



FINAL  
SITE HEALTH AND SAFETY PLAN  
FOR SUPPLEMENTAL  
REMEDIAL INVESTIGATION/FEASIBILITY STUDY  
COLD CREEK SWAMP OPERABLE UNIT  
COLD CREEK/LEMOYNE SUPERFUND SITES  
MOBILE COUNTY, ALABAMA

Prepared for:

Akzo Chemicals Inc.  
Chicago, Illinois

and

ICI Americas Inc.  
Wilmington, Delaware

Prepared by:

EA Mid-Atlantic Regional Operations  
EA Engineering, Science, and Technology, Inc.  
15 Loveton Circle  
Sparks, Maryland 21152

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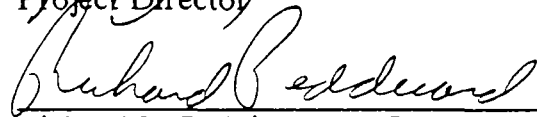
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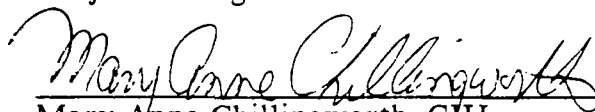
EA Mid-Atlantic Regional Operations  
EA Engineering, Science, and Technology, Inc.

  
\_\_\_\_\_  
J.H. Zarzycki  
Project Director

11/30/90  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Richard L. Peddicord, Ph.D.  
Project Manager

11/30/90  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Mary Anne Chillingworth, CIH  
Corporate Safety and Health Officer

11/30/90  
\_\_\_\_\_  
Date

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## EXECUTIVE SUMMARY

In 1989 the U.S. Environmental Protection Agency (EPA) Region IV designated the Cold Creek Swamp as Operable Unit Number 3 (OU3) of the Cold Creek/LeMoyne Superfund sites. Cold Creek Swamp is a freshwater river-bottom hardwood swamp encompassing several hundred acres along the Mobile River. The site is located approximately 20 miles north of Mobile, Alabama. The upper portion of the swamp originates on property formerly owned by the Stauffer Chemical Company. The former Stauffer property includes two chemical processing facilities. The LeMoyne Plant produces industrial chemicals and is currently owned by Akzo Chemicals Inc. (Chicago, Illinois). The Cold Creek Plant manufactures agricultural chemicals and is owned by ICI Americas Inc. (Wilmington, Delaware). Akzo and ICI have been designated by EPA as potentially responsible parties (PRPs) with respect to environmental contamination at the Cold Creek/LeMoyne Superfund sites.

In July 1990, Akzo and ICI initiated supplemental Remedial Investigation/Feasibility Study (RI/FS) activities to investigate specific environmental concerns in the Cold Creek Swamp that had been identified by EPA, the U.S. Fish and Wildlife Service (USFWS), and the National Oceanic and Atmospheric Administration (NOAA) pursuant to review of the original RI/FS for the Cold Creek/LeMoyne Superfund sites. Akzo and ICI retained EA Engineering, Science, and Technology (Sparks, Maryland) to develop work plans for supplemental RI/FS activities associated with the characterization of Cold Creek Swamp (OU3). On 16-17 August 1990, EA conducted a preliminary site reconnaissance. The main objective of the site visit was to assimilate sufficient background understanding of current site conditions at Cold Creek Swamp to be able to develop and scope the strategy for data collection for this supplemental RI/FS.

### Project Plans

EA has prepared the four site specific RI/FS project plans as required by EPA guidance. These plans will govern all project activities, including data collection and analysis, health and safety, quality assurance/quality control, contamination and risk assessments, report development, and examination of potential remedial actions. The following plans have been prepared. Note that the Work Plan and Field Sampling Plan have been combined as a Work Plan/Sampling and Analysis Plan.

- . Work Plan/Sampling and Analysis Plan (WP/SAP)
- . Site Health and Safety Plan (SHSP)
- . Quality Assurance Project Plan

The Work Plan/Sampling and Analysis Plan describes objectives of the RI/FS; data quality objectives, data collection rationale; number and location of samples and analyses; field sampling procedures, contamination and risk assessment approach; and RI/FS report development. Potential hazards, levels of protection, and other considerations affecting the health and safety of field personnel are detailed in the Site Health and Safety Plan. Field and laboratory Quality Assurance/Quality Control (QA/QC) requirements for chemical analyses, laboratory operations, required detection limits, field operations, sampling, sample preservation, sample holding times, equipment decontamination, and chain-of-custody are detailed in the Quality Assurance Project Plan (QAPP).

### Objectives of the RI/FS

The overall objective of this RI/FS is to supplement existing investigatory work to support quantitation of site-related risks and assessment of remedial alternatives for the Cold Creek Swamp Operable Unit of the Cold Creek/LeMoyne sites. Specific tasks to be performed to meet these response objectives include the following:



- . Developing an inventory of environmental receptors present in the swamp, including key wetland plants and animals, and endangered or threatened species.
- . Delineating wetland boundaries and the extent of upland in the Cold Creek Swamp.
- . Characterizing the nature and extent of contamination present in swamp soil, sediment, surface water, and biota, including screening representative samples for Target Compound List analytes and thiocarbamates and examining the relationship between total and organic mercury both at depth and in biotically active zones.
- . Characterizing contamination upstream, downstream, and within Cold Creek Swamp, and the interaction of the surface water system with the ground-water regime based on existing data available from other previous and ongoing investigations, information to be gathered under this Work Plan, and other available information.
- . Estimating and verifying quantitative risks to human health and the environment due to site-related contaminants by modeling exposure and toxicity and measuring tissue concentration in key receptors.
- . Evaluating potential remedial alternatives.

#### Approach

A three stage field investigation will be used for data collection at this site. Stage I will include soil, sediment, and surface water sampling to characterize the nature and extent of contamination in the swamp and to focus sampling efforts for subsequent stages. In addition, a wetland delineation/ecological assessment survey will be conducted.

During Stage II, more intensive sampling will be conducted to characterize the nature and extent of contamination specifically within the bio-accessible zone of the swamp. The Stage II sampling will be focused to concentrate on the parameters determined to be representative of bio-accessible chemical contamination within the swamp. Existing data indicate that mercury will be the primary contaminant of concern for this study. This Work Plan is developed based upon that premise. Should additional contaminants be identified as significant as a result of Stage I testing, additional characterization of these contaminants will be added to the Stage II field effort, as appropriate.

Data generated during Stages I and II will be used to develop a preliminary ecological risk assessment and to conduct ecological risk modeling. Results of ecological risk modeling will be used to select representative numbers and types of biological species to be sampled and analyzed during Stage III. This staged approach will enable the consultant to optimize biological tissue collection. Species that have been found to be most at risk due to exposure to site contamination, based upon the ecological risk modeling, will be selected for Stage III sampling.

At the conclusion of Stage III data collection, a contamination assessment will be made to examine the nature and extent of site contamination and to examine contaminant transport pathways and potential impacts beyond the site area. Risk assessments will also be conducted to identify exposure pathways and magnitude of risk from contaminant exposure from both ecological and human health perspectives. The contamination assessment and risk assessment data will be compiled and combined into a comprehensive Remedial Investigation (RI) report in accordance with EPA protocols.

The Feasibility Study (FS) will be initiated midway through development of the RI. The FS will identify remedial action objectives, based upon the findings of the RI contamination and risk assessments, and the applicable or relevant and appropriate requirements (ARARs) governing remediation at the site. Potential remedial action alternatives will

be developed and examined with respect to evaluation criteria defined by EPA in the revised National Contingency Plan (NCP). Treatability studies will be conducted as needed during the FS. A particular consideration related to this site will be potential adverse impacts of remedial action alternatives to the Cold Creek wetland ecosystem. Alternatives that may result in greater destruction of the wetland than is necessary for the protection of natural resources will not be considered to be feasible.

The ultimate product of this investigation will be a final supplemental RI/FS report submitted to EPA Region IV. It will be a stand-alone document and will take into account all available OU3 data.

## 1. INTRODUCTION

The purpose of this Site Health and Safety Plan (SHSP) is to define requirements and designate protocols to be followed during the investigation of the Cold Creek Swamp Operable Unit of the Stauffer Chemical - LeMoyne and Cold Creek National Priority List (NPL) site. This SHSP applies to all personnel participating in investigations of the Cold Creek Swamp Operable Unit. In particular, this SHSP applies to personnel who are working outside of facility fencelines, and in the Cold Creek Swamp itself. When inside facility fencelines, the appropriate site health and safety guidance applies. As primary access to the site is via the Akzo facility, all personnel must be familiar with the Akzo Emergency Safety Procedures, attached to this SHSP as Appendix A.

All personnel on the Cold Creek Swamp site shall be informed of emergency response procedures and any potential fire, explosion, health, or safety hazards of particular operations. This SHSP summarizes those hazards in Section 3 and defines protective measures for various work tasks.

The following tasks will be performed during the field investigation of Cold Creek Swamp:

1. Characterization of horizontal and vertical nature and extent of contamination by sediment, soil, and surface water sampling; using hand apparatus (for example, trowels and cores) and split-spoon samplers.
2. Characterization of biota tissue contamination by sampling and analysis of fish and other organisms using electroshock apparatus, nets, and/or traps.
3. Delineation of wetlands boundaries by observation and characterization of vegetation and soil types.

4. Non-acquisitive observation and characterization of the ecosystem by ground truth and catch-and-release collection.

#### 1.1 SAFETY AND HEALTH GUIDELINES

Safety and health procedures outlined in the SHSP are designed to minimize the possibility of injury or chemical exposure during the investigation. This SHSP incorporates safety and health requirements and recommendations applicable to this investigation, including but not limited to the following:

- . Occupational Safety and Health Administration (OSHA) Standards for General Industry, 29 CFR 1910, particularly 29 CFS 1910.120, "Hazardous Waste Operations and Emergency Response"
- . National Institute of Occupational Safety and Health (NIOSH), OSHA, U.S. Environmental Protection Agency (EPA), and U.S. Coast Guard "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," October 1985
- . NIOSH Pocket Guide to Chemical Hazards
- . American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values for 1989-1990
- . Akzo Chemical Contractor Safety Rules
- . ICI Americas Inc., Basic Safety Rules for Consultants (Appendix B)

## 1.2 RESPONSIBILITIES

The chain of command for safety and health-related issues during investigative activities at Cold Creek Swamps is delineated below.

### 1.2.1 Certified Industrial Hygienist (CIH)

Responsibilities of the CIH include the following:

- . reviewing all health and safety documentation pertaining to the investigation;
- . reviewing and confirming, as necessary, onsite ambient air monitoring results, as well as changes in personal protective clothing and respiratory protection requirements; and
- . providing technical support to the Site Safety and Health Officer (SSHO), particularly in the modification of requirements in this SHSP or changes in the investigation Work Plan.

### 1.2.2 Site Safety and Health Officer (SSHO)

Responsibilities of the SSHO include the following:

- . stopping work when unacceptable health or safety risk exists;
- . providing a health and safety briefing to all site visitors and site personnel;
- . conducting any required monitoring, including collection of air samples, as necessary, and heat stress monitoring;
- . supervising decontamination to ensure complete decontamination of all personnel, tools, and equipment;

- . supervising the distribution, use, maintenance, and disposal of any personal protective equipment potentially used during investigations;
- . establishing and ensuring compliance with site control areas and procedures; and
- . preparing any incident reports required.

