mg/kg-day	NA	---	NA	1.8E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	6.55E-02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				4.4E-08	1.3E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.45E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				6.3E-08	1.9E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	3.42E-05	mg/kg	2.0E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.6E-08	6.9E-12	mg/kg-day	7.0E-10	mg/kg-day	0.010
				o,p'-DDT	4.40E-03	mg/kg	2.5E-11	mg/kg-day	NA	---	NA	8.8E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	2.02E-01	mg/kg	1.2E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.3E-09	4.1E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0020
				Aluminum	9.00E+03	mg/kg	5.2E-05	mg/kg-day	NA	---	NA	1.8E-03	mg/kg-day	1.0E+00	mg/kg-day	0.0018
				Arsenic	3.11E+00	mg/kg	1.8E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.7E-08	6.2E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0021
				Chromium	1.35E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				6.2E-07	2.7E-06	mg/kg-day	3.0E-03	mg/kg-day	0.00090
				Cobalt	9.40E+00	mg/kg	5.4E-08	mg/kg-day	NA	---	NA	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0063
				Iron	1.50E+04	mg/kg	8.6E-05	mg/kg-day	NA	---	NA	3.0E-03	mg/kg-day	7.0E-01	mg/kg-day	0.0043
				Manganese	3.30E+02	mg/kg	1.9E-06	mg/kg-day	NA	---	NA	6.6E-05	mg/kg-day	7.0E-02	mg/kg-day	0.00095
			Ingestion Total								2.0E-06					0.028
			Dermal	Benzo(a)anthracene	1.50E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				7.3E-08	2.2E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	1.46E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				7.1E-07	2.1E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	1.96E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				9.6E-08	2.9E-07	mg/kg-day	NA	---	NA
				Carbazole	8.80E-02	mg/kg	3.7E-10	mg/kg-day	NA	---	NA	1.3E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	6.55E-02	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				3.2E-08	9.6E-09	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	9.45E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-26				4.6E-08	1.4E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	3.42E-05	mg/kg	3.3E-14	mg/kg-day	1.3E+05	(mg/kg-day)^-1	4.3E-09	1.2E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0016
				o,p'-DDT	4.40E-03	mg/kg	1.4E-11	mg/kg-day	NA	---	NA	5.0E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	2.02E-01	mg/kg	9.1E-10	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.8E-09	3.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0016
				Aluminum	9.00E+03	mg/kg	NA	---	NA	---	NA	NA	---	1.0E+00	mg/kg-day	NA
				Arsenic	3.11E+00	mg/kg	3.0E-09	mg/kg-day	1.5E+00	(mg/kg-day)^-1	4.5E-09	1.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00035
				Chromium	1.35E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Cobalt	9.40E+00	mg/kg	NA	---	NA	---	NA	NA	---	3.0E-04	mg/kg-day	NA
				Iron	1.50E+04	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-01	mg/kg-day	NA
				Manganese	3.30E+02	mg/kg	NA	---	NA	---	NA	NA	---	7.0E-02	mg/kg-day	NA
			Dermal Total								9.7E-07					0.0036
Sediment Total											3.0E-06					0.032
										Total of Receptor Risks Across All Media	3.0E-06			Total of Receptor Hazards Across All Media		0.032

TABLE M-7.3F-9 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 3 Sediment	Ingestion	Benzo(a)anthracene	2.40E+00	mg/kg	5.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.8E-09	5.2E-08	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.90E+00	mg/kg	6.2E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	4.6E-08	6.2E-08	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	3.80E+00	mg/kg	8.2E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	6.0E-09	8.2E-08	mg/kg-day	NA	---	NA
				Carbazole	1.40E-01	mg/kg	3.0E-10	mg/kg-day	NA	---	NA	3.0E-09	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.50E-01	mg/kg	7.5E-10	mg/kg-day	7.3E+00	(mg/kg-day)^-1	5.5E-09	7.5E-09	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.60E+00	mg/kg	3.4E-09	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.5E-09	3.4E-08	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.91E-04	mg/kg	6.3E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	8.1E-08	6.3E-12	mg/kg-day	7.0E-10	mg/kg-day	0.0089
				o,p'-DDT	3.10E-03	mg/kg	6.7E-12	mg/kg-day	NA	---	NA	6.7E-11	mg/kg-day	NA	---	NA
				Total PCB Homologs	3.10E-01	mg/kg	6.7E-10	mg/kg-day	2.0E+00	(mg/kg-day)^-1	1.3E-09	6.7E-09	mg/kg-day	2.0E-05	mg/kg-day	0.00033
				Arsenic	7.30E+00	mg/kg	1.6E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.4E-08	1.6E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00052
				Chromium	1.07E+01	mg/kg	2.3E-08	mg/kg-day	5.0E-01	(mg/kg-day)^-1	1.2E-08	2.3E-07	mg/kg-day	3.0E-03	mg/kg-day	0.000077
				Mercury	3.66E+00	mg/kg	7.9E-09	mg/kg-day	NA	---	NA	7.9E-08	mg/kg-day	3.0E-04	mg/kg-day	0.00026
			Ingestion Total								1.8E-07					0.010
			Dermal	Benzo(a)anthracene	2.40E+00	mg/kg	2.8E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	2.0E-08	2.8E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.90E+00	mg/kg	3.4E-08	mg/kg-day	7.3E+00	(mg/kg-day)^-1	2.5E-07	3.4E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	3.80E+00	mg/kg	4.4E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	3.2E-08	4.4E-07	mg/kg-day	NA	---	NA
				Carbazole	1.40E-01	mg/kg	1.6E-09	mg/kg-day	NA	---	NA	1.6E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.50E-01	mg/kg	4.1E-09	mg/kg-day	7.3E+00	(mg/kg-day)^-1	3.0E-08	4.1E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.60E+00	mg/kg	1.9E-08	mg/kg-day	7.3E-01	(mg/kg-day)^-1	1.4E-08	1.9E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.91E-04	mg/kg	7.8E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	1.0E-07	7.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.011
				o,p'-DDT	3.10E-03	mg/kg	2.8E-11	mg/kg-day	NA	---	NA	2.8E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	3.10E-01	mg/kg	3.9E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	7.7E-09	3.9E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0019
				Arsenic	7.30E+00	mg/kg	2.0E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.9E-08	2.0E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00065
				Chromium	1.07E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Mercury	3.66E+00	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								4.8E-07					0.014
Sediment Total											6.6E-07					0.024
											Total of Receptor Risks Across All Media	6.6E-07		Total of Receptor Hazards Across All Media		0.024

TABLE M-7.3F-10 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Area 3 Sediment	Ingestion	Benzo(a)anthracene	2.40E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				1.6E-07	4.8E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.90E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				1.9E-06	5.8E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	3.80E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				2.5E-07	7.6E-07	mg/kg-day	NA	---	NA
				Carbazole	1.40E-01	mg/kg	8.0E-10	mg/kg-day	NA	---	NA	2.8E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.50E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				2.3E-07	7.0E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.60E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				1.1E-07	3.2E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.91E-04	mg/kg	1.7E-12	mg/kg-day	1.3E+05	(mg/kg-day)^-1	2.2E-07	5.8E-11	mg/kg-day	7.0E-10	mg/kg-day	0.083
				o,p'-DDT	3.10E-03	mg/kg	1.8E-11	mg/kg-day	NA	---	NA	6.2E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	3.10E-01	mg/kg	1.8E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	3.6E-09	6.2E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0031
				Arsenic	7.30E+00	mg/kg	4.2E-08	mg/kg-day	1.5E+00	(mg/kg-day)^-1	6.3E-08	1.5E-06	mg/kg-day	3.0E-04	mg/kg-day	0.0049
				Chromium	1.07E+01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				4.9E-07	2.1E-06	mg/kg-day	3.0E-03	mg/kg-day	0.00072
				Mercury	3.66E+00	mg/kg	2.1E-08	mg/kg-day	NA	---	NA	7.4E-07	mg/kg-day	3.0E-04	mg/kg-day	0.0025
			Ingestion Total								3.5E-06					0.095
			Dermal	Benzo(a)anthracene	2.40E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				1.2E-07	3.5E-07	mg/kg-day	NA	---	NA
				Benzo(a)pyrene	2.90E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				1.4E-06	4.2E-07	mg/kg-day	NA	---	NA
				Benzo(b)fluoranthene	3.80E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				1.9E-07	5.6E-07	mg/kg-day	NA	---	NA
				Carbazole	1.40E-01	mg/kg	5.9E-10	mg/kg-day	NA	---	NA	2.0E-08	mg/kg-day	NA	---	NA
				Dibenz(a,h)anthracene	3.50E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				1.7E-07	5.1E-08	mg/kg-day	NA	---	NA
				Indeno(1,2,3-cd)pyrene	1.60E+00	mg/kg	Mutagenic Mode of Action Calculation; see Table J-27				7.8E-08	2.3E-07	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	2.91E-04	mg/kg	2.8E-13	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.6E-08	9.8E-12	mg/kg-day	7.0E-10	mg/kg-day	0.014
				o,p'-DDT	3.10E-03	mg/kg	1.0E-11	mg/kg-day	NA	---	NA	3.5E-10	mg/kg-day	NA	---	NA
				Total PCB Homologs	3.10E-01	mg/kg	1.4E-09	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.8E-09	4.9E-08	mg/kg-day	2.0E-05	mg/kg-day	0.0024
				Arsenic	7.30E+00	mg/kg	7.0E-09	mg/kg-day	1.5E+00	(mg/kg-day)^-1	1.1E-08	2.5E-07	mg/kg-day	3.0E-04	mg/kg-day	0.00082
				Chromium	1.07E+01	mg/kg	NA	---	1.3E-02	(mg/kg-day)^-1	NA	NA	---	7.5E-05	mg/kg-day	NA
				Mercury	3.66E+00	mg/kg	NA	---	NA	---	NA	NA	---	2.1E-05	mg/kg-day	NA
			Dermal Total								2.0E-06					0.017
Sediment Total											5.5E-06					0.11
											Total of Receptor Risks Across All Media	5.5E-06		Total of Receptor Hazards Across All Media		0.11

TABLE M-7.4G-11 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - ANDROSCOGGIN RIVER FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish	Androscoggin River Reaches 3-9	Ingestion	Indeno(1,2,3-cd)pyrene	7.20E-03	mg/kg	---	---	---	---	---	1.5E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	6.96E-06	mg/kg	---	---	---	---	---	1.4E-09	mg/kg-day	7.0E-10	mg/kg-day	2.0
				4,4'-DDT	2.10E-01	mg/kg	---	---	---	---	---	4.3E-05	mg/kg-day	5.0E-04	mg/kg-day	0.086
				beta-BHC	3.90E-03	mg/kg	---	---	---	---	---	8.0E-07	mg/kg-day	NA	---	NA
				o,p'-DDD	5.60E-02	mg/kg	---	---	---	---	---	1.2E-05	mg/kg-day	NA	---	NA
				trans-Nonachlor	1.30E-03	mg/kg	---	---	---	---	---	2.7E-07	mg/kg-day	NA	---	NA
				PCB Dioxin-like Congener TEQ	7.10E-05	mg/kg	---	---	---	---	---	1.5E-08	mg/kg-day	7.0E-10	mg/kg-day	21
				Total PCBs	3.21E+00	mg/kg	---	---	---	---	---	6.6E-04	mg/kg-day	2.0E-05	mg/kg-day	33
				Arsenic	5.53E-01	mg/kg	---	---	---	---	---	1.1E-04	mg/kg-day	3.0E-04	mg/kg-day	0.38
				Chromium	4.93E-01	mg/kg	---	---	---	---	---	1.0E-04	mg/kg-day	3.0E-03	mg/kg-day	0.034
				Lead	1.02E-02	mg/kg	---	---	---	---	---	2.1E-06	mg/kg-day	NA	---	NA
				Mercury[1]	1.23E+00	mg/kg	---	---	---	---	---	2.5E-04	mg/kg-day	1.0E-04	mg/kg-day	2.5
			Ingestion Total								---					59
Fish Ingestion Total											---					59
											Total of Receptor Risks Across All Media	---		Total of Receptor Hazards Across All Media		59

[1]Total Mercury in fish tissue was assumed to be methylmercury.

TABLE M-7.4G-12 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - ANDROSCOGGIN RIVER FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish	Androscoggin River Reaches 3-9	Ingestion	Indeno(1,2,3-cd)pyrene	7.20E-03	mg/kg	---	---	---	---	---	2.9E-06	mg/kg-day	NA	---	NA
				2,3,7,8-TCDD TEQ	6.96E-06	mg/kg	---	---	---	---	---	2.8E-09	mg/kg-day	7.0E-10	mg/kg-day	4.1
				4,4'-DDT	2.10E-01	mg/kg	---	---	---	---	---	8.6E-05	mg/kg-day	5.0E-04	mg/kg-day	0.17
				beta-BHC	3.90E-03	mg/kg	---	---	---	---	---	1.6E-06	mg/kg-day	NA	---	NA
				o,p'-DDD	5.60E-02	mg/kg	---	---	---	---	---	2.3E-05	mg/kg-day	NA	---	NA
				trans-Nonachlor	1.30E-03	mg/kg	---	---	---	---	---	5.3E-07	mg/kg-day	NA	---	NA
				PCB Dioxin-like Congener TEQ	7.10E-05	mg/kg	---	---	---	---	---	2.9E-08	mg/kg-day	7.0E-10	mg/kg-day	41
				Total PCBs	3.21E+00	mg/kg	---	---	---	---	---	1.3E-03	mg/kg-day	2.0E-05	mg/kg-day	66
				Arsenic	5.53E-01	mg/kg	---	---	---	---	---	2.3E-04	mg/kg-day	3.0E-04	mg/kg-day	0.75
				Chromium	4.93E-01	mg/kg	---	---	---	---	---	2.0E-04	mg/kg-day	3.0E-03	mg/kg-day	0.067
				Lead	1.02E-02	mg/kg	---	---	---	---	---	4.2E-06	mg/kg-day	NA	---	NA
				Mercury[1]	1.23E+00	mg/kg	---	---	---	---	---	5.0E-04	mg/kg-day	1.0E-04	mg/kg-day	5.0
			Ingestion Total								---					117
Fish Ingestion Total											---					117
											Total of Receptor Risks Across All Media ---					Total of Receptor Hazards Across All Media 117

[1]Total Mercury in fish tissue was assumed to be methylmercury.

TABLE M-7.4G-13 CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - ANDROSCOGGIN RIVER FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Age-adjusted

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish	Androscoggin River Reaches 3-9	Ingestion	Indeno(1,2,3-cd)pyrene	7.20E-03	mg/kg	Mutagenic Mode of Action Calculation; see Table J-28				9.4E-07	---	---	---	---	---
				2,3,7,8-TCDD TEQ	6.96E-06	mg/kg	2.3E-10	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.0E-05	---	---	---	---	---
				4,4'-DDT	2.10E-01	mg/kg	6.9E-06	mg/kg-day	3.4E-01	(mg/kg-day)^-1	2.3E-06	---	---	---	---	---
				beta-BHC	3.90E-03	mg/kg	1.3E-07	mg/kg-day	1.8E+00	(mg/kg-day)^-1	2.3E-07	---	---	---	---	---
				o,p'-DDD	5.60E-02	mg/kg	1.8E-06	mg/kg-day	NA	---	NA	---	---	---	---	---
				trans-Nonachlor	1.30E-03	mg/kg	4.3E-08	mg/kg-day	NA	---	NA	---	---	---	---	---
				PCB Dioxin-like Congener TEQ	7.10E-05	mg/kg	2.3E-09	mg/kg-day	1.3E+05	(mg/kg-day)^-1	3.0E-04	---	---	---	---	---
				Total PCBs	3.21E+00	mg/kg	1.1E-04	mg/kg-day	2.0E+00	(mg/kg-day)^-1	2.1E-04	---	---	---	---	---
				Arsenic	5.53E-01	mg/kg	1.8E-05	mg/kg-day	1.5E+00	(mg/kg-day)^-1	2.7E-05	---	---	---	---	---
				Chromium	4.93E-01	mg/kg	Mutagenic Mode of Action Calculation; see Table J-28				4.4E-05	---	---	---	---	---
				Lead	1.02E-02	mg/kg	3.4E-07	mg/kg-day	NA	---	NA	---	---	---	---	---
				Mercury[1]	1.23E+00	mg/kg	4.0E-05	mg/kg-day	NA	---	NA	---	---	---	---	---
			Ingestion Total								6.2E-04					---
Fish Ingestion Total											6.2E-04					---
											Total of Receptor Risks Across All Media 6.2E-04					Total of Receptor Hazards Across All Media ---

[1]Total Mercury in fish tissue was assumed to be methylmercury.

TABLE M-9.1A-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	48	---	12	60
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.036	---	0.040	0.077
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.019	---	0.021	0.039
			Antimony	---	---	---	---	Blood	0.0050	---	---	0.0050
			Arsenic	---	---	---	---	Skin	1.4	---	0.33	1.7
			Chromium	---	---	---	---	None observed	0.0035	---	---	0.0035
			Cobalt	---	---	---	---	Thyroid	0.027	---	---	0.027
			Iron	---	---	---	---	Gastrointestinal	0.021	---	---	0.021
			Manganese	---	---	---	---	Nervous system	0.0021	---	---	0.0021
			Mercury	---	---	---	---	Kidney	0.33	---	---	0.33
			Chemical Total	---	---	---	---		50	---	12	62
		Exposure Point Total					---					62
		Air at CHP	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00013	---	0.00013
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000049	---	0.000000049
			Antimony	---	---	---	---	---	---	---	---	---

TABLE M-9.1A-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0041	---	0.0041
			Chromium	---	---	---	---	Respiratory tract	---	0.000016	---	0.000016
			Cobalt	---	---	---	---	Respiratory tract	---	0.00021	---	0.00021
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00045	---	0.00045
			Mercury	---	---	---	---	Nervous system	---	15	---	15
			Chemical Total	---	---	---	---		---	15	---	15
		Exposure Point Total					---					15
	Surface Soil Total						---					76
Soil Total							---					76

Total Risk Across All Media: ---

Total Hazard Across All Media: 76

Total Nervous System HI Across All Media	15
Total Skin HI Across All Media	1.7
Total Thyroid HI Across All Media	0.027
Total Gastrointestinal HI Across All Media	0.021
Total Kidney HI Across All Media	0.33
Total Developmental HI Across All Media	60
Total Cardiovascular HI Across All Media	0.0041
Total Lung/Respiratory Tract HI Across All Media	0.0045
Total Eyes HI Across All Media	0.077
Total Immune System HI Across All Media	0.077
Total Blood HI Across All Media	0.0052
Total Liver HI Across All Media	0.00013
Total Reproductive System HI Across All Media	0.00013
Total Endrocrine System HI Across All Media	0.00013

TABLE M-9.1A-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	448	---	75	524
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.34	---	0.26	0.60
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.17	---	0.14	0.31
			Antimony	---	---	---	---	Blood	0.047	---	---	0.047
			Arsenic	---	---	---	---	Skin	13	---	2.2	15
			Chromium	---	---	---	---	None observed	0.033	---	---	0.033
			Cobalt	---	---	---	---	Thyroid	0.26	---	---	0.26
			Iron	---	---	---	---	Gastrointestinal	0.20	---	---	0.20
			Manganese	---	---	---	---	Nervous system	0.020	---	---	0.020
			Mercury	---	---	---	---	Kidney	3.1	---	---	3.1
			Chemical Total	---	---	---	---		465	---	78	543
		Exposure Point Total					---					543
		Air at CHP	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00013	---	0.00013
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000049	---	0.000000049
			Antimony	---	---	---	---	---	---	---	---	---

TABLE M-9.1A-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0041	---	0.0041
			Chromium	---	---	---	---	Respiratory tract	---	0.000016	---	0.000016
			Cobalt	---	---	---	---	Respiratory tract	---	0.00021	---	0.00021
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00045	---	0.00045
			Mercury	---	---	---	---	Nervous system	---	15	---	15
			Chemical Total	---	---	---	---		---	15	---	15
		Exposure Point Total					---					15
	Surface Soil Total						---					558
Soil Total							---					558

Total Risk Across All Media: ---

Total Hazard Across All Media: 558

Total Nervous System HI Across All Media	15
Total Skin HI Across All Media	15
Total Thyroid HI Across All Media	0.26
Total Gastrointestinal HI Across All Media	0.20
Total Kidney HI Across All Media	3.1
Total Developmental HI Across All Media	524
Total Cardiovascular HI Across All Media	0.0041
Total Lung/Respiratory Tract HI Across All Media	0.0045
Total Eyes HI Across All Media	0.60
Total Immune System HI Across All Media	0.60
Total Blood HI Across All Media	0.047
Total Liver HI Across All Media	0.00013
Total Reproductive System HI Across All Media	0.00013
Total Endrocrine System HI Across All Media	0.00013

TABLE M-9.1A-3 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	2.5E-06	1.1E-11	1.9E-06	4.4E-06	---	---	---	---	---
			Benzo(a)pyrene	2.3E-05	1.0E-10	1.7E-05	4.0E-05	---	---	---	---	---
			Benzo(b)fluoranthene	2.4E-06	1.1E-11	1.9E-06	4.3E-06	---	---	---	---	---
			Benzo(k)fluoranthene	2.3E-07	1.0E-11	1.7E-07	4.0E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	7.8E-06	3.8E-11	5.9E-06	1.4E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.3E-06	5.7E-12	9.7E-07	2.3E-06	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.6E-03	2.5E-08	3.0E-04	1.9E-03	---	---	---	---	---
			Total PCB Homologs	5.3E-07	8.0E-12	4.6E-07	1.0E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	6.2E-07	9.6E-12	5.4E-07	1.2E-06	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	2.3E-04	3.4E-08	4.3E-05	2.7E-04	---	---	---	---	---
			Chromium	1.6E-05	7.7E-08	---	1.6E-05	---	---	---	---	---
			Cobalt	---	1.4E-09	---	1.4E-09	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Chemical Total	1.9E-03	1.4E-07	3.7E-04	2.3E-03		---	---	---	---
		Exposure Point Total					2.3E-03					---
	Surface Soil Total						2.3E-03					---
Soil Total							2.3E-03					---

Total Risk Across All Media: 2.3E-03

Total Hazard Across All Media: ---

TABLE M-9.1A-4 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	1.2E-08	---	1.3E-08	2.5E-08	---	---	---	---	---
			Benzo(a)pyrene	1.1E-07	---	1.2E-07	2.3E-07	---	---	---	---	---
			Benzo(b)fluoranthene	1.2E-08	---	1.3E-08	2.5E-08	---	---	---	---	---
			Benzo(k)fluoranthene	1.1E-09	---	1.2E-09	2.3E-09	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	3.1E-08	---	3.2E-08	6.3E-08	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	6.4E-09	---	6.7E-09	1.3E-08	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	6.5E-05	---	1.6E-05	8.1E-05	Developmental	7.1	---	1.7	8.8
			Total PCB Homologs	2.2E-08	---	2.4E-08	4.6E-08	Eyes, Immune system	0.0054	---	0.0060	0.011
			PCB Dioxin-like Congener TEQ	2.5E-08	---	2.8E-08	5.3E-08	Developmental	0.0028	---	0.0031	0.0059
			Antimony	---	---	---	---	Blood	0.00075	---	---	0.00075
			Arsenic	9.2E-06	---	2.2E-06	1.1E-05	Skin	0.20	---	0.049	0.25
			Chromium	7.8E-08	---	---	7.8E-08	None observed	0.00052	---	---	0.00052
			Cobalt	---	---	---	---	Thyroid	0.0041	---	---	0.0041
			Iron	---	---	---	---	Gastrointestinal	0.0031	---	---	0.0031
			Manganese	---	---	---	---	Nervous system	0.00032	---	---	0.00032
			Mercury	---	---	---	---	Kidney	0.049	---	---	0.049
			Chemical Total	7.4E-05	---	1.8E-05	9.2E-05		7.4	---	1.8	9.2
		Exposure Point Total					9.2E-05					9.2
		Air at CHP	Benzo(a)anthracene	---	1.2E-14	---	1.2E-14	---	---	---	---	---
			Benzo(a)pyrene	---	1.1E-13	---	1.1E-13	---	---	---	---	---
			Benzo(b)fluoranthene	---	1.2E-14	---	1.2E-14	---	---	---	---	---
			Benzo(k)fluoranthene	---	1.1E-14	---	1.1E-14	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	3.2E-14	---	3.2E-14	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	6.0E-15	---	6.0E-15	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.2E-10	---	1.2E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000078	---	0.00000078
			Total PCB Homologs	---	3.8E-14	---	3.8E-14	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	4.6E-14	---	4.6E-14	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000000030	---	0.00000000030
			Antimony	---	---	---	---	---	---	---	---	---

TABLE M-9.1A-4 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	1.6E-10	---	1.6E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000026	---	0.000026
			Chromium	---	8.2E-11	---	8.2E-11	Respiratory tract	---	0.00000010	---	0.00000010
			Cobalt	---	6.9E-12	---	6.9E-12	Respiratory tract	---	0.0000013	---	0.0000013
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.0000028	---	0.0000028
			Mercury	---	---	---	---	Nervous system	---	0.090	---	0.090
			Chemical Total	---	3.7E-10	---	3.7E-10		---	0.090	---	0.090
		Exposure Point Total					3.7E-10					0.090
	Surface Soil Total						9.2E-05					9.3
Soil Total							9.2E-05					9.3

Total Risk Across All Media	9.2E-05

Total Hazard Across All Media	9.3
Total Nervous System HI Across All Media	0.091
Total Skin HI Across All Media	0.25
Total Thyroid HI Across All Media	0.0041
Total Gastrointestinal HI Across All Media	0.0031
Total Kidney HI Across All Media	0.049
Total Developmental HI Across All Media	8.8
Total Cardiovascular HI Across All Media	0.000026
Total Lung/Respiratory Tract HI Across All Media	0.000028
Total Eyes HI Across All Media	0.011
Total Immune System HI Across All Media	0.011
Total Blood HI Across All Media	0.00075
Total Liver HI Across All Media	0.00000078
Total Reproductive System HI Across All Media	0.00000078
Total Endrocrine System HI Across All Media	0.00000078

TABLE M-9.1A-5 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	5.3E-07	---	3.9E-07	9.2E-07	---	---	---	---	---
			Benzo(a)pyrene	4.8E-06	---	3.5E-06	8.4E-06	---	---	---	---	---
			Benzo(b)fluoranthene	5.2E-07	---	3.8E-07	9.0E-07	---	---	---	---	---
			Benzo(k)fluoranthene	4.8E-08	---	3.5E-08	8.4E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.7E-06	---	1.2E-06	2.9E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.7E-07	---	2.0E-07	4.7E-07	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.7E-04	---	2.9E-05	2.0E-04	Developmental	67	---	11	78
			Total PCB Homologs	5.7E-08	---	4.5E-08	1.0E-07	Eyes, Immune system	0.050	---	0.039	0.090
			PCB Dioxin-like Congener TEQ	6.7E-08	---	5.3E-08	1.2E-07	Developmental	0.026	---	0.020	0.046
			Antimony	---	---	---	---	Blood	0.0070	---	---	0.0070
			Arsenic	2.5E-05	---	4.1E-06	2.9E-05	Skin	1.9	---	0.32	2.2
			Chromium	3.3E-06	---	---	3.3E-06	None observed	0.0048	---	---	0.0048
			Cobalt	---	---	---	---	Thyroid	0.038	---	---	0.038
			Iron	---	---	---	---	Gastrointestinal	0.029	---	---	0.029
			Manganese	---	---	---	---	Nervous system	0.0030	---	---	0.0030
			Mercury	---	---	---	---	Kidney	0.46	---	---	0.46
			Chemical Total	2.1E-04	---	3.9E-05	2.5E-04		69	---	12	81
		Exposure Point Total					2.5E-04					81
		Air at CHP	Benzo(a)anthracene	---	5.3E-14	---	5.3E-14	---	---	---	---	---
			Benzo(a)pyrene	---	4.8E-13	---	4.8E-13	---	---	---	---	---
			Benzo(b)fluoranthene	---	5.2E-14	---	5.2E-14	---	---	---	---	---
			Benzo(k)fluoranthene	---	4.9E-14	---	4.9E-14	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	1.8E-13	---	1.8E-13	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	2.7E-14	---	2.7E-14	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	3.4E-11	---	3.4E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000078	---	0.00000078
			Total PCB Homologs	---	1.1E-14	---	1.1E-14	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	1.3E-14	---	1.3E-14	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000000030	---	0.00000000030
			Antimony	---	---	---	---	---	---	---	---	---

TABLE M-9.1A-5 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	4.7E-11	---	4.7E-11	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000026	---	0.000026
			Chromium	---	3.7E-10	---	3.7E-10	Respiratory tract	---	0.00000010	---	0.00000010
			Cobalt	---	2.0E-12	---	2.0E-12	Respiratory tract	---	0.0000013	---	0.0000013
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.0000028	---	0.0000028
			Mercury	---	---	---	---	Nervous system	---	0.090	---	0.090
			Chemical Total	---	4.6E-10	---	4.6E-10		---	0.090	---	0.090
		Exposure Point Total					4.6E-10					0.090
	Surface Soil Total						2.5E-04					81
Soil Total							2.5E-04					81

Total Risk Across All Media	2.5E-04

Total Hazard Across All Media	81
Total Nervous System HI Across All Media	0.093
Total Skin HI Across All Media	2.2
Total Thyroid HI Across All Media	0.038
Total Gastrointestinal HI Across All Media	0.029
Total Kidney HI Across All Media	0.46
Total Developmental HI Across All Media	78
Total Cardiovascular HI Across All Media	0.000026
Total Lung/Respiratory Tract HI Across All Media	0.000028
Total Eyes HI Across All Media	0.090
Total Immune System HI Across All Media	0.090
Total Blood HI Across All Media	0.0070
Total Liver HI Across All Media	0.00000078
Total Reproductive System HI Across All Media	0.00000078
Total Endrocrine System HI Across All Media	0.00000078

TABLE M-9.1A-7 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	CHP Surface Soil	Benzo(a)anthracene	3.3E-08	---	7.2E-08	1.0E-07	---	---	---	---	---
			Benzo(a)pyrene	3.0E-07	---	6.6E-07	9.6E-07	---	---	---	---	---
			Benzo(b)fluoranthene	3.3E-08	---	7.1E-08	1.0E-07	---	---	---	---	---
			Benzo(k)fluoranthene	3.0E-09	---	6.6E-09	9.6E-09	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.0E-07	---	2.3E-07	3.3E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.7E-08	---	3.7E-08	5.4E-08	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	5.8E-05	---	2.9E-05	8.7E-05	Developmental	4.4	---	2.2	6.7
			Total PCB Homologs	1.9E-08	---	4.5E-08	6.4E-08	Eyes, Immune system	0.0033	---	0.0078	0.011
			PCB Dioxin-like Congener TEQ	2.2E-08	---	5.2E-08	7.5E-08	Developmental	0.0017	---	0.0040	0.0057
			Antimony	---	---	---	---	Blood	0.00047	---	---	0.00047
			Arsenic	8.2E-06	---	4.1E-06	1.2E-05	Skin	0.13	---	0.064	0.19
			Chromium	2.1E-07	---	---	2.1E-07	None observed	0.00032	---	---	0.00032
			Cobalt	---	---	---	---	Thyroid	0.0025	---	---	0.0025
			Iron	---	---	---	---	Gastrointestinal	0.0019	---	---	0.0019
			Manganese	---	---	---	---	Nervous system	0.00020	---	---	0.00020
			Mercury	---	---	---	---	Kidney	0.031	---	---	0.031
			Chemical Total	6.7E-05	---	3.4E-05	1.0E-04		4.6	---	2.3	6.9
		Exposure Point Total					1.0E-04					6.9
		Air at CHP	Benzo(a)anthracene	---	3.4E-14	---	3.4E-14	---	---	---	---	---
			Benzo(a)pyrene	---	3.1E-13	---	3.1E-13	---	---	---	---	---
			Benzo(b)fluoranthene	---	3.4E-14	---	3.4E-14	---	---	---	---	---
			Benzo(k)fluoranthene	---	3.2E-14	---	3.2E-14	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	1.2E-13	---	1.2E-13	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	1.8E-14	---	1.8E-14	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.2E-10	---	1.2E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000054	---	0.00000054
			Total PCB Homologs	---	3.8E-14	---	3.8E-14	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	4.6E-14	---	4.6E-14	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000000021	---	0.00000000021
			Antimony	---	---	---	---	---	---	---	---	---

TABLE M-9.1A-7 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at CHP	Arsenic	---	1.6E-10	---	1.6E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000018	---	0.000018
			Chromium	---	2.4E-10	---	2.4E-10	Respiratory tract	---	0.000000067	---	0.000000067
			Cobalt	---	6.8E-12	---	6.8E-12	Respiratory tract	---	0.00000088	---	0.00000088
			Iron	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.0000019	---	0.0000019
			Mercury	---	---	---	---	Nervous system	---	0.063	---	0.063
			Chemical Total	---	5.3E-10	---	5.3E-10		---	0.063	---	0.063
		Exposure Point Total					5.3E-10					0.063
	Surface Soil Total						1.0E-04					7.0
Soil Total							1.0E-04					7.0

Total Risk Across All Media	1.0E-04
Total Hazard Across All Media	7.0
Total Nervous System HI Across All Media	0.063
Total Skin HI Across All Media	0.19
Total Thyroid HI Across All Media	0.0025
Total Gastrointestinal HI Across All Media	0.0019
Total Kidney HI Across All Media	0.031
Total Developmental HI Across All Media	6.7
Total Cardiovascular HI Across All Media	0.000018
Total Lung/Respiratory Tract HI Across All Media	0.000019
Total Eyes HI Across All Media	0.011
Total Immune System HI Across All Media	0.011
Total Blood HI Across All Media	0.00047
Total Liver HI Across All Media	0.00000054
Total Reproductive System HI Across All Media	0.00000054
Total Endrocrine System HI Across All Media	0.00000054

TABLE M-9.1B-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	0.087	---	0.021	0.11
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.054	---	0.061	0.11
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.040	---	0.045	0.085
			Aluminum	---	---	---	---	Nervous system	0.0034	---	---	0.0034
			Antimony	---	---	---	---	Blood	0.22	---	---	0.22
			Arsenic	---	---	---	---	Skin	0.14	---	0.034	0.18
			Chromium	---	---	---	---	None observed	0.0051	---	---	0.0051
			Cobalt	---	---	---	---	Thyroid	0.018	---	---	0.018
			Iron	---	---	---	---	Gastrointestinal	0.054	---	---	0.054
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0032	---	---	0.0032
			Mercury	---	---	---	---	Kidney	0.080	---	---	0.080
			Nickel	---	---	---	---	Body weight	0.0020	---	---	0.0020
			Vanadium	---	---	---	---	Kidney	0.25	---	---	0.25
			Chemical Total	---	---	---	---		0.95	---	0.16	1.1
		Exposure Point Total					---					1.1
		Air at SFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000002	---	0.0000002
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000011	---	0.00000011
			Aluminum	---	---	---	---	Nervous system	---	0.00010	---	0.00010
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00042	---	0.00042

TABLE M-9.1B-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at SFSA	Chromium	---	---	---	---	Respiratory tract	---	0.000023	---	0.000023
			Cobalt	---	---	---	---	Respiratory tract	---	0.00013	---	0.00013
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00068	---	0.00068
			Mercury	---	---	---	---	Nervous system	---	3.5	---	3.5
			Nickel	---	---	---	---	Respiratory tract	---	0.000068	---	0.000068
			Vanadium	---	---	---	---	Respiratory tract	---	0.000026	---	0.000026
			Chemical Total	---	---	---	---		---	3.5	---	3.5
		Exposure Point Total					---					3.5
	Surface Soil Total						---					4.6
Soil Total							---					4.6