### 1.2.3 Field Personnel

All field personnel are responsible for following the requirements of this SHSP. In addition, they must report all accidents, illnesses, and near-miss incidents to the SSHO.

## 2. SITE DESCRIPTION

Cold Creek Swamp is located in southern Alabama, adjacent to the Mobile River approximately 20 mi north of the city of Mobile (Figure 2-1). The swamp parcel includes both wetland and upland areas. The wetland is primarily riverbottom hardwood forest with much of the original cypress canopy logged out and replaced by gums, ashes, and maples. The uplands include mixed pine and hardwoods with a sandy substrate.

The Cold Creek Swamp Operable Unit received wastewater from various chemical processes by discharge to an unnamed tributary to Cold Creek and the Mobile River. These discharges were ceased in the early 1970s during a program of source control and site cleanup activities. Residual contamination (primarily mercury, but including other metals and some organics) has been detected in swamp soils and sediments. The swamp is being investigated as a separate operable unit of an NPL site.



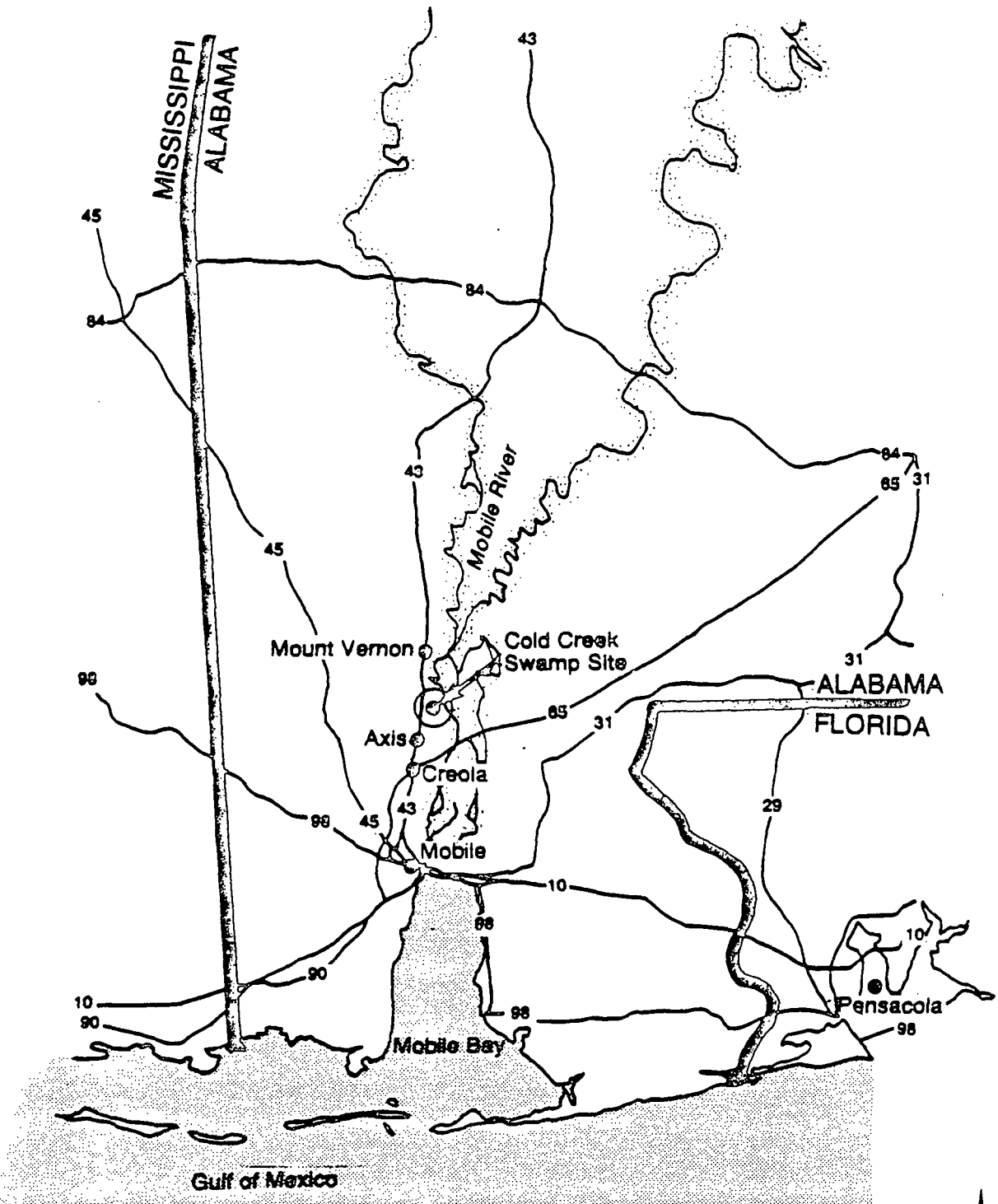
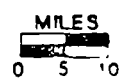


Figure 2-1. Cold Creek Swamp site location map.



### 3. HAZARD EVALUATION

This section evaluates the chemical, physical, and biological hazards potentially existing in the area of Cold Creek Swamp, as well as those potentially created by investigation activities. Each subsection describes tasks in terms of the specific hazards associated with it. Protective measures to be implemented during the tasks have been established based on this task-specific hazard evaluation.

#### 3.1 SURFACE WATER, SEDIMENT, AND SOIL SAMPLING

##### 3.1.1 Chemical Hazard Evaluation

Of the tasks described in this SHSP, this task presents the greatest hazard for chemical exposure anticipated for this project. However, as described below, this hazard is relatively low.

Cold Creek Swamp surface waters have not been extensively sampled. However, samples that have been analyzed revealed few detectable contaminants, with only low levels of metals being quantifiable under CLP protocols. None of the site related priority pollutant contaminants is highly soluble or volatile. Thus, exposure to workers via inhalation of volatilizing organic chemicals or dermal contact with contaminants in the water column are not of concern.

Similarly, high levels of volatile organics are not present in site soil or sediment. The only observed organic contaminants were low levels of thiocarbamate herbicides, which behave, in general, as semivolatile compounds. Oral toxicity of these compounds to mammals is low. Toxicity is expressed at doses ranging from tens to thousands of mg/kg/day. Such exposures are not expected based on the relatively low concentrations (less than 2 mg/kg) observed in samples from site sediments. Table 3-1 summarizes results of chemical analyses of Cold Creek Swamp soil samples collected during the initial RI/FS.

TABLE 3-1 COMPOSITE SOIL SAMPLES - COLD CREEK SWAMP - PRIORITY  
 POLLUTANTS AND THIOCARBAMATES IN mg/kg (All priority  
 pollutants not shown are ND)

<u>Metals</u>	<u>CCS-1S</u>	<u>CCS-2S</u>	<u>CCS-3S</u>
Arsenic	5	5	5
Beryllium	0.46	0.31	0.81
Chromium	130	140	180
Copper	35	14	34
Lead	31	BMDL	26
Mercury	300	190	230
Nickel	51	32	56
Zinc	171	312	561
<u>Thiocarbamates</u>			
EPTC (Eptam)	0.1	0.2	1.0
Butylate (Sutan)	ND	0.3	1.8
Vernolate (Vernam)	ND	0.2	1.1
Pebulate (Tillam)	ND	ND	0.3
Molinate (Otdram)	0.1	0.4	0.9
Cycloate (Ro neet)	ND	0.5	1.8
<u>Other Inorganics</u>			
Chloride	ND	50	50

ND = not detected

BMDL = detected below method detection limit

Several of the thiocarbamates found in site sediments have been indicated through laboratory study to be skin or eye irritants. In the field, low concentrations and reduced availability due to presence of organic materials are expected to ameliorate these effects. Nonetheless, potential exists for site-related contaminants to cause skin and eye irritation.

Mercury is the primary contaminant of concern, and has been found at concentrations up to 690 mg/kg in swamp sediments (Tables 3-1 and 3-2). The initial RI/FS concluded that mercury is present primarily in inorganic forms bound in the sediments. Organic mercury is closely coupled to biotic processes in the swamp, entering food webs via microbial transformations. The primary concern for the inorganic bound mercury in the sediments of Cold Creek is through dermal contact.

### 3.1.2 Required Personal Protective Equipment (PPE)

Based on the above hazard evaluation, the potential for inhalation of significant concentrations of organic and inorganic chemicals during either surface water or sediment sampling is considered negligible, and no respiratory protection is required during this activity. Due to the lack of organic chemical data for the sediments and the potential presence of forms of inorganic chemicals which may be irritating if directly contacted, neoprene or nitrile gloves must be worn for all sediment sampling. Care must be used to avoid contact of sediments and sediment waters with the eyes. During sampling, when sediments or waters are being actively manipulated (to extract sample from the soil or water column, or to fill bottles), goggles or eyeglasses must be worn. This requirement applies only to those times when sample materials are being handled. Contact of gloves or exposed garments with the eyes is to be avoided at all times. Portable eyewash bottles shall be accessible during all sampling with sufficient supplies of clean water to provide a 15-minute eye wash, and shall be used should irritating materials contact the eyes. If irritation persists, the person must be taken immediately

TABLE 3-2 COMPOSITE SOIL SAMPLES - COLD CREEK SWAMP - MERCURY IN mg/kg

	<u>CCS-2 1E</u>	<u>CCS-2 1W</u>	<u>CCS-3 1W</u>	<u>CCS-3 1E</u>	<u>CCS-4 1E</u>	<u>CCS-4-2E</u>	<u>CCS-4-3E</u>	<u>CCS-4-3W</u>	<u>CCS-4-2W</u>	<u>CCS-4 1W</u>	
Mercury	1.8	7.3	690	29	58	1.2	2.0	BMDL	0.14	15	
	<u>CCS5- ZW</u>	<u>CCS-5 1W</u>	<u>CCS-5 2E</u>	<u>CCS-5 1E</u>	<u>CCS-6 1E</u>	<u>CCS-6-1W</u>	<u>CCS-6-2W</u>	<u>CCS-7-3W</u>	<u>CCS-7-2W</u>	<u>CCS-7 1W</u>	
Mercury	12.7	9.3	5.3	1.8	4.9	6.0	5.6	0.9	22	7.7	
	<u>CCS-7 1E</u>	<u>CCS-7 2E</u>	<u>CCS-7 3E</u>	<u>CCS-7 4E</u>	<u>CCS-7 5E</u>	<u>CCS-7-6E</u>	<u>CCS-8-1W</u>	<u>CCS-8-1E</u>	<u>CCS-8-2E</u>	<u>CCS-8 3E</u>	<u>CCS-8-4E</u>
Mercury	103	35	49	25	10.5	17	2.1	8.3	2.2	1.7	7.0

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to the hospital. Where appropriate, waterproof clothing should be worn to limit contact with water and wet sediments during sampling. The entry level of PPE is termed Level D and is fully described in Section 6.

A specific monitoring plan will be used during the initiation of sediment sampling activities to determine whether or not protection levels continue to be adequate. This plan includes the use of an HNU or an OVA to monitor breathing zone contamination during intrusive activities. Daily calibration and records will be kept in a site log book. PPE will be upgraded, if necessary, in response to environmental conditions. Air monitoring requirements are addressed in more detail in Section 7 of this document.

### 3.2 AQUATIC LIFE SAMPLING AND FIELD SURVEY OF FISH COMMUNITIES

#### 3.2.1 Hazard Evaluation

Workers collecting fish samples are not expected to be significantly exposed via dermal contact with chemicals potentially present in fish tissues or in surface water (Section 3.1.1).

#### 3.2.2 Required Personal Protective Equipment

Based on the above hazard evaluation, no respiratory protective equipment is required for fish sampling and community survey operations. Due to the potential to contact sediments during biota sampling, gloves should be worn when necessary, as well as waterproof clothing where appropriate. The entry level of PPE is termed Level D, which is fully described in Section 6.

### 3.3 DELINEATION OF WETLANDS BOUNDARIES

No chemical hazards are anticipated during the performance of this task.

### 3.4 ECOSYSTEM CHARACTERIZATION

No chemical hazards are anticipated during the performance of this task.

### 3.5 PHYSICAL HAZARDS

Physical hazards that may be encountered during sampling and surveying operations are discussed in subsections below.

#### 3.5.1 Boating Operations

Boats will be employed for limited sampling and observation in Cold Creek Swamp and in the Mobile River. The buddy system will be in effect during all boating operations. No person will conduct boating operations alone. Potential hazards and precautions associated with boating operations include the following:

- . Maneuvering boat in narrow channels with partial or complete obstruction of the waterway by branches and logs; care must be taken to avoid colliding with objects at or just below the water surface.
- . Adverse weather conditions (Section 3.5.3).
- . Fueling of boat; no ignition sources can be present, and adequate ventilation must be ensured to prevent accumulation of gasoline vapors and explosive atmospheres.
- . Overloading boats; to prevent capsizing, boat loads must be kept low and distributed evenly; changing weather conditions should be considered when determining daily load limits.
- . Running aground; if boat is caught on rocks or other solid material, it must be checked for holes and the holes must be blocked prior to releasing the boat.

- . Electrofishing; all personnel involved with electrofishing shall be thoroughly familiar with all phases of the equipment and its operations. A railing capable of bearing the weight of at least two persons shall surround the netting platform of the electrofishing boat. All personnel should be aware of all safety precautions and capable of immediate first aid for electric shock and drowning. Treadle switches shall be used on all electrofishing boats so that the circuit will be broken if anyone falls overboard. All members of an electrofishing crew shall wear life preservers. As any electrofishing locations will either be isolated and of limited public access (Cold Creek Swamp), or open and highly visible (Mobile River), passersby will not likely be present in the fishing locations. Electrofishers should observe activities of passersby and shock only when conditions are safe. Similar concerns for electric shock should be observed when backpack electrofishing in upper swamp areas.

At a minimum, all boats must be equipped with a first aid kit, distress-signaling equipment, oars or a paddle, a bailing device, U.S. Coast Guard approved personal flotation devices (one must be accessible for each person onboard), and a portable fire extinguisher.

### 3.5.2 Biological Hazards

Depending on the time of year and weather conditions, snakes, insects (e.g., mosquitoes, wasps), and mites (including chiggers and ticks) may be present in and around the swamp during work operations.

Extreme care must be taken by non-biologists working at this site. Snakes may be present in brush at the water's edge and in the trees closely overhanging the swamp surface. Areas should be carefully surveyed prior to entering to conduct work tasks. If snakes are present, work should be moved to another area until the creatures leave or are removed by a qualified site biologist. A snake kit should be onsite



at all times. Workers bitten by poisonous or suspected poisonous snakes must be immediately taken to the nearest hospital (Section 10). **UNDER NO CIRCUMSTANCES** should attempts be made by non-biologists to kill snakes. First, these animals are one of the natural resources to be protected, and more importantly, up to half of all venomous snakebites are caused by casual handling. Many of these instances involve attempts to kill.

Bites from certain ticks (the deer tick) may cause Lyme disease. The disease itself develops in three stages. The first stage erupts 2 to 30 days after a tick bite and includes flu-like symptoms and a bite area often characterized by a smooth red rash surrounding a small white bump. A blood test will verify a diagnosis of Lyme disease, although early diagnosis may be difficult if the rash does not develop. The effects of Lyme disease are treated with antibiotics and are especially effective if treated in its early stages. Precautions will be taken to lower the potential for tick bites during work operations. Workers should wear long-sleeved shirts and pull long socks over pants cuffs. Light-colored clothing should be worn to aid in detecting ticks on clothing. Certain insect repellants (e.g., DEET) may be sprayed on the outside of clothing. To minimize potential sample contamination problems only one brand of insecticide will be used for all workers. Sample contamination could be attributed to the insecticide. The specific insecticide to be used will be identified at the pre-entry site briefing. Workers should frequently visually inspect each other's clothing for the presence of ticks, as well as thoroughly check their own clothing, skin, and hair for ticks periodically and at the end of each work day. If a tick attaches itself to a worker's body, the tick should be removed by gently tugging with tweezers where the mouth parts enter the skin. The tick should not be killed prior to removal.

Wasp nests are also present in the tree branches overhanging the swamp and along the shores. The survey of the work area should include scanning for wasp nests. In the event of a wasp sting, the stinger should be removed immediately and the sting covered. The first aid kit

should include a bee sting kit. Prior to initiation of work, workers must inform the SSHO of any allergies to bee stings. If personnel with allergies are bitten during work operations, they should be immediately taken to the nearest hospital.

### 3.5.3 Adverse Weather Conditions

Hurricane "season" is from approximately 1 June to 30 November each year. If hurricane presence is forecast, site work should be terminated until it is safe to proceed. Should workers be onsite during a sudden hurricane, precautions must be taken to minimize damage, reduce injury to site workers, and facilitate recovery from the storm.

Close attention should be paid to weather warning signals, and radio weather forecasts should be monitored by tuning in to the NOAA marine weather channel periodically. In the event of adverse weather such as high winds or thunderstorms, work should be discontinued by the SSHO in conjunction with the site manager.

### 3.6 HEAT STRESS

Heat stress may be caused by the interaction of environmental conditions, clothing, workload, and individual characteristics of a worker. All personnel involved in this project must be familiar with the signs and symptoms of heat stress.

- . Heat Exhaustion--Dizziness, light-headedness, slurred speech, rapid pulse, confusion, fainting, fatigue, copious perspiration, cold skin that is sometimes pale and clammy, and nausea.
  
- . Heat Stroke--Hot, dry, flushed skin, lack of or reduced perspiration, nausea, confusion, rapid pulse, delirium, and coma (in some cases). Heat stroke can be fatal and must be immediately treated as a medical emergency.

Section 7.4 discusses heat stress monitoring procedures. Heat stress can be prevented by resting frequently in a shaded area and consuming large quantities of fresh, potable water. If heat exhaustion symptoms are observed, the person will be required to rest in a shaded area and consume liquids. If symptoms are widespread or observed frequently, an appropriate work/rest regimen will be instituted. This regimen may involve limiting the work period so that after one minute of rest, a person's heart rate (HR) does not exceed 100 beats/min. If the HR is higher than 100 beats/min, the next work period should be shortened by 22 percent, while the length of the rest period stays the same. If the HR is 110 beats/min at the beginning of the next rest period, the following work cycle should be shortened by 33 percent. Resting HR will be determined prior to the start of onsite activities. A healthy individual's resting HR is usually 60 to 72 beats/min.

If symptoms of heat stroke are observed, the victim will be transported to the nearest hospital immediately. Workers should not hesitate to seek medical attention if heat stroke is suspected. Phone numbers for the nearest hospitals and ambulances are provided in Attachment G.

#### 4. TRAINING

Note: The Cold Creek Swamp is listed on the NPL. Accordingly, the provisions of 29 CFR 1910.120 apply.

##### 4.1 MINIMUM TRAINING REQUIREMENTS

Personnel performing intrusive operations in Cold Creek Swamp (i.e., sediment, soil, surface water, and benthic sampling) must be trained as required by the U.S. Department of Labor, OSHA, 29 CFR 1910.120. For personnel involved in surface water, sediment, and soil sampling activities, this training shall consist of the following:

- . a minimum of 40 hours' initial instruction offsite,
- . a minimum of 3 days' actual field experience under the direct supervision of a trained, experienced supervisor,
- . 8-hour refresher training annually, and
- . 8-hour supervisor training (required for SSHO only).

Personnel conducting nonintrusive observation and sampling (including biota surveys with binoculars or spotting scopes, catch-and-release collection, and fish sampling) are required to have a minimum of 24 hours of initial instruction offsite and supervision by an experienced trained supervisor. In this case, the supervisor must have had training consisting of 40 hours of instruction, an 8-hour annual refresher, and 3 days' supervised field experience.

#### 4.2 ADDITIONAL TRAINING

Onsite management and supervisors who are directly responsible for or who supervise employees shall receive at least 8 additional hours of specialized training on managing health and safety operations at these types of sites.

One employee onsite at any time must be currently trained in first aid/CPR. Certification of such training must be kept on file in the office supplying personnel for site work. Dates of this training and the supervisor's training shall be recorded on Attachment B of the field copy of this SHSP.

#### 4.3 PRE-ENTRY ORIENTATION SESSION

Prior to initiation of investigative operations, all personnel (including visitors entering the investigation area) shall attend a pre-entry orientation session presented by the SSHO. This session shall address the degree and nature of potential health and safety hazards, training, and medical requirements for all site personnel, required levels of PPE, safe work practices, emergency procedures, and decontamination procedures.

## 5. MEDICAL REQUIREMENTS

### 5.1 PROTOCOL

Personnel involved in soil, sediment, benthic, and water investigative operations only must be approved for this work by an occupational physician based on receiving a comprehensive medical examination within 12 months prior to assignment to this project. The protocol for the examination will be determined by the examining physician who must specialize in the practice of occupational medicine.

The examination must be repeated at least annually and whenever an employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or the employee has been exposed above the established occupational exposure limits.

### 5.2 INFORMATION PROVIDED TO THE PHYSICIAN

Prior to the medical examination, employers will provide information for each individual to the examining physician. This information shall be updated annually and shall include:

- . a description of the employee's duties as they relate to the employee's exposure,
- . the employee's exposure levels or anticipated exposure levels, and
- . a description of any personal protective equipment used or to be used.

### 5.3 PHYSICIAN'S WRITTEN OPINION

The physician shall provide the employer with a written opinion regarding each examined employee that includes the following:

- . medical examination and test results;
- . the physician's opinion concerning the employee's medical condition (any conditions which would increase the risk of material impairment of the employee's health due to work in hazardous waste operations or from the use of respirators must be noted);
- . the physician's recommended limitations upon the employee's work assignment; and
- . a statement that the employee has been informed by the physician of the results of the examination and any medical conditions that require further examination or treatment.

The physician will also inform the employee of the results of the examination.

### 5.4 LOST-TIME ILLNESS

Any employee who develops a lost-time illness or injury during the period of the contract (which might be job-related) must be evaluated by the occupational physician.