Total Risk Across All Media: ---

Total Hazard Across All Media: 4.6

Total Nervous System HI Across All Media	3.5
Total Skin HI Across All Media	0.18
Total Thyroid HI Across All Media	0.018
Total Gastrointestinal HI Across All Media	0.054
Total Kidney HI Across All Media	0.33
Total Developmental HI Across All Media	0.19
Total Cardiovascular HI Across All Media	0.00042
Total Lung/Respiratory Tract HI Across All Media	0.00068
Total Eyes HI Across All Media	0.11
Total Immune System HI Across All Media	0.11
Total Blood HI Across All Media	0.22
Total Liver HI Across All Media	0.0000003
Total Reproductive System HI Across All Media	0.0000003
Total Endrocrine System HI Across All Media	0.0000003

TABLE M-9.1B-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	0.81	---	0.14	0.94
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.51	---	0.40	0.90
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.37	---	0.29	0.67
			Aluminum	---	---	---	---	Nervous system	0.032	---	---	0.032
			Antimony	---	---	---	---	Blood	2.0	---	---	2.0
			Arsenic	---	---	---	---	Skin	1.3	---	0.22	1.5
			Chromium	---	---	---	---	None observed	0.048	---	---	0.048
			Cobalt	---	---	---	---	Thyroid	0.17	---	---	0.17
			Iron	---	---	---	---	Gastrointestinal	0.50	---	---	0.50
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.030	---	---	0.030
			Mercury	---	---	---	---	Kidney	0.74	---	---	0.74
			Nickel	---	---	---	---	Body weight	0.019	---	---	0.019
			Vanadium	---	---	---	---	Kidney	2.3	---	---	2.3
			Chemical Total	---	---	---	---		8.9	---	1.0	10
		Exposure Point Total					---					10
		Air at SFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000002	---	0.0000002
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000011	---	0.00000011
			Aluminum	---	---	---	---	Nervous system	---	0.00010	---	0.00010
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00042	---	0.00042

TABLE M-9.1B-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at SFSA	Chromium	---	---	---	---	Respiratory tract	---	0.000023	---	0.000023
			Cobalt	---	---	---	---	Respiratory tract	---	0.00013	---	0.00013
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00068	---	0.00068
			Mercury	---	---	---	---	Nervous system	---	3.5	---	3.5
			Nickel	---	---	---	---	Respiratory tract	---	0.000068	---	0.000068
			Vanadium	---	---	---	---	Respiratory tract	---	0.000026	---	0.000026
			Chemical Total	---	---	---	---		---	3.5	---	3.5
		Exposure Point Total					---					3.5
	Surface Soil Total						---					13
Soil Total							---					13

Total Risk Across All Media	---
Total Hazard Across All Media	13

Total Nervous System HI Across All Media	3.6
Total Skin HI Across All Media	1.5
Total Thyroid HI Across All Media	0.17
Total Gastrointestinal HI Across All Media	0.50
Total Kidney HI Across All Media	3.0
Total Developmental HI Across All Media	1.6
Total Cardiovascular HI Across All Media	0.00042
Total Lung/Respiratory Tract HI Across All Media	0.00068
Total Eyes HI Across All Media	0.90
Total Immune System HI Across All Media	0.90
Total Blood HI Across All Media	2.0
Total Liver HI Across All Media	0.00000033
Total Reproductive System HI Across All Media	0.00000033
Total Endrocrine System HI Across All Media	0.00000033

TABLE M-9.1B-3 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	2.8E-06	1.3E-11	2.2E-06	5.0E-06	---	---	---	---	---
			Benzo(a)pyrene	2.7E-05	1.2E-10	2.0E-05	4.7E-05	---	---	---	---	---
			Benzo(b)fluoranthene	2.8E-06	1.2E-11	2.1E-06	4.8E-06	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	2.3E-07	1.0E-11	1.7E-07	4.0E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	6.5E-06	3.1E-11	4.9E-06	1.1E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.6E-06	1.1E-11	1.9E-06	4.5E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.9E-06	4.4E-11	5.4E-07	3.4E-06	---	---	---	---	---
			Total PCB Homologs	8.0E-07	1.2E-11	7.0E-07	1.5E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	1.3E-06	2.1E-11	1.2E-06	2.5E-06	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	2.3E-05	3.5E-09	4.4E-06	2.8E-05	---	---	---	---	---
			Chromium	2.3E-05	1.1E-07	---	2.3E-05	---	---	---	---	---
			Cobalt	---	9.3E-10	---	9.3E-10	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Nickel	---	2.1E-10	---	2.1E-10	---	---	---	---	---
			Vanadium	---	---	---	---	---	---	---	---	---
			Chemical Total	9.3E-05	1.2E-07	3.9E-05	1.3E-04		---	---	---	---
		Exposure Point Total					1.3E-04					---
	Surface Soil Total						1.3E-04					---
Soil Total							1.3E-04					---

Total Risk Across All Media: 1.3E-04

Total Hazard Across All Media: ---

TABLE M-9.1B-6 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	7.7E-08	---	4.6E-08	1.2E-07	---	---	---	---	---
			Benzo(a)pyrene	7.3E-07	---	4.4E-07	1.2E-06	---	---	---	---	---
			Benzo(b)fluoranthene	7.5E-08	---	4.5E-08	1.2E-07	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	6.2E-09	---	3.7E-09	9.9E-09	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.8E-07	---	1.1E-07	2.8E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	6.9E-08	---	4.2E-08	1.1E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	6.3E-07	---	8.8E-08	7.2E-07	Developmental	0.054	---	0.008	0.062
			Total PCB Homologs	1.7E-07	---	1.1E-07	2.9E-07	Eyes, Immune system	0.034	---	0.022	0.056
			PCB Dioxin-like Congener TEQ	2.9E-07	---	1.9E-07	4.8E-07	Developmental	0.025	---	0.016	0.041
			Aluminum	---	---	---	---	Nervous system	0.0021	---	---	0.0021
			Antimony	---	---	---	---	Blood	0.13	---	---	0.13
			Arsenic	5.1E-06	---	7.1E-07	5.8E-06	Skin	0.088	---	0.012	0.10
			Chromium	6.2E-07	---	---	6.2E-07	None observed	0.0032	---	---	0.0032
			Cobalt	---	---	---	---	Thyroid	0.011	---	---	0.011
			Iron	---	---	---	---	Gastrointestinal	0.034	---	---	0.034
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0020	---	---	0.0020
			Mercury	---	---	---	---	Kidney	0.050	---	---	0.050
			Nickel	---	---	---	---	Body weight	0.0013	---	---	0.0013
			Vanadium	---	---	---	---	Kidney	0.15	---	---	0.15
			Chemical Total	8.0E-06	---	1.8E-06	9.8E-06		0.59	---	0.058	0.65
		Exposure Point Total					9.8E-06					0.65
		Air at SFSA	Benzo(a)anthracene	---	5.8E-13	---	5.8E-13	---	---	---	---	---
			Benzo(a)pyrene	---	5.5E-12	---	5.5E-12	---	---	---	---	---
			Benzo(b)fluoranthene	---	5.6E-13	---	5.6E-13	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	4.7E-13	---	4.7E-13	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	1.4E-12	---	1.4E-12	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	5.2E-13	---	5.2E-13	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	9.3E-12	---	9.3E-12	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000005	---	0.00000005
			Total PCB Homologs	---	2.5E-12	---	2.5E-12	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	4.3E-12	---	4.3E-12	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000022	---	0.000000022
			Aluminum	---	---	---	---	Nervous system	---	0.000021	---	0.000021
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	7.3E-10	---	7.3E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000088	---	0.000088

TABLE M-9.1B-6 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at SFSA	Chromium	---	5.2E-09	---	5.2E-09	Respiratory tract	---	0.0000048	---	0.0000048
			Cobalt	---	1.9E-10	---	1.9E-10	Respiratory tract	---	0.000028	---	0.000028
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00014	---	0.00014
			Mercury	---	---	---	---	Nervous system	---	0.73	---	0.73
			Nickel	---	4.3E-11	---	4.3E-11	Respiratory tract	---	0.000014	---	0.000014
			Vanadium	---	---	---	---	Respiratory tract	---	0.000005	---	0.000005
			Chemical Total	---	6.2E-09	---	6.2E-09		---	0.73	---	0.73
		Exposure Point Total					6.2E-09					0.73
	Surface Soil Total						9.8E-06					1.4
Soil Total							9.8E-06					1.4

Total Risk Across All Media	9.8E-06
Total Hazard Across All Media	1.4
Total Nervous System HI Across All Media	0.74
Total Skin HI Across All Media	0.10
Total Thyroid HI Across All Media	0.011
Total Gastrointestinal HI Across All Media	0.034
Total Kidney HI Across All Media	0.20
Total Developmental HI Across All Media	0.10
Total Cardiovascular HI Across All Media	0.000088
Total Lung/Respiratory Tract HI Across All Media	0.00014
Total Eyes HI Across All Media	0.056
Total Immune System HI Across All Media	0.056
Total Blood HI Across All Media	0.13
Total Liver HI Across All Media	0.00000007
Total Reproductive System HI Across All Media	0.00000007
Total Endrocrine System HI Across All Media	0.00000007

TABLE M-9.1B-7 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	SFSA Surface Soil	Benzo(a)anthracene	3.8E-08	---	8.3E-08	1.2E-07	---	---	---	---	---
			Benzo(a)pyrene	3.6E-07	---	7.8E-07	1.1E-06	---	---	---	---	---
			Benzo(b)fluoranthene	3.7E-08	---	8.0E-08	1.2E-07	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	3.1E-09	---	6.6E-09	9.7E-09	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	8.6E-08	---	1.9E-07	2.7E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	3.4E-08	---	7.4E-08	1.1E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.0E-07	---	5.2E-08	1.6E-07	Developmental	0.0080	---	0.0040	0.012
			Total PCB Homologs	2.9E-08	---	6.7E-08	9.6E-08	Eyes, Immune system	0.0050	---	0.012	0.017
			PCB Dioxin-like Congener TEQ	4.8E-08	---	1.1E-07	1.6E-07	Developmental	0.0037	---	0.0087	0.012
			Aluminum	---	---	---	---	Nervous system	0.00031	---	---	0.00031
			Antimony	---	---	---	---	Blood	0.020	---	---	0.020
			Arsenic	8.4E-07	---	4.2E-07	1.3E-06	Skin	0.013	---	0.0065	0.020
			Chromium	3.1E-07	---	---	3.1E-07	None observed	0.00047	---	---	0.00047
			Cobalt	---	---	---	---	Thyroid	0.0017	---	---	0.0017
			Iron	---	---	---	---	Gastrointestinal	0.0050	---	---	0.0050
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.00030	---	---	0.00030
			Mercury	---	---	---	---	Kidney	0.0074	---	---	0.0074
			Nickel	---	---	---	---	Body weight	0.00019	---	---	0.00019
			Vanadium	---	---	---	---	Kidney	0.0227	---	---	0.0227
			Chemical Total	1.9E-06	---	1.9E-06	3.7E-06		0.088	---	0.031	0.12
		Exposure Point Total					3.7E-06					0.12
		Air at SFSA	Benzo(a)anthracene	---	3.4E-14	---	3.4E-14	---	---	---	---	---
			Benzo(a)pyrene	---	3.7E-13	---	3.7E-13	---	---	---	---	---
			Benzo(b)fluoranthene	---	3.8E-14	---	3.8E-14	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	3.2E-14	---	3.2E-14	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	9.8E-14	---	9.8E-14	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	3.6E-14	---	3.6E-14	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	2.1E-13	---	2.1E-13	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000001	---	0.000000001
			Total PCB Homologs	---	5.7E-14	---	5.7E-14	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	9.8E-14	---	9.8E-14	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000000045	---	0.00000000045
			Aluminum	---	---	---	---	Nervous system	---	0.00000043	---	0.00000043
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	1.7E-11	---	1.7E-11	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0000018	---	0.0000018

TABLE M-9.1B-7 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at SFSA	Chromium	---	3.5E-10	---	3.5E-10	Respiratory tract	---	0.000000099	---	0.000000099
			Cobalt	---	4.4E-12	---	4.4E-12	Respiratory tract	---	0.00000058	---	0.00000058
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.0000029	---	0.0000029
			Mercury	---	---	---	---	Nervous system	---	0.015	---	0.015
			Nickel	---	9.8E-13	---	9.8E-13	Respiratory tract	---	0.00000029	---	0.00000029
			Vanadium	---	---	---	---	Respiratory tract	---	0.00000011	---	0.00000011
			Chemical Total	---	3.8E-10	---	3.8E-10		---	0.015	---	0.015
		Exposure Point Total					3.8E-10					0.015
	Surface Soil Total						3.7E-06					0.13
Soil Total							3.7E-06					0.13

Total Risk Across All Media	3.7E-06
Total Hazard Across All Media	0.13

Total Nervous System HI Across All Media	0.016
Total Skin HI Across All Media	0.020
Total Thyroid HI Across All Media	0.0017
Total Gastrointestinal HI Across All Media	0.0050
Total Kidney HI Across All Media	0.030
Total Developmental HI Across All Media	0.024
Total Cardiovascular HI Across All Media	0.0000018
Total Lung/Respiratory Tract HI Across All Media	0.0000029
Total Eyes HI Across All Media	0.017
Total Immune System HI Across All Media	0.017
Total Blood HI Across All Media	0.020
Total Liver HI Across All Media	0.000000001
Total Reproductive System HI Across All Media	0.000000001
Total Endrocrine System HI Across All Media	0.000000001

TABLE M-9.1C-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	2.7	---	0.64	3.3
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.0065	---	0.0073	0.014
			Aluminum	---	---	---	---	Nervous system	0.0048	---	---	0.0048
			Antimony	---	---	---	---	Blood	0.018	---	---	0.018
			Arsenic	---	---	---	---	Skin	0.042	---	0.010	0.052
			Chromium	---	---	---	---	None observed	0.0028	---	---	0.0028
			Cobalt	---	---	---	---	Thyroid	0.015	---	---	0.015
			Iron	---	---	---	---	Gastrointestinal	0.013	---	---	0.013
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0037	---	---	0.0037
			Mercury	---	---	---	---	Kidney	0.048	---	---	0.048
			Chemical Total	---	---	---	---		2.8	---	0.65	3.5
		Exposure Point Total					---					3.5
		Air at EFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000070	---	0.0000070
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000002	---	0.00000002
			Aluminum	---	---	---	---	Nervous system	---	0.00014	---	0.00014
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00013	---	0.00013
			Chromium	---	---	---	---	Respiratory tract	---	0.000013	---	0.000013
			Cobalt	---	---	---	---	Respiratory tract	---	0.00011	---	0.00011

TABLE M-9.1C-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at EFSA	Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00078	---	0.00078
			Mercury	---	---	---	---	Nervous system	---	2.1	---	2.1
			Chemical Total	---	---	---	---		---	2.1	---	2.1
		Exposure Point Total					---					2.1
	Surface Soil Total						---					5.6
Soil Total							---					5.6

Total Risk Across All Media	---
Total Hazard Across All Media	5.6
Total Nervous System HI Across All Media	2.1
Total Skin HI Across All Media	0.052
Total Thyroid HI Across All Media	0.015
Total Gastrointestinal HI Across All Media	0.013
Total Kidney HI Across All Media	0.05
Total Developmental HI Across All Media	3.3
Total Cardiovascular HI Across All Media	0.00013
Total Lung/Respiratory Tract HI Across All Media	0.00026
Total Blood HI Across All Media	0.018
Total Liver HI Across All Media	0.000007
Total Reproductive System HI Across All Media	0.000007
Total Endrocrine System HI Across All Media	0.000007

TABLE M-9.1C-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	25	---	4.2	29
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.061	---	0.048	0.11
			Aluminum	---	---	---	---	Nervous system	0.045	---	---	0.045
			Antimony	---	---	---	---	Blood	0.17	---	---	0.17
			Arsenic	---	---	---	---	Skin	0.39	---	0.066	0.46
			Chromium	---	---	---	---	None observed	0.026	---	---	0.026
			Cobalt	---	---	---	---	Thyroid	0.14	---	---	0.14
			Iron	---	---	---	---	Gastrointestinal	0.12	---	---	0.12
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.035	---	---	0.035
			Mercury	---	---	---	---	Kidney	0.45	---	---	0.45
			Chemical Total	---	---	---	---		26	---	4.3	31
		Exposure Point Total					---					31
		Air at EFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000007	---	0.000007
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000002	---	0.00000002
			Aluminum	---	---	---	---	Nervous system	---	0.00014	---	0.00014
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00013	---	0.00013
			Chromium	---	---	---	---	Respiratory tract	---	0.000013	---	0.000013
			Cobalt	---	---	---	---	Respiratory tract	---	0.00011	---	0.00011

TABLE M-9.1C-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at EFSA	Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00078	---	0.00078
			Mercury	---	---	---	---	Nervous system	---	2.1	---	2.1
			Chemical Total	---	---	---	---		---	2.1	---	2.1
		Exposure Point Total					---					2.1
	Surface Soil Total						---					33
Soil Total							---					33

Total Risk Across All Media	---
Total Hazard Across All Media	33

Total Nervous System HI Across All Media	2.2
Total Skin HI Across All Media	0.46
Total Thyroid HI Across All Media	0.14
Total Gastrointestinal HI Across All Media	0.12
Total Kidney HI Across All Media	0.45
Total Developmental HI Across All Media	29
Total Cardiovascular HI Across All Media	0.00013
Total Lung/Respiratory Tract HI Across All Media	0.00026
Total Blood HI Across All Media	0.17
Total Liver HI Across All Media	0.000007
Total Reproductive System HI Across All Media	0.000007
Total Endrocrine System HI Across All Media	0.000007

TABLE M-9.1C-3 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	2.6E-05	1.2E-10	2.0E-05	4.6E-05	---	---	---	---	---
			Benzo(a)pyrene	1.9E-04	8.4E-10	1.4E-04	3.4E-04	---	---	---	---	---
			Benzo(b)fluoranthene	1.7E-05	7.6E-11	1.3E-05	3.0E-05	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	1.9E-06	8.4E-11	1.4E-06	3.3E-06	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	2.9E-06	1.4E-11	2.2E-06	5.1E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.7E-05	7.6E-11	1.3E-05	3.0E-05	---	---	---	---	---
			2,3,7,8-TCDD TEQ	8.9E-05	1.4E-09	1.7E-05	1.1E-04	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	2.2E-07	3.4E-12	1.9E-07	4.1E-07	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	6.9E-06	1.0E-09	1.3E-06	8.2E-06	---	---	---	---	---
			Chromium	1.2E-05	6.2E-08	---	1.3E-05	---	---	---	---	---
			Cobalt	---	7.9E-10	---	7.9E-10	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Chemical Total	3.6E-04	6.6E-08	2.1E-04	5.8E-04		---	---	---	---
		Exposure Point Total					5.8E-04					---
	Surface Soil Total						5.8E-04					---
Soil Total							5.8E-04					---

Total Risk Across All Media: 5.8E-04

Total Hazard Across All Media: ---

TABLE M-9.1C-6 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	7.1E-07	---	4.2E-07	1.1E-06	---	---	---	---	---
			Benzo(a)pyrene	5.2E-06	---	3.1E-06	8.3E-06	---	---	---	---	---
			Benzo(b)fluoranthene	4.7E-07	---	2.8E-07	7.5E-07	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	5.1E-08	---	3.1E-08	8.2E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	6.9E-09	---	4.1E-09	1.1E-08	---	---	---	---	---
			Dibenz(a,h)anthracene	7.8E-08	---	4.7E-08	1.3E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.6E-07	---	2.8E-07	7.4E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	1.9E-05	---	2.7E-06	2.2E-05	Developmental	1.7	---	0.23	1.9
			PCB Dioxin-like Congener TEQ	4.8E-08	---	3.1E-08	7.9E-08	Developmental	0.0041	---	0.0026	0.0067
			Aluminum	---	---	---	---	Nervous system	0.0030	---	---	0.0030
			Antimony	---	---	---	---	Blood	0.011	---	---	0.011
			Arsenic	1.5E-06	---	2.1E-07	1.7E-06	Skin	0.026	---	0.0036	0.030
			Chromium	3.4E-07	---	---	3.4E-07	None observed	0.0018	---	---	0.0018
			Cobalt	---	---	---	---	Thyroid	0.010	---	---	0.010
			Iron	---	---	---	---	Gastrointestinal	0.0083	---	---	0.0083
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0023	---	---	0.0023
			Mercury	---	---	---	---	Kidney	0.030	---	---	0.030
			Chemical Total	2.8E-05	---	7.1E-06	3.5E-05		1.8	---	0.24	2.0
		Exposure Point Total					3.5E-05					2.0
		Air at EFSA	Benzo(a)anthracene	---	5.3E-12	---	5.3E-12	---	---	---	---	---
			Benzo(a)pyrene	---	3.9E-11	---	3.9E-11	---	---	---	---	---
			Benzo(b)fluoranthene	---	3.5E-12	---	3.5E-12	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	3.9E-12	---	3.9E-12	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	5.2E-13	---	5.2E-13	---	---	---	---	---
			Dibenz(a,h)anthracene	---	6.5E-13	---	6.5E-13	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	3.5E-12	---	3.5E-12	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	2.8E-10	---	2.8E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000015	---	0.0000015
			PCB Dioxin-like Congener TEQ	---	7.0E-13	---	7.0E-13	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000004	---	0.000000004
			Aluminum	---	---	---	---	Nervous system	---	0.000030	---	0.000030
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	2.2E-10	---	2.2E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00003	---	0.00003
			Chromium	---	2.8E-09	---	2.8E-09	Respiratory tract	---	0.0000026	---	0.0000026
			Cobalt	---	1.7E-10	---	1.7E-10	Respiratory tract	---	0.000024	---	0.000024

TABLE M-9.1C-6 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Air at EFSA	Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00016	---	0.00016
			Mercury	---	---	---	---	Nervous system	---	0.45	---	0.45
			Chemical Total	---	3.6E-09	---	3.6E-09		---	0.45	---	0.45
		Exposure Point Total					3.6E-09					0.45
	Surface Soil Total						3.5E-05					2.4
Soil Total							3.5E-05					2.4

Total Risk Across All Media: 3.5E-05

Total Hazard Across All Media: 2.4

Total Nervous System HI Across All Media	0.45
Total Skin HI Across All Media	0.030
Total Thyroid HI Across All Media	0.010
Total Gastrointestinal HI Across All Media	0.0083
Total Kidney HI Across All Media	0.030
Total Developmental HI Across All Media	1.9
Total Cardiovascular HI Across All Media	0.000026
Total Lung/Respiratory Tract HI Across All Media	0.000054
Total Blood HI Across All Media	0.011
Total Liver HI Across All Media	0.000001
Total Reproductive System HI Across All Media	0.000001
Total Endrocrine System HI Across All Media	0.000001

TABLE M-9.1C-7 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EFSA Surface Soil	Benzo(a)anthracene	3.5E-07	---	7.5E-07	1.1E-06	---	---	---	---	---
			Benzo(a)pyrene	2.5E-06	---	5.5E-06	8.1E-06	---	---	---	---	---
			Benzo(b)fluoranthene	2.3E-07	---	5.0E-07	7.3E-07	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	2.5E-08	---	5.5E-08	8.0E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	3.4E-09	---	7.4E-09	1.1E-08	---	---	---	---	---
			Dibenz(a,h)anthracene	3.9E-08	---	8.4E-08	1.2E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.3E-07	---	5.0E-07	7.2E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	3.2E-06	---	1.6E-06	4.8E-06	Developmental	0.25	---	0.12	0.37
			PCB Dioxin-like Congener TEQ	7.8E-09	---	1.8E-08	2.6E-08	Developmental	0.00060	---	0.0014	0.0020
			Aluminum	---	---	---	---	Nervous system	0.00044	---	---	0.00044
			Antimony	---	---	---	---	Blood	0.0017	---	---	0.0017
			Arsenic	2.5E-07	---	1.2E-07	3.7E-07	Skin	0.0039	---	0.0019	0.0058
			Chromium	1.7E-07	---	---	1.7E-07	None observed	0.00026	---	---	0.00026
			Cobalt	---	---	---	---	Thyroid	0.0014	---	---	0.0014
			Iron	---	---	---	---	Gastrointestinal	0.0012	---	---	0.0012
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.00034	---	---	0.00034
			Mercury	---	---	---	---	Kidney	0.0045	---	---	0.0045
			Chemical Total	7.0E-06	---	9.2E-06	1.6E-05		0.26	---	0.13	0.39
		Exposure Point Total					1.6E-05					0.39
		Air at EFSA	Benzo(a)anthracene	---	3.6E-13	---	3.6E-13	---	---	---	---	---
			Benzo(a)pyrene	---	2.6E-12	---	2.6E-12	---	---	---	---	---
			Benzo(b)fluoranthene	---	2.4E-13	---	2.4E-13	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	2.6E-13	---	2.6E-13	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	3.5E-14	---	3.5E-14	---	---	---	---	---
			Dibenz(a,h)anthracene	---	4.4E-14	---	4.4E-14	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	2.4E-13	---	2.4E-13	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	6.5E-12	---	6.5E-12	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000030	---	0.000000030
			PCB Dioxin-like Congener TEQ	---	1.6E-14	---	1.6E-14	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000000007	---	0.00000000007
			Aluminum	---	---	---	---	Nervous system	---	0.00000061	---	0.00000061
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	5.0E-12	---	5.0E-12	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00000054	---	0.00000054
			Chromium	---	1.9E-10	---	1.9E-10	Respiratory tract	---	0.00000005	---	0.00000005
			Cobalt	---	3.8E-12	---	3.8E-12	Respiratory tract	---	0.00000049	---	0.00000049

TABLE M-9.1C-7 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.0000033	---	0.0000033
			Mercury	---	---	---	---	Nervous system	---	0.0091	---	0.0091
			Chemical Total	---	2.1E-10	---	2.1E-10		---	0.0092	---	0.0092
		Exposure Point Total					2.1E-10					0.0092
	Surface Soil Total						1.6E-05					0.40
Soil Total							1.6E-05					0.40

Total Risk Across All Media	1.6E-05
Total Hazard Across All Media	0.40
Total Nervous System HI Across All Media	0.0099
Total Skin HI Across All Media	0.0058
Total Thyroid HI Across All Media	0.0014
Total Gastrointestinal HI Across All Media	0.0012
Total Kidney HI Across All Media	0.0045
Total Developmental HI Across All Media	0.37
Total Cardiovascular HI Across All Media	0.0000005
Total Lung/Respiratory Tract HI Across All Media	0.0000011
Total Blood HI Across All Media	0.0017
Total Liver HI Across All Media	0.00000003
Total Reproductive System HI Across All Media	0.00000003
Total Endrocrine System HI Across All Media	0.00000003

TABLE M-9.2A-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	1,1'-Biphenyl	---	---	---	---	Kidney	0.0000026	---	---	0.0000026
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	Body and organ weight	0.027	---	0.022	0.049
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	---	---	---	---	Liver	0.000051	---	0.00010	0.00015
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.0024	---	0.0025	0.0048
			Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Fluoranthene	---	---	---	---	Liver, Kidney, Blood	0.0057	---	0.0060	0.012
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.00046	---	0.00047	0.00093
			Pyrene	---	---	---	---	Kidney	0.0051	---	0.0053	0.010
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	71	---	17	88
			4,4'-DDE	---	---	---	---	---	---	---	---	---
			4,4'-DDT	---	---	---	---	Liver	0.0042	---	0.0010	0.0053
			Aldrin	---	---	---	---	Liver	0.27	---	0.22	0.49
			Alpha-BHC	---	---	---	---	Liver	0.00015	---	0.00012	0.00026
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	---	---	---	---	Liver	0.12	---	0.093	0.21
			Gamma-BHC (Lindane)	---	---	---	---	Liver and kidney	0.0032	---	0.0010	0.0042
			Heptachlor Epoxide	---	---	---	---	Liver	0.25	---	0.20	0.45
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.11	---	0.12	0.24
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.74	---	0.83	1.6
			Aluminum	---	---	---	---	Nervous system	0.0040	---	---	0.0040
			Antimony	---	---	---	---	Blood	0.0045	---	---	0.0045
			Arsenic	---	---	---	---	Skin	0.41	---	0.099	0.51

TABLE M-9.2A-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	Cadmium	---	---	---	---	Kidney	0.0033	---	0.0010	0.0043
			Chromium	---	---	---	---	None observed	0.0030	---	---	0.0030
			Cobalt	---	---	---	---	Thyroid	0.14	---	---	0.14
			Iron	---	---	---	---	Gastrointestinal	0.050	---	---	0.050
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0023	---	---	0.0023
			Mercury	---	---	---	---	Kidney	11	---	---	11
			Nickel	---	---	---	---	Body weight	0.0026	---	---	0.0026
			Thallium	---	---	---	---	Hair	0.060	---	---	0.060
			Zinc	---	---	---	---	Blood	0.0031	---	---	0.0031
			Chemical Total	---	---	---	---		84	---	19	103
		Exposure Point Total					---					103
		Air at CHP	1,1'-Biphenyl	---	---	---	---	Respiratory tract	---	0.0038	---	0.0038
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	---	---	---	---	---
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	---	---	---	---	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	---	---	---	---	---
			Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Fluoranthene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory tract	---	0.086	---	0.086
			Pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00019	---	0.00019
			4,4'-DDE	---	---	---	---	---	---	---	---	---

TABLE M-9.2A-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at CHP	4,4'-DDT	---	---	---	---	---	---	---	---	---
			Aldrin	---	---	---	---	---	---	---	---	---
			Alpha-BHC	---	---	---	---	---	---	---	---	---
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	---	---	---	---	---	---	---	---	---
			Gamma-BHC (Lindane)	---	---	---	---	---	---	---	---	---
			Heptachlor Epoxide	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000019	---	0.0000019
			Aluminum	---	---	---	---	Nervous system	---	0.00012	---	0.00012
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0012	---	0.0012
			Cadmium	---	---	---	---	Kidney and Respiratory tract	---	0.000024	---	0.000024
			Chromium	---	---	---	---	Respiratory tract	---	0.000014	---	0.000014
			Cobalt	---	---	---	---	Respiratory tract	---	0.0010	---	0.0010
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00047	---	0.00047
			Mercury	---	---	---	---	Nervous system	---	467	---	467
			Nickel	---	---	---	---	Respiratory tract	---	0.000086	---	0.000086
			Thallium	---	---	---	---	---	---	---	---	---
			Zinc	---	---	---	---	---	---	---	---	---
			Chemical Total	---	---	---	---		---	467	---	467
		Exposure Point Total					---					467
	Aggregate Soil Total						---					570
Soil Total							---					570

Total Risk Across All Media	---
Total Hazard Across All Media	570
Total Nervous System HI Across All Media	467
Total Skin HI Across All Media	0.51
Total Thyroid HI Across All Media	0.14
Total Gastrointestinal HI Across All Media	0.050
Total Kidney HI Across All Media	11
Total Developmental HI Across All Media	90
Total Cardiovascular HI Across All Media	0.0012
Total Lung/Respiratory Tract HI Across All Media	0.10

TABLE M-9.2A-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
											Total Eyes HI Across All Media	0.24
											Total Immune System HI Across All Media	0.24
											Total Blood HI Across All Media	0.019
											Total Liver HI Across All Media	1.2
											Total Reproductive System HI Across All Media	0.00019
											Total Endrocrine System HI Across All Media	0.00019
											Total Hair HI Across All Media	0.060
											Total Body Weight HI Across All Media	0.053

TABLE M-9.2A-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	1,1'-Biphenyl	---	---	---	---	Kidney	0.000024	---	---	0.000024
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	Body and organ weight	0.25	---	0.14	0.40
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	---	---	---	---	Liver	0.00047	---	0.00066	0.0011
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.022	---	0.016	0.038
			Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Fluoranthene	---	---	---	---	Liver, Kidney, Blood	0.054	---	0.039	0.093
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.0042	---	0.0031	0.0073
			Pyrene	---	---	---	---	Kidney	0.047	---	0.034	0.082
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	665	---	112	777
			4,4'-DDE	---	---	---	---	---	---	---	---	---
			4,4'-DDT	---	---	---	---	Liver	0.040	---	0.0067	0.046
			Aldrin	---	---	---	---	Liver	2.6	---	1.4	4.0
			Alpha-BHC	---	---	---	---	Liver	0.0014	---	0.00076	0.0021
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	---	---	---	---	Liver	1.1	---	0.61	1.7
			Gamma-BHC (Lindane)	---	---	---	---	Liver and kidney	0.030	---	0.0067	0.037
			Heptachlor Epoxide	---	---	---	---	Liver	2.3	---	1.3	3.6
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	1.0	---	0.82	1.9
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	6.9	---	5.4	12
			Aluminum	---	---	---	---	Nervous system	0.037	---	---	0.037
			Antimony	---	---	---	---	Blood	0.042	---	---	0.042
			Arsenic	---	---	---	---	Skin	3.9	---	0.65	4.5

TABLE M-9.2A-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	Cadmium	---	---	---	---	Kidney	0.030	---	0.0068	0.037
			Chromium	---	---	---	---	None observed	0.028	---	---	0.028
			Cobalt	---	---	---	---	Thyroid	1.3	---	---	1.3
			Iron	---	---	---	---	Gastrointestinal	0.47	---	---	0.47
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.021	---	---	0.021
			Mercury	---	---	---	---	Kidney	99	---	---	99
			Nickel	---	---	---	---	Body weight	0.024	---	---	0.024
			Thallium	---	---	---	---	Hair	0.56	---	---	0.56
			Zinc	---	---	---	---	Blood	0.029	---	---	0.029
			Chemical Total	---	---	---	---		784	---	122	907
		Exposure Point Total					---					907
		Air at CHP	1,1'-Biphenyl	---	---	---	---	Respiratory tract	---	0.0038	---	0.0038
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	---	---	---	---	---
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	---	---	---	---	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	---	---	---	---	---
			Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Fluoranthene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory tract	---	0.086	---	0.086
			Pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00019	---	0.00019
			4,4'-DDE	---	---	---	---	---	---	---	---	---

TABLE M-9.2A-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at CHP	4,4'-DDT	---	---	---	---	---	---	---	---	---
			Aldrin	---	---	---	---	---	---	---	---	---
			Alpha-BHC	---	---	---	---	---	---	---	---	---
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	---	---	---	---	---	---	---	---	---
			Gamma-BHC (Lindane)	---	---	---	---	---	---	---	---	---
			Heptachlor Epoxide	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000019	---	0.0000019
			Aluminum	---	---	---	---	Nervous system	---	0.00012	---	0.00012
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.0012	---	0.0012
			Cadmium	---	---	---	---	Kidney and Respiratory tract	---	0.000024	---	0.000024
			Chromium	---	---	---	---	Respiratory tract	---	0.000014	---	0.000014
			Cobalt	---	---	---	---	Respiratory tract	---	0.0010	---	0.0010
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00047	---	0.00047
			Mercury	---	---	---	---	Nervous system	---	467	---	467
			Nickel	---	---	---	---	Respiratory tract	---	0.000086	---	0.000086
			Thallium	---	---	---	---	---	---	---	---	---
			Zinc	---	---	---	---	---	---	---	---	---
			Chemical Total	---	---	---	---		---	467	---	467
		Exposure Point Total					---					467
	Aggregate Soil Total						---					1374
Soil Total							---					1374

Total Risk Across All Media	---
Total Hazard Across All Media	1374
Total Nervous System HI Across All Media	467
Total Skin HI Across All Media	4.5
Total Thyroid HI Across All Media	1.3
Total Gastrointestinal HI Across All Media	0.47
Total Kidney HI Across All Media	99
Total Developmental HI Across All Media	789
Total Cardiovascular HI Across All Media	0.0012
Total Lung/Respiratory Tract HI Across All Media	0.13