### 5.5 RECORDKEEPING

An accurate record of the medical surveillance required for this program will be retained for at least 30 years as specified by 29 CFR

1910.120. This record will include, at a minimum, the employee's name and social security number, the physician's written opinion, any employee medical complaints related to exposure to hazardous substances, respiratory fit-testing documentation (if required), and a copy of any information provided to the examining physician by the employer.



## 6. PERSONAL PROTECTIVE EQUIPMENT

Minimum personal protective equipment requirements for the planned work operations were identified in Section 3 and are described in detail below. Although not discussed in previous portions of this SHSP, Level C PPE requirements are discussed since upgrading from Level D to Level C may be necessary based on monitoring and observation of site conditions during work operations. Section 7 contains details concerning real-time air monitoring.

### 6.1 LEVEL D PPE

The following PPE is required to be worn during all work operations.

- . Waterproof Clothing/Coveralls (cloth coveralls may be worn if the potential for contacting water is negligible)
- . Nitrile Gloves (required during all sediment, soil, and benthic contact activities)
- . Steel Toe and Shank, Neoprene Boots/Shoes (waders may be necessary depending on type of work operation)
- . Safety Glasses
- . Hard Hat as appropriate (when overhead hazards are present)
- . Snake leggings (when walking in rattlesnake habitats)

### 6.2 LEVEL C PPE

The following PPE must be worn when air monitoring indicates significant levels of potentially hazardous chemicals or if observation of site conditions (e.g., generation of contaminated dust) indicates a potential

respiratory hazard due to inhalation of contaminated dust. All respiratory protective equipment must be approved by NIOSH/Mine and Safety and Health Administration (MSHA).

- . Full-Facepiece, Air-Purifying Respirator with Combination Organic Vapor and High Efficiency Particulate Cartridges
- . Polycoated Tyvek Coveralls
- . Nitrile Outer Gloves
- . Latex Inner Gloves
- . Steel Toe and Shank Neoprene Boots
- . Hard Hat as appropriate (when overhead hazards are present)
- . Snake Leggings (when walking in rattlesnake habitats)

### 6.3 UPGRADING OR DOWNGRADING OF PPE LEVELS

As detailed in Section 7, the level of PPE required in various areas and during certain operations may be upgraded or downgraded based on the results of air monitoring conducted during investigative activities.

### 6.4 MAINTENANCE AND IN-USE INSPECTION OF PPE

Effective use of PPE requires that the equipment be properly used, maintained, and inspected periodically throughout the day. Upon issue, the user should determine that the clothing material is correct for the specific task, and should visually inspect the PPE for imperfect seams, non-uniform coatings, tears, and malfunctioning closures.

Gloves and coveralls will be regularly inspected and replaced immediately if torn. Disposable coveralls will be replaced daily, at a minimum. Reusable gloves will be decontaminated (Section 9) whenever exiting the site.

If respirators are needed, they will be inspected and checked daily by the user for leaks both visually and with negative or positive pressure checks on the user. Respirator cartridges will be replaced daily or more frequently if excessive resistance develops or if breakthrough occurs. All respirator maintenance will be performed by the SSHO. Decontamination procedures for respirators are discussed in Section 9.

## 7. ENVIRONMENTAL MONITORING

The purpose of air monitoring is to identify and quantify airborne contaminants in order to verify and determine the level of PPE needed, and to ensure proper selection of engineering controls and work practices. The monitoring program may be increased, reduced, or modified by the CIH and the SSHO based on the actual site conditions and monitoring results. All Monitoring will be accomplished under the direction of the CIH.

### 7.1 REAL-TIME MONITORING

The air monitoring program is intended to assess levels of employee exposure and to determine whether respiratory protection is needed for certain operations in various areas onsite. A total volatile organics instrument (OVA or HNU with 10.2 ev lamp) will be used initially during surface water/sediment sampling and soil sampling activities described in Section 1 to monitor airborne concentrations of volatile organic contaminants in the worker's breathing zone and at the anticipated source during initial operations. Sediment sampling activities associated with sediment toxicity testing must also be similarly monitored. If levels of total volatile organics in the breathing zone onsite exceed 5 ppm above background for a period of longer than 5 minutes, work operations will cease and workers will evacuate the immediate area until concentrations dissipate. If work must continue or levels do not dissipate, PPE levels must be upgraded to Level C (Section 6). If no above-background concentrations are observed during initial start-up of surface water/sediment and soil sampling, then monitoring may be discontinued. If, however, monitoring indicates the presence of volatile organic compounds (VOCs) at concentrations exceeding the action level, then monitoring must continue periodically throughout the surface water/sediment and soil sampling period. Monitoring is not necessary during fish, and earthworm/plant seed sampling activities. Monitoring must also be conducted in the following situations:

- . continuously, when readings exceeding the action level listed above are obtained for a specific operation;
- . continuously, when personnel are working in areas with obvious contamination; and
- . initially when a change in work scope affects the degree of contact with contaminants in various media.

Instruments shall only be used by employees who have been trained in the proper operation, use, limitations, and calibration of the monitoring instrument and who have demonstrated skills necessary to operate the instrument.

## 7.2 CALIBRATION AND MAINTENANCE

All direct-reading instruments must be calibrated at least once daily. A known concentration of a specific gas (usually isobutylene or methane, depending on the instrument) will be used. Instructions in the manufacturer's operations manual regarding cleaning and maintenance of the instrument shall be followed. Each calibration must be recorded on the environmental monitoring log. Recalibration is required whenever the instrument is turned "on" from the "off" position. Recalibration is not required when the instrument is turned on from "stand-by."

## 7.3 RECORDKEEPING

The results of air monitoring shall be recorded on standard air monitoring data forms. Calibration and maintenance of the instrument shall also be recorded on this sheet.

#### 7.4 HEAT STRESS MONITORING

Heat stress monitoring is applicable primarily when PPE equipment is required. An outdoor thermometer is to be mounted in a shaded area and readings recorded at the beginning, midpoint, and end of the work day. Ambient temperatures at the site combined with the requirements for PPE use may contribute to heat stress. The SSHO should follow the procedures outlined in Section 3 when ambient temperatures reach or exceed 70 F. Heart rates will be monitored when heat stress conditions occur. The SSHO should consult with the CIH if conditions indicate or if work-rest regimens are not effective in reducing stress of employees. When ambient temperatures exceed 80 F, monitor pulse rate, as described in Section 3, at least once per day. Above 85 F, monitor pulse rates every 2 hours, at a minimum.

## 8. SITE CONTROL

The following sections define measures and procedures for maintaining site control. Site control is an essential component in the implementation of this SHSP.

### 8.1 WORK ZONES

Work zones are designed to prevent employees, visitors, and the surrounding environment from exposure to contamination during all aspects of site investigation activities. All work zones and support areas will be established by the SSHO. Movement of personnel and equipment between zones and on and off the site will be controlled by means of designated access points. Minimum PPE for work in each zone is described in Section 6.

The Exclusion Zone for this site is considered to be the Cold Creek Swamp, and the delineation should be clear based on topography and vegetation. Level D PPE will initially be worn in this zone. The boundary between the contaminant reduction zone and exclusion zone will be clearly marked in the field using flagging or other appropriate means as will the boundary between the contaminant reduction zone (CRZ) and the support zone. It is impractical to control the exclusion zone through fencing, however, the nature of the zone and proximity to the Akzo and ICI chemical plants should be sufficient to prevent access to this zone except through the CRZ. The CRZ can be controlled throughout the marked perimeter.

The Contamination Reduction Zone will be established as a buffer zone between the Exclusion Zone and the Support Zone (Figure 8-1). All personnel and equipment leaving the Exclusion Zone shall do so through the Contamination Reduction Zone. The personnel and equipment decontamination stations (Section 9) will be located in this zone. The Contamination Reduction Zone will require a level of PPE equal to or one level below the level of PPE used in the Exclusion Zone.

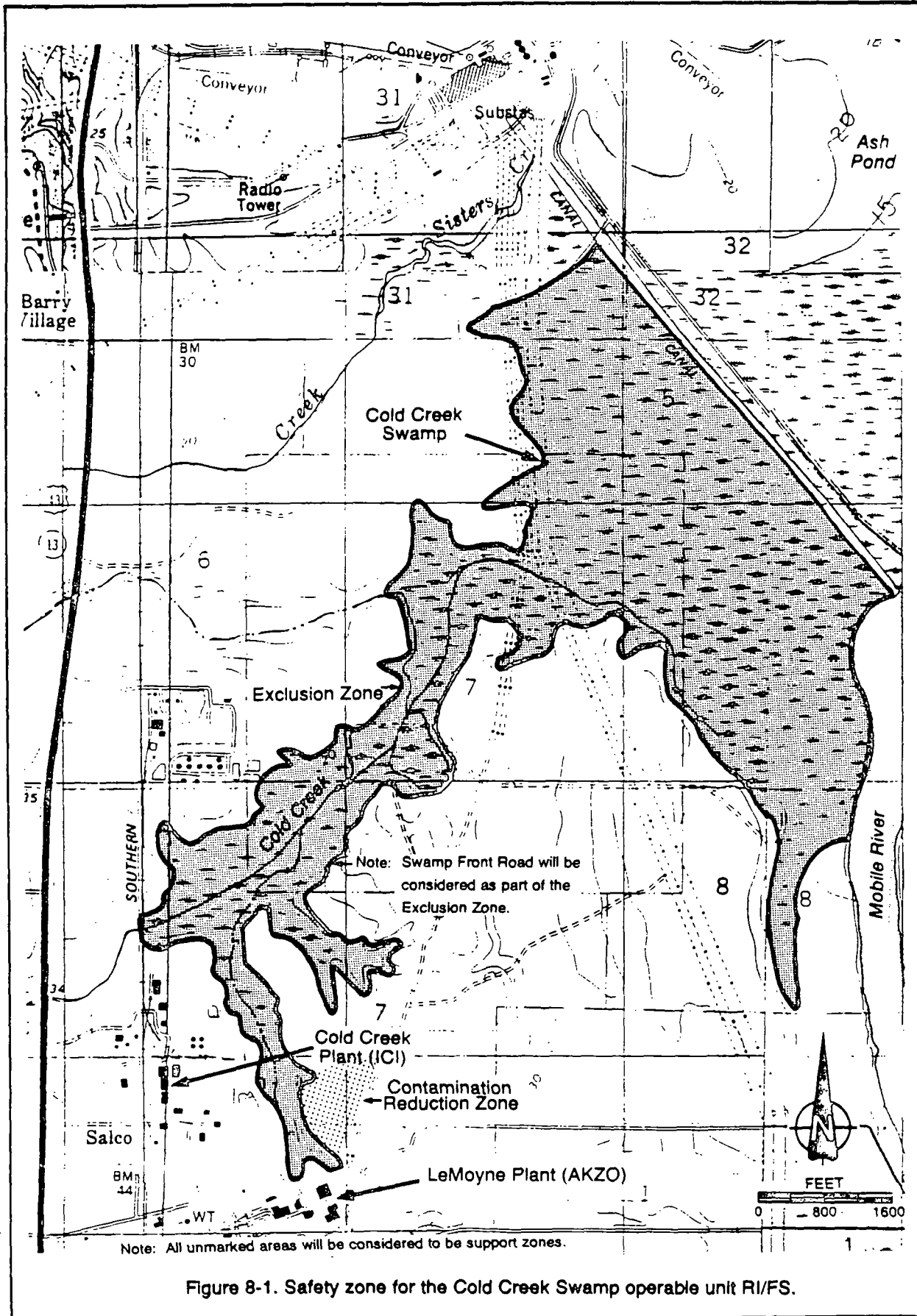


Figure 8-1. Safety zone for the Cold Creek Swamp operable unit RI/FS.