TABLE M-9.2A-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
											Total Eyes HI Across All Media	1.9
											Total Immune System HI Across All Media	1.9
											Total Blood HI Across All Media	0.16
											Total Liver HI Across All Media	9.5
											Total Reproductive System HI Across All Media	0.00019
											Total Endrocrine System HI Across All Media	0.00019
											Total Hair HI Across All Media	0.56
											Total Body Weight HI Across All Media	0.43

TABLE M-9.2A-3 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	1,1'-Biphenyl	3.8E-10	---	---	3.8E-10	---	---	---	---	---
			1,3-Dichlorobenzene	---	---	---	---	---	---	---	---	---
			Dibenzofuran	---	---	---	---	---	---	---	---	---
			Di-n-octyl-phthalate	---	---	---	---	---	---	---	---	---
			Pentachlorophenol	3.7E-08	2.5E-14	5.8E-08	9.5E-08	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	---	---	---	---	---
			Benzo(a)anthracene	1.6E-04	6.9E-10	1.2E-04	2.7E-04	---	---	---	---	---
			Benzo(a)pyrene	1.1E-03	5.0E-09	8.5E-04	2.0E-03	---	---	---	---	---
			Benzo(b)fluoranthene	1.4E-04	6.0E-10	1.0E-04	2.4E-04	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	3.0E-06	1.3E-10	2.3E-06	5.3E-06	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	1.4E-06	6.3E-11	1.1E-06	2.5E-06	---	---	---	---	---
			Dibenz(a,h)anthracene	5.8E-05	2.8E-10	4.4E-05	1.0E-04	---	---	---	---	---
			Fluoranthene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.5E-05	2.0E-10	3.4E-05	8.0E-05	---	---	---	---	---
			Naphthalene	---	1.1E-06	---	1.1E-06	---	---	---	---	---
			Pyrene	---	---	---	---	---	---	---	---	---
			Dichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Heptachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Hexachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Monochloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Pentachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Tetrachloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			Trichloronaphthalene, Total	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.4E-03	3.7E-08	4.5E-04	2.8E-03	---	---	---	---	---
			4,4'-DDE	1.4E-06	2.1E-11	8.5E-07	2.2E-06	---	---	---	---	---
			4,4'-DDT	2.6E-07	4.0E-12	5.0E-08	3.1E-07	---	---	---	---	---
			Aldrin	5.1E-05	7.8E-10	3.2E-05	8.3E-05	---	---	---	---	---
			Alpha-BHC	2.7E-06	4.0E-11	1.7E-06	4.4E-06	---	---	---	---	---
			Delta-BHC	---	---	---	---	---	---	---	---	---
			Dieldrin	3.4E-05	5.2E-10	2.1E-05	5.5E-05	---	---	---	---	---
			Gamma-BHC (Lindane)	3.9E-07	5.7E-12	9.7E-08	4.8E-07	---	---	---	---	---
			Heptachlor Epoxide	1.1E-05	1.6E-10	6.7E-06	1.7E-05	---	---	---	---	---
			Total PCB Homologs	1.6E-06	2.5E-11	1.4E-06	3.1E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	2.5E-05	3.8E-10	2.2E-05	4.6E-05	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	6.8E-05	1.0E-08	1.3E-05	8.1E-05	---	---	---	---	---

TABLE M-9.2A-3 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - CHP AREA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	CHP Aggregate Soil	Cadmium	---	1.1E-10	---	1.1E-10	---	---	---	---	---
			Chromium	1.3E-05	6.6E-08	---	1.4E-05	---	---	---	---	---
			Cobalt	---	7.2E-09	---	7.2E-09	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Nickel	---	2.6E-10	---	2.6E-10	---	---	---	---	---
			Thallium	---	---	---	---	---	---	---	---	---
			Zinc	---	---	---	---	---	---	---	---	---
			Chemical Total	4.1E-03	1.3E-06	1.7E-03	5.8E-03		---	---	---	---
		Exposure Point Total					5.8E-03					---
	Aggregate Soil Total						5.8E-03					---
Soil Total							5.8E-03					---

Total Risk Across All Media: 5.8E-03

Total Hazard Across All Media: ---

TABLE M-9.2B-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	0.11	---	0.025	0.13
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	0.14	---	0.15	0.29
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.11	---	0.13	0.24
			Aluminum	---	---	---	---	Nervous system	0.0038	---	---	0.0038
			Antimony	---	---	---	---	Blood	0.12	---	---	0.12
			Arsenic	---	---	---	---	Skin	0.085	---	0.020	0.10
			Barium	---	---	---	---	Kidney	0.0011	---	---	0.0011
			Chromium	---	---	---	---	None observed	0.0041	---	---	0.0041
			Cobalt	---	---	---	---	Thyroid	0.020	---	---	0.020
			Iron	---	---	---	---	Gastrointestinal	0.042	---	---	0.042
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0032	---	---	0.0032
			Mercury	---	---	---	---	Kidney	0.058	---	---	0.058
			Nickel	---	---	---	---	Body weight	0.0022	---	---	0.0022
			Thallium	---	---	---	---	Hair	0.012	---	---	0.012
			Vanadium	---	---	---	---	Kidney	0.23	---	---	0.23
			Chemical Total	---	---	---	---		0.93	---	0.33	1.3
		Exposure Point Total					---					1.3
		Air at SFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000028	---	0.00000028
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000030	---	0.00000030

TABLE M-9.2B-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at SFSA	Aluminum	---	---	---	---	Nervous system	---	0.00011	---	0.00011
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00025	---	0.00025
			Barium	---	---	---	---	Developmental	---	0.000066	---	0.000066
			Chromium	---	---	---	---	Respiratory tract	---	0.000019	---	0.000019
			Cobalt	---	---	---	---	Respiratory tract	---	0.00015	---	0.00015
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00067	---	0.00067
			Mercury	---	---	---	---	Nervous system	---	2.6	---	2.6
			Nickel	---	---	---	---	Respiratory tract	---	0.000074	---	0.000074
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	Respiratory tract	---	0.000024	---	0.000024
			Chemical Total	---	---	---	---		---	2.6	---	2.6
		Exposure Point Total					---					2.6
	Aggregate Soil Total						---					3.8
Soil Total							---					3.8

Total Risk Across All Media	---
Total Hazard Across All Media	3.8

Total Nervous System HI Across All Media	2.6
Total Skin HI Across All Media	0.11
Total Thyroid HI Across All Media	0.020
Total Gastrointestinal HI Across All Media	0.042
Total Kidney HI Across All Media	0.29
Total Developmental HI Across All Media	0.37
Total Cardiovascular HI Across All Media	0.00025
Total Lung/Respiratory Tract HI Across All Media	0.00052
Total Eyes HI Across All Media	0.29
Total Immune System HI Across All Media	0.29
Total Blood HI Across All Media	0.12
Total Liver HI Across All Media	0.00000058
Total Reproductive System HI Across All Media	0.00000058
Total Endrocrine System HI Across All Media	0.00000058
Total Body Weight HI Across All Media	0.0022

TABLE M-9.2B-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	1.0	---	0.2	1.2
			Total PCB Homologs	---	---	---	---	Eyes, Immune system	1.3	---	1.0	2.3
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	1.1	---	0.83	1.9
			Aluminum	---	---	---	---	Nervous system	0.036	---	---	0.036
			Antimony	---	---	---	---	Blood	1.1	---	---	1.1
			Arsenic	---	---	---	---	Skin	0.79	---	0.13	0.92
			Barium	---	---	---	---	Kidney	0.01	---	---	0.01
			Chromium	---	---	---	---	None observed	0.039	---	---	0.039
			Cobalt	---	---	---	---	Thyroid	0.18	---	---	0.18
			Iron	---	---	---	---	Gastrointestinal	0.39	---	---	0.39
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.030	---	---	0.030
			Mercury	---	---	---	---	Kidney	0.54	---	---	0.54
			Nickel	---	---	---	---	Body weight	0.021	---	---	0.021
			Thallium	---	---	---	---	Hair	0.12	---	---	0.12
			Vanadium	---	---	---	---	Kidney	2.1	---	---	2.1
			Chemical Total	---	---	---	---		8.7	---	2.1	11
		Exposure Point Total					---					11
		Air at SFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000003	---	0.0000003
			Total PCB Homologs	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000030	---	0.00000030

TABLE M-9.2B-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at SFSA	Aluminum	---	---	---	---	Nervous system	---	0.00011	---	0.00011
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00025	---	0.00025
			Barium	---	---	---	---	Developmental	---	0.00007	---	0.00007
			Chromium	---	---	---	---	Respiratory tract	---	0.000019	---	0.000019
			Cobalt	---	---	---	---	Respiratory tract	---	0.00015	---	0.00015
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00067	---	0.00067
			Mercury	---	---	---	---	Nervous system	---	2.6	---	2.6
			Nickel	---	---	---	---	Respiratory tract	---	0.000074	---	0.000074
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	Respiratory tract	---	0.000024	---	0.000024
			Chemical Total	---	---	---	---		---	2.6	---	2.6
		Exposure Point Total					---					2.6
	Aggregate Soil Total						---					13
Soil Total							---					13

Total Risk Across All Media	---
Total Hazard Across All Media	13

Total Nervous System HI Across All Media	2.6
Total Skin HI Across All Media	0.92
Total Thyroid HI Across All Media	0.18
Total Gastrointestinal HI Across All Media	0.39
Total Kidney HI Across All Media	2.7
Total Developmental HI Across All Media	3.1
Total Cardiovascular HI Across All Media	0.00025
Total Lung/Respiratory Tract HI Across All Media	0.00052
Total Eyes HI Across All Media	2.3
Total Immune System HI Across All Media	2.3
Total Blood HI Across All Media	1.1
Total Liver HI Across All Media	0.00000058
Total Reproductive System HI Across All Media	0.00000058
Total Endrocrine System HI Across All Media	0.00000058
Total Body Weight HI Across All Media	0.021

TABLE M-9.2B-3 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	1.4E-06	6.0E-12	1.0E-06	2.4E-06	---	---	---	---	---
			Benzo(a)pyrene	1.3E-05	5.8E-11	1.0E-05	2.3E-05	---	---	---	---	---
			Benzo(b)fluoranthene	1.8E-06	7.9E-12	1.4E-06	3.1E-06	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	1.1E-07	5.1E-12	8.7E-08	2.0E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	4.5E-06	2.2E-11	3.4E-06	8.0E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.4E-06	6.1E-12	1.0E-06	2.4E-06	---	---	---	---	---
			2,3,7,8-TCDD TEQ	3.5E-06	5.5E-11	6.6E-07	4.2E-06	---	---	---	---	---
			Total PCB Homologs	2.0E-06	3.0E-11	1.8E-06	3.8E-06	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	3.8E-06	5.8E-11	3.3E-06	7.1E-06	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	1.4E-05	2.1E-09	2.6E-06	1.7E-05	---	---	---	---	---
			Barium	---	---	---	---	---	---	---	---	---
			Chromium	1.8E-05	9.1E-08	---	1.9E-05	---	---	---	---	---
			Cobalt	---	1.0E-09	---	1.0E-09	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Nickel	---	2.2E-10	---	2.2E-10	---	---	---	---	---
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	---	---	---	---	---
			Chemical Total	6.4E-05	9.5E-08	2.5E-05	8.9E-05		---	---	---	---
		Exposure Point Total					8.9E-05					---
	Aggregate Soil Total						8.9E-05					---
Soil Total							8.9E-05					---

Total Risk Across All Media: 8.9E-05

Total Hazard Across All Media: ---

TABLE M-9.2B-6 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	3.7E-08	---	2.2E-08	5.9E-08	---	---	---	---	---
			Benzo(a)pyrene	3.6E-07	---	2.1E-07	5.7E-07	---	---	---	---	---
			Benzo(b)fluoranthene	4.8E-08	---	2.9E-08	7.7E-08	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	3.1E-09	---	1.9E-09	5.0E-09	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.2E-07	---	7.4E-08	2.0E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	3.7E-08	---	2.2E-08	6.0E-08	---	---	---	---	---
			2,3,7,8-TCDD TEQ	7.8E-07	---	1.1E-07	8.8E-07	Developmental	0.066	---	0.0092	0.076
			Total PCB Homologs	4.4E-07	---	2.9E-07	7.3E-07	Eyes, Immune system	0.086	---	0.056	0.14
			PCB Dioxin-like Congener TEQ	8.3E-07	---	5.4E-07	1.4E-06	Developmental	0.071	---	0.046	0.12
			Aluminum	---	---	---	---	Nervous system	0.0024	---	---	0.0024
			Antimony	---	---	---	---	Blood	0.072	---	---	0.072
			Arsenic	3.1E-06	---	4.2E-07	3.5E-06	Skin	0.053	---	0.0073	0.060
			Barium	---	---	---	---	Kidney	0.00068	---	---	0.00068
			Chromium	5.0E-07	---	---	5.0E-07	None observed	0.0026	---	---	0.0026
			Cobalt	---	---	---	---	Thyroid	0.012	---	---	0.012
			Iron	---	---	---	---	Gastrointestinal	0.026	---	---	0.026
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0020	---	---	0.0020
			Mercury	---	---	---	---	Kidney	0.036	---	---	0.036
			Nickel	---	---	---	---	Body weight	0.0014	---	---	0.0014
			Thallium	---	---	---	---	Hair	0.0077	---	---	0.0077
			Vanadium	---	---	---	---	Kidney	0.14	---	---	0.14
			Chemical Total	6.2E-06	---	1.7E-06	7.9E-06		0.58	---	0.12	0.70
		Exposure Point Total					7.9E-06					0.70
		Air at SFSA	Benzo(a)anthracene	---	2.8E-13	---	2.8E-13	---	---	---	---	---
			Benzo(a)pyrene	---	2.7E-12	---	2.7E-12	---	---	---	---	---
			Benzo(b)fluoranthene	---	3.6E-13	---	3.6E-13	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	2.3E-13	---	2.3E-13	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	1.0E-12	---	1.0E-12	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	2.8E-13	---	2.8E-13	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.1E-11	---	1.1E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000058	---	0.000000058
			Total PCB Homologs	---	6.3E-12	---	6.3E-12	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	1.2E-11	---	1.2E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000006	---	0.00000006

TABLE M-9.2B-6 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at SFSA	Aluminum	---	---	---	---	Nervous system	---	0.000024	---	0.000024
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	4.4E-10	---	4.4E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000053	---	0.000053
			Barium	---	---	---	---	Developmental	---	0.000014	---	0.000014
			Chromium	---	4.2E-09	---	4.2E-09	Respiratory tract	---	0.0000039	---	0.0000039
			Cobalt	---	2.1E-10	---	2.1E-10	Respiratory tract	---	0.000031	---	0.000031
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00014	---	0.00014
			Mercury	---	---	---	---	Nervous system	---	0.54	---	0.54
			Nickel	---	4.6E-11	---	4.6E-11	Respiratory tract	---	0.000015	---	0.000015
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	Respiratory tract	---	0.0000050	---	0.0000050
			Chemical Total	---	4.9E-09	---	4.9E-09		---	0.54	---	0.54
		Exposure Point Total					4.9E-09					0.54
	Aggregate Soil Total						7.9E-06					1.2
Soil Total							7.9E-06					1.2

Total Risk Across All Media	7.9E-06
Total Hazard Across All Media	1.2

Total Nervous System HI Across All Media	0.5
Total Skin HI Across All Media	0.060
Total Thyroid HI Across All Media	0.012
Total Gastrointestinal HI Across All Media	0.026
Total Kidney HI Across All Media	0.18
Total Developmental HI Across All Media	0.19
Total Cardiovascular HI Across All Media	0.00005
Total Lung/Respiratory Tract HI Across All Media	0.00011
Total Eyes HI Across All Media	0.14
Total Immune System HI Across All Media	0.14
Total Blood HI Across All Media	0.072
Total Liver HI Across All Media	0.00000012
Total Reproductive System HI Across All Media	0.00000012
Total Endrocrine System HI Across All Media	0.00000012
Total Body Weight HI Across All Media	0.0014

TABLE M-9.2B-8 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	SFSA Aggregate Soil	Benzo(a)anthracene	9.7E-10	---	8.3E-10	1.8E-09	---	---	---	---	---
			Benzo(a)pyrene	9.4E-09	---	8.1E-09	1.8E-08	---	---	---	---	---
			Benzo(b)fluoranthene	1.3E-09	---	1.1E-09	2.4E-09	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	8.2E-11	---	7.0E-11	1.5E-10	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	3.2E-09	---	2.8E-09	6.0E-09	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	9.9E-10	---	8.5E-10	1.8E-09	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.1E-08	---	4.1E-09	2.5E-08	Developmental	0.016	---	0.0031	0.019
			Total PCB Homologs	1.2E-08	---	1.1E-08	2.3E-08	Eyes, Immune system	0.020	---	0.019	0.039
			PCB Dioxin-like Congener TEQ	2.2E-08	---	2.0E-08	4.2E-08	Developmental	0.017	---	0.016	0.033
			Aluminum	---	---	---	---	Nervous system	0.00057	---	---	0.00057
			Antimony	---	---	---	---	Blood	0.017	---	---	0.017
			Arsenic	8.1E-08	---	1.6E-08	9.7E-08	Skin	0.013	---	0.0025	0.015
			Barium	---	---	---	---	Kidney	0.00016	---	---	0.00016
			Chromium	1.3E-08	---	---	1.3E-08	None observed	0.00061	---	---	0.00061
			Cobalt	---	---	---	---	Thyroid	0.0029	---	---	0.0029
			Iron	---	---	---	---	Gastrointestinal	0.0062	---	---	0.0062
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.00047	---	---	0.00047
			Mercury	---	---	---	---	Kidney	0.0087	---	---	0.0087
			Nickel	---	---	---	---	Body weight	0.00033	---	---	0.00033
			Thallium	---	---	---	---	Hair	0.0018	---	---	0.0018
			Vanadium	---	---	---	---	Kidney	0.034	---	---	0.034
			Chemical Total	1.6E-07	---	6.5E-08	2.3E-07		0.14	---	0.040	0.18
		Exposure Point Total					2.3E-07					0.18
		Air at SFSA	Benzo(a)anthracene	---	2.5E-11	---	2.5E-11	---	---	---	---	---
			Benzo(a)pyrene	---	2.4E-10	---	2.4E-10	---	---	---	---	---
			Benzo(b)fluoranthene	---	3.2E-11	---	3.2E-11	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	2.1E-11	---	2.1E-11	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	8.9E-11	---	8.9E-11	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	2.5E-11	---	2.5E-11	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	1.0E-09	---	1.0E-09	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00005	---	0.00005
			Total PCB Homologs	---	5.6E-10	---	5.6E-10	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	1.1E-09	---	1.1E-09	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000050	---	0.000050

TABLE M-9.2B-8 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at SFSA	Aluminum	---	---	---	---	Nervous system	---	0.019	---	0.019
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	3.9E-08	---	3.9E-08	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.042	---	0.042
			Barium	---	---	---	---	Developmental	---	0.011	---	0.011
			Chromium	---	3.7E-07	---	3.7E-07	Respiratory tract	---	0.0031	---	0.0031
			Cobalt	---	1.9E-08	---	1.9E-08	Respiratory tract	---	0.024	---	0.024
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.11	---	0.11
			Mercury	---	---	---	---	Nervous system	---	0.064	---	0.064
			Nickel	---	4.1E-09	---	4.1E-09	Respiratory tract	---	0.012	---	0.012
			Thallium	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	Respiratory tract	---	0.0040	---	0.0040
			Chemical Total	---	4.4E-07	---	4.4E-07		---	---	---	0.29
		Exposure Point Total					4.4E-07					0.29
	Aggregate Soil Total						6.7E-07					0.47
Soil Total							6.7E-07					0.47

Total Risk Across All Media	6.7E-07
Total Hazard Across All Media	0.47

Total Nervous System HI Across All Media	0.24
Total Skin HI Across All Media	0.057
Total Thyroid HI Across All Media	0.0029
Total Gastrointestinal HI Across All Media	0.0062
Total Kidney HI Across All Media	0.043
Total Developmental HI Across All Media	0.10
Total Cardiovascular HI Across All Media	0.042
Total Lung/Respiratory Tract HI Across All Media	0.086
Total Eyes HI Across All Media	0.039
Total Immune System HI Across All Media	0.039
Total Blood HI Across All Media	0.017
Total Liver HI Across All Media	0.000096
Total Reproductive System HI Across All Media	0.000096
Total Endrocrine System HI Across All Media	0.000096
Total Body Weight HI Across All Media	0.00033

TABLE M-9.2C-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.000033	---	0.000034	0.000067
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	2.9	---	0.69	3.6
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.0079	---	0.0089	0.017
			Aluminum	---	---	---	---	Nervous system	0.0041	---	---	0.0041
			Antimony	---	---	---	---	Blood	0.013	---	---	0.013
			Arsenic	---	---	---	---	Skin	0.050	---	0.012	0.061
			Chromium	---	---	---	---	None observed	0.0032	---	---	0.0032
			Cobalt	---	---	---	---	Thyroid	0.015	---	---	0.015
			Iron	---	---	---	---	Gastrointestinal	0.015	---	---	0.015
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0033	---	---	0.0033
			Mercury	---	---	---	---	Kidney	0.040	---	---	0.040
			Vanadium	---	---	---	---	Kidney	0.22	---	---	0.22
			Chemical Total	---	---	---	---		3.2	---	0.71	3.9
		Exposure Point Total					---					3.9
		Air at EFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory tract	---	0.00000003	---	0.00000003
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000075	---	0.0000075
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000002	---	0.00000002
			Aluminum	---	---	---	---	Nervous system	---	0.00012	---	0.00012

TABLE M-9.2C-1 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at EFSA	Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00015	---	0.00015
			Chromium	---	---	---	---	Respiratory tract	---	0.000015	---	0.000015
			Cobalt	---	---	---	---	Respiratory tract	---	0.00012	---	0.00012
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00070	---	0.00070
			Mercury	---	---	---	---	Nervous system	---	1.8	---	1.8
			Vanadium	---	---	---	---	Respiratory tract	---	0.000023	---	0.000023
			Chemical Total	---	---	---	---		---	1.8	---	1.8
		Exposure Point Total					---					1.8
	Aggregate Soil Total						---					5.7
Soil Total							---					5.7

Total Risk Across All Media	---
Total Hazard Across All Media	5.7

Total Nervous System HI Across All Media	1.8
Total Skin HI Across All Media	0.062
Total Thyroid HI Across All Media	0.015
Total Gastrointestinal HI Across All Media	0.015
Total Kidney HI Across All Media	0.26
Total Developmental HI Across All Media	3.6
Total Cardiovascular HI Across All Media	0.00015
Total Lung/Respiratory Tract HI Across All Media	0.00031
Total Blood HI Across All Media	0.013
Total Liver HI Across All Media	0.000008
Total Reproductive System HI Across All Media	0.000008
Total Endrocrine System HI Across All Media	0.000008
Total Body Weight HI Across All Media	0.00007

TABLE M-9.2C-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.00030	---	0.00022	0.00053
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	27	---	4.5	31
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	0.074	---	0.058	0.13
			Aluminum	---	---	---	---	Nervous system	0.038	---	---	0.038
			Antimony	---	---	---	---	Blood	0.12	---	---	0.12
			Arsenic	---	---	---	---	Skin	0.46	---	0.078	0.54
			Chromium	---	---	---	---	None observed	0.030	---	---	0.030
			Cobalt	---	---	---	---	Thyroid	0.14	---	---	0.14
			Iron	---	---	---	---	Gastrointestinal	0.14	---	---	0.14
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.031	---	---	0.031
			Mercury	---	---	---	---	Kidney	0.37	---	---	0.37
			Vanadium	---	---	---	---	Kidney	2.1	---	---	2.1
			Chemical Total	---	---	---	---		30	---	4.6	35
		Exposure Point Total					---					35
		Air at EFSA	Benzo(a)anthracene	---	---	---	---	---	---	---	---	---
			Benzo(a)pyrene	---	---	---	---	---	---	---	---	---
			Benzo(b)fluoranthene	---	---	---	---	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	---	---	---	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	---	---	---	---	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory tract	---	0.000000033	---	0.000000033
			2,3,7,8-TCDD TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000008	---	0.000008
			PCB Dioxin-like Congener TEQ	---	---	---	---	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.00000002	---	0.00000002
			Aluminum	---	---	---	---	Nervous system	---	0.00012	---	0.00012

TABLE M-9.2C-2 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at EFSA	Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	---	---	---	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.00015	---	0.00015
			Chromium	---	---	---	---	Respiratory tract	---	0.000015	---	0.000015
			Cobalt	---	---	---	---	Respiratory tract	---	0.00012	---	0.00012
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00070	---	0.00070
			Mercury	---	---	---	---	Nervous system	---	1.8	---	1.8
			Vanadium	---	---	---	---	Respiratory tract	---	0.000023	---	0.000023
			Chemical Total	---	---	---	---		---	1.8	---	1.8
		Exposure Point Total					---					1.8
	Aggregate Soil Total						---					37
Soil Total							---					37

Total Risk Across All Media	---
Total Hazard Across All Media	37
Total Nervous System HI Across All Media	1.8
Total Skin HI Across All Media	0.54
Total Thyroid HI Across All Media	0.14
Total Gastrointestinal HI Across All Media	0.14
Total Kidney HI Across All Media	2.4
Total Developmental HI Across All Media	31
Total Cardiovascular HI Across All Media	0.00015
Total Lung/Respiratory Tract HI Across All Media	0.00031
Total Blood HI Across All Media	0.12
Total Liver HI Across All Media	0.000008
Total Reproductive System HI Across All Media	0.000008
Total Endrocrine System HI Across All Media	0.000008
Total Body Weight HI Across All Media	0.0005

TABLE M-9.2C-3 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Age-Adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	2.2E-05	9.7E-11	1.7E-05	3.8E-05	---	---	---	---	---
			Benzo(a)pyrene	1.6E-04	7.2E-10	1.2E-04	2.8E-04	---	---	---	---	---
			Benzo(b)fluoranthene	1.3E-05	5.8E-11	1.0E-05	2.3E-05	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	1.5E-06	6.8E-11	1.2E-06	2.7E-06	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	2.2E-07	9.9E-12	1.7E-07	3.9E-07	---	---	---	---	---
			Dibenz(a,h)anthracene	1.7E-05	8.4E-11	1.3E-05	3.1E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.2E-05	5.4E-11	9.3E-06	2.2E-05	---	---	---	---	---
			Naphthalene	---	4.3E-13	---	4.3E-13	---	---	---	---	---
			2,3,7,8-TCDD TEQ	9.6E-05	1.5E-09	1.8E-05	1.1E-04	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	2.6E-07	4.1E-12	2.3E-07	5.0E-07	---	---	---	---	---
			Aluminum	---	---	---	---	---	---	---	---	---
			Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	8.2E-06	1.2E-09	1.5E-06	9.7E-06	---	---	---	---	---
			Chromium	1.4E-05	7.1E-08	---	1.4E-05	---	---	---	---	---
			Cobalt	---	8.0E-10	---	8.0E-10	---	---	---	---	---
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	---	---	---	---	---
			Mercury	---	---	---	---	---	---	---	---	---
			Vanadium	---	---	---	---	---	---	---	---	---
			Chemical Total	3.5E-04	7.6E-08	1.9E-04	5.4E-04		---	---	---	---
		Exposure Point Total					5.4E-04					---
	Aggregate Soil Total						5.4E-04					---
Soil Total							5.4E-04					---

Total Risk Across All Media: 5.4E-04

Total Hazard Across All Media: ---

TABLE M-9.2C-6 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	5.9E-07	---	3.6E-07	9.5E-07	---	---	---	---	---
			Benzo(a)pyrene	4.4E-06	---	2.6E-06	7.0E-06	---	---	---	---	---
			Benzo(b)fluoranthene	3.6E-07	---	2.1E-07	5.7E-07	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	4.2E-08	---	2.5E-08	6.7E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	6.1E-09	---	3.7E-09	9.7E-09	---	---	---	---	---
			Dibenz(a,h)anthracene	4.7E-07	---	2.8E-07	7.6E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	3.3E-07	---	2.0E-07	5.3E-07	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.000020	---	0.000012	0.000033
			2,3,7,8-TCDD TEQ	2.1E-05	---	2.9E-06	2.4E-05	Developmental	1.8	---	0.25	2.0
			PCB Dioxin-like Congener TEQ	5.8E-08	---	3.8E-08	9.6E-08	Developmental	0.0050	---	0.0032	0.0082
			Aluminum	---	---	---	---	Nervous system	0.0026	---	---	0.0026
			Antimony	---	---	---	---	Blood	0.0082	---	---	0.0082
			Arsenic	1.8E-06	---	2.5E-07	2.0E-06	Skin	0.031	---	0.0043	0.035
			Chromium	3.9E-07	---	---	3.9E-07	None observed	0.0020	---	---	0.0020
			Cobalt	---	---	---	---	Thyroid	0.010	---	---	0.010
			Iron	---	---	---	---	Gastrointestinal	0.0091	---	---	0.0091
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.0021	---	---	0.0021
			Mercury	---	---	---	---	Kidney	0.025	---	---	0.025
			Vanadium	---	---	---	---	Kidney	0.14	---	---	0.14
			Chemical Total	2.9E-05	---	6.9E-06	3.6E-05		2.0	---	0.26	2.3
		Exposure Point Total					3.6E-05					2.3
		Air at EFSA	Benzo(a)anthracene	---	4.5E-12	---	4.5E-12	---	---	---	---	---
			Benzo(a)pyrene	---	3.3E-11	---	3.3E-11	---	---	---	---	---
			Benzo(b)fluoranthene	---	2.7E-12	---	2.7E-12	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	3.1E-12	---	3.1E-12	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	4.6E-13	---	4.6E-13	---	---	---	---	---
			Dibenz(a,h)anthracene	---	3.9E-12	---	3.9E-12	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	2.5E-12	---	2.5E-12	---	---	---	---	---
			Naphthalene	---	8.9E-14	---	8.9E-14	Respiratory tract	---	0.000000007	---	0.000000007
			2,3,7,8-TCDD TEQ	---	3.1E-10	---	3.1E-10	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0000016	---	0.0000016
			PCB Dioxin-like Congener TEQ	---	8.5E-13	---	8.5E-13	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000000004	---	0.000000004
			Aluminum	---	---	---	---	Nervous system	---	0.000026	---	0.000026

TABLE M-9.2C-6 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at EFSA	Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	2.6E-10	---	2.6E-10	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.000031	---	0.000031
			Chromium	---	3.3E-09	---	3.3E-09	Respiratory tract	---	0.0000030	---	0.0000030
			Cobalt	---	1.7E-10	---	1.7E-10	Respiratory tract	---	0.000024	---	0.000024
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.00015	---	0.00015
			Mercury	---	---	---	---	Nervous system	---	0.37	---	0.37
			Vanadium	---	---	---	---	Respiratory tract	---	0.0000049	---	0.0000049
			Chemical Total	---	4.1E-09	---	4.1E-09		---	0.37	---	0.37
		Exposure Point Total					4.1E-09					0.37
	Aggregate Soil Total						3.6E-05					2.6
Soil Total							3.6E-05					2.6

Total Risk Across All Media	3.6E-05
Total Hazard Across All Media	2.6
Total Nervous System HI Across All Media	0.37
Total Skin HI Across All Media	0.035
Total Thyroid HI Across All Media	0.010
Total Gastrointestinal HI Across All Media	0.0091
Total Kidney HI Across All Media	0.16
Total Developmental HI Across All Media	2.1
Total Cardiovascular HI Across All Media	0.00003
Total Lung/Respiratory Tract HI Across All Media	0.00006
Total Blood HI Across All Media	0.008
Total Liver HI Across All Media	0.000002
Total Reproductive System HI Across All Media	0.000002
Total Endrocrine System HI Across All Media	0.000002
Total Body Weight HI Across All Media	0.00003

TABLE M-9.2C-8 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	EFSA Aggregate Soil	Benzo(a)anthracene	1.6E-08	---	1.3E-08	2.9E-08	---	---	---	---	---
			Benzo(a)pyrene	1.2E-07	---	9.9E-08	2.2E-07	---	---	---	---	---
			Benzo(b)fluoranthene	9.4E-09	---	8.1E-09	1.7E-08	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	1.1E-09	---	9.4E-10	2.0E-09	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	1.6E-10	---	1.4E-10	3.0E-10	---	---	---	---	---
			Dibenz(a,h)anthracene	1.2E-08	---	1.1E-08	2.3E-08	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	8.8E-09	---	7.5E-09	1.6E-08	---	---	---	---	---
			Naphthalene	---	---	---	---	Body weight	0.0000049	---	0.0000042	0.0000090
			2,3,7,8-TCDD TEQ	5.5E-07	---	1.1E-07	6.6E-07	Developmental	0.43	---	0.084	0.51
			PCB Dioxin-like Congener TEQ	1.5E-09	---	1.4E-09	2.9E-09	Developmental	0.0012	---	0.0011	0.0023
			Aluminum	---	---	---	---	Nervous system	0.00061	---	---	0.00061
			Antimony	---	---	---	---	Blood	0.0019	---	---	0.0019
			Arsenic	4.7E-08	---	9.4E-09	5.7E-08	Skin	0.0074	---	0.0015	0.0088
			Chromium	1.0E-08	---	---	1.0E-08	None observed	0.00048	---	---	0.00048
			Cobalt	---	---	---	---	Thyroid	0.0023	---	---	0.0023
			Iron	---	---	---	---	Gastrointestinal	0.0022	---	---	0.0022
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	0.00049	---	---	0.00049
			Mercury	---	---	---	---	Kidney	0.0059	---	---	0.0059
			Vanadium	---	---	---	---	Kidney	0.033	---	---	0.033
			Chemical Total	7.8E-07	---	2.6E-07	1.0E-06		0.48	---	0.087	0.57
		Exposure Point Total					1.0E-06					0.57
		Air at EFSA	Benzo(a)anthracene	---	4.0E-10	---	4.0E-10	---	---	---	---	---
			Benzo(a)pyrene	---	2.9E-09	---	2.9E-09	---	---	---	---	---
			Benzo(b)fluoranthene	---	2.4E-10	---	2.4E-10	---	---	---	---	---
			Benzo(g,h,i)perylene	---	---	---	---	---	---	---	---	---
			Benzo(k)fluoranthene	---	2.8E-10	---	2.8E-10	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Chrysene	---	4.1E-11	---	4.1E-11	---	---	---	---	---
			Dibenz(a,h)anthracene	---	3.4E-10	---	3.4E-10	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	---	2.2E-10	---	2.2E-10	---	---	---	---	---
			Naphthalene	---	7.9E-12	---	7.9E-12	Respiratory tract	---	0.0000054	---	0.0000054
			2,3,7,8-TCDD TEQ	---	2.7E-08	---	2.7E-08	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.0013	---	0.0013
			PCB Dioxin-like Congener TEQ	---	7.5E-11	---	7.5E-11	Liver, Reproductive system, Developmental, Endocrine system, Respiratory tract, Blood	---	0.000003	---	0.000003
			Aluminum	---	---	---	---	Nervous system	---	0.020	---	0.020

TABLE M-9.2C-8 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - EFSA
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Receptor Population: Construction/Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Aggregate Soil	Air at EFSA	Antimony	---	---	---	---	---	---	---	---	---
			Arsenic	---	2.3E-08	---	2.3E-08	Developmental, Cardiovascular system, Nervous system, Lung, Skin	---	0.025	---	0.025
			Chromium	---	2.9E-07	---	2.9E-07	Respiratory tract	---	0.0024	---	0.0024
			Cobalt	---	1.5E-08	---	1.5E-08	Respiratory tract	---	0.019	---	0.019
			Iron	---	---	---	---	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Manganese	---	---	---	---	Nervous system	---	0.12	---	0.12
			Mercury	---	---	---	---	Nervous system	---	0.043	---	0.043
			Vanadium	---	---	---	---	Respiratory tract	---	0.0039	---	0.0039
			Chemical Total	---	3.6E-07	---	3.6E-07		---	0.23	---	0.23
		Exposure Point Total					3.6E-07					0.23
	Aggregate Soil Total						1.4E-06					0.80
Soil Total							1.4E-06					0.80

Total Risk Across All Media	1.4E-06
Total Hazard Across All Media	0.80
Total Nervous System HI Across All Media	0.21
Total Skin HI Across All Media	0.034
Total Thyroid HI Across All Media	0.0023
Total Gastrointestinal HI Across All Media	0.0022
Total Kidney HI Across All Media	0.039
Total Developmental HI Across All Media	0.54
Total Cardiovascular HI Across All Media	0.025
Total Lung/Respiratory Tract HI Across All Media	0.051
Total Blood HI Across All Media	0.0032
Total Liver HI Across All Media	0.0013
Total Reproductive System HI Across All Media	0.0013
Total Endrocrine System HI Across All Media	0.0013
Total Body Weight HI Across All Media	0.000009

TABLE M-9.3D-9 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 1
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 1 Sediment	Benzo(a)anthracene	4.4E-09	---	2.4E-08	2.8E-08	---	---	---	---	---
			Benzo(a)pyrene	4.2E-08	---	2.3E-07	2.7E-07	---	---	---	---	---
			Benzo(b)fluoranthene	6.4E-09	---	3.5E-08	4.1E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.2E-09	---	6.3E-09	7.5E-09	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.7E-09	---	1.4E-08	1.7E-08	---	---	---	---	---
			Aluminum	---	---	---	---	Nervous system	0.00026	---	---	0.00026
			Arsenic	3.2E-09	---	4.0E-09	7.2E-09	Skin	0.000071	---	0.000088	0.00016
			Chromium	2.0E-08	---	---	2.0E-08	None observed	0.00014	---	---	0.00014
			Cobalt	---	---	---	---	Thyroid	0.00079	---	---	0.00079
			Iron	---	---	---	---	Gastrointestinal	0.00052	---	---	0.00052
			Manganese	---	---	---	---	Nervous system	0.00012	---	---	0.00012
			Chemical Total	8.1E-08	---	3.1E-07	3.9E-07		0.0019	---	0.000088	0.0020
		Exposure Point Total					3.9E-07					0.0020
Sediment Total							3.9E-07					0.0020

Total Risk Across All Media	3.9E-07
Total Hazard Across All Media	0.0020
Total Nervous System HI Across All Media	0.00038
Total Skin HI Across All Media	0.00016
Total Thyroid HI Across All Media	0.00079
Total Gastrointestinal HI Across All Media	0.00052

TABLE M-9.3D-10 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - AREA 1 SEDIMENT
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 1 Sediment	Benzo(a)anthracene	1.9E-07	---	1.4E-07	3.2E-07	---	---	---	---	---
			Benzo(a)pyrene	1.8E-06	---	1.3E-06	3.1E-06	---	---	---	---	---
			Benzo(b)fluoranthene	2.7E-07	---	2.0E-07	4.8E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	5.0E-08	---	3.7E-08	8.7E-08	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.1E-07	---	8.3E-08	2.0E-07	---	---	---	---	---
			Aluminum	---	---	---	---	Nervous system	0.0024	---	---	0.0024
			Arsenic	8.5E-09	---	1.4E-09	1.0E-08	Skin	0.00066	---	0.00011	0.00077
			Chromium	8.7E-07	---	---	8.7E-07	None observed	0.0013	---	---	0.0013
			Cobalt	---	---	---	---	Thyroid	0.0074	---	---	0.0074
			Iron	---	---	---	---	Gastrointestinal	0.0049	---	---	0.0049
			Manganese	---	---	---	---	Nervous system	0.0011	---	---	0.0011
			Chemical Total	3.3E-06	---	1.8E-06	5.1E-06		0.018	---	0.00011	0.018
		Exposure Point Total					5.1E-06					0.018
Sediment Total							5.1E-06					0.018

Total Risk Across All Media	5.1E-06
Total Hazard Across All Media	0.018
Total Nervous System HI Across All Media	0.0035
Total Skin HI Across All Media	0.00077
Total Thyroid HI Across All Media	0.0074
Total Gastrointestinal HI Across All Media	0.0049

TABLE M-9.3E-9 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 2 Sediment	Benzo(a)anthracene	2.3E-09	---	1.3E-08	1.5E-08	---	---	---	---	---
			Benzo(a)pyrene	2.3E-08	---	1.2E-07	1.5E-07	---	---	---	---	---
			Benzo(b)fluoranthene	3.1E-09	---	1.7E-08	2.0E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	1.0E-09	---	5.5E-09	6.6E-09	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.5E-09	---	8.0E-09	9.5E-09	---	---	---	---	---
			2,3,7,8-TCDD TEQ	9.6E-09	---	1.2E-08	2.1E-08	Developmental	0.0011	---	0.0013	0.0024
			o,p'-DDT	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	8.7E-10	---	5.0E-09	5.9E-09	Eyes, Immune system	0.00022	---	0.0013	0.0015
			Aluminum	---	---	---	---	Nervous system	0.00019	---	---	0.00019
			Arsenic	1.0E-08	---	1.2E-08	2.2E-08	Skin	0.00022	---	0.00028	0.00050
			Chromium	1.5E-08	---	---	1.5E-08	None observed	0.00010	---	---	0.00010
			Cobalt	---	---	---	---	Thyroid	0.00067	---	---	0.00067
			Iron	---	---	---	---	Gastrointestinal	0.00046	---	---	0.00046
			Manganese	---	---	---	---	Nervous system	0.00010	---	---	0.00010
			Chemical Total	6.6E-08	---	2.0E-07	2.6E-07		0.0030	---	0.0028	0.0059
		Exposure Point Total					2.6E-07					0.0059
Sediment Total							2.6E-07					0.0059

Total Risk Across All Media	2.6E-07
Total Hazard Across All Media	0.0059
Total Nervous System HI Across All Media	0.00030
Total Skin HI Across All Media	0.00050
Total Thyroid HI Across All Media	0.00067
Total Gastrointestinal HI Across All Media	0.00046
Total Developmental HI Across All Media	0.0024
Total Eyes HI Across All Media	0.0015
Total Immune System HI Across All Media	0.0015

TABLE M-9.3E-10 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 2
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 2 Sediment	Benzo(a)anthracene	1.0E-07	---	7.3E-08	1.7E-07	---	---	---	---	---
			Benzo(a)pyrene	9.8E-07	---	7.1E-07	1.7E-06	---	---	---	---	---
			Benzo(b)fluoranthene	1.3E-07	---	9.6E-08	2.3E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	4.4E-08	---	3.2E-08	7.6E-08	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	6.3E-08	---	4.6E-08	1.1E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.6E-08	---	4.3E-09	3.0E-08	Developmental	0.010	---	0.0016	0.011
			o,p'-DDT	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	2.3E-09	---	1.8E-09	4.1E-09	Eyes, Immune system	0.0020	---	0.0016	0.0036
			Aluminum	---	---	---	---	Nervous system	0.0018	---	---	0.0018
			Arsenic	2.7E-08	---	4.5E-09	3.1E-08	Skin	0.0021	---	0.00035	0.0024
			Chromium	6.2E-07	---	---	6.2E-07	None observed	0.00090	---	---	0.00090
			Cobalt	---	---	---	---	Thyroid	0.0063	---	---	0.0063
			Iron	---	---	---	---	Gastrointestinal	0.0043	---	---	0.0043
			Manganese	---	---	---	---	Nervous system	0.00095	---	---	0.00095
			Chemical Total	2.0E-06	---	9.7E-07	3.0E-06		0.028	---	0.0036	0.032
		Exposure Point Total					3.0E-06					0.032
Sediment Total							3.0E-06					0.032

Total Risk Across All Media	3.0E-06
Total Hazard Across All Media	0.032
Total Nervous System HI Across All Media	0.0028
Total Skin HI Across All Media	0.0024
Total Thyroid HI Across All Media	0.0063
Total Gastrointestinal HI Across All Media	0.0043
Total Developmental HI Across All Media	0.011
Total Eyes HI Across All Media	0.0036
Total Immune System HI Across All Media	0.0036

TABLE M-9.3F-9 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 3 Sediment	Benzo(a)anthracene	3.8E-09	---	2.0E-08	2.4E-08	---	---	---	---	---
			Benzo(a)pyrene	4.6E-08	---	2.5E-07	2.9E-07	---	---	---	---	---
			Benzo(b)fluoranthene	6.0E-09	---	3.2E-08	3.8E-08	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	5.5E-09	---	3.0E-08	3.5E-08	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.5E-09	---	1.4E-08	1.6E-08	---	---	---	---	---
			2,3,7,8-TCDD TEQ	8.1E-08	---	1.0E-07	1.8E-07	Developmental	0.0089	---	0.011	0.020
			o,p'-DDT	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	1.3E-09	---	7.7E-09	9.1E-09	Eyes, Immune system	0.00033	---	0.0019	0.0023
			Arsenic	2.4E-08	---	2.9E-08	5.3E-08	Skin	0.00052	---	0.00065	0.0012
			Chromium	1.2E-08	---	---	1.2E-08	None observed	0.000077	---	---	0.000077
			Mercury	---	---	---	---	Kidney	0.00026	---	---	0.00026
			Chemical Total	1.8E-07	---	4.8E-07	6.6E-07		0.010	---	0.014	0.024
		Exposure Point Total					6.6E-07					0.024
Sediment Total							6.6E-07					0.024

Total Risk Across All Media	6.6E-07
Total Hazard Across All Media	0.024
Total Eyes HI Across All Media	0.0023
Total Immune System HI Across All Media	0.0023
Total Skin HI Across All Media	0.0012
Total Kidney HI Across All Media	0.00026
Total Developmental HI Across All Media	0.020

TABLE M-9.3F-10 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - SEDIMENT AREA 3
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: River Recreational Visitor
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Area 3 Sediment	Benzo(a)anthracene	1.6E-07	---	1.2E-07	2.8E-07	---	---	---	---	---
			Benzo(a)pyrene	1.9E-06	---	1.4E-06	3.4E-06	---	---	---	---	---
			Benzo(b)fluoranthene	2.5E-07	---	1.9E-07	4.4E-07	---	---	---	---	---
			Carbazole	---	---	---	---	---	---	---	---	---
			Dibenz(a,h)anthracene	2.3E-07	---	1.7E-07	4.1E-07	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.1E-07	---	7.8E-08	1.9E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	2.2E-07	---	3.6E-08	2.5E-07	Developmental	0.083	---	0.014	0.10
			o,p'-DDT	---	---	---	---	---	---	---	---	---
			Total PCB Homologs	3.6E-09	---	2.8E-09	6.3E-09	Eyes, Immune system	0.0031	---	0.0024	0.0056
			Arsenic	6.3E-08	---	1.1E-08	7.3E-08	Skin	0.0049	---	0.00082	0.0057
			Chromium	4.9E-07	---	---	4.9E-07	None observed	0.00072	---	---	0.00072
			Mercury	---	---	---	---	Kidney	0.0025	---	---	0.0025
			Chemical Total	3.5E-06	---	2.0E-06	5.5E-06		0.095	---	0.017	0.11
		Exposure Point Total					5.5E-06					0.11
Sediment Total							5.5E-06					0.11

Total Risk Across All Media	5.5E-06
Total Hazard Across All Media	0.11
Total Eyes HI Across All Media	0.0056
Total Immune System HI Across All Media	0.0056
Total Skin HI Across All Media	0.0057
Total Kidney HI Across All Media	0.0025
Total Developmental HI Across All Media	0.10

TABLE M-9.4G-11 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish	Androscoggin River Reaches 3-9	Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	2.0	---	---	2.0
			4,4'-DDT	---	---	---	---	Liver	0.086	---	---	0.086
			beta-BHC	---	---	---	---	---	---	---	---	---
			o,p'-DDD	---	---	---	---	---	---	---	---	---
			trans-Nonachlor	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	21	---	---	21
			Total PCBs	---	---	---	---	Eyes, Immune system	33	---	---	33
			Arsenic	---	---	---	---	Skin	0.38	---	---	0.38
			Chromium	---	---	---	---	None observed	0.034	---	---	0.034
			Lead	---	---	---	---	---	---	---	---	---
			Mercury[1]	---	---	---	---	Nervous system	2.5	---	---	2.5
			Chemical Total	---	---	---	---		59	---	---	59
		Exposure Point Total					---					59
Fish Ingestion Total							---					59

[1]Total Mercury in fish tissue was assumed to be methylmercury.

Total Risk Across All Media	---
Total Hazard Across All Media	59
Total Developmental HI Across All Media	23
Total Liver HI Across All Media	0.086
Total Eyes HI Across All Media	33
Total Immune System HI Across All Media	33
Total Skin HI Across All Media	0.38
Total Nervous system HI Across All Media	2.5

TABLE M-9.4G-12 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish	Androscoggin River Reaches 3-9	Indeno(1,2,3-cd)pyrene	---	---	---	---	---	---	---	---	---
			2,3,7,8-TCDD TEQ	---	---	---	---	Developmental	4.1	---	---	4.1
			4,4'-DDT	---	---	---	---	Liver	0.17	---	---	0.17
			beta-BHC	---	---	---	---	---	---	---	---	---
			o,p'-DDD	---	---	---	---	---	---	---	---	---
			trans-Nonachlor	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	---	---	---	---	Developmental	41	---	---	41
			Total PCBs	---	---	---	---	Eyes, Immune system	66	---	---	66
			Arsenic	---	---	---	---	Skin	0.75	---	---	0.75
			Chromium	---	---	---	---	None observed	0.067	---	---	0.067
			Lead	---	---	---	---	---	---	---	---	---
			Mercury[1]	---	---	---	---	Nervous system	5	---	---	5
			Chemical Total	---	---	---	---		117	---	---	117
		Exposure Point Total					---					117
Fish Ingestion Total							---					117

[1]Total Mercury in fish tissue was assumed to be methylmercury.

Total Risk Across All Media	---
Total Hazard Across All Media	117
Total Developmental HI Across All Media	46
Total Liver HI Across All Media	0.17
Total Eyes HI Across All Media	66
Total Immune System HI Across All Media	66
Total Skin HI Across All Media	0.75
Total Nervous system HI Across All Media	5.0

TABLE M-9.4G-13 CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
CHLOR ALKALI SUPERFUND SITE - FISH
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Current
Receptor Population: Recreational Angler
Receptor Age: Age-adjusted

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish	Fish	Androscoggin River Reaches 3-9	Indeno(1,2,3-cd)pyrene	9.4E-07	---	---	9.4E-07	---	---	---	---	---
			2,3,7,8-TCDD TEQ	3.0E-05	---	---	3.0E-05	---	---	---	---	---
			4,4'-DDT	2.3E-06	---	---	2.3E-06	---	---	---	---	---
			beta-BHC	2.3E-07	---	---	2.3E-07	---	---	---	---	---
			o,p'-DDD	---	---	---	---	---	---	---	---	---
			trans-Nonachlor	---	---	---	---	---	---	---	---	---
			PCB Dioxin-like Congener TEQ	3.0E-04	---	---	3.0E-04	---	---	---	---	---
			Total PCBs	2.1E-04	---	---	2.1E-04	---	---	---	---	---
			Arsenic	2.7E-05	---	---	2.7E-05	---	---	---	---	---
			Chromium	4.4E-05	---	---	4.4E-05	---	---	---	---	---
			Lead	---	---	---	---	---	---	---	---	---
			Mercury[1]	---	---	---	---	---	---	---	---	---
			Chemical Total	6.2E-04	---	---	6.2E-04		---	---	---	---
		Exposure Point Total					6.2E-04					---
Fish Ingestion Total							6.2E-04					---

[1]Total Mercury in fish tissue was assumed to be methylmercury.

Total Risk Across All Media: 6.2E-04

Total Hazard Across All Media: ---

Table M-10
Summary of Central Tendency Exposure Receptor Risks and Hazards
Chlor Alkali Superfund Site
Berlin, New Hampshire
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Exposure Area	Scenario/ Receptor	Media	CTE						
			CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Noncancer Hazard Index	Major contributors to noncancer Hazard Index above 1.0 (individual HQ>1.0)	Individual COC hazard quotient
CHP	Age-Adjusted Resident	Surface Soil	Yes	2.3E-03	2,3,7,8-TCDD TEQ	1.9E-03	NE	---	
					Arsenic	2.7E-04			
					Benzo(a)pyrene	4.0E-05			
					Chromium	1.6E-05			
					Dibenz(a,h)anthracene	1.4E-05			
					Benzo(a)anthracene	4.4E-06			
					Benzo(b)fluoranthene	4.3E-06			
					Indeno(1,2,3-cd)pyrene	2.3E-06			
					PCB Dioxin-like Congener TEQ	1.2E-06			
					Total PCB Homologs	1.0E-06			
	Adult Resident	Surface Soil	Yes	NE	---		76	2,3,7,8-TCDD TEQ	60
								Mercury	15
								Arsenic	1.7
	Child Resident	Surface Soil	Yes	NE	---		558	2,3,7,8-TCDD TEQ	524
								Arsenic	15
								Mercury	18
	Age-Adjusted Resident	Aggregate Soil	Yes	5.8E-03	2,3,7,8-TCDD TEQ	2.8E-03	NE	---	
					Benzo(a)pyrene	2.0E-03			
					Benzo(a)anthracene	2.7E-04			
					Benzo(b)fluoranthene	2.4E-04			
					Dibenz(a,h)anthracene	1.0E-04			
					Aldrin	8.3E-05			
					Arsenic	8.1E-05			
					Indeno(1,2,3-cd)pyrene	8.0E-05			
					Dieldrin	5.5E-05			
					PCB Dioxin-like Congener TEQ	4.6E-05			
					Total PCB Homologs	3.1E-06			
					Heptachlor Epoxide	1.7E-05			
					Chromium	1.4E-05			
					Benzo(k)fluoranthene	5.3E-06			
					Alpha-BHC	4.4E-06			
					Chrysene	2.5E-06			
					4,4'-DDE	2.2E-06			
					Naphthalene	1.1E-06			

Table M-10
Summary of Central Tendency Exposure Receptor Risks and Hazards
Chlor Alkali Superfund Site
Berlin, New Hampshire
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Exposure Area	Scenario/ Receptor	Media	CTE						
			CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Noncancer Hazard Index	Major contributors to noncancer Hazard Index above 1.0 (individual HQ>1.0)	Individual COC hazard quotient
CHP, continued	Adult Resident	Aggregate Soil	Yes	NE	---		570	Mercury	477
								2,3,7,8-TCDD TEQ	88
								PCB Dioxin-like Congener TEQ	1.6
	Child Resident	Aggregate Soil	Yes	NE	---		1374	2,3,7,8-TCDD TEQ	777
								Mercury	566
								PCB Dioxin-like Congener TEQ	12
								Arsenic	4.5
								Aldrin	4.0
								Heptachlor Epoxide	3.6
								Total PCB Homologs	1.9
								Dieldrin	1.7
								Cobalt	1.3
	Adult Recreational Visitor	Surface Soil	Yes	9.2E-05	2,3,7,8-TCDD TEQ	8.1E-05	9.3	2,3,7,8-TCDD TEQ	8.8
					Arsenic	1.1E-05			
	Child Recreational Visitor	Surface Soil	Yes	2.5E-04	2,3,7,8-TCDD TEQ	2.0E-04	81	2,3,7,8-TCDD TEQ	78
					Arsenic	2.9E-05		Arsenic	2.2
					Benzo(a)pyrene	8.4E-06			
					Chromium	3.3E-06			
					Dibenz(a,h)anthracene	2.9E-06			
	Adolescent Trespasser	Surface Soil	Yes	1.0E-04	2,3,7,8-TCDD TEQ	8.7E-05	7.0	2,3,7,8-TCDD TEQ	6.7
					Arsenic	1.2E-05			
SFSA	Age-Adjusted Resident	Surface Soil	Yes	1.3E-04	Benzo(a)pyrene	4.7E-05	NE	---	
					Arsenic	2.8E-05			
					Chromium	2.3E-05			
					Dibenz(a,h)anthracene	1.1E-05			
					Benzo(a)anthracene	5.0E-06			
					Benzo(b)fluoranthene	4.8E-06			
					Indeno(1,2,3-cd)pyrene	4.5E-06			
					2,3,7,8-TCDD TEQ	3.4E-06			
					PCB Dioxin-like Congener TEQ	2.5E-06			
					Total PCB Homologs	1.5E-06			
	Adult Resident	Surface Soil	Yes	NE	---		4.6	Mercury	3.6
	Child Resident	Surface Soil	Yes	NE	---		13	Mercury	4.2
								Vanadium	2.3
								Antimony	2.0
								Arsenic	1.5

Table M-10
Summary of Central Tendency Exposure Receptor Risks and Hazards
Chlor Alkali Superfund Site
Berlin, New Hampshire
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Exposure Area	Scenario/ Receptor	Media	CTE						
			CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Noncancer Hazard Index	Major contributors to noncancer Hazard Index above 1.0 (individual HQ>1.0)	Individual COC hazard quotient
SFSA, Continued	Age-Adjusted Resident	Aggregate Soil	No	8.9E-05	Benzo(a)pyrene	2.3E-05	NE	---	
					Chromium	1.9E-05			
					Arsenic	1.7E-05			
					Dibenz(a,h)anthracene	8.0E-06			
					PCB Dioxin-like Congener TEQ	7.1E-06			
					2,3,7,8-TCDD TEQ	4.2E-06			
					Total PCB Homologs	3.8E-06			
					Benzo(b)fluoranthene	3.1E-06			
					Indeno(1,2,3-cd)pyrene	2.4E-06			
					Benzo(a)anthracene	2.4E-06			
	Adult Resident	Aggregate Soil	Yes	NE	---		3.8	Mercury	2.6
	Child Resident	Aggregate Soil	Yes	NE	---		13	Mercury	3.1
								Total PCB Homologs	2.3
								Vanadium	2.1
								PCB Dioxin-like Congener TEQ	1.9
								2,3,7,8-TCDD TEQ	1.2
								Antimony	1.1
	Commercial/Industrial Worker	Surface Soil	Yes	9.8E-06	Arsenic	5.8E-06	1.4	None	
					Benzo(a)pyrene	1.2E-06			
	Commercial/Industrial Worker	Aggregate Soil	Yes	7.9E-06	Arsenic	3.5E-06	1.2	None	
					PCB Dioxin-like Congener TEQ	1.4E-06			
	Construction Worker	Aggregate Soil	No	6.7E-07	None		0.47	None	
	Adolescent Trespasser	Surface Soil	No	3.7E-06	Arsenic	1.3E-06	0.13	None	
					Benzo(a)pyrene	1.1E-06			
EFSA	Age-Adjusted Resident	Surface Soil	Yes	5.8E-04	Benzo(a)pyrene	3.4E-04	NE	---	
					2,3,7,8-TCDD TEQ	1.1E-04			
					Benzo(a)anthracene	4.6E-05			
					Benzo(b)fluoranthene	3.0E-05			
					Indeno(1,2,3-cd)pyrene	3.0E-05			
					Chromium	1.3E-05			
					Arsenic	8.2E-06			
					Dibenz(a,h)anthracene	5.1E-06			
					Benzo(k)fluoranthene	3.3E-06			
	Adult Resident	Surface Soil	Yes	NE	---		5.6	2,3,7,8-TCDD TEQ	3.3
								Mercury	2.2
	Child Resident	Surface Soil	Yes	NE	---		33	2,3,7,8-TCDD TEQ	29
								Mercury	2.6

Table M-10
Summary of Central Tendency Exposure Receptor Risks and Hazards
Chlor Alkali Superfund Site
Berlin, New Hampshire
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Exposure Area	Scenario/ Receptor	Media	CTE						
			CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Noncancer Hazard Index	Major contributors to noncancer Hazard Index above 1.0 (individual HQ>1.0)	Individual COC hazard quotient
EFSA, Continued	Age-Adjusted Resident	Aggregate Soil	Yes	5.4E-04	Benzo(a)pyrene	2.8E-04	NE	---	
					2,3,7,8-TCDD TEQ	1.1E-04			
					Benzo(a)anthracene	3.8E-05			
					Dibenz(a,h)anthracene	3.1E-05			
					Benzo(b)fluoranthene	2.3E-05			
					Indeno(1,2,3-cd)pyrene	2.2E-05			
					Chromium	1.4E-05			
					Arsenic	9.7E-06			
					Benzo(k)fluoranthene	2.7E-06			
	Adult Resident	Aggregate Soil	Yes	NE	---		5.7	2,3,7,8-TCDD TEQ	3.6
								Mercury	1.8
	Child Resident	Aggregate Soil	Yes	NE	---		37	2,3,7,8-TCDD TEQ	31
								Mercury	2.1
								Vanadium	2.1
	Commercial/Industrial Worker	Surface Soil	Yes	3.5E-05	2,3,7,8-TCDD TEQ	2.2E-05	2.4	2,3,7,8-TCDD TEQ	1.9
					Benzo(a)pyrene	8.3E-06			
					Arsenic	1.7E-06			
					Benzo(a)anthracene	1.1E-06			
	Commercial/Industrial Worker	Aggregate Soil	Yes	3.6E-05	2,3,7,8-TCDD TEQ	2.4E-05	2.6	2,3,7,8-TCDD TEQ	2.0
					Benzo(a)pyrene	7.0E-06			
					Arsenic	2.0E-06			
	Construction Worker	Aggregate Soil	No	1.4E-06	None		0.80	None	
	Adolescent Trespasser	Surface Soil	No	1.6E-05	Benzo(a)pyrene	8.1E-06	0.40	None	
					2,3,7,8-TCDD TEQ	4.8E-06			
					Benzo(a)anthracene	1.1E-06			
Area 1 Sediment	Adult Recreational Visitor	Sediment	No	3.9E-07	None		0.0020	None	
	Child Recreational Visitor	Sediment	No	5.1E-06	Benzo(a)pyrene	3.1E-06	0.018	None	
Area 2 Sediment	Adult Recreational Visitor	Sediment	No	2.6E-07	None		0.0059	None	
	Child Recreational Visitor	Sediment	No	3.0E-06	Benzo(a)pyrene	1.7E-06	0.032	None	
Area 3 Sediment	Adult Recreational Visitor	Sediment	No	6.6E-07	None		0.024	None	
	Child Recreational Visitor	Sediment	No	5.5E-06	Benzo(a)pyrene	3.4E-06	0.11	None	

Table M-10
Summary of Central Tendency Exposure Receptor Risks and Hazards
Chlor Alkali Superfund Site
Berlin, New Hampshire
Page 5 of 5

Exposure Area	Scenario/ Receptor	Media	CTE						
			CR>1E-04 or HI>1	Total Cancer Risks	Major contributors to total cancer risk (individual cancer risk >1E-06)	Individual COC cancer risks	Total Noncancer Hazard Index	Major contributors to noncancer Hazard Index above 1.0 (individual HQ>1.0)	Individual COC hazard quotient
Androscoggin River Fish	Age-Adjusted Recreational Angler	Fish Tissue	Yes	6.2E-04	PCB Dioxin-like Congener TEQ	3.0E-04	NE	---	
					Total PCBs	2.1E-04			
					2,3,7,8-TCDD TEQ	3.0E-05			
					Arsenic	2.7E-05			
					Chromium	4.4E-05			
					4,4'-DDT	2.3E-06			
	Adult Recreational Angler	Fish Tissue	Yes	NE	---		59	Total PCBs	33
								PCB Dioxin-like Congener TEQ	21
								Mercury[1]	2.5
								2,3,7,8-TCDD TEQ	2.0
	Child Recreational Angler	Fish Tissue	Yes	NE	---		117	Total PCBs	66
								PCB Dioxin-like Congener TEQ	41
								Mercury[1]	5.0
								2,3,7,8-TCDD TEQ	4.1

Notes:

NE	Not Evaluated
CTE	Central Tendency Exposure
CR	Cancer risk
HI	Hazard Index
HQ	Hazard Quotient
	Cancer Risks are above 1E-04 or Hazard Indices are above 1.
	Cancer risks fall in the range of 10^{-6} to 10^{-4}.
1	Total Mercury in fish tissue was assumed to be methylmercury.

APPENDIX N

APPENDIX N

GROUNDWATER CANCER RISK AND HAZARD INDEX ESTIMATES

TABLE N-1
GROUNDWATER CANCER RISK AND HAZARD INDEX ESTIMATES
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Exposure Point Concentration (1)	Non-cancer based RSL (2)	Cancer based RSL (3)	Hazard Index	Cancer Risk
Groundwater	92524	1,1'-Biphenyl	0.17	0.49	µg/L	MW-8-1007-1600	7/135	5-5	0.49	0.83	3.3	0.59	1.5E-07
	541731	1,3-Dichlorobenzene	1.2	1.2	µg/L	MW-35O1-1110-01A	1/132	5-500	1.2	NBA	NBA		
	71432	Benzene	0.85	4.6	µg/L	MW-35B1-1110-01A	3/132	5-500	4.6	29	0.39	0.16	1.2E-05
	75150	Carbon disulfide	0.44	260,000	µg/L	MW-34B1-1110-02A	23/137	5-5	260,000	720		361	
	56235	Carbon tetrachloride	0.36	16,000	µg/L	MW-34B1-1110-02A	15/137	5-250	16,000	40	0.39	400	4.1E-02
	67663	Chloroform	1.1	100,000	µg/L	MW-34B1-1110-02A	78/137	5-5.8	100,000	84	0.19	1190	5.3E-01
	156592	cis-1,2-Dichloroethene	0.15	11	µg/L	MW-11B-1006-0945	32/137	5-500	11	28		0.39	
	87683	Hexachlorobutadiene	0.16	8.4	µg/L	MW-8-1007-1600	24/135	5-5	8.4	4.7	0.26	1.8	3.2E-05
	67721	Hexachloroethane	2.4	42	µg/L	MW-34B1-1110-02A	4/135	5-5	42	5.1	0.79	8.2	5.3E-05
	75092	Methylene chloride	0.82	70	µg/L	MW-35B1-0611-02A	8/137	5-500	70	84	9.9	0.83	7.1E-06
	127184	Tetrachloroethene	0.10	310	µg/L	MW-8-1007-1600	51/137	5-500	310	35	9.7	8.9	3.2E-05
	79016	Trichloroethene	0.10	130	µg/L	MW-8-1007-1600	60/137	5-500	130	2.6	0.44	50	3.0E-04
	75014	Vinyl chloride	0.91	0.91	µg/L	MW-6-1006-1010	1/137	5-500	0.91	36	0.015	0.03	6.1E-05
	88062	2,4,6-Trichlorophenol	0.16	5.2	µg/L	MW-14R-0611-01A	10/135	5-5	5.2	9	3.5	0.58	1.5E-06
	534521	4,6-Dinitro-2-methylphenol	0.17	0.17	µg/L	MW-33B1-1110-02A	1/135	10-10	0.17	1.2		0.14	
	106445	4-Methylphenol	0.20	890	µg/L	MW-20B-1007-1205	53/135	5-5	890	1,400		0.64	
	100027	4-Nitrophenol	0.16	0.16	µg/L	MW-33B1-1110-02A	1/133	10-10	0.16	NBA	NBA		
	117817	Bis(2-ethylhexyl)phthalate	0.15	4.3	µg/L	MW-18B-0611-01A	38/135	5-5	4.3	4.6	0.071	0.93	6.1E-05
	132649	Dibenzofuran	0.16	1.6	µg/L	MW-08-1110-01A	28/135	5-5	1.6	5.8		0.28	
	131113	Dimethylphthalate	1.4	5.4	µg/L	MW-34B1-1110-02A	4/135	5-5	5.4	NBA	NBA		
	117840	Di-n-octyl phthalate	0.35	0.35	µg/L	MW-33B1-1110-02A	1/135	5-5	0.35	NBA	NBA		
	621647	n-Nitroso-di-n-propylamine	0.52	1.3	µg/L	MW-33B1-1110-02A	2/135	5-5	1.3	NBA	0.0093		1.4E-04
	86306	n-Nitrosodiphenylamine	0.16	90	µg/L	MW-26B1-1012-1130	15/135	5-5	90	NBA	10		9.0E-06
	87865	Pentachlorophenol	0.16	1.3	µg/L	MW-08-1110-01A	12/135	0.3-10	1.3	78	0.17	0.02	7.6E-06
	108952	Phenol	0.19	780	µg/L	MW-20B-1007-1205	38/135	5-9.6	780	4500		0.17	
	56553	Benzo(a)anthracene	0.15	0.78	µg/L	MW-06-1110-01A	5/135	5-5	0.78	NBA	0.029		2.7E-05
	50328	Benzo(a)pyrene	0.16	0.23	µg/L	MW-16B-1006-1155	3/135	5-5	0.23	NBA	0.0029		7.9E-05
	86748	Carbazole	0.15	1.2	µg/L	MW-2-1008-1445	23/135	5-5	1.2	NBA	NBA		
	91203	Naphthalene	0.16	5.9	µg/L	MW-08-1110-01A	40/135	1.5-5	5.9	6.1	0.14	0.97	4.2E-05
	---	2,3,7,8-TCDD TEQ	0.00000062	0.0014	µg/L	MW-24OB-1013-1125	76/116	0.00000036-0.0000093	0.0014	0.000011	0.00000052	127	2.7E-03
	309002	Aldrin	0.0064	0.29	µg/L	MW-34B1-0611-01A	11/99	0.05-0.05	0.29	0.024	0.00021	12	1.4E-03
	319846	alpha-BHC	0.00031	0.10	µg/L	MW-13A-1110-01A	9/100	0.05-0.05	0.10	73	0.0062	0.0014	1.6E-05
	5103719	alpha-Chlordane	0.0018	0.69	µg/L	MW-34B1-0611-02A	2/99	0.05-0.05	0.69	1.1	0.027	0.63	2.6E-05
	319868	delta-BHC	0.0057	0.021	µg/L	MW-08-1110-01A	2/99	0.05-0.05	0.021	NBA	NBA		

TABLE N-1
GROUNDWATER CANCER RISK AND HAZARD INDEX ESTIMATES
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Contaminant	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Exposure Point Concentration (1)	Non-cancer based RSL (2)	Cancer based RSL (3)	Hazard Index	Cancer Risk
Groundwater	60571	Dieldrin	0.0012	0.053	µg/L	MW-34B1-1110-01A	11/99	0.1-0.1	0.053	0.28	0.0015	0.19	3.5E-05
(continued)	58899	gamma-BHC	0.012	0.29	µg/L	MW-34B1-0611-01A	2/99	0.05-0.05	0.29	2.7	0.036	0.11	8.1E-06
	76448	Heptachlor	0.0019	0.016	µg/L	MW-11B-1110-01A	8/98	0.05-0.05	0.016	0.92	0.0018	0.017	8.9E-06
	1024573	Heptachlor Epoxide	0.0011	0.097	µg/L	MW-24OB-0611-01A	22/99	0.029-0.068	0.097	0.092	0.0033	1.1	2.9E-05
	2051243	Decachlorobiphenyl	0.000	0.000	µg/L	MW-24O1-1009-0840	33/115	0.00000082-0.000267	0.000	NBA	NBA		
	---	Total PCB Homologs	0.0000026	7.36	µg/L	MW-24OB-1013-1125	94/112	0.000503-0.0148	7.36	NBA	0.17		4.3E-05
	---	PCB Dioxin-like Congener TEC	0.0000000017	0.000037	µg/L	MW-24OB-1013-1125	81/115	0.0000000017-0.000000085	0.000037	0.000011	0.00000052	3.4	7.2E-05
	14797730	Perchlorate	0.015	7.9	µg/L	MW-24B2-1008-1450	20/37	0.05-5	7.9	11		0.72	
	7429905	Aluminum	37.1	14,500	µg/L	MW-24OB-1013-1125	118/272	200-2000	14,500	16,000		0.91	
	7440360	Antimony	2.0	17.9	µg/L	MW-7-1008-1205	50/251	1-4.3	17.9	6		3.0	
	7440382	Arsenic	2.1	135	µg/L	MW-14R-0611-01A	141/270	10-100	135	4.7	0.045	29	3.0E-03
	7440393	Barium	5.1	1,410	µg/L	MW-40B1-0611-01A	266/274	200-200	1,410	2,900		0.49	
	7440417	Beryllium	0.015	2.8	µg/L	MW-20B-1007-1305	75/274	1-2	2.8	16		0.18	
	7440439	Cadmium	0.16	5.0	µg/L	MW-14R-0611-01A	85/261	5-50	5.0	6.9		0.72	
	7440473	Chromium	0.30	251	µg/L	MW-20B-1007-1305	134/274	10-100	251	31	0.031	8.1	8.1E-03
	7440484	Cobalt	0.28	36	µg/L	MW-24B1-1006-1600	67/274	50-500	36	4.7		7.7	
	7439896	Iron	56.7	176,000	µg/L	MW-34B1-0611-01A	263/274	100-1200	176,000	11,000		16	
	7439921	Lead	1.2	156	µg/L	MW-24OB-1013-1125	121/272	10-100	156	NBA	NBA		
	7439965	Manganese	2.3	15,400	µg/L	MW-34B1-0611-02A	265/274	15-150	15,400	320		48	
	7439976	Mercury	0.028	134	µg/L	MW-08-1110-01A	152/274	0.2-0.2	134	0.63		213	
	7440020	Nickel	0.56	198	µg/L	MW-20B-1007-1305	124/274	40-400	198	300		0.66	
	7782492	Selenium	1.1	114	µg/L	MW-14R-0611-01A	90/274	35-350	114	78		1.5	
	7440224	Silver	0.33	13.8	µg/L	MW-26B1-1110-02A	106/205	10-100	13.8	71		0.19	
	7440280	Thallium	0.082	0.4	µg/L	MW-24OB-1013-1125	7/274	1-2	0.4	0.16		2.3	
	7440622	Vanadium	0.75	607	µg/L	MW-20B-1007-1305	169/274	50-50	607	78		7.8	
	7440666	Zinc	0.97	1,803	µg/L	MW-34B1-1110-02A	131/268	60-600	1,803	4,700		0.38	
											Total	**2510**	**5.8E-01**

Notes/sources:

(1) Maximum detected concentration used for EPC.