The Support Zone will be established on the Akzo plant property south of the Cold Creek Swamp (Figure 8-1). No special clothing or protective equipment, except safety glasses, hard hats, and safety boots, is required in this area. Operational direction and support facilities (e.g., supplies, storage, etc.) will be located in this area. No personnel will be permitted to enter the Support Zone from the Exclusion Zone without first undergoing decontamination in the Contamination Reduction Zone.

## 8.2 COMMUNICATIONS

A method of communication between contractor personnel and Akzo personnel at the complex using portable hand-held radios will be established for communications in the event of emergency. Emergency response procedures are discussed in more detail in Section 10.

## 8.3 BUDDY SYSTEM

All work in the Exclusion Zone, over or near surface water, and during field reconnaissance will be scheduled so that no employee works alone at any time. The buddy system will help ensure against an employee becoming stressed without a coworker being aware of his/her condition. Workers should "watch out" for each other while working close to potential chemical and physical hazards and should ensure that there are no tears or other problems with a coworker's PPE.

## 8.4 SAFE WORK PRACTICES

The following safe work practices will be adhered to at all times:

- . Daylight hours only.
- . No eating, drinking, or smoking, except in areas designated by the SSHO.

- . No horseplay.
- . Report unsafe conditions to the SSHO.
- . Inspect all PPE prior to use.
- . If toilet facilities are not available within a 5-minute walk, provide a vehicle and directions to the nearest available facilities.
- . If a telephone is not available within a 3-minute walk, provide a mobile telephone. All communications should be handled through the aforementioned two-way radios with the Akzo plant prior to using the mobile telephone.
- . Have a vehicle available at all times for emergency use by the field crew. Each crew member must know where the keys are and the vehicle must be equipped with a copy of this SHSP.

#### 8.5 DAILY START-UP AND SHUTDOWN PROCEDURES

Prior to the daily start-up of work activities, the SSHO, in conjunction with the site manager and the CIH if necessary, will review site conditions to determine if modification of work and safety plans are needed. The SSHO will then brief personnel on any new health and safety procedures and will check and calibrate all safety equipment to ensure proper function. After ensuring that all required equipment, including methods of communication and first aid kits, are present, the SSHO will initiate monitoring activities.

At the end of daily operations and before breaks, all personnel will proceed through appropriate decontamination procedures. The SSHO will complete an Environmental Monitoring Report (Attachment E) at the end of each working day, and submit the completed form to the CIH.

## 9. DECONTAMINATION

During the pre-entry orientation session, all personnel will be briefed by the SSHO on the appropriate decontamination procedures as delineated in this section. Decontamination will be performed to minimize potential contamination of equipment and the potential spread of contamination from one area to another. All personnel should minimize contact with contaminants in order to minimize the need for extensive decontamination.

### 9.1 PERSONNEL DECONTAMINATION

No worker, except under certain emergency conditions, shall leave the Exclusion Zone without going through proper decontamination sequences. Upon leaving the Exclusion Zone, personnel will wash non-disposable boots and outer non-disposable gloves with a wash solution (a detergent/water solution). Outer disposable clothing will be removed and placed in sealed plastic bags for disposal. All personnel must wash hands and face with clean soap and water prior to breaks, meals, etc. Launder all clothing worn prior to re-use.

### 9.2 DECONTAMINATION OF AIR-PURIFYING RESPIRATORS (APRs)

In the field, APRs should be washed/rinsed with soap and water. The mask should then be wiped with disinfectant wipes and allowed to air dry. Cleaned APRs should be stored in clean plastic bags in the Support Zone. Respirator cartridges will be changed at least daily or more frequently if real-time air monitoring data indicate potential saturation concentrations exist or breathing resistance increases significantly. Removed cartridges should be deliberately damaged to prevent accidental re-use. Each individual will be assigned his/her own respirator for exclusive use. Respirators will be identified by employee initials written in permanent ink.

### 9.3 EQUIPMENT DECONTAMINATION

Sampling equipment will be decontaminated in accordance with procedures as defined in the Work Plan for this site.

### 9.4 DISPOSAL OF DECONTAMINATION WASTES

All equipment used for decontamination shall be decontaminated as above or disposed of in onsite trash receptacles. Non-disposable work clothing shall be laundered daily. Old, worn-out clothing may be disposed of in trash receptacles after laundering.

## 10. EMERGENCY RESPONSE PLAN

Emergency conditions that may occur at the Cold Creek Swamp area include medical emergencies (including overexposure of personnel to onsite contaminants, drowning, snake bite, or heat stress), fire, and hurricanes. Fire and/or explosion emergencies potentially occurring on industrial property may impact personnel in the Cold Creek Swamp. Akzo facility health and safety plans must be followed for industrial emergencies. While facility emergencies will generally be handled by qualified industry employees, initial response and/or first aid may need to be provided by field personnel.

### 10.1 INITIAL RESPONSE AND EVACUATION PROCEDURES

In case of a hazardous materials emergency, the SSHO will assume full control and direction of the emergency response as the Incident Commander. The Incident Commander will initially identify and evaluate hazards. All emergency responders and communications will be coordinated and controlled through the Incident Commander. The Incident Commander will lead personnel to a safe area. This safe area must be identified by appropriate understanding of exposure hazards, including wind direction and intensity, distance, and type of hazard. Initial response and evacuation procedures must be discussed in advance of any activities by the SSHO and appropriate Akzo personnel and followed thereafter for the duration of the field activities. Any initial communication from contractor personnel working in the swamp must be made to Akzo personnel. The SSHO may be relieved as Incident Commander by the Akzo Emergency Coordinator or Fire Chief, as appropriate. The SSHO is only responsible for directing the activities of field investigation personnel.

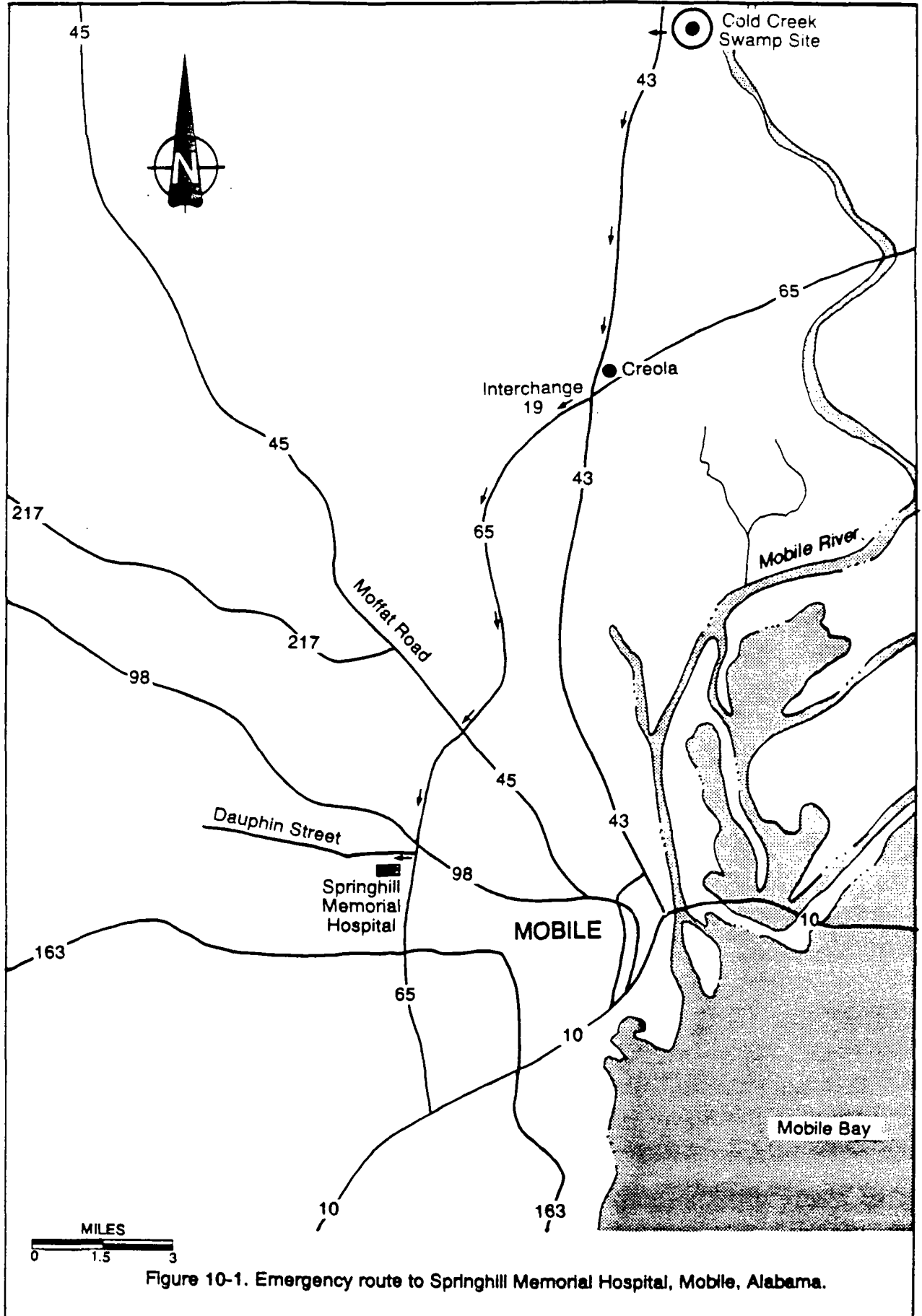


Figure 10-1. Emergency route to Springhill Memorial Hospital, Mobile, Alabama.



## 10.2 EMERGENCY EQUIPMENT

Emergency equipment which will be onsite during all work activities includes, but is not limited to, the following:

- . Two way radio for communication of emergencies to Akzo plant emergency response officer.
- . portable emergency eye wash with a capacity for providing clean water at a rate of at least 2 gpm for a 20-minute period,
- . two 2-lb multipurpose (ABC-rated) fire extinguishers,
- . an adequately stocked first aid kit, including a snake bite and wasp sting kit,
- . cellular mobile telephone, and
- . an emergency alarm device.

## 10.3 PRE-EMERGENCY PLANNING

During the daily/periodic briefings, the SSHO will remind all personnel of the provisions of this Emergency Response Plan, communication systems, and evacuation routes. The chemical and physical hazards discussed in Section 3 should also be reviewed to aid in the recognition and prevention of site emergencies. The Emergency Response Plan will be reviewed and revised periodically by the SSHO and the CIH to ensure that it is adequate and consistent with site conditions.

At the pre-entry briefing, the SSHO should instruct all personnel in the proper use of the fire extinguisher. This procedure consists of pulling the safety pin, pointing the extinguisher at the base of the flames, and discharging the extinguisher by sweeping the flames from a distance of

about 6 ft. The extinguisher operator should move in as the flames are extinguished. Personnel will attempt control of only very small fires using the fire extinguishers onsite. Uncontrolled fires must be reported by the Incident Commander to Akzo with evacuation of the immediate area by all contractor personnel.