(2) NC = Noncancer based screening value set at a target hazard quotient of 1.0, obtained from the Regional Screening Level (RSL) Table (May, 2012).

(3) C = Cancer based screening value set at a target risk of 1E-06, obtained from the Regional Screening Level (RSL) Table (May, 2012).

NA = Not Available.

NBA = no RSL available.

TABLE N-2
REGIONAL SCREENING LEVEL (RSL) TAPWATER SUPPORTING TABLE APRIL 2012
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; Y = New York; O = EPA Office of Water; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide); SSL values are based on DAF=1

Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
1.8E-02	C	5.1E-06	C	1.5E-01	I					1	Yes	ALAR	1596845	3.7E+00	1.1E+04		3.7E+00	2.3E+03	7.1E+06		2.3E+03	
8.7E-03	I			4.0E-03	I					1	Yes	Acephate	30560191	7.7E+00	1.0E+04		7.7E+00	6.3E+01	8.1E+04		6.3E+01	
		2.2E-06	I			9.0E-03	I	V		1	Yes	Acetaldehyde	75070			2.2E+00	2.2E+00			1.9E+01	1.9E+01	
				2.0E-02	I					1	Yes	Acetochlor	34256821					3.1E+02	2.1E+03		2.7E+02	
				9.0E-01	I	3.1E+01	A	V		1	Yes	Acetone	67641					1.4E+04	2.9E+06	6.4E+04	1.2E+04	
				3.0E-03	P	6.0E-02	P	V		1	Yes	Acetone Cyanohydrin	75865					4.7E+01	8.8E+03	1.3E+02	3.4E+01	
						6.0E-02	I	V		1	Yes	Acetonitrile	75058							1.3E+02	1.3E+02	
				1.0E-01	I			V		1	Yes	Acetophenone	98862					1.6E+03	3.3E+04		1.5E+03	
3.8E+00	C	1.3E-03	C							1	Yes	Acetylaminofluorene, 2-	53963	1.8E-02	6.8E-02		1.4E-02					
				5.0E-04	I	2.0E-05	I	V		1	Yes	Acrolein	107028					7.8E+00	1.1E+03	4.2E-02	4.1E-02	
5.0E-01	I	1.0E-04	I	2.0E-03	I	6.0E-03	I		M	1	Yes	Acrylamide	79061	4.3E-02	2.2E+01		4.3E-02	3.1E+01	1.4E+04		3.1E+01	
				5.0E-01	I	1.0E-03	I			1	Yes	Acrylic Acid	79107					7.8E+03	7.4E+05		7.7E+03	
5.4E-01	I	6.8E-05	I	4.0E-02	A	2.0E-03	I	V		1	Yes	Acrylonitrile	107131	1.2E-01	1.2E+01	7.2E-02	4.5E-02	6.3E+02	5.8E+04	4.2E+00	4.1E+00	
						6.0E-03	P			1	Yes	Adiponitrile	111693									
5.6E-02	C			1.0E-02	I					1	Yes	Alachlor	15972608	1.2E+00	3.8E+00		9.1E-01	1.6E+02	4.9E+02		1.2E+02	2.0E+00
				1.0E-03	I					1	Yes	Aldicarb	116063					1.6E+01	1.0E+03		1.5E+01	
				1.0E-03	I					1	Yes	Aldicarb Sulfone	1646884					1.6E+01	1.7E+04		1.6E+01	
1.7E+01	I	4.9E-03	I	3.0E-05	I					1	Yes	Aldrin	309002	4.0E-03	2.2E-04		2.1E-04	4.7E-01	2.6E-02		2.4E-02	
				2.5E-01	I					1	Yes	Ally	74223646					3.9E+03	1.7E+05		3.8E+03	
				5.0E-03	I	1.0E-04	X			1	Yes	Allyl Alcohol	107186					7.8E+01	8.6E+03		7.8E+01	
2.1E-02	C	6.0E-06	C			1.0E-03	I	V		1	Yes	Allyl Chloride	107051	3.2E+00	2.9E+01	8.1E-01	6.3E-01			2.1E+00	2.1E+00	
				1.0E+00	P	5.0E-03	P			1	Yes	Aluminum	7429905					1.6E+04	2.4E+06		1.6E+04	
				4.0E-04	I					1	Yes	Aluminum Phosphide	20859738					6.3E+00	9.5E+02		6.2E+00	
				3.0E-04	I					1	No	Amdro	67485294					4.7E+00			4.7E+00	
				9.0E-03	I					1	Yes	Ametryn	834128					1.4E+02	6.9E+02		1.2E+02	
2.1E+01	C	6.0E-03	C							1	Yes	Aminobiphenyl, 4-	92671	3.2E-03	1.3E-02		2.6E-03					
				8.0E-02	P					1	Yes	Aminophenol, m-	591275					1.3E+03	2.0E+05		1.2E+03	
				2.0E-02	P					1	Yes	Aminophenol, p-	123308					3.1E+02	6.4E+04		3.1E+02	
				2.5E-03	I					1	Yes	Amitraz	33089611					3.9E+01	6.9E+00		5.9E+00	
						1.0E-01	I			1		Ammonia	7664417									
				2.0E-01	I					1	Yes	Ammonium Sulfamate	7773060					3.1E+03	4.7E+05		3.1E+03	
5.7E-03	I	1.6E-06	C	7.0E-03	P	1.0E-03	I			1	Yes	Aniline	62533	1.2E+01	5.9E+02		1.2E+01	1.1E+02	5.3E+03		1.1E+02	
4.0E-02	P			2.0E-03	X					1	Yes	Anthraquinone, 9,10-	84651	1.7E+00	4.3E+00		1.2E+00	3.1E+01	8.1E+01		2.3E+01	
				4.0E-04	I					0.15	Yes	Antimony (metallic)	7440360					6.3E+00	1.4E+02		6.0E+00	6.0E+00
				5.0E-04	H					0.15	Yes	Antimony Pentoxide	1314609					7.8E+00	1.8E+02		7.5E+00	
				9.0E-04	H					0.15	Yes	Antimony Potassium Tartrate	11071151					1.4E+01	3.2E+02		1.3E+01	
				4.0E-04	H					0.15	Yes	Antimony Tetroxide	1332816					6.3E+00	1.4E+02		6.0E+00	
						2.0E-04	I			0.15	Yes	Antimony Trioxide	1309644									
				1.3E-02	I					1	Yes	Apollo	74115245					2.0E+02	1.5E+03		1.8E+02	
2.5E-02	I	7.1E-06	I	5.0E-02	H					1	No	Aramite	140578	2.7E+00			2.7E+00	7.8E+02			7.8E+02	
1.5E+00	I	4.3E-03	I	3.0E-04	I	1.5E-05	C			1	Yes	Arsenic, Inorganic	7440382	4.5E-02	8.3E+00		4.5E-02	4.7E+00	7.1E+02		4.7E+00	1.0E+01
				3.5E-06	C	5.0E-05	I			1	Yes	Arsine	7784421					5.5E-02	8.3E+00		5.4E-02	
				9.0E-03	I					1	Yes	Assure	76578148					1.4E+02	2.7E+02		9.3E+01	
				5.0E-02	I					1	Yes	Asulam	3337711					7.8E+02	5.7E+05		7.8E+02	
2.3E-01	C			3.5E-02	I					1	Yes	Atrazine	1912249	2.9E-01	2.3E+00		2.6E-01	5.5E+02	4.4E+03		4.9E+02	3.0E+00
8.8E-01	C	2.5E-04	C							1	Yes	Auramine	492808	7.6E-02	5.4E-01		6.7E-02					
				4.0E-04	I					1	No	Avermectin B1	65195553					6.3E+00			6.3E+00	
1.1E-01	I	3.1E-05	I					V		1	Yes	Azobenzene	103333	6.1E-01	6.2E-01	1.6E-01	1.0E-01					
				2.0E-01	I	5.0E-04	H			0.07	Yes	Barium	7440393					3.1E+03	3.3E+04		2.9E+03	2.0E+03
				4.0E-03	I					1	Yes	Baygon	114261					6.3E+01	2.6E+03		6.1E+01	
				3.0E-02	I					1	Yes	Bayleton	43121433					4.7E+02	4.9E+03		4.3E+02	
				2.5E-02	I					1	Yes	Baythroid	68359375					3.9E+02	1.1E+02		8.7E+01	
				3.0E-01	I					1	Yes	Benefin	1861401					4.7E+03	1.7E+03		1.2E+03	
				5.0E-02	I					1	Yes	Benomyl	17804352					7.8E+02	2.2E+04		7.5E+02	
				3.0E-02	I					1	Yes	Bentazon	25057890					4.7E+02	6.7E+03		4.4E+02	
				1.0E-01	I				V	1	Yes	Benzaldehyde	100527					1.6E+03	3.4E+04		1.5E+03	
5.5E-02	I	7.8E-06	I	4.0E-03	I	3.0E-02	I	V		1	Yes	Benzene	71432	1.2E+00	8.4E+00	6.2E-01	3.9E-01	6.3E+01	4.1E+02	6.3E+01	2.9E+01	5.0E+00

TABLE N-2
REGIONAL SCREENING LEVEL (RSL) TAPWATER SUPPORTING TABLE APRIL 2012
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; Y = New York; O = EPA Office of Water; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide); SSL values are based on DAF=1

Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (μg/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				2.0E-04	X					1	No	Benzenediamine-2-methyl sulfate, 1,4-	6369591					3.1E+00			3.1E+00	
				1.0E-03	P			V		1	Yes	Benzenethiol	108985					1.6E+01	7.3E+01		1.3E+01	
2.3E+02	I	6.7E-02	I	3.0E-03	I				M	1	Yes	Benzidine	92875	9.4E-05	4.6E-03		9.2E-05	4.7E+01	2.1E+03		4.6E+01	
				4.0E+00	I					1	Yes	Benzoic Acid	65850					6.3E+04	8.5E+05		5.8E+04	
1.3E+01	I							V		1	Yes	Benzotrichloride	98077	5.2E-03	5.1E-03		2.6E-03					
				1.0E-01	P					1	Yes	Benzyl Alcohol	100516					1.6E+03	6.3E+04		1.5E+03	
1.7E-01	I	4.9E-05	C	2.0E-03	P	1.0E-03	P	V		1	Yes	Benzyl Chloride	100447	4.0E-01	2.9E+00	9.9E-02	7.7E-02	3.1E+01	2.3E+02	2.1E+00	1.9E+00	
		2.4E-03	I	2.0E-03	I	2.0E-05	I			0.007	Yes	Beryllium and compounds	7440417					3.1E+01	3.3E+01		1.6E+01	4.0E+00
				1.0E-04	I					1	Yes	Bidrin	141662					1.6E+00	7.8E+02		1.6E+00	
				9.0E-03	P					1	Yes	Bifenox	42576023					1.4E+02	1.6E+02		7.5E+01	
				1.5E-02	I					1	No	Biphenthrin	82657043					2.3E+02			2.3E+02	
8.0E-03	X			5.0E-02	I	4.0E-04	X	V		1	Yes	Biphenyl, 1,1'-	92524	8.4E+00	5.6E+00		3.3E+00	7.8E+02	5.2E+02	8.3E-01	8.3E-01	
7.0E-02	H	1.0E-05	H	4.0E-02	I			V		1	Yes	Bis(2-chloro-1-methylethyl) ether	108601	9.6E-01	7.0E+00	4.9E-01	3.1E-01	6.3E+02	4.6E+03		5.5E+02	
				3.0E-03	P					1	No	Bis(2-chloroethoxy)methane	111911					4.7E+01			4.7E+01	
1.1E+00	I	3.3E-04	I					V		1	Yes	Bis(2-chloroethyl)ether	111444	6.1E-02	2.3E+00	1.5E-02	1.2E-02					
1.4E-02	I	2.4E-06	C	2.0E-02	I					1	Yes	Bis(2-ethylhexyl)phthalate	117817	4.8E+00	7.2E-02		7.1E-02	3.1E+02	4.7E+00		4.6E+00	6.0E+00
2.2E+02	I	6.2E-02	I					V		1	Yes	Bis(chloromethyl)ether	542881	3.1E-04	2.9E-02	7.8E-05	6.2E-05					
				5.0E-02	I					1	Yes	Bisphenol A	80057					7.8E+02	2.3E+03		5.8E+02	
				2.0E-01	I	2.0E-02	H			1	Yes	Boron And Borates Only	7440428					3.1E+03	4.7E+05		3.1E+03	
				4.0E-02	C	1.3E-02	C			1	Yes	Boron Trifluoride	7637072					6.3E+02	9.5E+04		6.2E+02	
7.0E-01	I			4.0E-03	I					1	Yes	Bromate	15541454	9.6E-02	1.8E+01		9.6E-02	6.3E+01	9.5E+03		6.2E+01	1.0E+01
2.0E+00	X	6.0E-04	X					V		1	No	Bromo-2-chloroethane, 1-	107040	3.4E-02		8.1E-03	6.5E-03					
				8.0E-03	I	6.0E-02	I	V		1	Yes	Bromobenzene	108861					1.3E+02	3.8E+02	1.3E+02	5.4E+01	
						4.0E-02	X	V		1	Yes	Bromochloromethane	74975							8.3E+01	8.3E+01	
6.2E-02	I	3.7E-05	C	2.0E-02	I			V		1	Yes	Bromodichloromethane	75274	1.1E+00	1.6E+01	1.3E-01	1.2E-01	3.1E+02	4.6E+03		2.9E+02	8.0E+01(F)
7.9E-03	I	1.1E-06	I	2.0E-02	I					1	Yes	Bromoform	75252	8.5E+00	1.2E+02		7.9E+00	3.1E+02	4.4E+03		2.9E+02	8.0E+01
				1.4E-03	I	5.0E-03	I	V		1	Yes	Bromomethane	74839					2.2E+01	6.8E+02	1.0E+01	7.0E+00	
				5.0E-03	H					1	Yes	Bromophos	2104963					7.8E+01	3.9E+01		2.6E+01	
				2.0E-02	I					1	No	Bromoxynil	1689845					3.1E+02			3.1E+02	
				2.0E-02	I					1	Yes	Bromoxynil Octanoate	1689992					3.1E+02	1.5E+02		1.0E+02	
3.4E+00	C	3.0E-05	I			2.0E-03	I	V		1	Yes	Butadiene, 1,3-	106990	2.0E-02	1.4E-01	1.6E-01	1.6E-02			4.2E+00	4.2E+00	
				1.0E-01	I					1	Yes	Butanol, N-	71363					1.6E+03	6.6E+04		1.5E+03	
1.9E-03	P			2.0E-01	I					1	Yes	Butyl Benzyl Phthlate	85687	3.5E+01	2.3E+01		1.4E+01	3.1E+03	2.0E+03		1.2E+03	
				2.0E+00	P	3.0E+01	P			1	Yes	Butyl alcohol, sec-	78922					3.1E+04	2.0E+06		3.1E+04	
				5.0E-02	I					1	Yes	Butylate	2008415					7.8E+02	6.0E+02		3.4E+02	
2.0E-04	C	5.7E-08	C							1	No	Butylated hydroxyanisole	25013165	3.4E+02			3.4E+02					
				5.0E-02	P			V		1	No	Butylbenzene, n-	104518					7.8E+02			7.8E+02	
				1.0E+00	I					1	No	Butylphthalyl Butylglycolate	85701					1.6E+04			1.6E+04	
				2.0E-02	A					1	No	Cacodylic Acid	75605					3.1E+02			3.1E+02	
		1.8E-03	I	5.0E-04	I	2.0E-05	C			0.05	Yes	Cadmium (Water)	7440439					7.8E+00	5.9E+01		6.9E+00	5.0E+00
				5.0E-01	I					1	Yes	Caprolactam	105602					7.8E+03	6.4E+05		7.7E+03	
1.5E-01	C	4.3E-05	C	2.0E-03	I					1	Yes	Captafol	2425061	4.5E-01	1.5E+00		3.5E-01	3.1E+01	1.1E+02		2.4E+01	
2.3E-03	C	6.6E-07	C	1.3E-01	I					1	Yes	Captan	133062	2.9E+01	3.0E+02		2.7E+01	2.0E+03	2.1E+04		1.9E+03	
				1.0E-01	I					1	Yes	Carbaryl	63252					1.6E+03	1.7E+04		1.4E+03	
				5.0E-03	I					1	Yes	Carbofuran	1563662					7.8E+01	1.0E+03		7.3E+01	4.0E+01
				1.0E-01	I	7.0E-01	I	V		1	Yes	Carbon Disulfide	75150					1.6E+03	1.3E+04	1.5E+03	7.2E+02	
7.0E-02	I	6.0E-06	I	4.0E-03	I	1.0E-01	I	V		1	Yes	Carbon Tetrachloride	56235	9.6E-01	3.7E+00	8.1E-01	3.9E-01	6.3E+01	2.4E+02	2.1E+02	4.0E+01	5.0E+00
				1.0E-02	I					1	No	Carbosulfan	55285148					1.6E+02			1.6E+02	
				1.0E-01	I					1	Yes	Carboxin	5234684					1.6E+03	2.9E+04		1.5E+03	
						9.0E-04	I			1	Yes	Ceric oxide	1306383									
				1.0E-01	I					1	Yes	Chloral Hydrate	302170					1.6E+03	1.1E+05		1.5E+03	
				1.5E-02	I					1	No	Chloramben	133904					2.3E+02			2.3E+02	
4.0E-01	H									1	No	Chloranil	118752	1.7E-01			1.7E-01					
3.5E-01	I	1.0E-04	I	5.0E-04	I	7.0E-04	I			1	Yes	Chlordane	12789036	1.9E-01	3.1E-02		2.7E-02	7.8E+00	1.3E+00		1.1E+00	2.0E+00
1.0E+01	I	4.6E-03	C	3.0E-04	I					1	Yes	Chlordecone (Kepone)	143500	6.7E-03	5.5E-03		3.0E-03	4.7E+00	3.8E+00		2.1E+00	
				7.0E-04	A					1	Yes	Chlorfenvinphos	470906					1.1E+01	4.0E+01		8.6E+00	

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Toxicity and Chemical-specific Information												Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				2.0E-02	I					1	Yes	Chlorimuron, Ethyl-	90982324					3.1E+02	1.1E+04		3.0E+02	
				1.0E-01	I	1.5E-04	A			1	Yes	Chlorine	7782505					1.6E+03	2.4E+05		1.6E+03	
				3.0E-02	I	2.0E-04	I			1	Yes	Chlorine Dioxide	10049044					4.7E+02	7.1E+04		4.7E+02	
				3.0E-02	I					1	Yes	Chlorite (Sodium Salt)	7758192					4.7E+02	7.1E+04		4.7E+02	1.0E+03
						5.0E+01	I	V		1	Yes	Chloro-1,1-difluoroethane, 1-	75683							1.0E+05	1.0E+05	
		3.0E-04	I	2.0E-02	H	2.0E-02	I	V		1	Yes	Chloro-1,3-butadiene, 2-	126998			1.6E-02	1.6E-02	3.1E+02	1.2E+03	4.2E+01	3.6E+01	
4.6E-01	H									1	Yes	Chloro-2-methylaniline HCl, 4-	3165933	1.5E-01	1.2E+00		1.3E-01					
1.0E-01	P	7.7E-05	C	3.0E-03	X					1	No	Chloro-2-methylaniline, 4-	95692	6.7E-01			6.7E-01	4.7E+01			4.7E+01	
2.7E-01	X							V		1	Yes	Chloroacetaldehyde, 2-	107200	2.5E-01	3.9E+01		2.5E-01					
				2.0E-03	H					1	Yes	Chloroacetic Acid	79118					3.1E+01	4.3E+03		3.1E+01	6.0E+01
						3.0E-05	I			1	No	Chloroacetophenone, 2-	532274									
2.0E-01	P			4.0E-03	I					1	Yes	Chloroaniline, p-	106478	3.4E-01	5.0E+00		3.2E-01	6.3E+01	9.4E+02		5.9E+01	
				2.0E-02	I	5.0E-02	P	V		1	Yes	Chlorobenzene	108907					3.1E+02	9.1E+02	1.0E+02	7.2E+01	1.0E+02
1.1E-01	C	3.1E-05	C	2.0E-02	I					1	Yes	Chlorobenzilate	510156	6.1E-01	4.8E-01		2.7E-01	3.1E+02	2.5E+02		1.4E+02	
				3.0E-02	X					1	Yes	Chlorobenzoic Acid, p-	74113					4.7E+02	2.4E+03		3.9E+02	
				3.0E-03	P	3.0E-01	P	V		1	Yes	Chlorobenzotrifluoride, 4-	98566					4.7E+01	6.6E+01	6.3E+02	2.6E+01	
				4.0E-02	P			V		1	Yes	Chlorobutane, 1-	109693					6.3E+02	2.1E+03		4.8E+02	
						5.0E+01	I	V		1	Yes	Chlorodifluoromethane	75456							1.0E+05	1.0E+05	
3.1E-02	C	2.3E-05	I	1.0E-02	I	9.8E-02	A	V		1	Yes	Chloroform	67663	2.2E+00	2.5E+01	2.1E-01	1.9E-01	1.6E+02	1.8E+03	2.0E+02	8.4E+01	8.0E+01
						9.0E-02	I	V		1	Yes	Chloromethane	74873							1.9E+02	1.9E+02	
2.4E+00	C	6.9E-04	C					V		1	No	Chloromethyl Methyl Ether	107302	2.8E-02		7.1E-03	5.6E-03					
				8.0E-02	I			V		1	Yes	Chloronaphthalene, Beta-	91587					1.3E+03	9.9E+02		5.5E+02	
3.0E-01	P			3.0E-03	P	1.0E-05	X			1	Yes	Chloronitrobenzene, o-	88733	2.2E-01	2.2E+00		2.0E-01	4.7E+01	4.6E+02		4.3E+01	
6.3E-03	P			1.0E-03	P	6.0E-04	P			1	Yes	Chloronitrobenzene, p-	100005	1.1E+01	8.2E+01		9.4E+00	1.6E+01	1.2E+02		1.4E+01	
				5.0E-03	I			V		1	Yes	Chlorophenol, 2-	95578					7.8E+01	7.2E+02		7.1E+01	
						4.0E-04	C	V		1	Yes	Chloropicrin	76062							8.3E-01	8.3E-01	
3.1E-03	C	8.9E-07	C	1.5E-02	I					1	Yes	Chlorothalonil	1897456	2.2E+01	1.4E+02		1.9E+01	2.3E+02	1.5E+03		2.0E+02	
				2.0E-02	I			V		1	Yes	Chlorotoluene, o-	95498					3.1E+02	4.1E+02		1.8E+02	
				2.0E-02	X			V		1	Yes	Chlorotoluene, p-	106434					3.1E+02	4.7E+02		1.9E+02	
2.4E+02	C	6.9E-02	C							1	Yes	Chlorozotocin	54749905	2.8E-04	6.3E-01		2.8E-04					
				2.0E-01	I					1	Yes	Chlorpropham	101213					3.1E+03	7.0E+03		2.2E+03	
				1.0E-03	A					1	Yes	Chlorpyrifos	2921882					1.6E+01	1.0E+01		6.2E+00	
				1.0E-02	H					1	Yes	Chlorpyrifos Methyl	5598130					1.6E+02	2.1E+02		8.9E+01	
				5.0E-02	I					1	Yes	Chlorsulfuron	64902723					7.8E+02	4.0E+04		7.7E+02	
				8.0E-04	H					1	Yes	Chlorthiophos	60238564					1.3E+01	2.4E+00		2.0E+00	
				1.5E+00	I					0.013	Yes	Chromium(III), Insoluble Salts	16065831					2.3E+04	4.6E+04		1.6E+04	
5.0E-01	J	8.4E-02	S	3.0E-03	I	1.0E-04	I		M	0.025	Yes	Chromium(VI)	18540299	4.3E-02	1.1E-01		3.1E-02	4.7E+01	8.9E+01		3.1E+01	
										0.013	Yes	Chromium, Total	7440473									1.0E+02
		9.0E-03	P	3.0E-04	P	6.0E-06	P			1	Yes	Cobalt	7440484					4.7E+00	1.8E+03		4.7E+00	
		6.2E-04	I						M	1		Coke Oven Emissions	8007452									
				4.0E-02	H					1	Yes	Copper	7440508					6.3E+02	9.5E+04		6.2E+02	1.3E+03
				5.0E-02	I	6.0E-01	C			1	Yes	Cresol, m-	108394					7.8E+02	8.5E+03		7.2E+02	
				5.0E-02	I	6.0E-01	C			1	Yes	Cresol, o-	95487					7.8E+02	8.6E+03		7.2E+02	
				1.0E-01	A	6.0E-01	C			1	Yes	Cresol, p-	106445					1.6E+03	1.7E+04		1.4E+03	
				1.0E-01	A					1	Yes	Cresol, p-chloro-m-	59507					1.6E+03	3.7E+03		1.1E+03	
				1.0E-01	A	6.0E-01	C			1	Yes	Cresols	1319773					1.6E+03	1.7E+04		1.4E+03	
1.9E+00	H			1.0E-03	P			V		1	Yes	Crotonaldehyde, trans-	123739	3.5E-02	2.3E+00		3.5E-02	1.6E+01	9.8E+02		1.5E+01	
				1.0E-01	I	4.0E-01	I	V		1	Yes	Cumene	98828					1.6E+03	1.4E+03	8.3E+02	3.9E+02	
2.2E-01	C	6.3E-05	C							1	No	Cupferron	135206	3.1E-01			3.1E-01					
8.4E-01	H			2.0E-03	H					1	Yes	Cyanazine	21725462	8.0E-02	1.4E+00		7.6E-02	3.1E+01	5.4E+02		3.0E+01	
												Cyanides										
				1.0E-03	I					1	Yes	~Calcium Cyanide	592018					1.6E+01	2.4E+03		1.6E+01	
				5.0E-03	I					1	Yes	~Copper Cyanide	544923					7.8E+01	1.2E+04		7.8E+01	
				6.0E-04	I			V		1	Yes	~Cyanide (CN-)	57125					9.4E+00	1.4E+03		9.3E+00	2.0E+02
				1.0E-03	I			V		1	Yes	~Cyanogen	460195					1.6E+01	2.7E+03		1.6E+01	
				9.0E-02	I			V		1	Yes	~Cyanogen Bromide	506683					1.4E+03	8.4E+05		1.4E+03	
				5.0E-02	I			V		1	Yes	~Cyanogen Chloride	506774					7.8E+02	3.0E+05		7.8E+02	

TABLE N-2
REGIONAL SCREENING LEVEL (RSL) TAPWATER SUPPORTING TABLE APRIL 2012
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; Y = New York; O = EPA Office of Water; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide); SSL values are based on DAF=1

Toxicity and Chemical-specific Information												Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				6.0E-04	I	8.0E-04	I	V		1	Yes	~Hydrogen Cyanide	74908					9.4E+00	1.4E+03	1.7E+00	1.4E+00	
				2.0E-03	I					1	Yes	~Potassium Cyanide	151508					3.1E+01	2.4E+03		3.1E+01	
				5.0E-03	I					0.04	Yes	~Potassium Silver Cyanide	506616					7.8E+01	2.4E+02		5.9E+01	
				1.0E-01	I					0.04	Yes	~Silver Cyanide	506649					1.6E+03	9.5E+03		1.3E+03	
				1.0E-03	I					1	Yes	~Sodium Cyanide	143339					1.6E+01	2.4E+03		1.6E+01	2.0E+02
				2.0E-04	P			V		1	No	~Thiocyanate	463569					3.1E+00			3.1E+00	
				5.0E-02	I					1	Yes	~Zinc Cyanide	557211					7.8E+02	2.0E+05		7.8E+02	
						6.0E+00	I	V		1	Yes	Cyclohexane	110827							1.3E+04	1.3E+04	
2.3E-02	H									1	Yes	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87843	2.9E+00	7.1E+00		2.1E+00					
				5.0E+00	I	7.0E-01	P			1	Yes	Cyclohexanone	108941					7.8E+04	4.5E+06		7.7E+04	
				2.0E-01	I					1	Yes	Cyclohexylamine	108918					3.1E+03	6.4E+04		3.0E+03	
				5.0E-03	I					1	No	Cyhalothrin/karate	68085858					7.8E+01			7.8E+01	
				1.0E-02	I					1	No	Cypermethrin	52315078					1.6E+02			1.6E+02	
				7.5E-03	I					1	No	Cyromazine	66215278					1.2E+02			1.2E+02	
2.4E-01	I	6.9E-05	C							1	No	DDD	72548	2.8E-01			2.8E-01					
3.4E-01	I	9.7E-05	C							1	No	DDE, p,p'-	72559	2.0E-01			2.0E-01					
3.4E-01	I	9.7E-05	I	5.0E-04	I					1	No	DDT	50293	2.0E-01			2.0E-01	7.8E+00			7.8E+00	
				1.0E-02	I					1	Yes	Dacthal	1861321					1.6E+02	2.3E+02		9.3E+01	
				3.0E-02	I					1	No	Dalapon	75990					4.7E+02			4.7E+02	2.0E+02
7.0E-04	I			7.0E-03	I					1	No	Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209)	1163195	9.6E+01			9.6E+01	1.1E+02			1.1E+02	
				4.0E-05	I					1	Yes	Demeton	8065483					6.3E-01	2.9E+00		5.2E-01	
1.2E-03	I			6.0E-01	I					1	No	Di(2-ethylhexyl)adipate	103231	5.6E+01			5.6E+01	9.4E+03			9.4E+03	4.0E+02
6.1E-02	H									1	Yes	Diallate	2303164	1.1E+00	7.9E-01		4.6E-01					
				7.0E-04	A					1	Yes	Diazinon	333415					1.1E+01	2.8E+01		7.9E+00	
8.0E-01	P	6.0E-03	P	2.0E-04	P	2.0E-04	I	V	M	1	Yes	Dibromo-3-chloropropane, 1,2-	96128	2.7E-02	1.6E-01	3.2E-04	3.2E-04	3.1E+00	1.7E+01	4.2E-01	3.6E-01	2.0E-01
				1.0E-02	I					1	Yes	Dibromobenzene, 1,4-	106376					1.6E+02	2.6E+02		9.8E+01	
8.4E-02	I	2.7E-05	C	2.0E-02	I			V		1	Yes	Dibromochloromethane	124481	8.0E-01	1.2E+01	1.8E-01	1.5E-01	3.1E+02	4.8E+03		2.9E+02	8.0E+01(F)
2.0E+00	I	6.0E-04	I	9.0E-03	I	9.0E-03	I	V		1	Yes	Dibromoethane, 1,2-	106934	3.4E-02	6.1E-01	8.1E-03	6.5E-03	1.4E+02	2.5E+03	1.9E+01	1.6E+01	5.0E-02
				1.0E-02	H	4.0E-03	X	V		1	Yes	Dibromomethane (Methylene Bromide)	74953					1.6E+02	3.9E+03	8.3E+00	7.9E+00	
				1.0E-01	I					1	Yes	Dibutyl Phthalate	84742					1.6E+03	1.2E+03		6.7E+02	
				3.0E-04	P					1	No	Dibutyltin Compounds	NA					4.7E+00			4.7E+00	
				3.0E-02	I					1	Yes	Dicamba	1918009					4.7E+02	7.2E+03		4.4E+02	
		4.2E-03	P					V		1	No	Dichloro-2-butene, 1,4-	764410			1.2E-03	1.2E-03					
		4.2E-03	P					V		1	Yes	Dichloro-2-butene, cis-1,4-	1476115			1.2E-03	1.2E-03					
		4.2E-03	P					V		1	Yes	Dichloro-2-butene, trans-1,4-	110576			1.2E-03	1.2E-03					
5.0E-02	I			4.0E-03	I					1	Yes	Dichloroacetic Acid	79436	1.3E+00	8.2E+01		1.3E+00	6.3E+01	3.8E+03		6.2E+01	6.0E+01
				9.0E-02	I	2.0E-01	H	V		1	Yes	Dichlorobenzene, 1,2-	95501					1.4E+03	2.1E+03	4.2E+02	2.8E+02	6.0E+02
5.4E-03	C	1.1E-05	C	7.0E-02	A	8.0E-01	I	V		1	Yes	Dichlorobenzene, 1,4-	106467	1.2E+01	1.8E+01	4.4E-01	4.2E-01	1.1E+03	1.6E+03	1.7E+03	4.7E+02	7.5E+01
4.5E-01	I	3.4E-04	C							1	Yes	Dichlorobenzidine, 3,3'-	91941	1.5E-01	3.9E-01		1.1E-01					
				9.0E-03	X					1	No	Dichlorobenzophenone, 4,4'-	90982					1.4E+02			1.4E+02	
				2.0E-01	I	1.0E-01	X	V		1	Yes	Dichlorodifluoromethane	75718					3.1E+03	2.7E+04	2.1E+02	1.9E+02	
5.7E-03	C	1.6E-06	C	2.0E-01	P			V		1	Yes	Dichloroethane, 1,1-	75343	1.2E+01	1.6E+02	3.0E+00	2.4E+00	3.1E+03	4.0E+04		2.9E+03	
9.1E-02	I	2.6E-05	I	6.0E-03	X	7.0E-03	P	V		1	Yes	Dichloroethane, 1,2-	107062	7.4E-01	1.6E+01	1.9E-01	1.5E-01	9.4E+01	1.9E+03	1.5E+01	1.3E+01	5.0E+00
				5.0E-02	I	2.0E-01	I	V		1	Yes	Dichloroethylene, 1,1-	75354					7.8E+02	5.9E+03	4.2E+02	2.6E+02	7.0E+00
				9.0E-03	H			V		1	Yes	Dichloroethylene, 1,2- (Mixed Isomers)	540590					1.4E+02	1.1E+03		1.3E+02	
				2.0E-03	I			V		1	Yes	Dichloroethylene, 1,2-cis-	156592					3.1E+01	2.5E+02		2.8E+01	7.0E+01
				2.0E-02	I	6.0E-02	P	V		1	Yes	Dichloroethylene, 1,2-trans-	156605					3.1E+02	2.5E+03	1.3E+02	8.6E+01	1.0E+02
				3.0E-03	I					1	Yes	Dichlorophenol, 2,4-	120832					4.7E+01	1.3E+02		3.5E+01	
				1.0E-02	I					1	Yes	Dichlorophenoxy Acetic Acid, 2,4-	94757					1.6E+02	9.6E+02		1.3E+02	7.0E+01
				8.0E-03	I					1	Yes	Dichlorophenoxy)butyric Acid, 4-(2,4-	94826					1.3E+02	3.4E+02		9.1E+01	
3.6E-02	C	1.0E-05	C	9.0E-02	A	4.0E-03	I	V		1	Yes	Dichloropropane, 1,2-	78875	1.9E+00	2.0E+01	4.9E-01	3.8E-01	1.4E+03	1.5E+04	8.3E+00	8.3E+00	5.0E+00
				2.0E-02	P			V		1	Yes	Dichloropropane, 1,3-	142289					3.1E+02	3.3E+03		2.9E+02	
				3.0E-03	I					1	No	Dichloropropanol, 2,3-	616239					4.7E+01			4.7E+01	
1.0E-01	I	4.0E-06	I	3.0E-02	I	2.0E-02	I	V		1	Yes	Dichloropropene, 1,3-	542756	6.7E-01	6.7E+00	1.2E+00	4.1E-01	4.7E+02	4.7E+03	4.2E+01	3.8E+01	
2.9E-01	I	8.3E-05	C	5.0E-04	I	5.0E-04	I			1	Yes	Dichlorvos	62737	2.3E-01	1.2E+01		2.3E-01	7.8E+00	4.0E+02		7.7E+00	
				8.0E-03	P	7.0E-03	P	V		1	Yes	Dicyclopentadiene	77736					1.3E+02	2.5E+02	1.5E+01	1.2E+01	
1.6E+01	I	4.6E-03	I	5.0E-05	I					1	Yes	Dieldrin	60571	4.2E-03	2.3E-03		1.5E-03	7.8E-01	4.3E-01		2.8E-01	

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BERLIN, NEW HAMPSHIRE

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Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
		3.0E-04	C			5.0E-03	I			1		Diesel Engine Exhaust	NA									
						3.0E-03	C			1	Yes	Diethanolamine	111422									
				8.0E-01	I					1	Yes	Diethyl Phthalate	84662					1.3E+04	1.4E+05		1.1E+04	
				3.0E-02	P	1.0E-04	P			1	Yes	Diethylene Glycol Monobutyl Ether	112345					4.7E+02	6.1E+04		4.7E+02	
				6.0E-02	P	3.0E-04	P			1	Yes	Diethylene Glycol Monoethyl Ether	111900					9.4E+02	5.5E+05		9.4E+02	
				1.0E-03	P					1	No	Diethylformamide	617845					1.6E+01			1.6E+01	
3.5E+02	C	1.0E-01	C							1	Yes	Diethylstilbestrol	56531	1.9E-04	5.6E-05		4.3E-05					
				8.0E-02	I					1	Yes	Difenzoquat	43222486					1.3E+03	5.2E+05		1.2E+03	
				2.0E-02	I					1	Yes	Diflubenzuron	35367385					3.1E+02	7.4E+02		2.2E+02	
						4.0E+01	I	V		1	Yes	Difluoroethane, 1,1-	75376							8.3E+04	8.3E+04	
4.4E-02	C	1.3E-05	C					V		1	No	Dihydrosafrole	94586	1.5E+00		3.7E-01	3.0E-01					
						7.0E-01	P	V		1	Yes	Diisopropyl Ether	108203							1.5E+03	1.5E+03	
				8.0E-02	I			V		1	Yes	Diisopropyl Methylphosphonate	1445756					1.3E+03	9.0E+04		1.2E+03	
				2.0E-02	I					1	Yes	Dimethipin	55290647					3.1E+02	1.7E+05		3.1E+02	
				2.0E-04	I					1	Yes	Dimethoate	60515					3.1E+00	4.5E+02		3.1E+00	
1.4E-02	H									1	Yes	Dimethoxybenzidine, 3,3'-	119904	4.8E+00	1.6E+02		4.7E+00					
1.7E-03	P			6.0E-02	P					1	Yes	Dimethyl methylphosphonate	756796	4.0E+01	2.4E+04		3.9E+01	9.4E+02	5.7E+05		9.4E+02	
4.6E+00	C	1.3E-03	C							1	Yes	Dimethylamino azobenzene [p-]	60117	1.5E-02	6.1E-03		4.3E-03					
5.8E-01	H									1	Yes	Dimethylaniline HCl, 2,4-	21436964	1.2E-01	2.1E+00		1.1E-01					
2.0E-01	P			2.0E-03	X					1	Yes	Dimethylaniline, 2,4-	95681	3.4E-01	6.1E+00		3.2E-01	3.1E+01	5.7E+02		3.0E+01	
				2.0E-03	I			V		1	Yes	Dimethylaniline, N,N-	121697					3.1E+01	2.2E+02		2.7E+01	
1.1E+01	P									1	Yes	Dimethylbenzidine, 3,3'-	119937	6.1E-03	7.2E-02		5.6E-03					
				1.0E-01	P	3.0E-02	I			1	Yes	Dimethylformamide	68122					1.6E+03	1.2E+06		1.6E+03	
				1.0E-04	X	2.0E-06	X			1	Yes	Dimethylhydrazine, 1,1-	57147					1.6E+00	1.4E+03		1.6E+00	
5.5E+02	C	1.6E-01	C							1	No	Dimethylhydrazine, 1,2-	540738	1.2E-04			1.2E-04					
				2.0E-02	I					1	Yes	Dimethylphenol, 2,4-	105679					3.1E+02	2.2E+03		2.7E+02	
				6.0E-04	I					1	Yes	Dimethylphenol, 2,6-	576261					9.4E+00	6.0E+01		8.1E+00	
				1.0E-03	I					1	Yes	Dimethylphenol, 3,4-	95658					1.6E+01	1.2E+02		1.4E+01	
				1.0E-01	I			V		1	Yes	Dimethylterephthalate	120616					1.6E+03	1.9E+04		1.4E+03	
4.5E-02	C	1.3E-05	C					V		1	No	Dimethylvinylchloride	513371	1.5E+00		3.7E-01	3.0E-01					
				8.0E-05	X					1	Yes	Dinitro-o-cresol, 4,6-	534521					1.3E+00	1.9E+01		1.2E+00	
				2.0E-03	I					1	Yes	Dinitro-o-cyclohexyl Phenol, 4,6-	131895					3.1E+01	3.8E+01		1.7E+01	
				1.0E-04	P					1	Yes	Dinitrobenzene, 1,2-	528290					1.6E+00	3.8E+01		1.5E+00	
				1.0E-04	I					1	Yes	Dinitrobenzene, 1,3-	99650					1.6E+00	5.1E+01		1.5E+00	
				1.0E-04	P					1	Yes	Dinitrobenzene, 1,4-	100254					1.6E+00	5.4E+01		1.5E+00	
				2.0E-03	I					1	Yes	Dinitrophenol, 2,4-	51285					3.1E+01	8.6E+02		3.0E+01	
6.8E-01	I									1	Yes	Dinitrotoluene Mixture, 2,4/2,6-	25321146	9.9E-02	1.2E+00		9.2E-02					
3.1E-01	C	8.9E-05	C	2.0E-03	I					1	Yes	Dinitrotoluene, 2,4-	121142	2.2E-01	3.7E+00		2.0E-01	3.1E+01	5.3E+02		3.0E+01	
				1.0E-03	P					1	Yes	Dinitrotoluene, 2,6-	606202					1.6E+01	2.2E+02		1.5E+01	
				2.0E-03	S					1	Yes	Dinitrotoluene, 2-Amino-4,6-	35572782					3.1E+01	7.3E+02		3.0E+01	
				2.0E-03	S					1	Yes	Dinitrotoluene, 4-Amino-2,6-	19406510					3.1E+01	7.3E+02		3.0E+01	
				1.0E-03	I					1	Yes	Dinoseb	88857					1.6E+01	3.8E+01		1.1E+01	7.0E+00
1.0E-01	I	7.7E-06	C	3.0E-02	I	3.0E+00	C			1	Yes	Dioxane, 1,4-	123911	6.7E-01	1.9E+02		6.7E-01	4.7E+02	1.3E+05		4.7E+02	
												Dioxins										
6.2E+03	I	1.3E+00	I							1	No	~Hexachlorodibenzo-p-dioxin, Mixture	NA	1.1E-05			1.1E-05					
1.3E+05	C	3.8E+01	C	7.0E-10	I	4.0E-08	C			1	No	~TCDD, 2,3,7,8-	TEQ_M	5.2E-07			5.2E-07	1.1E-05			1.1E-05	3.0E-05
				3.0E-02	I					1	No	Diphenamid	957517					4.7E+02			4.7E+02	
				8.0E-04	X					1	Yes	Diphenyl Sulfone	127639					1.3E+01	1.4E+02		1.1E+01	
				2.5E-02	I					1	Yes	Diphenylamine	122394					3.9E+02	6.0E+02		2.4E+02	
8.0E-01	I	2.2E-04	I							1	Yes	Diphenylhydrazine, 1,2-	122667	8.4E-02	3.3E-01		6.7E-02					
				2.2E-03	I					1	No	Diquat	85007					3.4E+01			3.4E+01	2.0E+01
7.4E+00	C	2.1E-03	C							1	No	Direct Black 38	1937377	9.1E-03			9.1E-03					
7.4E+00	C	2.1E-03	C							1	No	Direct Blue 6	2602462	9.1E-03			9.1E-03					
6.7E+00	C	1.9E-03	C							1	No	Direct Brown 95	16071866	1.0E-02			1.0E-02					
				4.0E-05	I					1	Yes	Disulfoton	298044					6.3E-01	9.5E-01		3.8E-01	
				1.0E-02	I			V		1	Yes	Dithiane, 1,4-	505293					1.6E+02	1.1E+04		1.5E+02	
				2.0E-03	I					1	Yes	Diuron	330541					3.1E+01	2.5E+02		2.8E+01	

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CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; Y = New York; O = EPA Office of Water; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide); SSL values are based on DAF=1

Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO $(mg/kg\text{-}day)^{-1}$	key	IUR $(ug/m^3)^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				4.0E-03	I					1	Yes	Dodine	2439103					6.3E+01	7.5E+03		6.2E+01	
				2.5E-02	I			V		1	Yes	EPTC	759944					3.9E+02	1.1E+03		2.9E+02	
				6.0E-03	I					1	Yes	Endosulfan	115297					9.4E+01	4.5E+02		7.8E+01	
				2.0E-02	I					1	Yes	Endothall	145733					3.1E+02	6.1E+03		3.0E+02	1.0E+02
				3.0E-04	I					1	Yes	Endrin	72208					4.7E+00	2.6E+00		1.7E+00	2.0E+00
9.9E-03	I	1.2E-06	I	6.0E-03	P	1.0E-03	I	V		1	Yes	Epichlorohydrin	106898	6.8E+00	6.7E+02	4.1E+00	2.5E+00	9.4E+01	8.9E+03	2.1E+00	2.0E+00	
						2.0E-02	I	V		1	Yes	Epoxybutane, 1,2-	106887							4.2E+01	4.2E+01	
				5.0E-03	I					1	Yes	Ethephon	16672870					7.8E+01	3.0E+04		7.8E+01	
				5.0E-04	I					1	Yes	Ethion	563122					7.8E+00	5.4E+00		3.2E+00	
				1.0E-01	P	6.0E-02	P			1	Yes	Ethoxyethanol Acetate, 2-	111159					1.6E+03	1.6E+05		1.5E+03	
				4.0E-01	H	2.0E-01	I			1	Yes	Ethoxyethanol, 2-	110805					6.3E+03	1.9E+06		6.2E+03	
				9.0E-01	I			V		1	Yes	Ethyl Acetate	141786					1.4E+04	8.4E+05		1.4E+04	
4.8E-02	H							V		1	Yes	Ethyl Acrylate	140885	1.4E+00	3.8E+01		1.4E+00					
						1.0E+01	I	V		1	Yes	Ethyl Chloride	75003							2.1E+04	2.1E+04	
				2.0E-01	I			V		1	Yes	Ethyl Ether	60297					3.1E+03	1.3E+05		3.1E+03	
				9.0E-02	H	3.0E-01	P	V		1	Yes	Ethyl Methacrylate	97632					1.4E+03	1.6E+04	6.3E+02	4.2E+02	
				1.0E-05	I					1	Yes	Ethyl-p-nitrophenyl Phosphonate	2104645					1.6E-01	1.1E-01		6.6E-02	
1.1E-02	C	2.5E-06	C	1.0E-01	I	1.0E+00	I	V		1	Yes	Ethylbenzene	100414	6.1E+00	1.1E+01	1.9E+00	1.3E+00	1.6E+03	2.6E+03	2.1E+03	6.7E+02	7.0E+02
				3.0E-02	P					1	Yes	Ethylene Cyanohydrin	109784					4.7E+02	3.1E+05		4.7E+02	
				9.0E-02	P					1	No	Ethylene Diamine	107153					1.4E+03			1.4E+03	
				2.0E+00	I	4.0E-01	C			1	Yes	Ethylene Glycol	107211					3.1E+04	3.7E+07		3.1E+04	
				1.0E-01	I	1.6E+00	I			1	Yes	Ethylene Glycol Monobutyl Ether	111762					1.6E+03	1.0E+05		1.5E+03	
3.1E-01	C	8.8E-05	C			3.0E-02	C	V		1	Yes	Ethylene Oxide	75218	2.2E-01	4.6E+01	5.5E-02	4.4E-02			6.3E+01	6.3E+01	
4.5E-02	C	1.3E-05	C	8.0E-05	I					1	Yes	Ethylene Thiourea	96457	1.5E+00	8.6E+02		1.5E+00	1.3E+00	7.0E+02		1.2E+00	
6.5E+01	C	1.9E-02	C					V		1	Yes	Ethyleneimine	151564	1.0E-03	2.1E-01	2.6E-04	2.1E-04					
				3.0E+00	I					1	Yes	Ethylphthalyl Ethyl Glycolate	84720					4.7E+04	1.1E+06		4.5E+04	
				8.0E-03	I					1	No	Express	101200480					1.3E+02			1.3E+02	
				2.5E-04	I					1	Yes	Fenamiphos	22224926					3.9E+00	2.4E+01		3.4E+00	
				2.5E-02	I					1	Yes	Fenpropathrin	39515418					3.9E+02	5.2E+01		4.6E+01	
				1.3E-02	I					1	Yes	Fluometuron	2164172					2.0E+02	2.4E+03		1.9E+02	
				4.0E-02	C	1.3E-02	C			1	Yes	Fluoride	16984488					6.3E+02	9.5E+04		6.2E+02	
				6.0E-02	I	1.3E-02	C			1	Yes	Fluorine (Soluble Fluoride)	7782414					9.4E+02	1.4E+05		9.3E+02	4.0E+03
				8.0E-02	I					1	Yes	Fluridone	59756604					1.3E+03	1.0E+04		1.1E+03	
				2.0E-02	I					1	Yes	Flurprimidol	56425913					3.1E+02	1.7E+03		2.6E+02	
				6.0E-02	I					1	Yes	Flutolanil	66332965					9.4E+02	3.2E+03		7.2E+02	
				1.0E-02	I					1	No	Fluvalinate	69409945					1.6E+02			1.6E+02	
3.5E-03	I			1.0E-01	I					1	Yes	Folpet	133073	1.9E+01	1.8E+02		1.7E+01	1.6E+03	1.5E+04		1.4E+03	
1.9E-01	I									1	Yes	Fomesafen	72178020	3.5E-01	7.7E+00		3.4E-01					
				2.0E-03	I					1	Yes	Fonofos	944229					3.1E+01	4.4E+01		1.8E+01	
		1.3E-05	I	2.0E-01	I	9.8E-03	A			1	Yes	Formaldehyde	50000					3.1E+03	2.0E+05		3.1E+03	
				9.0E-01	P	3.0E-04	X			1	Yes	Formic Acid	64186					1.4E+04	4.1E+06		1.4E+04	
				3.0E+00	I					1	No	Fosetyl-AL	39148248					4.7E+04			4.7E+04	
												Furans										
				1.0E-03	X			V		1	Yes	~Dibenzofuran	132649					1.6E+01	9.2E+00		5.8E+00	
				1.0E-03	I			V		1	Yes	~Furan	110009					1.6E+01	3.1E+02		1.5E+01	
				9.0E-01	I	2.0E+00	I	V		1	Yes	~Tetrahydrofuran	109999					1.4E+04	1.1E+06	4.2E+03	3.2E+03	
3.8E+00	H									1	Yes	Furazolidone	67458	1.8E-02	8.7E+00		1.8E-02					
				3.0E-03	I	5.0E-02	H			1	Yes	Furfural	98011					4.7E+01	4.9E+03		4.6E+01	
1.5E+00	C	4.3E-04	C							1	Yes	Furium	531828	4.5E-02	1.6E+00		4.4E-02					
3.0E-02	I	8.6E-06	C							1	Yes	Furmecyclox	60568050	2.2E+00	1.7E+00		9.6E-01					
				4.0E-04	I					1	No	Glufosinate, Ammonium	77182822					6.3E+00			6.3E+00	
						8.0E-05	C			1	No	Glutaraldehyde	111308									
				4.0E-04	I	1.0E-03	H			1	No	Glycidyl	765344					6.3E+00			6.3E+00	
				1.0E-01	I					1	No	Glyphosate	1071836					1.6E+03			1.6E+03	7.0E+02
				3.0E-03	I					1	Yes	Goal	42874033					4.7E+01	4.7E+01		2.4E+01	
				3.0E-03	A	1.0E-02	A			1	Yes	Guthion	86500					4.7E+01	5.9E+02		4.3E+01	
				5.0E-05	I					1	Yes	Haloxyfop, Methyl	69806402					7.8E-01	2.2E+00		5.8E-01	

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Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				1.3E-02	I					1	Yes	Harmony	79277273					2.0E+02	2.5E+04		2.0E+02	
4.5E+00	I	1.3E-03	I	5.0E-04	I					1	Yes	Heptachlor	76448	1.5E-02	2.0E-03		1.8E-03	7.8E+00	1.0E+00		9.2E-01	4.0E-01
9.1E+00	I	2.6E-03	I	1.3E-05	I					1	Yes	Heptachlor Epoxide	1024573	7.4E-03	6.1E-03		3.3E-03	2.0E-01	1.7E-01		9.2E-02	2.0E-01
				2.0E-03	I					1	No	Hexabromobenzene	87821					3.1E+01			3.1E+01	
				2.0E-04	I					1	No	Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	68631492					3.1E+00			3.1E+00	
1.6E+00	I	4.6E-04	I	8.0E-04	I					1	No	Hexachlorobenzene	118741	4.2E-02			4.2E-02	1.3E+01			1.3E+01	1.0E+00
7.8E-02	I	2.2E-05	I	1.0E-03	P					1	Yes	Hexachlorobutadiene	87683	8.6E-01	3.7E-01		2.6E-01	1.6E+01	6.8E+00		4.7E+00	
6.3E+00	I	1.8E-03	I	8.0E-03	A					1	Yes	Hexachlorocyclohexane, Alpha-	319846	1.1E-02	1.5E-02		6.2E-03	1.3E+02	1.7E+02		7.3E+01	
1.8E+00	I	5.3E-04	I							1	Yes	Hexachlorocyclohexane, Beta-	319857	3.7E-02	5.2E-02		2.2E-02					
1.1E+00	C	3.1E-04	C	3.0E-04	I					1	Yes	Hexachlorocyclohexane, Gamma- (Lindane)	58899	6.1E-02	8.5E-02		3.6E-02	4.7E+00	6.6E+00		2.7E+00	2.0E-01
1.8E+00	I	5.1E-04	I							1	Yes	Hexachlorocyclohexane, Technical	608731	3.7E-02	5.2E-02		2.2E-02					
				6.0E-03	I	2.0E-04	I			1	Yes	Hexachlorocyclopentadiene	77474					9.4E+01	2.9E+01		2.2E+01	5.0E+01
4.0E-02	I	1.1E-05	C	7.0E-04	I	3.0E-02	I			1	Yes	Hexachloroethane	67721	1.7E+00	1.5E+00		7.9E-01	1.1E+01	9.7E+00		5.1E+00	
				3.0E-04	I					1	No	Hexachlorophene	70304					4.7E+00			4.7E+00	
1.1E-01	I			3.0E-03	I					1	Yes	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121824	6.1E-01	7.3E+01		6.1E-01	4.7E+01	5.6E+03		4.7E+01	
						1.0E-05	I	V		1	No	Hexamethylene Diisocyanate, 1,6-	822060							2.1E-02	2.1E-02	
				4.0E-04	P					1	Yes	Hexamethylphosphoramide	680319					6.3E+00	1.4E+03		6.2E+00	
				6.0E-02	H	7.0E-01	I	V		1	Yes	Hexane, N-	110543					9.4E+02	4.5E+02	1.5E+03	2.5E+02	
				2.0E+00	P					1	Yes	Hexanedioic Acid	124049					3.1E+04	7.7E+06		3.1E+04	
				5.0E-03	I	3.0E-02	I	V		1	Yes	Hexanone, 2-	591786					7.8E+01	1.9E+03	6.3E+01	3.4E+01	
				3.3E-02	I					1	Yes	Hexazinone	51235042					5.2E+02	1.7E+04		5.0E+02	
3.0E+00	I	4.9E-03	I			3.0E-05	P			1	No	Hydrazine	302012	2.2E-02			2.2E-02					
3.0E+00	I	4.9E-03	I							1	Yes	Hydrazine Sulfate	10034932	2.2E-02	4.2E+00		2.2E-02					
						2.0E-02	I			1	Yes	Hydrogen Chloride	7647010									
				4.0E-02	C	1.4E-02	C			1	Yes	Hydrogen Fluoride	7664393					6.3E+02	9.5E+04		6.2E+02	
						2.0E-03	I			1	Yes	Hydrogen Sulfide	7783064									
6.0E-02	P			4.0E-02	P					1	Yes	Hydroquinone	123319	1.1E+00	1.0E+02		1.1E+00	6.3E+02	5.6E+04		6.2E+02	
				1.3E-02	I					1	Yes	Imazalil	35554440					2.0E+02	4.8E+02		1.4E+02	
				2.5E-01	I					1	Yes	Imazaquin	81335377					3.9E+03	1.8E+05		3.8E+03	
				1.0E-02	A					1	Yes	Iodine	7553562					1.6E+02	2.4E+04		1.6E+02	
				4.0E-02	I					1	Yes	Iprodione	36734197					6.3E+02	6.4E+03		5.7E+02	
				7.0E-01	P					1	Yes	Iron	7439896					1.1E+04	1.7E+06		1.1E+04	
				3.0E-01	I					1	Yes	Isobutyl Alcohol	78831					4.7E+03	2.4E+05		4.6E+03	
9.5E-04	I			2.0E-01	I	2.0E+00	C			1	Yes	Isophorone	78591	7.1E+01	1.4E+03		6.7E+01	3.1E+03	6.1E+04		3.0E+03	
				1.5E-02	I					1	No	Isopropalin	33820530					2.3E+02			2.3E+02	
						7.0E+00	C			1	Yes	Isopropanol	67630									
				1.0E-01	I					1	Yes	Isopropyl Methyl Phosphonic Acid	1832548					1.6E+03	2.7E+05		1.6E+03	
				5.0E-02	I					1	Yes	Isoxaben	82558507					7.8E+02	1.9E+03		5.6E+02	
						3.0E-01	A	V		1	No	JP-7	NA							6.3E+02	6.3E+02	
				7.5E-02	I					1	Yes	Kerb	23950585					1.2E+03	3.9E+03		9.0E+02	
				2.0E-03	I					1	Yes	Lactofen	77501634					3.1E+01	4.7E+01		1.9E+01	
												Lead Compounds										
2.8E-01	C	8.0E-05	C							1	No	~Lead acetate	301042	2.4E-01			2.4E-01					
										1	Yes	~Lead and Compounds	7439921									1.5E+01
3.8E-02	C	1.1E-05	C							1	No	~Lead subacetate	1335326	1.8E+00			1.8E+00					
				1.0E-07	I					1	Yes	~Tetraethyl Lead	78002					1.6E-03	2.7E-03		9.9E-04	
				2.0E-03	I					1	Yes	Linuron	330552					3.1E+01	1.4E+02		2.6E+01	
				2.0E-03	P					1	Yes	Lithium	7439932					3.1E+01	4.7E+03		3.1E+01	
				2.0E-01	I					1	Yes	Londax	83055996					3.1E+03	1.7E+05		3.1E+03	
				5.0E-04	I					1	Yes	MCPA	94746					7.8E+00	2.1E+01		5.7E+00	
				1.0E-02	I					1	No	MCPB	94815					1.6E+02			1.6E+02	
				1.0E-03	I					1	Yes	MCPP	93652					1.6E+01	5.1E+01		1.2E+01	
				2.0E-02	I					1	Yes	Malathion	121755					3.1E+02	7.7E+03		3.0E+02	
				1.0E-01	I	7.0E-04	C			1	Yes	Maleic Anhydride	108316					1.6E+03	2.6E+04		1.5E+03	
				5.0E-01	I					1	Yes	Maleic Hydrazide	123331					7.8E+03	6.3E+06		7.8E+03	
				1.0E-04	P					1	Yes	Malononitrile	109773					1.6E+00	6.0E+02		1.6E+00	
				3.0E-02	H					1	Yes	Mancozeb	8018017					4.7E+02	7.8E+04		4.7E+02	

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CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

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Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				5.0E-03	I					1	No	Maneb	12427382					7.8E+01			7.8E+01	
				2.4E-02	S	5.0E-05	I			0.04	Yes	Manganese (Non-diet)	7439965					3.8E+02	2.3E+03		3.2E+02	
				9.0E-05	H					1	Yes	Mephosfolan	950107					1.4E+00	1.8E+02		1.4E+00	
				3.0E-02	I					1	No	Mepiquat Chloride	24307264					4.7E+02			4.7E+02	
												Mercury Compounds										
				3.0E-04	I	3.0E-05	C			0.07	Yes	~Mercuric Chloride (and other Mercury salts)	7487947					4.7E+00	5.0E+01		4.3E+00	2.0E+00
						3.0E-04	I	V		1	Yes	~Mercury (elemental)	7439976							6.3E-01	6.3E-01	2.0E+00
				1.0E-04	I					1	Yes	~Methyl Mercury	22967926					1.6E+00	2.4E+02		1.6E+00	
				8.0E-05	I					1	Yes	~Phenylmercuric Acetate	62384					1.3E+00	4.0E+02		1.2E+00	
				3.0E-05	I					1	No	Merphos	150505					4.7E-01			4.7E-01	
				3.0E-05	I					1	Yes	Merphos Oxide	78488					4.7E-01	7.0E-02		6.1E-02	
				6.0E-02	I					1	Yes	Metalaxyl	57837191					9.4E+02	4.5E+04		9.2E+02	
				1.0E-04	I	7.0E-04	H	V		1	Yes	Methacrylonitrile	126987					1.6E+00	8.5E+01	1.5E+00	7.5E-01	
				5.0E-05	I					1	Yes	Methamidophos	10265926					7.8E-01	7.2E+02		7.8E-01	
				5.0E-01	I	4.0E+00	C			1	Yes	Methanol	67561					7.8E+03	2.8E+06		7.8E+03	
				1.0E-03	I					1	Yes	Methidathion	950378					1.6E+01	4.1E+02		1.5E+01	
				2.5E-02	I					1	Yes	Methomyl	16752775					3.9E+02	4.8E+04		3.9E+02	
4.9E-02	C	1.4E-05	C							1	Yes	Methoxy-5-nitroaniline, 2-	99592	1.4E+00	4.6E+01		1.3E+00					
				5.0E-03	I					1	Yes	Methoxychlor	72435					7.8E+01	4.2E+01		2.7E+01	4.0E+01
				8.0E-03	P	1.0E-03	P			1	No	Methoxyethanol Acetate, 2-	110496					1.3E+02			1.3E+02	
				5.0E-03	P	2.0E-02	I			1	Yes	Methoxyethanol, 2-	109864					7.8E+01	4.2E+04		7.8E+01	
				1.0E+00	X			V		1	Yes	Methyl Acetate	79209					1.6E+04	1.9E+06		1.6E+04	
				3.0E-02	H			V		1	Yes	Methyl Acrylate	96333					4.7E+02	2.5E+04		4.6E+02	
				6.0E-01	I	5.0E+00	I	V		1	Yes	Methyl Ethyl Ketone (2-Butanone)	78933					9.4E+03	9.7E+05	1.0E+04	4.9E+03	
		1.0E-03	X	1.0E-03	P	2.0E-05	X			1	Yes	Methyl Hydrazine	60344					1.6E+01	9.9E+03		1.6E+01	
				8.0E-02	H	3.0E+00	I	V		1	Yes	Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108101					1.3E+03	3.4E+04	6.3E+03	1.0E+03	
						1.0E-03	C	V		1	Yes	Methyl Isocyanate	624839							2.1E+00	2.1E+00	
				1.4E+00	I	7.0E-01	I	V		1	Yes	Methyl Methacrylate	80626					2.2E+04	5.3E+05	1.5E+03	1.4E+03	
				2.5E-04	I					1	Yes	Methyl Parathion	298000					3.9E+00	2.9E+01		3.4E+00	
				6.0E-02	X					1	No	Methyl Phosphonic Acid	993135					9.4E+02			9.4E+02	
				6.0E-03	H	4.0E-02	H	V		1	Yes	Methyl Styrene (Mixed Isomers)	25013154					9.4E+01	1.1E+02	8.3E+01	3.1E+01	
9.9E-02	C	2.8E-05	C							1	No	Methyl methanesulfonate	66273	6.8E-01			6.8E-01					
1.8E-03	C	2.6E-07	C			3.0E+00	I	V		1	Yes	Methyl tert-Butyl Ether (MTBE)	1634044	3.7E+01	1.7E+03	1.9E+01	1.2E+01			6.3E+03	6.3E+03	
				2.0E-04	X					1	Yes	Methyl-1,4-benzenediamine dihydrochloride, 2-	615452					3.1E+00	2.8E+04		3.1E+00	
9.0E-03	P			2.0E-02	X					1	Yes	Methyl-5-Nitroaniline, 2-	99558	7.5E+00	1.2E+02		7.0E+00	3.1E+02	5.2E+03		2.9E+02	
8.3E+00	C	2.4E-03	C							1	No	Methyl-N-nitro-N-nitrosoguanidine, N-	70257	8.1E-03			8.1E-03					
1.3E-01	C	3.7E-05	C							1	Yes	Methylaniline Hydrochloride, 2-	636215	5.2E-01	1.5E+01		5.0E-01					
				1.0E-02	A					1	No	Methylarsonic acid	124583					1.6E+02			1.6E+02	
				2.0E-04	X					1	No	Methylbenzene,1-4-diamine monohydrochloride, 2-	74612127					3.1E+00			3.1E+00	
				2.0E-04	X					1	No	Methylbenzene-1,4-diamine sulfate, 2-	615509					3.1E+00			3.1E+00	
2.2E+01	C	6.3E-03	C						M	1	No	Methylcholanthrene, 3-	56495	9.8E-04			9.8E-04					
2.0E-03	I	1.0E-08	I	6.0E-03	I	6.0E-01	I	V	M	1	Yes	Methylene Chloride	75092	1.1E+01	3.2E+02	1.9E+02	9.9E+00	9.4E+01	2.5E+03	1.3E+03	8.4E+01	5.0E+00
1.0E-01	P	4.3E-04	C	2.0E-03	P				M	1	Yes	Methylene-bis(2-chloroaniline), 4,4'-	101144	2.2E-01	4.0E-01		1.4E-01	3.1E+01	5.3E+01		2.0E+01	
4.6E-02	I	1.3E-05	C							1	Yes	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	101611	1.5E+00	1.0E+00		6.0E-01					
1.6E+00	C	4.6E-04	C			2.0E-02	C			1	Yes	Methylenebisbenzenamine, 4,4'-	101779	4.2E-02	1.4E+00		4.1E-02					
						6.0E-04	I			1	Yes	Methylenediphenyl Diisocyanate	101688									
				7.0E-02	H			V		1	Yes	Methylstyrene, Alpha-	98839					1.1E+03	1.2E+03		5.8E+02	
				1.5E-01	I					1	Yes	Metolachlor	51218452					2.3E+03	1.9E+04		2.1E+03	
				2.5E-02	I					1	Yes	Metribuzin	21087649					3.9E+02	1.3E+04		3.8E+02	
				3.0E+00	P			V		1	No	Mineral oils	8012951					4.7E+04			4.7E+04	
1.8E+01	C	5.1E-03	C	2.0E-04	I					1	No	Mirex	2385855	3.7E-03			3.7E-03	3.1E+00			3.1E+00	
				2.0E-03	I					1	Yes	Molinate	2212671					3.1E+01	8.4E+01		2.3E+01	
				5.0E-03	I					1	Yes	Molybdenum	7439987					7.8E+01	1.2E+04		7.8E+01	
				1.0E-01	I					1	Yes	Monochloramine	10599903					1.6E+03	2.4E+05		1.6E+03	
				2.0E-03	P					1	Yes	Monomethylaniline	100618					3.1E+01	5.3E+02		3.0E+01	
				3.0E-04	X					1	Yes	N,N'-Diphenyl-1,4-benzenediamine	74317					4.7E+00	6.3E+00		2.7E+00	