The SSHO must make sure that he/she knows the route to the hospital and is familiar with the location of the safe evacuation area designated by Akzo. One person onsite at any time must be currently trained in first aid/CPR.

#### 10.4 OPERATIONS SHUTDOWN

Operations shutdown may be mandated by appropriate Akzo personnel, the SSHO, or the contractor Incident Commander. Conditions warranting work stoppage include the following:

- . uncontrolled fire,
- . any condition judged by the SSHO to be immediately dangerous to life and health,
- . heat stress illness exhibited by site workers, or
- . air contaminant concentrations in excess of the protection factors afforded by the respirators in use.

When any of these conditions exist, operations will be stopped and the site secured. All personnel will leave the work area until qualified Akzo personnel have determined that operations may resume. If conditions allow, decontamination procedures should be followed when leaving the work area.



Emergency numbers for the following project personnel should be provided:

Certified Industrial Hygienist	(Home) (Work)
Site Safety and Health Officer	(Home) (Work)
Site Manager	(Home) (Work)
Field Activities Manager	(Home) (Work)
Project Manager	(Home) (Work)
Corporate Safety and Health Officer	(Home) (Work)

#### 10.5 EMERGENCY MEDICAL TREATMENT PROCEDURES

If an injury or illness is minor, full decontamination of the worker should be done and first aid administered prior to transport to the nearest medical facility. If a worker is critically injured in the Exclusion Zone, the worker must be removed immediately from the area while attempting to grossly decontaminate him/her. Medical attention must be sought immediately and first aid should be administered while waiting for an ambulance or paramedics. All injuries and illnesses must be immediately reported to the site manager and recorded on the Daily Activity Report (Attachment H) by the SSHO.

A map to the nearest hospital is provided as Figure 10-1. A list of phone numbers for hospitals and ambulances in the area is provided in Attachment G. These numbers should be prominently posted during all work activities.

FIG 10-1 MISSING

## 10.6 HURRICANE PREPARATIONS

As noted in Section 3, the area where operations will occur is susceptible to hurricanes during several months of each year. The SSHO should brief employees onsite concerning these hurricane procedures during the pre-entry briefing.

ATTACHMENT A HAZARDOUS SUBSTANCES DETECTED IN SOIL AT COLD CREEK SWAMP

Contaminant	Maximum Concentration Detected (mg/kg)	PEL/TLV (1)	Route of Exposure	Signs and Symptoms of Exposure
Arsenic	5	0.2 mg/m <sup>3</sup>	Inh, Derm, Ing	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin; carcinogenic
Beryllium	<0.83	0.002 mg/m <sup>3</sup>	Inh	Respiratory symptoms, weakness, fatigue, weight loss; carcinogen
Chromium	180	1.0 mg/m <sup>3</sup>	Inh, Ing	Histologic fibrosis of lungs; chromium VI carcinogen
Copper	35	1 mg/m <sup>3</sup>	Inh, Derm, Ing	Irritation of mucous membrane, pharynx; nasal perforation; eye irritation; metal taste; dermatitis
Lead	31	0.05 mg/m <sup>3</sup>	Inh, Derm, Ing	Lassitude; insomnia; pallor, eye grounds; anorexia, low weight, malnutrition; constipation, abdominal pain, colic; hypotension; anemia; gingival lead line; tremor, paralysis of the wrist
Mercury	300	0.01 mg/m <sup>3</sup>	Inh, Abs, Ing	Cough, dyspepsia, bronchial pneumonia, tremor, insomnia; irritability, indecision, headache; fatigue, weakness, stomatitis; salivation, GI effects, anorexia, low weight, irritation of eyes, skin
Nickel	56	1 mg/m <sup>3</sup>	Inh, Derm, Ing	Sensitation dermatitis; allergic asthma; nasal cavities, pneumonitis; (carcinogenic)
Zinc	220	10 mg/m <sup>3</sup>	Inh, Derm	Metal fume fever; nausea; chills, shortness of breath; chest pain

(1) Permissible Exposure Level (OSHA) or Threshold Limit Value (ACGIH) for time-weighted average exposure for an 8-hour work day or 40-hour work week unless otherwise noted. "Skin" designation refers to the potential contribution to overall exposure by the cutaneous route including mucous membrane and eyes, particularly by direct contact with substance.

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4  
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## ATTACHMENT D

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 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS
 

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SITE: Cold Creek Swamp

<u>Work Task</u>	<u>Level of Protection</u>	<u>Specific PPE</u>
Water, soil, sediment sampling	D	Waterproof coveralls, nitrile gloves, latex inner gloves, steel toe shank neoprene boots, safety glasses, snake leggings (when walking in rattlesnake habitat), face shield (for splash protection only), hard hat (if overhead hazards). U.S. Coast Guard approved life vest (when near or over waters that are >3 ft deep)
Biota sampling	D	U.S. Coast Guard approved life vest (when near or over waters that are >3 ft deep), safety glasses, latex gloves, snake leggings (when walking in rattlesnake habitat), steel tow shank neoprene boots, cotton coveralls
Survey activities	D	Snake leggings, steel toe steel shank neoprene boots, safety glasses, cotton coveralls







## ATTACHMENT G

EMERGENCY TELEPHONE NUMBERS

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SITE: Cold Creek Swamp

Police: 911

Mobile County Sheriff's Department(205) 690-8633  
Mount Vernon Police Department(205) 829-6631  
Creola Police Department(205) 675-8145

Fire: 911

AKZO Chemical Main Plant Telephone(205) 675-1310  
Mobile County Emergency  
Management Agency(205) 460-8000 (To be called only if  
"in house" fire fighting team cannot control emergency.)

Ambulance: 911

AKZO Chemicals(205) 675-1310  
(Have access to helicopter  
service from University  
of South Alabama Hospital)  
Newmans Ambulance Service(205) 471-1541  
Southflite (U.S. Medical Helicopter)(205) 471-7100

Hospital: Springhill Memorial Hospital (205) 460-5315  
3719 Dauphin Street  
Mobile, Alabama

Directions to hospital (Fig. 10-1):

From facility, turn south on U.S. Route 43 and follow it to I-65 South. Take I-65 South to Mobile and exit on Dauphin Street. Go right and the hospital is ahead 2 blocks on the left.

Alabama Marine Police: 432-8607

Report Toxic Chemical and Oil Spills: 1-800-424-8802

U.S. Coast Guard: 690-2211 or 690-2212

ATTACHMENT H

DAILY SITE SAFETY AND HEALTH ACTIVITY REPORT

Site: \_\_\_\_\_  
Weather Cond.: \_\_\_\_\_

Location: \_\_\_\_\_  
Onsite Hours: From \_\_\_\_\_ To \_\_\_\_\_

Site Personnel:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Subcontractors, Visitors, Others:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Site Operation(s):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Level of PPE (initial/changes)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Monitoring Instruments Used (attach Environmental Monitoring Record): \_\_\_\_\_

Site Safety and Health Plan  
Violations  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Corrective Action  
Specified  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Corrective Action  
Taken (yes/no)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Observations and Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Completed by: \_\_\_\_\_

Date: \_\_\_\_\_

3 4 0399

APPENDIX A



Title GENERAL SAFETY RULES		Policy Number
Issued By R. Cadena	Signature 	Date Issued 4/90
Approved By F. Cannon	Signature 	Effective Date 4/90
Keyword(s)	Supercedes (Ref. No. & Date)	Page <del>0</del> of <del>1</del> Pages

CLOTHING

1. All employees shall wear long sleeve shirts in plant areas. Sleeves shall be down and buttoned unless specific exception for certain jobs has been authorized by department supervisor.
2. Work shoes made of leather or rubber, preferably safety toe shoes are permissible. Open type shoes or shoes made of cloth or fabric are not allowed.
3. Hard hats are standard equipment and must be worn at all times within the plant except in the following locations:  
  
Offices, Control Rooms, Lunchrooms, Toolroom, I/E shop, storeroom, laboratory, and when entering or exiting the plant at the end of shifts.
4. Safety glasses with side shields or goggles are required at all times while working within the plant except in the following locations:  
  
Offices, Control Rooms, Lunchrooms, Storeroom and when entering or exiting the plant at the end of each shift.
5. Contact lenses are not permitted within the plant except when within the front office or engineering building.
6. Protective suits, boots, rubber gloves, goggles, face shields, and/or hoods, ear protection, life belts and lines and other specific safety equipment are available and must be worn when instructed by supervision or covered by specific safety procedures.

SPECIAL SAFETY EQUIPMENT

7. Life jackets are to be worn on barges, boats, or when working on equipment within 5 feet of dock edge or pond/pits unless protected by a handrail. Safety belt is required when working in the CS<sub>2</sub> moat areas outside the handrail.



Chemical Division



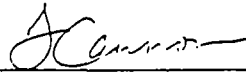
Title GENERAL SAFETY RULES		Policy Number G-3
Issued By R. Cadena	Signature 	Date Issued 4/90
Approved By F. Cannon	Signature 	Effective Date 4/90
Keyword(s)	Supercedes (Ref. No. & Date)	Page of Pages 2 OF 4


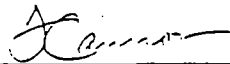
8. Proper type escape canisters must be carried on person at all times while working within the plant except in the following locations:

Offices, Control Rooms, Lunchrooms, Storeroom, & Lab

In these locations, the canister must be readily available and within easy reach.

9. Fire extinguisher, self contained breathing apparatus, safety shower, etc. locations are to be kept clear of any interfering obstacles (Do Not Block).
10. After use of any emergency equipment, report it promptly to your supervisor.
11. The use of a safety belt is required for all work conducted above ground which is not encompassed by a handrail and is greater than ten (10) ft. in elevation.
12. Respirators and supplied air systems must be worn and properly sealed as prescribed in the LeMoyne Respiratory Protection Program.
13. The Permit Procedures as outlined in the general section of the Safety Guide shall be followed without exception.
14. Emergency equipment such as Survivair Paks and SKA Paks must be refilled after being emptied. It is the responsibility of the person who used the equipment to refill or inform his supervisor that the equipment must be refilled.
15. Fire hoses and other equipment in the fire houses and carts shall not be used for washing down equipment or roadways.
16. No eating is allowed except in the following locations:
- Control rooms, Lunchrooms, Offices, Storeroom, I/E Shop. Drinking is permitted in the above locations and adjacent to authorized drink machines and containers.