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Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				2.0E-03	I					1	Yes	Naled	300765					3.1E+01	4.8E+03		3.1E+01	
				3.0E-02	X	1.0E-01	P	V		1	No	Naphtha, High Flash Aromatic (HFAN)	64724956					4.7E+02		2.1E+02	1.4E+02	
1.8E+00	C	0.0E+00	C							1	Yes	Naphthylamine, 2-	91598	3.7E-02	3.1E-01		3.3E-02					
				1.0E-01	I					1	Yes	Napropamide	15299997					1.6E+03	6.4E+03		1.3E+03	
				5.0E-02	C	5.0E-05	C			0.04	Yes	Nickel Carbonyl	13463393					7.8E+02	4.7E+03		6.7E+02	
				5.0E-02	C	1.0E-04	C			1	Yes	Nickel Oxide	1313991					7.8E+02	1.2E+05		7.8E+02	
		2.4E-04	I	5.0E-02	C	5.0E-05	C			0.04	Yes	Nickel Refinery Dust	NA					7.8E+02	2.4E+04		7.6E+02	
		2.6E-04	C	2.0E-02	I	9.0E-05	A			0.04	Yes	Nickel Soluble Salts	7440020					3.1E+02	9.5E+03		3.0E+02	
1.7E+00	C	4.8E-04	I	5.0E-02	C	5.0E-05	C			0.04	Yes	Nickel Subsulfide	12035722	4.0E-02	1.5E+00		3.9E-02	7.8E+02	2.4E+04		7.6E+02	
				1.6E+00	I					1	Yes	Nitrate	14797558					2.5E+04	3.8E+06		2.5E+04	1.0E+04
				1.0E-01	I					1	Yes	Nitrite	14797650					1.6E+03	2.4E+05		1.6E+03	1.0E+03
				1.0E-02	X	5.0E-05	X			1	Yes	Nitroaniline, 2-	88744					1.6E+02	2.4E+03		1.5E+02	
2.0E-02	P			4.0E-03	P	6.0E-03	P			1	Yes	Nitroaniline, 4-	100016	3.4E+00	1.1E+02		3.3E+00	6.3E+01	2.0E+03		6.1E+01	
		4.0E-05	I	2.0E-03	I	9.0E-03	I	V		1	Yes	Nitrobenzene	98953			1.2E-01	1.2E-01	3.1E+01	4.4E+02	1.9E+01	1.1E+01	
				3.0E+03	P					1	No	Nitrocellulose	9004700					4.7E+07			4.7E+07	
				7.0E-02	H					1	Yes	Nitrofurantoin	67209					1.1E+03	1.1E+06		1.1E+03	
1.3E+00	C	3.7E-04	C							1	Yes	Nitrofurazone	59870	5.2E-02	1.4E+01		5.2E-02					
1.7E-02	P			1.0E-04	P					1	Yes	Nitroglycerin	55630	4.0E+00	1.6E+02		3.9E+00	1.6E+00	6.2E+01		1.5E+00	
				1.0E-01	I					1	Yes	Nitroguanidine	556887					1.6E+03	1.3E+06		1.6E+03	
		9.0E-06	P			2.0E-02	P	V		1	Yes	Nitromethane	75525			5.4E-01	5.4E-01			4.2E+01	4.2E+01	
		2.7E-03	H			2.0E-02	I	V		1	Yes	Nitropropane, 2-	79469			1.8E-03	1.8E-03			4.2E+01	4.2E+01	
2.7E+01	C	7.7E-03	C						M	1	Yes	Nitroso-N-ethylurea, N-	759739	8.0E-04	1.4E-01		7.9E-04					
1.2E+02	C	3.4E-02	C						M	1	Yes	Nitroso-N-methylurea, N-	684935	1.8E-04	4.3E-02		1.8E-04					
5.4E+00	I	1.6E-03	I					V		1	Yes	Nitroso-di-N-butylamine, N-	924163	1.2E-02	6.7E-02	3.0E-03	2.4E-03					
7.0E+00	I	2.0E-03	C							1	Yes	Nitroso-di-N-propylamine, N-	621647	9.6E-03	3.0E-01		9.3E-03					
2.8E+00	I	8.0E-04	C							1	Yes	Nitrosodiethanolamine, N-	1116547	2.4E-02	4.4E+01		2.4E-02					
1.5E+02	I	4.3E-02	I						M	1	Yes	Nitrosodiethylamine, N-	55185	1.4E-04	1.6E-02		1.4E-04					
5.1E+01	I	1.4E-02	I	8.0E-06	P	4.0E-05	X		M	1	Yes	Nitrosodimethylamine, N-	62759	4.2E-04	1.9E-01		4.2E-04	1.3E-01	4.9E+01		1.2E-01	
4.9E-03	I	2.6E-06	C							1	Yes	Nitrosodiphenylamine, N-	86306	1.4E+01	4.4E+01		1.0E+01					
2.2E+01	I	6.3E-03	C							1	Yes	Nitrosomethylethylamine, N-	10595956	3.1E-03	5.5E-01		3.0E-03					
6.7E+00	C	1.9E-03	C							1	Yes	Nitrosomorpholine [N-]	59892	1.0E-02	4.5E+00		1.0E-02					
9.4E+00	C	2.7E-03	C							1	Yes	Nitrosopiperidine [N-]	100754	7.2E-03	9.3E-01		7.1E-03					
2.1E+00	I	6.1E-04	I							1	Yes	Nitrosopyrrolidine, N-	930552	3.2E-02	8.8E+00		3.2E-02					
				1.0E-04	X					1	Yes	Nitrotoluene, m-	99081					1.6E+00	9.7E+00		1.3E+00	
2.2E-01	P			9.0E-04	P			V		1	Yes	Nitrotoluene, o-	88722	3.1E-01	2.4E+00		2.7E-01	1.4E+01	1.1E+02		1.2E+01	
1.6E-02	P			4.0E-03	P					1	Yes	Nitrotoluene, p-	99990	4.2E+00	2.9E+01		3.7E+00	6.3E+01	4.4E+02		5.5E+01	
				3.0E-04	X	2.0E-01	P	V		1	No	Nonane, n-	111842					4.7E+00		4.2E+02	4.6E+00	
				4.0E-02	I					1	Yes	Norflurazon	27314132					6.3E+02	1.4E+04		6.0E+02	
				7.0E-04	I					1	Yes	Nustar	85509199					1.1E+01	3.5E+01		8.3E+00	
				3.0E-03	I					1	No	Octabromodiphenyl Ether	32536520					4.7E+01			4.7E+01	
				5.0E-02	I					1	Yes	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX)	2691410					7.8E+02	4.5E+05		7.8E+02	
				2.0E-03	H					1	No	Octamethylpyrophosphoramide	152169					3.1E+01			3.1E+01	
				5.0E-02	I					1	Yes	Oryzalin	19044883					7.8E+02	2.9E+03		6.2E+02	
				5.0E-03	I					1	Yes	Oxadiazon	19666309					7.8E+01	6.4E+01		3.5E+01	
				2.5E-02	I					1	Yes	Oxamyl	23135220					3.9E+02	3.6E+05		3.9E+02	2.0E+02
				1.3E-02	I					1	Yes	Paclobutrazol	76738620					2.0E+02	1.2E+03		1.7E+02	
				4.5E-03	I					1	Yes	Paraquat Dichloride	1910425					7.0E+01	2.5E+06		7.0E+01	
				6.0E-03	H					1	Yes	Parathion	56382					9.4E+01	2.1E+02		6.5E+01	
				5.0E-02	H					1	Yes	Pebulate	1114712					7.8E+02	9.0E+02		4.2E+02	
				4.0E-02	I					1	Yes	Pendimethalin	40487421					6.3E+02	1.7E+02		1.3E+02	
				2.0E-03	I					1	No	Pentabromodiphenyl Ether	32534819					3.1E+01			3.1E+01	
				1.0E-04	I					1	No	Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99)	60348609					1.6E+00			1.6E+00	
				8.0E-04	I					1	Yes	Pentachlorobenzene	608935					1.3E+01	2.8E+00		2.3E+00	
9.0E-02	P									1	Yes	Pentachloroethane	76017	7.5E-01	2.2E+00		5.6E-01					
2.6E-01	H			3.0E-03	I					1	Yes	Pentachloronitrobenzene	82688	2.6E-01	1.7E-01		1.0E-01	4.7E+01	3.1E+01		1.9E+01	
4.0E-01	I	5.1E-06	C	5.0E-03	I					1	No	Pentachlorophenol	87865	1.7E-01			1.7E-01	7.8E+01			7.8E+01	1.0E+00
4.0E-03	X			2.0E-03	P					1	Yes	Pentaerythritol tetranitrate (PETN)	78115	1.7E+01	3.7E+02		1.6E+01	3.1E+01	6.8E+02		3.0E+01	

TABLE N-2
REGIONAL SCREENING LEVEL (RSL) TAPWATER SUPPORTING TABLE APRIL 2012
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; Y = New York; O = EPA Office of Water; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide); SSL values are based on DAF=1

Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
						1.0E+00	P	V		1	Yes	Pentane, n-	109660							2.1E+03	2.1E+03	
												Perchlorates										
				7.0E-04	I					1	Yes	~Ammonium Perchlorate	7790989					1.1E+01	1.7E+03		1.1E+01	
				7.0E-04	I					1	Yes	~Lithium Perchlorate	7791039					1.1E+01	1.7E+03		1.1E+01	
				7.0E-04	I					1	Yes	~Perchlorate and Perchlorate Salts	14797730					1.1E+01	1.7E+03		1.1E+01	1.5E+01
				7.0E-04	I					1	Yes	~Potassium Perchlorate	7778747					1.1E+01	8.3E+02		1.1E+01	
				7.0E-04	I					1	Yes	~Sodium Perchlorate	7601890					1.1E+01	1.7E+03		1.1E+01	
				5.0E-02	I					1	No	Permethrin	52645531					7.8E+02			7.8E+02	
2.2E-03	C	6.3E-07	C							1	Yes	Phenacetin	62442	3.1E+01	9.4E+02		3.0E+01					
				2.5E-01	I					1	Yes	Phenmedipham	13684634					3.9E+03	1.3E+04		3.0E+03	
				3.0E-01	I	2.0E-01	C			1	Yes	Phenol	108952					4.7E+03	9.6E+04		4.5E+03	
				5.0E-04	X					1	Yes	Phenothiazine	92842					7.8E+00	5.4E+00		3.2E+00	
				6.0E-03	I					1	Yes	Phenylenediamine, m-	108452					9.4E+01	3.4E+04		9.4E+01	
4.7E-02	H									1	Yes	Phenylenediamine, o-	95545	1.4E+00	2.5E+02		1.4E+00					
				1.9E-01	H					1	Yes	Phenylenediamine, p-	106503					3.0E+03	1.0E+06		3.0E+03	
1.9E-03	H									1	Yes	Phenylphenol, 2-	90437	3.5E+01	1.0E+02		2.6E+01					
				2.0E-04	H					1	Yes	Phorate	298022					3.1E+00	8.7E+00		2.3E+00	
						3.0E-04	I	V		1		Phosgene	75445									
				2.0E-02	I					1	Yes	Phosmet	732116					3.1E+02	3.7E+03		2.9E+02	
												Phosphates, Inorganic										
				4.9E+01	P					1	Yes	~Aluminum metaphosphate	13776880					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Ammonium polyphosphate	68333799					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Calcium pyrophosphate	7790763					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Diammonium phosphate	7783280					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Dicalcium phosphate	7757939					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Dimagnesium phosphate	7782754					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Dipotassium phosphate	7758114					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Disodium phosphate	7558794					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Monoaluminum phosphate	13530502					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Monoammonium phosphate	7722761					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Monocalcium phosphate	7758238					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Monomagnesium phosphate	7757860					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Monopotassium phosphate	7778770					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Monosodium phosphate	7558807					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Polyphosphoric acid	8017161					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Potassium tripolyphosphate	13845368					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Sodium acid pyrophosphate	7758169					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Sodium aluminum phosphate (acidic)	7785888					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Sodium aluminum phosphate (anhydrous)	10279591					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Sodium aluminum phosphate (tetrahydrate)	10305767					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Sodium hexametaphosphate	10124568					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Sodium polyphosphate	68915311					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Sodium trimetaphosphate	7785844					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Sodium tripolyphosphate	7758294					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Tetrapotassium phosphate	7320345					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Tetrasodium pyrophosphate	7722885					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Trialuminum sodium tetra decahydrogenoctaorthophosphate (dihydrate)	15136875					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Tricalcium phosphate	7758874					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Trimagnesium phosphate	7757871					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Tripotassium phosphate	7778532					7.6E+05	1.2E+08		7.6E+05	
				4.9E+01	P					1	Yes	~Trisodium phosphate	7601549					7.6E+05	1.2E+08		7.6E+05	
				3.0E-04	I	3.0E-04	I			1	Yes	Phosphine	7803512					4.7E+00	7.1E+02		4.7E+00	
				4.9E+01	P	1.0E-02	I			1	Yes	Phosphoric Acid	7664382					7.6E+05	1.2E+08		7.6E+05	
				2.0E-05	I					1	Yes	Phosphorus, White	7723140					3.1E-01	4.7E+01		3.1E-01	
				1.0E+00	H					1	Yes	Phthalic Acid, P-	100210					1.6E+04	2.3E+05		1.5E+04	
				2.0E+00	I	2.0E-02	C			1	Yes	Phthalic Anhydride	85449					3.1E+04	7.6E+05		3.0E+04	
				7.0E-02	I					1	Yes	Picloram	1918021					1.1E+03	3.1E+04		1.1E+03	5.0E+02

TABLE N-2
REGIONAL SCREENING LEVEL (RSL) TAPWATER SUPPORTING TABLE APRIL 2012
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

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Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				1.0E-04	X					1	Yes	Picramic Acid (2-Amino-4,6-dinitrophenol)	96913					1.6E+00	1.5E+02		1.5E+00	
				1.0E-02	I					1	Yes	Pirimiphos, Methyl	29232937					1.6E+02	2.2E+02		9.1E+01	
3.0E+01	C	8.6E-03	C	7.0E-06	H					1	No	Polybrominated Biphenyls	59536651	2.2E-03			2.2E-03	1.1E-01			1.1E-01	
												Polychlorinated Biphenyls (PCBs)										
7.0E-02	S	2.0E-05	S	7.0E-05	I					1	No	~Aroclor 1016	12674112	9.6E-01			9.6E-01	1.1E+00			1.1E+00	
2.0E+00	S	5.7E-04	S					V		1	Yes	~Aroclor 1221	11104282	3.4E-02	1.2E-02	8.5E-03	4.3E-03					
2.0E+00	S	5.7E-04	S					V		1	Yes	~Aroclor 1232	11141165	3.4E-02	1.2E-02	8.5E-03	4.3E-03					
2.0E+00	S	5.7E-04	S							1	No	~Aroclor 1242	53469219	3.4E-02			3.4E-02					
2.0E+00	S	5.7E-04	S							1	No	~Aroclor 1248	12672296	3.4E-02			3.4E-02					
2.0E+00	S	5.7E-04	S	2.0E-05	I					1	No	~Aroclor 1254	11097691	3.4E-02			3.4E-02	3.1E-01			3.1E-01	
2.0E+00	S	5.7E-04	S							1	No	~Aroclor 1260	11096825	3.4E-02			3.4E-02					
3.9E+00	E	1.1E-03	E	3.3E-05	E	1.3E-03	E			1	No	~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189)	39635319	1.7E-02			1.7E-02	5.2E-01			5.2E-01	
3.9E+00	E	1.1E-03	E	3.3E-05	E	1.3E-03	E			1	No	~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)	52663726	1.7E-02			1.7E-02	5.2E-01			5.2E-01	
3.9E+00	E	1.1E-03	E	3.3E-05	E	1.3E-03	E			1	No	~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)	69782907	1.7E-02			1.7E-02	5.2E-01			5.2E-01	
3.9E+00	E	1.1E-03	E	3.3E-05	E	1.3E-03	E			1	No	~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)	38380084	1.7E-02			1.7E-02	5.2E-01			5.2E-01	
3.9E+03	E	1.1E+00	E	3.3E-08	E	1.3E-06	E			1	No	~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)	32774166	1.7E-05			1.7E-05	5.2E-04			5.2E-04	
3.9E+00	E	1.1E-03	E	3.3E-05	E	1.3E-03	E			1	No	~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)	65510443	1.7E-02			1.7E-02	5.2E-01			5.2E-01	
3.9E+00	E	1.1E-03	E	3.3E-05	E	1.3E-03	E			1	No	~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)	31508006	1.7E-02			1.7E-02	5.2E-01			5.2E-01	
3.9E+00	E	1.1E-03	E	3.3E-05	E	1.3E-03	E			1	No	~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)	32598144	1.7E-02			1.7E-02	5.2E-01			5.2E-01	
3.9E+00	E	1.1E-03	E	3.3E-05	E	1.3E-03	E			1	No	~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)	74472370	1.7E-02			1.7E-02	5.2E-01			5.2E-01	
1.3E+04	E	3.8E+00	E	1.0E-08	E	4.0E-07	E			1	No	~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)	57465288	5.2E-06			5.2E-06	1.6E-04			1.6E-04	
2.0E+00	I	5.7E-04	I							1		~Polychlorinated Biphenyls (high risk)	1336363									
4.0E-01	I	1.0E-04	I							1	No	~Polychlorinated Biphenyls (low risk)	1336363	1.7E-01			1.7E-01					5.0E-01
7.0E-02	I	2.0E-05	I							1		~Polychlorinated Biphenyls (lowest risk)	1336363									
1.3E+01	E	3.8E-03	E	1.0E-05	E	4.0E-04	E			1	No	~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598133	5.2E-03			5.2E-03	1.6E-01			1.6E-01	
3.9E+01	E	1.1E-02	E	3.3E-06	E	1.3E-04	E			1	No	~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362504	1.7E-03			1.7E-03	5.2E-02			5.2E-02	
						6.0E-04	I			1	No	Polymeric Methylene Diphenyl Diisocyanate (PMDI	9016879									
												Polynuclear Aromatic Hydrocarbons (PAHs)										
				6.0E-02	I			V		1	Yes	~Acenaphthene	83329					9.4E+02	6.8E+02		4.0E+02	
				3.0E-01	I			V		1	Yes	~Anthracene	120127					4.7E+03	1.8E+03		1.3E+03	
7.3E-01	E	1.1E-04	C						M	1	No	~Benz[a]anthracene	56553	2.9E-02			2.9E-02					
1.2E+00	C	1.1E-04	C							1	No	~Benzo(j)fluoranthene	205823	5.6E-02			5.6E-02					
7.3E+00	I	1.1E-03	C						M	1	No	~Benzo[a]pyrene	50328	2.9E-03			2.9E-03					2.0E-01
7.3E-01	E	1.1E-04	C						M	1	No	~Benzo[b]fluoranthene	205992	2.9E-02			2.9E-02					
7.3E-02	E	1.1E-04	C						M	1	No	~Benzo[k]fluoranthene	207089	2.9E-01			2.9E-01					
7.3E-03	E	1.1E-05	C						M	1	No	~Chrysene	218019	2.9E+00			2.9E+00					
7.3E+00	E	1.2E-03	C						M	1	No	~Dibenz[a,h]anthracene	53703	2.9E-03			2.9E-03					
1.2E+01	C	1.1E-03	C							1	No	~Dibenzo(a,e)pyrene	192654	5.6E-03			5.6E-03					
2.5E+02	C	7.1E-02	C						M	1	No	~Dimethylbenz(a)anthracene, 7,12-	57976	8.6E-05			8.6E-05					
				4.0E-02	I					1	No	~Fluoranthene	206440					6.3E+02			6.3E+02	
				4.0E-02	I			V		1	Yes	~Fluorene	86737					6.3E+02	3.3E+02		2.2E+02	
7.3E-01	E	1.1E-04	C						M	1	No	~Indeno[1,2,3-cd]pyrene	193395	2.9E-02			2.9E-02					
2.9E-02	P			7.0E-02	A			V		1	Yes	~Methylnaphthalene, 1-	90120	2.3E+00	1.7E+00		9.7E-01	1.1E+03	7.9E+02		4.6E+02	
				4.0E-03	I			V		1	Yes	~Methylnaphthalene, 2-	91576					6.3E+01	4.6E+01		2.7E+01	
		3.4E-05	C	2.0E-02	I	3.0E-03	I	V		1	Yes	~Naphthalene	91203			1.4E-01	1.4E-01	3.1E+02	5.0E+02	6.3E+00	6.1E+00	
1.2E+00	C	1.1E-04	C							1	Yes	~Nitropyrene, 4-	57835924	5.6E-02	2.3E-02		1.6E-02					
				3.0E-02	I			V		1	Yes	~Pyrene	129000					4.7E+02	1.1E+02		8.7E+01	
1.5E-01	I			9.0E-03	I					1	Yes	Prochloraz	67747095	4.5E-01	1.2E+00		3.2E-01	1.4E+02	3.6E+02		1.0E+02	
				6.0E-03	H					1	Yes	Profluralin	26399360					9.4E+01	2.3E+01		1.9E+01	
				1.5E-02	I					1	Yes	Prometon	1610180					2.3E+02	1.1E+03		1.9E+02	
				4.0E-03	I					1	Yes	Prometryn	7287196					6.3E+01	1.7E+02		4.5E+01	
				1.3E-02	I					1	Yes	Propachlor	1918167					2.0E+02	3.1E+03		1.9E+02	
				5.0E-03	I					1	Yes	Propanil	709988					7.8E+01	3.1E+02		6.3E+01	
				2.0E-02	I					1	Yes	Propargite	2312358					3.1E+02	1.9E+02		1.2E+02	
				2.0E-03	I					1	Yes	Propargyl Alcohol	107197					3.1E+01	7.8E+03		3.1E+01	
				2.0E-02	I					1	Yes	Propazine	139402					3.1E+02	1.7E+03		2.6E+02	
				2.0E-02	I					1	Yes	Propham	122429					3.1E+02	2.0E+03		2.7E+02	

TABLE N-2
REGIONAL SCREENING LEVEL (RSL) TAPWATER SUPPORTING TABLE APRIL 2012
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; Y = New York; O = EPA Office of Water; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide); SSL values are based on DAF=1

Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				1.3E-02	I					1	Yes	Propiconazole	60207901					2.0E+02	7.5E+02		1.6E+02	
						8.0E-03	I	V		1	Yes	Propionaldehyde	123386							1.7E+01	1.7E+01	
				1.0E-01	X	1.0E+00	X	V		1	Yes	Propyl benzene	103651					1.6E+03	1.3E+03	2.1E+03	5.3E+02	
						3.0E+00	C	V		1	Yes	Propylene	115071							6.3E+03	6.3E+03	
				2.0E+01	P					1	Yes	Propylene Glycol	57556					3.1E+05	2.1E+08		3.1E+05	
						2.7E-04	A			1	No	Propylene Glycol Dinitrate	6423434									
				7.0E-01	H					1	Yes	Propylene Glycol Monoethyl Ether	1569024					1.1E+04	2.2E+06		1.1E+04	
				7.0E-01	H	2.0E+00	I			1	Yes	Propylene Glycol Monomethyl Ether	107982					1.1E+04	4.3E+06		1.1E+04	
2.4E-01	I	3.7E-06	I			3.0E-02	I	V		1	Yes	Propylene Oxide	75569	2.8E-01	4.0E+01	1.3E+00	2.3E-01			6.3E+01	6.3E+01	
				2.5E-01	I					1	No	Pursuit	81335775					3.9E+03			3.9E+03	
				2.5E-02	I					1	No	Pydrin	51630581					3.9E+02			3.9E+02	
				1.0E-03	I			V		1	Yes	Pyridine	110861					1.6E+01	9.9E+02		1.5E+01	
				5.0E-04	I					1	Yes	Quinalphos	13593038					7.8E+00	7.3E+00		3.8E+00	
3.0E+00	I									1	Yes	Quinoline	91225	2.2E-02	2.5E-01		2.1E-02					
						3.0E-02	A			1	Yes	Refractory Ceramic Fibers	NA									
				3.0E-02	I					1	Yes	Resmethrin	10453868					4.7E+02	5.4E+01		4.8E+01	
				5.0E-02	H					1	Yes	Ronnel	299843					7.8E+02	4.8E+02		3.0E+02	
				4.0E-03	I					1	Yes	Rotenone	83794					6.3E+01	1.8E+02		4.7E+01	
2.2E-01	C	6.3E-05	C						M	1	Yes	Safrole	94597	9.8E-02	1.7E-01		6.2E-02					
				2.5E-02	I					1	Yes	Savey	78587050					3.9E+02	1.0E+02		8.1E+01	
				5.0E-03	I					1	Yes	Selenious Acid	7783008					7.8E+01	1.2E+04		7.8E+01	
				5.0E-03	I	2.0E-02	C			1	Yes	Selenium	7782492					7.8E+01	1.2E+04		7.8E+01	5.0E+01
				5.0E-03	C	2.0E-02	C			1	Yes	Selenium Sulfide	7446346					7.8E+01	1.2E+04		7.8E+01	
				9.0E-02	I					1	Yes	Sethoxydim	74051802					1.4E+03	1.7E+03		7.8E+02	
						3.0E-03	C			1	Yes	Silica (crystalline, respirable)	7631869									
				5.0E-03	I					0.04	Yes	Silver	7440224					7.8E+01	7.9E+02		7.1E+01	
1.2E-01	H			5.0E-03	I					1	Yes	Simazine	122349	5.6E-01	7.9E+00		5.2E-01	7.8E+01	1.1E+03		7.3E+01	4.0E+00
				1.3E-02	I					1	Yes	Sodium Acifluorfen	62476599					2.0E+02	1.5E+05		2.0E+02	
				4.0E-03	I					1	Yes	Sodium Azide	26628228					6.3E+01	9.5E+03		6.2E+01	
2.7E-01	H			3.0E-02	I					1	No	Sodium Diethyldithiocarbamate	148185	2.5E-01			2.5E-01	4.7E+02			4.7E+02	
				5.0E-02	A	1.3E-02	C			1	Yes	Sodium Fluoride	7681494					7.8E+02	1.2E+05		7.8E+02	
				2.0E-05	I					1	No	Sodium Fluoroacetate	62748					3.1E-01			3.1E-01	
				1.0E-03	H					1	Yes	Sodium Metavanadate	13718268					1.6E+01	2.4E+03		1.6E+01	
2.4E-02	H			3.0E-02	I					1	Yes	Stirofos (Tetrachlorovinphos)	961115	2.8E+00	1.6E+01		2.4E+00	4.7E+02	2.7E+03		4.0E+02	
				6.0E-01	I					1	Yes	Strontium, Stable	7440246					9.4E+03	1.4E+06		9.3E+03	
				3.0E-04	I					1	Yes	Strychnine	57249					4.7E+00	2.3E+02		4.6E+00	
				2.0E-01	I	1.0E+00	I	V		1	Yes	Styrene	100425					3.1E+03	7.1E+03	2.1E+03	1.1E+03	1.0E+02
				1.0E-03	P	2.0E-03	P			1	Yes	Sulfolane	126330					1.6E+01	1.2E+04		1.6E+01	
				8.0E-04	P					1	No	Sulfonylbis(4-chlorobenzene), 1,1'-	80079					1.3E+01			1.3E+01	
						1.0E-03	C			1	Yes	Sulfuric Acid	7664939									
				2.5E-02	I					1	Yes	Systhane	88671890					3.9E+02	3.4E+03		3.5E+02	
				3.0E-02	H					1	Yes	TCMTB	21564170					4.7E+02	1.7E+03		3.7E+02	
				7.0E-02	I					1	Yes	Tebuthiuron	34014181					1.1E+03	3.3E+04		1.1E+03	
				2.0E-02	H					1	No	Temephos	3383968					3.1E+02			3.1E+02	
				1.3E-02	I					1	Yes	Terbacil	5902512					2.0E+02	4.9E+03		2.0E+02	
				2.5E-05	H					1	Yes	Terbufos	13071799					3.9E-01	3.2E-01		1.8E-01	
				1.0E-03	I					1	Yes	Terbutryn	886500					1.6E+01	2.9E+01		1.0E+01	
				1.0E-04	I					1	No	Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)	5436431					1.6E+00			1.6E+00	
				3.0E-04	I					1	Yes	Tetrachlorobenzene, 1,2,4,5-	95943					4.7E+00	1.7E+00		1.2E+00	
2.6E-02	I	7.4E-06	I	3.0E-02	I			V		1	Yes	Tetrachloroethane, 1,1,1,2-	630206	2.6E+00	9.3E+00	6.6E-01	5.0E-01	4.7E+02	1.7E+03		3.7E+02	
2.0E-01	I	5.8E-05	C	2.0E-02	I			V		1	Yes	Tetrachloroethane, 1,1,2,2-	79345	3.4E-01	2.8E+00	8.4E-02	6.6E-02	3.1E+02	2.6E+03		2.8E+02	
2.1E-03	I	2.6E-07	I	6.0E-03	I	4.0E-02	I	V		1	Yes	Tetrachloroethylene	127184	3.2E+01	5.6E+01	1.9E+01	9.7E+00	9.4E+01	1.6E+02	8.3E+01	3.5E+01	5.0E+00
				3.0E-02	I					1	Yes	Tetrachlorophenol, 2,3,4,6-	58902					4.7E+02	2.8E+02		1.7E+02	
2.0E+01	H									1	No	Tetrachlorotoluene, p- alpha, alpha, alpha-	5216251	3.4E-03			3.4E-03					
				5.0E-04	I					1	Yes	Tetraethyl Dithiopyrophosphate	3689245					7.8E+00	1.7E+01		5.3E+00	
						8.0E+01	I	V		1	Yes	Tetrafluoroethane, 1,1,1,2-	811972							1.7E+05	1.7E+05	
				4.0E-03	P					1	No	Tetryl (Trinitrophenylmethylnitramine	479458					6.3E+01			6.3E+01	

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Toxicity and Chemical-specific Information												Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
				1.0E-05	X					1	Yes	Thallium (Soluble Salts)	7440280					1.6E-01	2.4E+01		1.6E-01	2.0E+00
				1.0E-02	I					1	Yes	Thiobencarb	28249776					1.6E+02	5.5E+02		1.2E+02	
				7.0E-02	X					1	Yes	Thiodiglycol	111488					1.1E+03	6.8E+05		1.1E+03	
				3.0E-04	H					1	Yes	Thiofanox	39196184					4.7E+00	3.1E+01		4.1E+00	
				8.0E-02	I					1	Yes	Thiophanate, Methyl	23564058					1.3E+03	1.5E+05		1.2E+03	
				5.0E-03	I					1	Yes	Thiram	137268					7.8E+01	2.8E+03		7.6E+01	
				6.0E-01	H					1	Yes	Tin	7440315					9.4E+03	1.4E+06		9.3E+03	
						1.0E-04	A			1	Yes	Titanium Tetrachloride	7550450									
				8.0E-02	I	5.0E+00	I	V		1	Yes	Toluene	108883					1.3E+03	3.7E+03	1.0E+04	8.6E+02	1.0E+03
1.8E-01	X			1.0E-04	X					1	No	Toluene-2,5-diamine	95705	3.7E-01			3.7E-01	1.6E+00			1.6E+00	
1.9E-01	H									1	Yes	Toluidine, p-	106490	3.5E-01	9.1E+00		3.4E-01					
1.1E+00	I	3.2E-04	I							1	Yes	Toxaphene	8001352	6.1E-02	1.7E-02		1.3E-02					3.0E+00
				7.5E-03	I					1	No	Tralomethrin	66841256					1.2E+02			1.2E+02	
				3.0E-04	A					1	No	Tri-n-butyltin	688733					4.7E+00			4.7E+00	
				1.3E-02	I					1	Yes	Triallate	2303175					2.0E+02	1.5E+02		8.7E+01	
				1.0E-02	I					1	No	Triasulfuron	82097505					1.6E+02			1.6E+02	
				5.0E-03	I					1	No	Tribromobenzene, 1,2,4-	615543					7.8E+01			7.8E+01	
9.0E-03	P			1.0E-02	P					1	Yes	Tributyl Phosphate	126738	7.5E+00	1.1E+01		4.5E+00	1.6E+02	2.3E+02		9.3E+01	
				3.0E-04	P					1	No	Tributyltin Compounds	NA					4.7E+00			4.7E+00	
				3.0E-04	I					1	Yes	Tributyltin Oxide	56359					4.7E+00	6.7E+01		4.4E+00	
				3.0E+01	I	3.0E+01	H	V		1	Yes	Trichloro-1,2,2-trifluoroethane, 1,1,2-	76131					4.7E+05	1.4E+06	6.3E+04	5.3E+04	
7.0E-02	I			2.0E-02	I					1	Yes	Trichloroacetic Acid	76039	9.6E-01	3.9E+01		9.4E-01	3.1E+02	1.3E+04		3.1E+02	6.0E+01
2.9E-02	H									1	Yes	Trichloroaniline HCl, 2,4,6-	33663502	2.3E+00	3.2E+03		2.3E+00					
7.0E-03	X			3.0E-05	X					1	Yes	Trichloroaniline, 2,4,6-	634935	9.6E+00	1.7E+01		6.1E+00	4.7E-01	8.3E-01		3.0E-01	
				8.0E-04	X			V		1	Yes	Trichlorobenzene, 1,2,3-	87616					1.3E+01	8.9E+00		5.2E+00	
2.9E-02	P			1.0E-02	I	2.0E-03	P	V		1	Yes	Trichlorobenzene, 1,2,4-	120821	2.3E+00	1.7E+00		9.9E-01	1.6E+02	1.2E+02	4.2E+00	3.9E+00	7.0E+01
				2.0E+00	I	5.0E+00	I	V		1	Yes	Trichloroethane, 1,1,1-	71556					3.1E+04	1.8E+05	1.0E+04	7.5E+03	2.0E+02
5.7E-02	I	1.6E-05	I	4.0E-03	I	2.0E-04	X	V		1	Yes	Trichloroethane, 1,1,2-	79005	1.2E+00	1.7E+01	3.0E-01	2.4E-01	6.3E+01	8.9E+02	4.2E-01	4.1E-01	5.0E+00
4.6E-02	I	4.1E-06	I	5.0E-04	I	2.0E-03	I	V	M	1	Yes	Trichloroethylene	79016	1.0E+00	6.6E+00	8.6E-01	4.4E-01	7.8E+00	4.9E+01	4.2E+00	2.6E+00	5.0E+00
				3.0E-01	I	7.0E-01	H	V		1	Yes	Trichlorofluoromethane	75694					4.7E+03	2.6E+04	1.5E+03	1.1E+03	
				1.0E-01	I					1	Yes	Trichlorophenol, 2,4,5-	95954					1.6E+03	2.0E+03		8.9E+02	
1.1E-02	I	3.1E-06	I	1.0E-03	P					1	Yes	Trichlorophenol, 2,4,6-	88062	6.1E+00	8.3E+00		3.5E+00	1.6E+01	2.1E+01		9.0E+00	
				1.0E-02	I					1	Yes	Trichlorophenoxyacetic Acid, 2,4,5-	93765					1.6E+02	6.2E+02		1.2E+02	
				8.0E-03	I					1	Yes	Trichlorophenoxypropionic acid, -2,4,5	93721					1.3E+02	2.6E+02		8.4E+01	5.0E+01
				5.0E-03	I			V		1	No	Trichloropropane, 1,1,2-	598776					7.8E+01			7.8E+01	
3.0E+01	I			4.0E-03	I	3.0E-04	I	V	M	1	Yes	Trichloropropane, 1,2,3-	96184	7.2E-04	6.7E-03		6.5E-04	6.3E+01	5.4E+02	6.3E-01	6.2E-01	
				3.0E-03	X	3.0E-04	P	V		1	No	Trichloropropene, 1,2,3-	96195					4.7E+01		6.3E-01	6.2E-01	
				3.0E-03	I					1	No	Tridiphane	58138082					4.7E+01			4.7E+01	
						7.0E-03	I	V		1	Yes	Triethylamine	121448							1.5E+01	1.5E+01	
7.7E-03	I			7.5E-03	I					1	Yes	Trifluralin	1582098	8.7E+00	2.9E+00		2.2E+00	1.2E+02	3.9E+01		2.9E+01	
2.0E-02	P			1.0E-02	P					1	Yes	Trimethyl Phosphate	512561	3.4E+00	2.4E+03		3.4E+00	1.6E+02	1.1E+05		1.6E+02	
						5.0E-03	P	V		1	Yes	Trimethylbenzene, 1,2,3-	526738							1.0E+01	1.0E+01	
						7.0E-03	P	V		1	Yes	Trimethylbenzene, 1,2,4-	95636							1.5E+01	1.5E+01	
				1.0E-02	X			V		1	Yes	Trimethylbenzene, 1,3,5-	108678					1.6E+02	2.0E+02		8.7E+01	
				3.0E-02	I					1	Yes	Trinitrobenzene, 1,3,5-	99354					4.7E+02	3.3E+04		4.6E+02	
3.0E-02	I			5.0E-04	I					1	Yes	Trinitrotoluene, 2,4,6-	118967	2.2E+00	9.1E+01		2.2E+00	7.8E+00	3.2E+02		7.6E+00	
				2.0E-02	P					1	Yes	Triphenylphosphine Oxide	791286					3.1E+02	2.7E+03		2.8E+02	
2.0E-02	P			7.0E-03	P					1	Yes	Tris(2-chloroethyl)phosphate	115968	3.4E+00	2.5E+02		3.3E+00	1.1E+02	8.3E+03		1.1E+02	
3.2E-03	P			1.0E-01	P					1	No	Tris(2-ethylhexyl)phosphate	78422	2.1E+01			2.1E+01	1.6E+03			1.6E+03	
				3.0E-03	I					1	Yes	Uranium (Soluble Salts)	NA					4.7E+01	7.1E+03		4.7E+01	3.0E+01
1.0E+00	C	2.9E-04	C						M	1	Yes	Urethane	51796	2.2E-02	5.6E+00		2.1E-02					
		8.3E-03	P	9.0E-03	I	7.0E-06	P			0.026	Yes	Vanadium Pentoxide	1314621					1.4E+02	5.5E+02		1.1E+02	
				5.0E-03	S					1	Yes	Vanadium and Compounds	7440622					7.9E+01	1.2E+04		7.8E+01	
				1.0E-03	I					1	Yes	Vernolate	1929777					1.6E+01	1.8E+01		8.3E+00	
				2.5E-02	I					1	Yes	Vinclozolin	50471448					3.9E+02	2.6E+03		3.4E+02	
				1.0E+00	H	2.0E-01	I	V		1	Yes	Vinyl Acetate	108054					1.6E+04	9.2E+05	4.2E+02	4.1E+02	
		3.2E-05	H			3.0E-03	I	V		1	Yes	Vinyl Bromide	593602			1.5E-01	1.5E-01			6.3E+00	6.3E+00	