		Safety Policy	
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<p><u>ACCIDENTS &amp; PREVENTION</u></p> <p>17. All injuries no matter how slight are to be reported immediately to your supervisor. All injuries or suspected injuries/illnesses, no matter how minor must be reported to your supervisor before leaving the plant. Injuries/illnesses not so reported will be adjudged non-work related. Supervisors are required to submit incident reports.</p> <p>18. Report all unsafe conditions to your supervisor at once.</p> <p>19. All employees shall make every effort possible to maintain a high standard of housekeeping. This will include removing or turning down all protruding nails in boards or boxes.</p> <p>20. Articles shall not be thrown.</p> <p>21. All straight ladders used must have safety cleats and securely tied at top or held at the bottom.</p> <p>22. The use of compressed air for removing dust and particles from the human body or clothing is prohibited. The use of regulated compressed air below <u>30 psig</u> may be used in cleaning of the equipment being maintained provided a safety blow gun is attached to the source. EXCEPTION: Sandblasting operations.</p> <p>23. All Chicago fittings shall have a safety clip in each connection before the hose is pressurized.</p> <p>24. No repairs or cleaning is allowed on moving or rotating equipment where there is the possibility of accidental contact except where permanently excepted.</p> <p>25. Drinking water is allowed only from regular drinking fountains and authorized containers.</p> <p>26. Machines and vehicles shall be operated only by authorized persons who have been instructed in the proper use of the equipment.</p>			

AKZO		Safety Policy	
		Chemical Division	
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<p>27. Any employee can and should activate the Emergency Action Plan whenever necessary.</p> <p>28. There shall be no connections made to the #7 water header upstream of the back flow preventer unless the proper approved backflow prevention device is used. No tie-ins are allowed on the municipal water system unless approved by the exception committee.</p> <p>29. Check valves must be placed in temporary and/or permanent utility (nitrogen, steam, water or air) lines that are directly connected to process vessels or piping.</p> <p>30. Smoking is allowed only in designated areas. See SMOKING POLICY in section G-15.</p> <p>31. No "HORSEPLAY" of any kind permitted.</p> <p>32. All signs, safety rules, posted notices, danger, caution tags and permits shall be obeyed.</p> <p>33. Aisles, steps, and passageways must not be obstructed.</p> <p>NOTE: In addition to the above general safety rules, each department has its own safety rules which must be followed while working in that department. There are also safety procedures for specific jobs. If you have any questions on these rules or procedures, your supervisor will be happy to answer them.</p>			

~~Construction~~  
3 4 0404  
BASIC SAFETY RULES

1. PLANT SAFETY RULES

When working within the confines of an operating plant, all workers shall become thoroughly familiar with and abide by the LeMoyné Plant Safety Rules.

2. EMERGENCY ALARMS

Workers must become familiar with the meaning of the emergency alarm and/or siren system in the plant. The Resident Engineer will instruct the workers to their meaning and the appropriate action that must be taken in case of an emergency.

3. EMERGENCY EQUIPMENT

Every employee must know the location of all safety showers, eye wash stations, and respiratory equipment when working in an operating plant.

4. FIRE PROTECTION

Each employee should become familiar with the location and use of portable fire fighting equipment. In case of a fire, Akzo employees and the Resident Engineer should be notified immediately.

5. HAZARDOUS AREAS

The Resident Engineer will instruct the workers to the location of all potentially hazardous substances, materials, and atmospheres at the job site. Check with him daily. Become aware of wind direction by observing the direction of flags and stack plumes.

6. SAFETY HAZARDS

Any and all unsafe acts or conditions observed by employees shall be reported to their immediate supervisor and the Resident Engineer promptly. Any close-calls shall also be reported.

7. FIRST AID

Employee shall have all injuries treated immediately, by the first aid station regardless of severity.



8. ACCIDENTS

All accidents shall be reported immediately to the injured man's supervisor and the Resident Engineer. The accident shall be investigated immediately, the cause determined, and where possible, the remedy applied.

9. SAFETY HATS

Approved protective helmets shall be worn at all times within the construction area. No exceptions.

10. FOOT PROTECTION

Approved foot protection shall be used as required by the job.

11. RESPIRATORY PROTECTION

Escape canister will be issued, they must be carried on the employee at all times.

12. EYE PROTECTION

Approved safety glasses with side shields or goggles shall be worn at all times by all employees and all visitors. Conventional frame glasses with safety lenses may be worn when protected by approved safety goggles. Contact lenses are prohibited.

13. CLOTHING

Full length sleeves rolled down are required on all jobs.

14. CONDUCT

Practical jokes, fighting or horseplay will not be tolerated at the construction site.

15. PARKING

Park in designated areas only. Do not take your personal vehicle into the construction site. Observe all traffic signs, especially, speed limits.

16. ALCOHOLIC BEVERAGES/DRUGS

Being intoxicated or possessing liquor and/or drugs on-the-job is prohibited.

17. FIREARMS

Possession of firearms, or other weapons, at the job site is prohibited.

18. SMOKING

Smoking is permitted in designated areas only.

19. COMPRESSED AIR

Compressed air shall not be used to clean clothing or people. Horseplay by blowing air at another person is prohibited.

20. MOBILE EQUIPMENT

Employees shall not ride on trucks, or any construction equipment unless they have express permission, and then, only when seats with seat belts are provided.

21. HOISTING EQUIPMENT

Employees shall not ride any load being raised nor shall they stand under same.

22. SAFETY PERMIT SYSTEM

Contractors shall become familiar with the plant safety permit system. This system will be used on all work.

PLANT SAFETY RULES FOR CONTRACTORS1. FACILITIES THAT ARE AVAILABLE

The contractor will have to provide his own work shanties, and field office trailer, as required. Electricity from a remote location will be made available to the contractor. The contractor will have to hook up temporary power for his use. The LeMoyné Plant Complex is located within a fenced in area with a 24 hour guard at the main gate. A separate contractor's road and parking lot are nearby but on the other side of the fenced in area.

2. SCHEDULE

The contractor should submit a detailed activity schedule and manpower loading chart with his quotation. Overtime work is not authorized and if Akzo requires work to be done on an overtime basis, the additional premiums will be picked up by Akzo as an extra. Work hours are typically 7:30 A.M. to 4:00 P.M., 5 days a week, Monday through Friday. However, if different working hours are required, this point can be negotiated.

3. AKZO SUPERVISION

Akzo will appoint a Resident Engineer to follow-up on all construction activities.

4. SAFETY

Safety is of the utmost importance. Basic Safety Rules and LeMoyné Plant Safety Rules must be adhered to and are included in the attachments as part of this bid package. Housekeeping will be the contractor's responsibility. All loose items must be picked up or disposed of, or stored in locked boxes at the end of each working day.

5. LOCAL WORK CONDITIONS

Trucks - 1 only in the plant. All other vehicles must be left in the parking lot.

Tools - No Akzo tools or equipment may be borrowed unless approved by the Maintenance Superintendent or his designate.

Rest Rooms - Use facilities in the main shop or acid shop only. Use of rest rooms in the control rooms or locker room is strictly prohibited.

-2-

Vending Machines - Machines located in the main shop are available. The employee lunchroom is off limits at all times.

Breaks/Lunch - All breaks are to be taken outside of operating process areas and control room buildings. Lunches are to be eaten in the parking lot. The employee lunchroom is off limits at all times.

3 4 0409

**APPENDIX B**

ICI AMERICAS INC.BASIC SAFETY RULES FOR CONSULTANTS

1. The Consultant shall comply with all of the Provisions of the Quality Assurance Project Plan and the Health and Safety Plan as approved by the State Environmental Department.
2. Report all accidents and unsafe conditions immediately to the designated site safety officer.
3. All personnel will be advised of the signals and proper procedures for emergency evacuation.
4. Approved hard hats, industrial safety glasses with side shields and proper dress must be worn at all times while at the job site. Appropriate personnel protective equipment for the job being done must be worn while doing the work.
5. Emergency escape masks will be required in areas where it is appropriate and must be carried by each person at all times.
6. Personnel protective equipment and emergency escape masks will be furnished by the Consultant.
7. Parking is allowed only in designated locations.
8. Hazardous areas created by work in progress must be roped off, barricaded, and clearly marked with appropriate signs.
9. All contractor personnel must stay in the immediate work area.
10. Good housekeeping is an integral part of safety and of an efficient operation. Contractors' work areas are to be kept clean and orderly at all times.
11. Fighting or horseplay is forbidden at the job site.
12. Being intoxicated or possessing liquor or any controlled substance on the job is prohibited.
13. Possession of firearms or other weapons at the job site is prohibited.
14. Smoking is permitted in designated areas only.
15. Compressed air shall not be used to clean clothing or people.

ICI AMERICAS INC.BASIC SAFETY RULES FOR CONSULTANTS  
(continued)

16. Riding on the side of trucks or other vehicles with legs hanging over the side or rear is prohibited. Drivers shall not start vehicles until riders are safely seated.
17. Riding on loads being raised or lowered is prohibited.
18. Burning or welding or enclosed space entry, without a permit issued by an ICIA representative is prohibited.
19. Guards, Safety Tags, Locks or Signs shall not be removed from switches or machines to make mechanical or electrical repairs; nor shall any be made without authorization by an ICIA representative.

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ICI AMERICAS INC.

Non-Disclosure and  
Hold Harmless Agreement  
for Visitors

Facility Location \_\_\_\_\_

Date(s) of Visit(s) \_\_\_\_\_

In consideration of the willingness of ICI Americas Inc., (hereinafter referred to "ICIA") to allow the undersigned individual to visit and inspect certain research and/or manufacturing facilities at the above location and to receive from ICIA certain technical and other confidential information (the "Confidential Information") relating to such facility and its operation, the undersigned company and individual hereby represent and agree as follows:

1. The undersigned individual is hereby authorized by the undersigned company to make such visit and to receive such information.
2. The undersigned company and individual hereby agree to keep secret and confidential and to not disclose to any third party or make any use of all or any part of the Confidential Information observed or disclosed by ICIA in reliance on this instrument, except as permitted by the terms of any agreement between the undersigned company and ICIA concerning the same subject matter, without first consulting with ICIA to determine the extent to which secret or proprietary information may be involved and without first obtaining ICIA's written permission to make such disclosure or commercial use. ICIA agrees not to deny such permission with reference to information (i) known to the undersigned company or individual without obligation of confidentiality prior to its disclosure by ICIA, as demonstrated by competent documentary evidence now in the possession of the undersigned company or individual, or (ii) which properly becomes available to the undersigned company or individual from a third party source under conditions which do not restrict further disclosure, provided such information shall not have been obtained either directly or indirectly from ICIA, or (iii) which is now in the public domain or which thereafter comes into the public domain without fault on the part of the undersigned company or individual.
3. The undersigned company and individual hereby agree to release and hold ICIA (including its officers, directors, employees and agents) harmless from any manner or liability, claim or suit whatsoever, which they, their agents, their heirs, executors, administrators, successors or assigns might assert against such parties based upon any injury to the person of the undersigned individual (including death) or to property brought upon the



premises of ICIA arising in any manner whatsoever including that arising from the condition of the premises or the act, or failure to act, of ICIA or its employees or agents, even if caused in part by the negligence of ICIA, except to the extent such injuries or damages are caused by the negligence of ICIA.

4. The undersigned company represents that all of its employees who will receive or have access to the technology or information observed or disclosed by ICIA in reliance of this instrument are bound to the same extent the undersigned company is bound by the terms of this Agreement.

5. The Confidential Information and all copies thereof shall be returned to ICIA without retaining any copies thereof upon request from ICIA.