TABLE N-2
REGIONAL SCREENING LEVEL (RSL) TAPWATER SUPPORTING TABLE APRIL 2012
CHLOR ALKALI SUPERFUND SITE
BERLIN, NEW HAMPSHIRE

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; Y = New York; O = EPA Office of Water; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide); SSL values are based on DAF=1

Toxicity and Chemical-specific Information											Contaminant		Carcinogenic Target Risk (TR) = 1E-06				Noncancer Hazard Index (HI) = 1				
SFO (mg/kg-day)$^{-1}$	key	IUR (ug/m^3)$^{-1}$	key	RfD_o (mg/kg-day)	key	RfC_i (mg/m^3)	key	voc	muta-gen	GIABS	In EPD?	Analyte	CAS No.	Ingestion SL TR=1.0E-6 (ug/L)	Dermal SL TR=1.0E-6 (ug/L)	Inhalation SL TR=1.0E-6 (ug/L)	Carcinogenic SL TR=1.0E-6 (ug/L)	Ingestion SL HQ=1 (ug/L)	Dermal SL HQ=1 (ug/L)	Inhalation SL HQ=1 (ug/L)	Noncarcinogenic SL HI=1 (ug/L)	MCL (ug/L)
7.2E-01	I	4.4E-06	I	3.0E-03	I	1.0E-01	I	V	M	1	Yes	Vinyl Chloride	75014	1.7E-02	2.6E-01	3.2E-01	1.5E-02	4.7E+01	5.8E+02	2.1E+02	3.6E+01	2.0E+00
				3.0E-04	I					1	Yes	Warfarin	81812					4.7E+00	6.0E+01		4.4E+00	
				2.0E-01	S	1.0E-01	S	V		1	Yes	Xylene, P-	106423					3.1E+03	5.3E+03	2.1E+02	1.9E+02	
				2.0E-01	S	1.0E-01	S	V		1	Yes	Xylene, m-	108383					3.1E+03	4.9E+03	2.1E+02	1.9E+02	
				2.0E-01	S	1.0E-01	S	V		1	Yes	Xylene, o-	95476					3.1E+03	5.5E+03	2.1E+02	1.9E+02	
				2.0E-01	I	1.0E-01	I	V		1	Yes	Xylenes	1330207					3.1E+03	5.5E+03	2.1E+02	1.9E+02	1.0E+04
				3.0E-04	I					1	Yes	Zinc Phosphide	1314847					4.7E+00	1.2E+03		4.7E+00	
				3.0E-01	I					1	Yes	Zinc and Compounds	7440666					4.7E+03	1.2E+06		4.7E+03	
				5.0E-02	I					1	No	Zineb	12122677					7.8E+02			7.8E+02	

2012 RSL User's Guide Equations Used to Develop Tapwater RSLs

Tap Water Equations

- **Noncarcinogenic-child**
  - Ingestion

$$SL_{water\text{-}nc\text{-}ing}\left(\mu g/L\right)=\frac{THQ\times AT_r\left(\frac{365\ days}{year}\times ED_c\left(6\ years\right)\right)\times BW_c\left(15\ Kg\right)\times\left(\frac{1000\ \mu g}{mg}\right)}{EF_r\left(350\ \frac{days}{year}\right)\times ED_c\left(6\ years\right)\times\frac{1}{RfD_o\left(\frac{mg}{kg\text{-}d}\right)}\times IRW_c\left(\frac{1\ L}{day}\right)}$$

- Dermal

FOR INORGANICS:

$$SL_{water\text{-}nc\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{- }event}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{K_p\left(\frac{cm}{hr}\right)\times ET_{rwc}\left(\frac{1\ hours}{event}\right)}$$

FOR ORGANICS:

$$IF\ ET_{rwc}\left(\frac{1\ hours}{event}\right)\le t^*\ \left(hr\right),then\ SL_{water\text{-}nc\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{- }event}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{2\times FA\times K_p\left(\frac{cm}{hr}\right)\sqrt{\frac{6\times\tau_{event}\left(\frac{hours}{event}\right)\times ET_{rwc}\left(\frac{1\ hours}{event}\right)}{\pi}}}$$

or,

$$IF\ ET_{rwc}\left(\frac{1\ hours}{event}\right)>t^*\ \left(hr\right),then\ SL_{water\text{-}nc\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{- }event}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{FA\times K_p\left(\frac{cm}{hr}\right)\times\left[\frac{ET_{rwc}\left(\frac{1\ hours}{event}\right)}{1+B}+2\times\tau_{event}\left(\frac{hours}{event}\right)\times\left(\frac{1+3B+3B^2}{\left(1+B\right)^2}\right)\right]}$$

where:

$$DA_{event}\left(\frac{ug}{cm^2\text{- }event}\right)=\frac{THQ\times AT_r\left(\frac{365\ days}{year}\times ED_c\left(6\ years\right)\right)\times\left(\frac{1000\ \mu g}{mg}\right)\times BW_c\left(15\ Kg\right)}{\left(\frac{1}{RfD_o\left(\frac{mg}{Kg\text{-}day}\right)\times GIABS}\right)\times EV_c\left(\frac{1\ events}{day}\right)\times ED_c\left(6\ years\right)\times EF\left(\frac{350\ days}{year}\right)\times SA_c\left(6{,}600\ cm^2\right)}$$

- Inhalation

$$SL_{water\text{-}nc\text{-}inh}\left(\mu g/L\right)=\frac{THQ\times AT_r\left(\frac{365\ days}{year}\times ED_c\left(6\ years\right)\right)\times\left(\frac{1000\ \mu g}{mg}\right)}{EF_r\left(350\ \frac{days}{year}\right)\times ED_c\left(6\ years\right)\times ET_{rw}\left(\frac{24\ hours}{day}\right)\times\left(\frac{1\ day}{24\ hours}\right)\times\frac{1}{RfC\left(\frac{mg}{m^3}\right)}\times K\left(\frac{0.5\ L}{m^3}\right)}$$

- Total

$$SL_{res\text{-}water\text{-}nc\text{-}tot}\left(\mu g/L\right)=\frac{1}{\frac{1}{SL_{water\text{-}nc\text{-}ing}}+\frac{1}{SL_{water\text{-}nc\text{-}der}}+\frac{1}{SL_{water\text{-}nc\text{-}inh}}}$$

- **Noncarcinogenic-adult**

  Ingestion

$$SL_{water\text{-}nc\text{-}ing}\left(\mu g/L\right)=\frac{THQ\times AT_r\left(\frac{365\ days}{year}\times ED_r\left(30\ years\right)\right)\times BW_a\left(70\ Kg\right)\times\left(\frac{1000\ \mu g}{mg}\right)}{EF_r\left(350\ \frac{days}{year}\right)\times ED_r\left(30\ years\right)\times\frac{1}{RfD_o\left(\frac{mg}{kg\text{-}d}\right)}\times IRW_a\left(\frac{2\ L}{day}\right)}$$

Dermal

FOR INORGANICS:

$$SL_{water\text{-}nc\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{- event}}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{K_p\left(\frac{cm}{hr}\right)\times ET_{rwa}\left(\frac{0.58\ hours}{event}\right)}$$

FOR ORGANICS:

$$\text{IF } ET_{rwa}\left(\frac{0.58\ hours}{event}\right)\le t^*\ (hr),\text{then } SL_{water\text{-}nc\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{- event}}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{2\times FA\times K_p\left(\frac{cm}{hr}\right)\sqrt{\frac{6\times\tau_{event}\left(\frac{hours}{event}\right)\times ET_{rwa}\left(\frac{0.58\ hours}{event}\right)}{\pi}}}$$

or,

$$\text{IF } ET_{rwa}\left(\frac{0.58\ hours}{event}\right)> t^*\ (hr),\text{then } SL_{water\text{-}nc\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{- event}}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{FA\times K_p\left(\frac{cm}{hr}\right)\times\left[\frac{ET_{rwa}\left(\frac{0.58\ hours}{event}\right)}{1+B}+2\times\tau_{event}\left(\frac{hours}{event}\right)\times\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]}$$

where:

$$DA_{event}\left(\frac{ug}{cm^2\text{- event}}\right)=\frac{THQ\times AT_r\left(\frac{365\ days}{year}\times ED_r\left(30\ years\right)\right)\times\left(\frac{1000\ \mu g}{mg}\right)\times BW_a\left(70\ Kg\right)}{\left(\frac{1}{RfD_o\left(\frac{mg}{Kg\text{-}day}\right)\times GIABS}\right)\times EV_a\left(\frac{1\ events}{day}\right)\times ED_r\left(30\ years\right)\times EF\left(\frac{350\ days}{year}\right)\times SA_a\left(18{,}000\ cm^2\right)}$$

Inhalation

$$SL_{water\text{-}nc\text{-}inh}\left(\mu g/L\right)=\frac{THQ\times AT_r\left(\frac{365\ days}{year}\times ED_r\left(30\ years\right)\right)\times\left(\frac{1000\ \mu g}{mg}\right)}{EF_r\left(350\ \frac{days}{year}\right)\times ED_r\left(30\ years\right)\times ET_{rw}\ \left(\frac{24\ hours}{day}\right)\times\left(\frac{1\ day}{24\ hours}\right)\times\frac{1}{RfC\left(\frac{mg}{m^3}\right)}\times K\left(\frac{0.5\ L}{m^3}\right)}$$

Total

$$SL_{res\text{-}water\text{-}nc\text{-}tot}\left(\mu g/L\right)=\frac{1}{\frac{1}{SL_{water\text{-}nc\text{-}ing}}+\frac{1}{SL_{water\text{-}nc\text{-}der}}+\frac{1}{SL_{water\text{-}nc\text{-}inh}}}$$

- **Carcinogenic**

Ingestion

$$SL_{water\text{-}ca\text{-}ing}\left(\mu g/L\right)=\frac{TR\times AT_r\left(\frac{365\ days}{year}\times LT\left(70\ years\right)\right)\times\left(\frac{1000\ \mu g}{mg}\right)}{EF_r\left(\frac{350\ days}{year}\right)\times CSF_o\left(\frac{mg}{kg\text{-}day}\right)^{-1}\times\left(IFW_{adj}\left(\frac{1.086\ L\text{-}Year}{Kg\text{-}day}\right)\right)}$$

where:

$$IFW_{adj}\left(\frac{1.086\ L\text{-}Year}{Kg\text{-}day}\right)=\frac{ED_c\left(6\ years\right)\times IRW_c\left(\frac{1\ L}{day}\right)}{BW_c\left(15\ Kg\right)}+\frac{ED_r\text{-}ED_c\left(24\ years\right)\times IRW_a\left(\frac{2\ L}{day}\right)}{BW_a\left(70\ Kg\right)}$$

Dermal

FOR INORGANICS:

$$SL_{water\text{-}ca\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{-}event}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{K_p\left(\frac{cm}{hr}\right)\times ET_{rw\text{-}adj}\left(\frac{0.664\ hours}{event}\right)}$$

FOR ORGANICS:

$$IF\ ET_{rw\text{-}adj}\left(\frac{hours}{event}\right)\leq t^*\ (hr),then\ SL_{water\text{-}ca\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{-}event}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{2\times FA\times K_p\left(\frac{cm}{hr}\right)\sqrt{\frac{6\times\tau_{event}\left(\frac{hours}{event}\right)\times ET_{rw\text{-}adj}\left(\frac{0.664\ hours}{event}\right)}{\pi}}}$$

or,

$$IF\ ET_{rw\text{-}adj}\left(\frac{hours}{event}\right)>t^*\ (hr),then\ SL_{water\text{-}ca\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{-}event}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{FA\times K_p\left(\frac{cm}{hr}\right)\times\left[\frac{ET_{rw\text{-}adj}\left(\frac{0.664\ hours}{event}\right)}{1+B}+2\times\tau_{event}\left(\frac{hours}{event}\right)\times\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]}$$

where:

$$DA_{event}\left(\frac{ug}{cm^2\text{-}event}\right)=\frac{TR\times AT_r\left(\frac{365\ days}{year}\times LT\left(70\ years\right)\right)\times\left(\frac{1000\ \mu g}{mg}\right)}{\left(\frac{CSF_o\left(\frac{mg}{Kg\text{-}day}\right)^{-1}}{GIABS}\right)\times EF_r\left(\frac{350\ days}{year}\right)\times DFW_{adj}\left(\frac{8811.4\ cm^2\text{-}event\text{-}day}{kg}\right)}$$

where:

$$DFW_{adj}\left(\frac{8811.4\ cm^2\text{-}event\text{-}day}{kg}\right)=\frac{EV_c\left(\frac{1\ events}{day}\right)\times ED_c\left(6\ years\right)\times SA_c\left(6{,}600\ cm^2\right)}{BW_c\left(15\ Kg\right)}+\frac{EV_a\left(\frac{1\ events}{day}\right)\times ED_a\left(24\ years\right)\times SA_a\left(18{,}000\ cm^2\right)}{BW_a\left(70\ Kg\right)}$$

and:

$$ET_{rw\text{-}adj}\left(\frac{0.664\ hours}{event}\right)=\frac{\left(ET_{rwc}\left(\frac{1\ hours}{event}\right)\times ED_c\left(6\ years\right)+ET_{rwa}\left(\frac{0.58\ hours}{event}\right)\times ED_r\text{-}ED_c\left(24\ years\right)\right)}{ED_r\left(30\ years\right)}$$

Inhalation

$$SL_{water\text{-}ca\text{-}inh}\left(\mu g/L\right)=\frac{TR\times AT_r\left(\frac{365\ days}{year}\times LT\left(70\ years\right)\right)}{EF_r\left(\frac{350\ days}{year}\right)\times ED_r\left(30\ years\right)\times ET_{rw}\left(\frac{24\ hours}{day}\right)\times\left(\frac{1\ day}{24\ hours}\right)\times IUR\left(\frac{\mu g}{m^3}\right)^{-1}\times K\left(\frac{0.5\ L}{m^3}\right)}$$

Total

$$SL_{water\text{-}ca\text{-}tot}\left(\mu g/L\right)=\frac{1}{\frac{1}{SL_{water\text{-}ca\text{-}ing}}+\frac{1}{SL_{water\text{-}ca\text{-}der}}+\frac{1}{SL_{water\text{-}ca\text{-}inh}}}$$

- **Mutagenic**

Ingestion

$$SL_{water\text{-}mu\text{-}ing}\left(\mu g/L\right)=\frac{TR\times AT_r\left(\frac{365\ days}{year}\times LT\left(70\ years\right)\right)\times\left(\frac{1000\ \mu g}{mg}\right)}{CSF_o\left(\frac{mg}{Kg\text{-}day}\right)^{-1}\times EF_r\left(\frac{350\ days}{year}\right)\times IFWM_{adj}\left(\frac{3.39\ L\text{-}Year}{Kg\text{-}day}\right)}$$

where:

$$IFWM_{adj}\left(\frac{3.39\ L\text{-}Year}{Kg\text{-}day}\right)=\frac{ED_{0\text{-}2}\left(yr\right)\times IRW_c\left(\frac{1\ L}{day}\right)\times 10}{BW_c\left(15\ Kg\right)}+\frac{ED_{2\text{-}6}\left(yr\right)\times IRW_c\left(\frac{1\ L}{day}\right)\times 3}{BW_c\left(15\ Kg\right)}+\frac{ED_{6\text{-}16}\left(yr\right)\times IRW_a\left(\frac{2\ L}{day}\right)\times 3}{BW_a\left(70\ Kg\right)}+\frac{ED_{16\text{-}30}\left(yr\right)\times IRW_a\left(\frac{2\ L}{day}\right)\times 1}{BW_a\left(70\ Kg\right)}$$

Dermal

FOR INORGANICS:

$$SL_{water\text{-}mu\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{-}event}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{K_p\left(\frac{cm}{hr}\right)\times ET_{rw\text{-}madj}\left(\frac{0.664\ hours}{event}\right)}$$

FOR ORGANICS:

$$\text{IF } ET_{rw\text{-}madj}\left(\frac{0.664\ hours}{event}\right)\le t^{*}\ (hr),\text{then } SL_{water\text{-}mu\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{-}event}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{2\times FA\times K_p\left(\frac{cm}{hr}\right)\sqrt{\frac{6\times\tau_{event}\left(\frac{hours}{event}\right)\times ET_{rw\text{-}madj}\left(\frac{hours}{event}\right)}{\pi}}}$$

or,

$$\text{IF } ET_{rw\text{-}madj}\left(\frac{0.664\ hours}{event}\right)\ge t^{*}\ (hr),\text{then } SL_{water\text{-}mu\text{-}der}\left(\mu g/L\right)=\frac{DA_{event}\left(\frac{ug}{cm^2\text{-}event}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{FA\times K_p\left(\frac{cm}{hr}\right)\times\left[\frac{ET_{rdw\text{-}madj}\left(\frac{hours}{event}\right)}{1+B}+2\times\tau_{event}\left(\frac{hours}{event}\right)\times\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]}$$

where:

$$DA_{event}\left(\frac{ug}{cm^2\text{-}event}\right)=\frac{TR\times AT_r\left(\frac{365\ days}{year}\times LT\left(70\ years\right)\right)\times\left(\frac{1000\ \mu g}{mg}\right)}{\left(\frac{CSF_o\left(\frac{mg}{Kg\text{-}day}\right)^{-1}}{GIABS}\right)\times DFWM_{adj}\left(\frac{25394.29\ events\text{-}cm^2}{kg}\right)\times EF_r\left(\frac{350\ days}{year}\right)}$$

where:

$$DFWM_{adj}\left(\frac{25394.29\ events\text{-}cm^2}{kg}\right)=\left[\left(\frac{EV_{0\text{-}2}\left(\frac{1\ events}{day}\right)\times ED_{0\text{-}2}\left(years\right)\times SA_c\left(6{,}600\ cm^2\right)\times 10}{BW_c\left(15\ Kg\right)}\right)+\left(\frac{EV_{2\text{-}6}\left(\frac{1\ events}{day}\right)\times ED_{2\text{-}6}\left(years\right)\times SA_c\left(6{,}600\ cm^2\right)\times 3}{BW_c\left(15\ Kg\right)}\right)+\left(\frac{EV_{6\text{-}16}\left(\frac{1\ events}{day}\right)\times ED_{6\text{-}16}\left(years\right)\times SA_a\left(18{,}000\ cm^2\right)\times 3}{BW_a\left(70\ Kg\right)}\right)+\left(\frac{EV_{16\text{-}30}\left(\frac{1\ events}{day}\right)\times ED_{16\text{-}30}\left(years\right)\times SA_a\left(18{,}000\ cm^2\right)\times 1}{BW_a\left(70\ Kg\right)}\right)\right]$$

and:

$$ET_{rw\text{-}madj}\left(\frac{0.664\ hours}{event}\right)=\frac{\left(\begin{array}{l}ET_{0\text{-}2}\left(\frac{1\ hours}{event}\right)\times ED_{0\text{-}2}\left(years\right)+ET_{2\text{-}6}\left(\frac{1\ hours}{event}\right)\times ED_{2\text{-}6}\left(years\right)+\\ ET_{6\text{-}16}\left(\frac{0.58\ hours}{event}\right)\times ED_{6\text{-}16}\left(years\right)+ET_{16\text{-}30}\left(\frac{0.58\ hours}{event}\right)\times ED_{16-30}\left(years\right)\end{array}\right)}{ED_{0\text{-}2}\left(years\right)+ED_{2\text{-}6}\left(years\right)+ED_{6\text{-}16}\left(years\right)+ED_{16\text{-}30}\left(years\right)}$$

Inhalation

$$SL_{water\text{-}mu\text{-}inh}\left(\mu g/L\right)=\frac{TR\times AT_r\left(\frac{365\ days}{year}\times LT\left(70\ years\right)\right)}{EF_r\left(\frac{350\ days}{year}\right)\times K\left(\frac{0.5\ L}{m^3}\right)\times ET_{rw}\left(\frac{24\ hours}{day}\right)\times\left(\frac{1\ day}{24\ hours}\right)\times \left(\left(ED_{0\text{-}2}\left(yrs\right)\times IUR\left(\frac{\mu g}{m^3}\right)^{-1}\times 10\right)+\left(ED_{2\text{-}6}\left(yrs\right)\times IUR\left(\frac{\mu g}{m^3}\right)^{-1}\times 3\right)+\left(\left(ED_{6\text{-}16}\left(yrs\right)\times IUR\left(\frac{\mu g}{m^3}\right)^{-1}\times 3\right)+\left(ED_{16\text{-}30}\left(yrs\right)\times IUR\left(\frac{\mu g}{m^3}\right)^{-1}\times 1\right)\right)\right)}$$

Total

$$SL_{water\text{-}mu\text{-}tot}\left(\mu g/L\right)=\frac{1}{\frac{1}{SL_{water\text{-}mu\text{-}ing}}+\frac{1}{SL_{water\text{-}mu\text{-}der}}+\frac{1}{SL_{water\text{-}mu\text{-}inh}}}$$

- **Vinyl Chloride**
  - Ingestion

$$SL_{water\text{-}ca\text{-}vc\text{-}ing}\left(\mu g/L\right)=\frac{TR}{\left(\frac{CSF_o\left(\frac{mg}{Kg\text{-}day}\right)^{-1}\times EF_r\left(\frac{350\ days}{year}\right)\times IFW_{adj}\left(\frac{1.086\ L\text{-}yr}{kg\text{-}day}\right)\times\left(\frac{mg}{1000\ \mu g}\right)}{AT\left(\frac{365\ days}{year}\times LT\left(70\ years\right)\right)}\right)+\left(\frac{CSF_o\left(\frac{mg}{Kg\text{-}day}\right)^{-1}\times IRW_c\left(\frac{1\ L}{day}\right)\times\left(\frac{mg}{1000\ \mu g}\right)}{BW_c\left(15\ kg\right)}\right)}$$

where:

$$IFW_{adj}\left(\frac{1.086\ L\text{-}Year}{Kg\text{-}day}\right)=\frac{ED_c\left(6\ years\right)\times IRW_c\left(\frac{1\ L}{day}\right)}{BW_c\left(15\ Kg\right)}+\frac{ED_r\text{-}ED_c\left(24\ years\right)\times IRW_a\left(\frac{2\ L}{day}\right)}{BW_a\left(70\ Kg\right)}$$

Dermal

$$\text{IF } ET_{rw\text{-}adj}\left(\frac{0.664\ \text{hours}}{\text{event}}\right) \le t^{*}\ (\text{hr}), \text{then } SL_{\text{water-vc-der}}\ (\mu g/L) = \frac{DA_{event}\left(\frac{ug}{cm^2\text{- event}}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{2\times FA\times K_p\left(\frac{cm}{hr}\right)\sqrt{\frac{6\times \tau_{event}\left(\frac{\text{hours}}{\text{event}}\right)\times ET_{rw\text{-}adj}\left(\frac{0.664\ \text{hours}}{\text{event}}\right)}{\pi}}}$$

or,

$$\text{IF } ET_{rw\text{-}adj}\left(\frac{0.664\ \text{hours}}{\text{event}}\right) > t^{*}\ (\text{hr}), \text{then } SL_{\text{water-vc-der}}\ (\mu g/L) = \frac{DA_{event}\left(\frac{ug}{cm^2\text{- event}}\right)\times\left(\frac{1000\ cm^3}{L}\right)}{FA\times K_p\left(\frac{cm}{hr}\right)\times\left[\frac{ET_{rw\text{-}adj}\left(\frac{0.664\ \text{hours}}{\text{event}}\right)}{1+B}+2\times\tau_{event}\left(\frac{\text{hours}}{\text{event}}\right)\times\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]}$$

where:

$$DA_{event}\left(\frac{ug}{cm^2\text{- event}}\right) = \frac{TR}{\left(\frac{\left(\frac{CSF_o\left(\frac{mg}{Kg\text{-day}}\right)^{-1}}{GIABS}\right)\times EF_r\left(\frac{350\ \text{days}}{\text{year}}\right)\times DFW_{adj}\left(\frac{8811.4\ cm^2\text{-events}}{kg}\right)}{AT_r\left(\frac{365\ \text{days}}{\text{year}}\times LT\ (70\ \text{years})\right)\times\left(\frac{1000\ \mu g}{mg}\right)}\right)+\left(\frac{\left(\frac{CSF_o\left(\frac{mg}{Kg\text{-day}}\right)^{-1}}{GIABS}\right)\times EV_{rdwc}\left(\frac{1\ \text{events}}{\text{day}}\right)\times SA_c\left(6{,}600\ cm^2\right)}{BW_c\ (15\ Kg)\times\left(\frac{1000\ \mu g}{mg}\right)}\right)}$$

where:

$$DFW_{adj}\left(\frac{8811.4\ cm^2\text{-event}}{kg}\right) = \frac{EV_c\left(\frac{1\ \text{events}}{\text{day}}\right)\times ED_c\ (6\ \text{years})\times SA_c\left(6{,}600\ cm^2\right)}{BW_c\ (15\ Kg)}+\frac{EV_a\left(\frac{1\ \text{events}}{\text{day}}\right)\times ED_a\ (24\ \text{years})\times SA_a\left(18{,}000\ cm^2\right)}{BW_a\ (70\ Kg)}$$

and:

$$ET_{rw\text{-}adj}\left(\frac{0.664\ \text{hours}}{\text{event}}\right) = \frac{\left(ET_{rwc}\left(\frac{1\ \text{hours}}{\text{event}}\right)\times ED_c\ (6\ \text{years})\right)+\left(ET_{rwa}\left(\frac{0.58\ \text{hours}}{\text{event}}\right)\times ED_r - ED_c\ (24\ \text{years})\right)}{ED_r\ (30\ \text{years})}$$

Inhalation

$$SL_{water\text{-}ca\text{-}vc\text{-}inh}\left(\mu g/L\right)=\frac{TR}{\left(\frac{IUR\left(\frac{\mu g}{m^3}\right)^{-1}\times EF\left(\frac{350\ days}{year}\right)\times ED\left(30\ years\right)\times ET_{rw}\left(\frac{24\ hours}{day}\right)\times\left(\frac{1\ day}{24\ hours}\right)\times K\left(\frac{0.5\ L}{m^3}\right)}{AT\left(\frac{365\ days}{year}\times LT\left(70\ years\right)\right)}\right)+\left(IUR\left(\frac{\mu g}{m^3}\right)^{-1}\times K\left(\frac{0.5\ L}{m^3}\right)\right)}$$

Total

$$SL_{water\text{-}ca\text{-}vc\text{-}tot}\left(\mu g/L\right)=\frac{1}{\frac{1}{SL_{water\text{-}ca\text{-}vc\text{-}ing}}+\frac{1}{SL_{water\text{-}ca\text{-}vc\text{-}der}}+\frac{1}{SL_{water\text{-}ca\text{-}vc\text{-}inh}}}$$

- **Supporting Equations**

Child

$$ED_c\,(6\text{ years}) = ED_{0\text{-}2}\,(2\text{ years}) + ED_{2\text{-}6}\,(4\text{ years})$$

$$BW_c\,(15\text{ kg}) = \frac{BW_{0\text{-}2}\,(15\text{ kg}) \times ED_{0\text{-}2}\,(2\text{ years}) + BW_{2\text{-}6}\,(15\text{ kg}) \times ED_{2\text{-}6}\,(4\text{ years})}{ED_{0\text{-}2}\,(2\text{ years}) + ED_{2\text{-}6}\,(4\text{ years})}$$

$$EF_c\left(\frac{350\text{ days}}{\text{year}}\right) = \frac{EF_{0\text{-}2}\left(\frac{350\text{ days}}{\text{year}}\right) \times ED_{0\text{-}2}\,(2\text{ years}) + EF_{2\text{-}6}\left(\frac{350\text{ days}}{\text{year}}\right) \times ED_{2\text{-}6}\,(4\text{ years})}{ED_{0\text{-}2}\,(2\text{ years}) + ED_{2\text{-}6}\,(4\text{ years})}$$

$$EV_c\left(\frac{1\text{ event}}{\text{day}}\right) = \frac{EV_{0\text{-}2}\left(\frac{1\text{ event}}{\text{day}}\right) \times ED_{0\text{-}2}\,(2\text{ years}) + EV_{2\text{-}6}\left(\frac{1\text{ event}}{\text{day}}\right) \times ED_{2\text{-}6}\,(4\text{ years})}{ED_{0\text{-}2}\,(2\text{ years}) + ED_{2\text{-}6}\,(4\text{ years})}$$

$$ET_c\left(\frac{1\text{ hour}}{\text{event}}\right) = \frac{ET_{0\text{-}2}\left(\frac{1\text{ hour}}{\text{event}}\right) \times ED_{0\text{-}2}\,(2\text{ years}) + ET_{2\text{-}6}\left(\frac{1\text{ hour}}{\text{event}}\right) \times ED_{2\text{-}6}\,(4\text{ years})}{ED_{0\text{-}2}\,(2\text{ years}) + ED_{2\text{-}6}\,(4\text{ years})}$$

$$SA_c\left(6600\text{ cm}^2\right) = \frac{SA_{0\text{-}2}\left(6{,}600\text{ cm}^2\right) \times ED_{0\text{-}2}\,(2\text{ years}) + SA_{2\text{-}6}\left(6{,}600\text{ cm}^2\right) \times ED_{2\text{-}6}\,(4\text{ years})}{ED_{0\text{-}2}\,(2\text{ years}) + ED_{2\text{-}6}\,(4\text{ years})}$$

$$IRW_c\left(\frac{1\text{ L}}{\text{day}}\right) = \frac{IRW_{0\text{-}2}\left(\frac{1\text{ L}}{\text{day}}\right) \times ED_{0\text{-}2}\,(2\text{ years}) + IRW_{2\text{-}6}\left(\frac{1\text{ L}}{\text{day}}\right) \times ED_{2\text{-}6}\,(4\text{ years})}{ED_{0\text{-}2}\,(2\text{ years}) + ED_{2\text{-}6}\,(4\text{ years})}$$

Adult

$$ED_a\,(24\text{ years}) = ED_{6\text{-}16}\,(10\text{ years}) + ED_{16\text{-}30}\,(14\text{ years})$$

$$BW_a\,(70\text{ kg}) = \frac{BW_{6\text{-}16}\,(70\text{ kg}) \times ED_{6\text{-}16}\,(10\text{ years}) + BW_{16\text{-}30}\,(70\text{ kg}) \times ED_{16\text{-}30}\,(14\text{ years})}{ED_{6\text{-}16}\,(10\text{ years}) + ED_{16\text{-}30}\,(14\text{ years})}$$

$$EF_a\left(\frac{350\text{ days}}{\text{year}}\right) = \frac{EF_{6\text{-}16}\left(\frac{350\text{ days}}{\text{year}}\right) \times ED_{6\text{-}16}\,(10\text{ years}) + EF_{16\text{-}30}\left(\frac{350\text{ days}}{\text{year}}\right) \times ED_{16\text{-}30}\,(14\text{ years})}{ED_{6\text{-}16}\,(10\text{ years}) + ED_{16\text{-}30}\,(14\text{ years})}$$

$$EV_a\left(\frac{1\text{ event}}{\text{day}}\right) = \frac{EV_{6\text{-}16}\left(\frac{1\text{ event}}{\text{day}}\right) \times ED_{6\text{-}16}\,(10\text{ years}) + EV_{16\text{-}30}\left(\frac{1\text{ event}}{\text{day}}\right) \times ED_{16\text{-}30}\,(14\text{ years})}{ED_{6\text{-}16}\,(10\text{ years}) + ED_{16\text{-}30}\,(14\text{ years})}$$

$$ET_a\left(\frac{0.58\text{ hour}}{\text{event}}\right) = \frac{ET_{6\text{-}16}\left(\frac{0.58\text{ hour}}{\text{event}}\right) \times ED_{6\text{-}16}\,(10\text{ years}) + ET_{16\text{-}30}\left(\frac{0.58\text{ hour}}{\text{event}}\right) \times ED_{16\text{-}30}\,(14\text{ years})}{ED_{6\text{-}16}\,(10\text{ years}) + ED_{16\text{-}30}\,(14\text{ years})}$$

$$SA_a\left(18{,}000\text{ cm}^2\right) = \frac{SA_{6\text{-}16}\left(18{,}000\text{ cm}^2\right) \times ED_{6\text{-}16}\,(10\text{ years}) + SA_{16\text{-}30}\left(18{,}000\text{ cm}^2\right) \times ED_{16\text{-}30}\,(14\text{ years})}{ED_{6\text{-}16}\,(10\text{ years}) + ED_{16\text{-}30}\,(14\text{ years})}$$

$$IRW_a\left(\frac{2\text{ L}}{\text{day}}\right) = \frac{IRW_{6\text{-}16}\left(\frac{2\text{ L}}{\text{day}}\right) \times ED_{6\text{-}16}\,(10\text{ years}) + IRW_{16\text{-}30}\left(\frac{2\text{ L}}{\text{day}}\right) \times ED_{16\text{-}30}\,(14\text{ years})}{ED_{6\text{-}16}\,(10\text{ years}) + ED_{16\text{-}30}\,(14\text{ years})}$$

Age-adjusted

$$ED_r\,(30\ \text{years}) = ED_{0\text{-}2}\,(2\ \text{years}) + ED_{2\text{-}6}\,(4\ \text{years}) + ED_{6\text{-}16}\,(10\ \text{years}) + ED_{16\text{-}30}\,(14\ \text{years})$$

$$EF_r\left(\frac{350\ \text{days}}{\text{year}}\right) = \frac{\begin{array}{l} EF_{0\text{-}2}\left(\frac{350\ \text{days}}{\text{year}}\right) \times ED_{0\text{-}2}\,(2\ \text{years}) + EF_{2\text{-}6}\left(\frac{350\ \text{days}}{\text{year}}\right) \times ED_{2\text{-}6}\,(4\ \text{years}) \\ + EF_{6\text{-}16}\left(\frac{350\ \text{days}}{\text{year}}\right) \times ED_{6\text{-}16}\,(10\ \text{years}) + EF_{16\text{-}30}\left(\frac{350\ \text{days}}{\text{year}}\right) \times ED_{16\text{-}30}\,(14\ \text{years}) \end{array}}{ED_{0\text{-}2}\,(2\ \text{years}) + ED_{2\text{-}6}\,(4\ \text{years}) + ED_{6\text{-}16}\,(10\ \text{years}) + ED_{16\text{-}30}\,(14\ \text{years})}$$

$$ET_r\left(\frac{24\ \text{hours}}{\text{day}}\right)$$