6. In the event that the undersigned company or the undersigned individual breaches any of its covenants made in this Agreement, the undersigned company and the undersigned individual agree that it would be extremely impractical and difficult to measure the resulting damages; accordingly, in addition to any of the rights and remedies ICIA may have, the undersigned company and the undersigned individual agree that ICIA may sue each of them or either of them in equity for specific performance, and the undersigned individual and undersigned company expressly waive the defense that a remedy in damages will be adequate and expressly waive any requirement in an action for specific performance for the posting of a bond by ICIA. The undersigned company and the undersigned individual further agree to reimburse ICIA for costs and expenses, including reasonable attorney fees and out-of-pocket expense of counsel, incurred in connection with the enforcement or prosecution of Client's rights under this Section 5.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 19 \_\_\_\_\_

Company Name \_\_\_\_\_  
(Please Print)

Name of Individual \_\_\_\_\_  
\_\_\_\_\_  
(Signature)

Title of Signatory \_\_\_\_\_  
(Please Print)

# ICI AMERICAS INC. ALCOHOLIC BEVERAGE AND SUBSTANCE ABUSE POLICY

Contractor/Vendor shall disseminate to its employees, agents and subcontractors the following text of the ICI Americas' Inc. Substance Abuse Policy as follows and require such persons to abide by the terms of such policy:

ICI Americas Inc. is vitally concerned with the safety and well-being of its employees and the employees of its contractors. Therefore, it is important for you to be aware of ICI Americas' policy regarding alcoholic beverages and controlled substances:

The use, possession, sale, transfer, or purchase of alcoholic beverages and controlled substances on ICI Americas' property is prohibited.

"ICI Americas' property" means any property or facility owned, leased, or under the control of ICI Americas Inc. wherever located, including land, buildings, structures, installations, boats, planes, helicopters, cars and trucks.

"Controlled substances" means any drug or other ingestible, inhalable, or injectable substance the use, sale or possession of which is prohibited or restricted by law except drugs prescribed for the user by a licensed physician.

"Use" means ingesting, inhaling, or injecting alcoholic beverages or controlled substances either during the time an individual is present on ICI Americas' property or within such time prior to entering upon or returning to ICI Americas' property that his or her coordination, visual perception, or reaction time is, or is likely to be, affected by such beverage or substance.

Entry onto ICI Americas' property constitutes consent to inspection of the individual's person and his or her personal effects upon entering or while remaining present on ICI Americas' property. Any individual who is found in violation of this Substance Abuse Policy or who refuses to permit inspection is subject to be removed and barred from ICI Americas' property, at the discretion of ICI Americas Inc.

AGREED TO: \_\_\_\_\_  
Company Name

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

P.O. #: \_\_\_\_\_

**EQUAL EMPLOYMENT OPPORTUNITY CLAUSE -**  
applicable to contracts or orders in excess of \$10,000

1. The supplier will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, or national origin. The supplier will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, age, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation, the selection for training, including apprenticeship. The supplier agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
2. The supplier will, in all solicitations or advertisements for employees placed by or on behalf of the supplier, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, or national origin.
3. The supplier will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, advising the labor union or workers' representative of the supplier's commitments under Section 202 of Executive Order 11246, as amended, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The supplier will comply with all provisions of Executive Order 11246, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The supplier certifies that it has filed with the appropriate federal agency all reports due under the applicable filing requirements, including a complete and accurate report on Standard Form 100 (EEO-1) or will file such reports within 30 days after the signing of this agreement or the award of any purchase order, as the case may be, and will continue to file such reports as required.
6. In the event of the supplier's noncompliance with the nondiscrimination clauses of this contract or with any of said rules, regulations or orders, this contract may be canceled, terminated, or suspended in whole or in part and the supplier may be declared ineligible for further government contracts in accordance with procedures authorized in Executive Order 11246, as amended, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246, as amended, or by rule, regulations, or order of the Secretary of Labor on equal employment opportunity or as otherwise provided by law.
7. The supplier will include the provisions of paragraphs 1 through 7 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246, as amended, so that such provisions will be binding upon each subcontractor or vendor. The supplier will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event the supplier becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the supplier may request the United States to enter into such litigation to protect the interest of the United States.
8. The supplier certifies that, for orders in excess of \$50,000 or if supplier has 50 or more employees, it has developed and has on file a current written affirmative action compliance program for each of its establishments in accordance with the regulations of the Secretary of Labor promulgated under Executive Order 11246, as amended, or will develop such programs within 120 days after the signing of this agreement. The supplier will also require subcontractors who are not otherwise exempt to establish written affirmative action compliance programs in accordance with Executive Order 11246, as amended.

**B. CERTIFICATION OF NONSEGREGATED FACILITIES -**  
applicable to contracts or orders in excess of \$10,000

Supplier certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The phrase "segregated facilities" includes facilities which are in fact segregated on a basis of race, color, creed, or national origin, because of explicit directive or by habit, local custom or otherwise. Supplier agrees that it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Employment Opportunity Clause.

**C. MINORITY BUSINESS ENTERPRISE**

**1. Utilization of Minority Business Enterprises -**  
applicable to contracts or orders in excess of \$5,000

- a. It is the policy of the government that minority business enterprises shall have the maximum practicable opportunity to participate in the performance of government contracts.
- b. The supplier agrees to use its best efforts to carry out this policy in the award of its subcontracts to the fullest extent consistent with the efficient performance of the contract. As used in the contract, the term "Minority Business Enterprise" means a business, at least 50 percent of which is owned by minority group members or, in the case of publicly owned businesses, at least 51 percent of the stock of which is owned by minority group members. For the purposes of this definition, minority group members are Negroes, Spanish-Speaking American persons, American-Orientals, American-Indians, American-Eskimos, and American-Aleuts. Suppliers may rely on written representations by subcontractors regarding their status as minority business enterprises in lieu of an independent investigation.

**2. Minority Business Enterprises Subcontracting Programs -**  
applicable to contracts or orders in excess of \$500,000

- a. Supplier agrees to establish and conduct a program which will enable minority business enterprises (as defined in the clause entitled "Utilization of Minority Business En-

terprises") to be considered fairly as subcontractors and suppliers under this contract in this connection the supplier shall:

- i. Designate a liaison officer who will administer the supplier's minority business enterprises program.
  - ii. Provide adequate and timely consideration of the potentialities of known minority business enterprises in all "make-or-buy" decisions.
  - iii. Assure that known minority business enterprises will have an equitable opportunity to compete for subcontracts, particularly by arranging solicitation, time for the preparation of bids, quantities, specifications and delivery schedules so as to facilitate the participation of minority business enterprises.
  - iv. Maintain records showing (1) procedures which have been adopted to comply with the policies set forth in this clause, including the establishment of a source list of minority business enterprises, (2) awards to minority business enterprises on the source list, and (3) specific efforts to identify and award contracts to minority business enterprises.
  - v. Include the Utilization of Minority Business Enterprises Clause in subcontracts which offer substantial minority business enterprises subcontracting opportunities.
  - vi. Cooperate with the contracting officer in any studies and surveys of the supplier's minority business enterprises procedures and practices that the contracting officer may from time to time conduct.
  - vii. Submit periodic reports of subcontracting to known minority business enterprises with respect to the records referred to in Subparagraph iv. above in such form and manner and at such time (not more often than quarterly) as the contracting officer may prescribe.
- b. The supplier further agrees to insert, in any subcontract hereunder which may exceed \$500,000, provisions which shall conform substantially to the language of this clause, including this Paragraph b, and to notify the contracting officer of the names of such subcontractors.

**D. EMPLOYMENT OF VETERANS -**  
applicable to contracts or orders in excess of \$10,000

1. Subject to the definitions contained in 41 CFR 50-250.2 the supplier to provide special emphasis to the employment of qualified disabled veterans of the Vietnam Era, agrees that all suitable employment openings which exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by this contract and including those occurring at an establishment of the supplier other than the one wherein the contract is being performed but excluding those of independently operated corporate affiliates, shall be offered for listing at an appropriate local office of the State employment service system wherein the opening occurs and to provide such reports to each local office regarding employment openings and hires as may be required. Provided that, if the contract is for less than \$10,000 or if it is with a State or local government, the reports set forth in Paragraphs 3 and 4 of this clause are not required.
2. Listing of employment openings with the employment service system pursuant to this clause shall be made at least concurrently with the use of any other recruitment service or effort and shall involve the normal obligations which attach to the placing of a bona fide job order, including the acceptance of referrals of veterans and nonveterans. The listing of employment openings does not require the hiring of any particular job applicant or from any particular group of job applicants, and nothing herein is intended to relieve the supplier from any requirements in any Executive Orders or regulations regarding nondiscrimination in employment.
3. The reports required by Paragraph 1 of this clause shall include, but not be limited to, periodic reports which shall be filed at least quarterly with the appropriate local office or, where the supplier has more than one establishment in a State, with the central office of that State employment service. Such reports shall indicate for each establishment (1) the number of individuals who were hired during the reporting period, (2) the number of those hired who were disabled veterans, and (3) the number who were nondisabled veterans of the Vietnam Era. The supplier shall submit a report within 30 days after the end of each reporting period wherein any performance is made on this contract. The supplier shall maintain copies of the reports submitted until the expiration of 1 year after final payment under the contract, during which time they shall be made available, upon request for examination by any authorized representative of the contracting officer or of the Secretary of Labor.
4. Whenever the supplier becomes contractually bound to the listing provisions of this clause, it shall advise the employment service system in each State wherein it has establishments of the name and location of each such establishment in the State. As long as the supplier is contractually bound to these provisions and has not advised the State system, there is no need to advise the State system of subsequent contracts. The supplier may advise the State system when it is no longer bound by this contract clause.
5. This clause does not apply to the listing of employment openings which occur and are filled outside of the 50 States, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.
6. This clause does not apply to openings which the supplier proposes to fill from within its own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement. This exclusion does not apply to a particular opening once an employer decides to consider applicants outside of its own organization or employer-union arrangement for that opening.
7. If the supplier does not have a current written affirmative action program pursuant to this section at each of its establishments having 50 or more employees, the undersigned supplier agrees to develop and maintain such programs in accordance with 41 CFR 60-250 at each establishment within 120 days after the receipt of any contract or purchase order in the amount of \$50,000 or more.

**E. AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS -**  
applicable to contracts or orders in the amount of \$2,500 or more

1. The supplier will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The supplier agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.
2. The supplier agrees that, if it has established an internal review procedure and a handicapped individual files a complaint with the supplier under that procedure that it is not complying with the requirements of the Act, it will (1) investigate the complaint and take appropriate action consistent with the requirements of 20 CFR 741.27, and (2) maintain on file for three years the record regarding the complaint and the actions taken.
3. The supplier agrees that, if a handicapped individual files a complaint with the Department of Labor that it has not complied with the requirements of the Act, (1) it will cooperate with the Department in its investigation of the complaint, and (2) it will provide all pertinent information regarding its employment practices with respect to handicapped individuals.
4. The supplier agrees to comply with the rules and regulations of the Secretary of Labor in 20 CFR Ch. VI, Part 741.

5. In the event of the supplier's noncompliance with the requirements of this clause, the supplier may be declared in default and sanctions may be imposed in accordance with 20 CFR Ch. VI, Part 741.
6. This clause shall be included in all subcontracts of \$2,500 or more.
7. The supplier agrees to permit the examination by appropriate contracting agency officials or the Assistant Secretary for Employment Standards or his designee, of pertinent books, documents, papers, and records concerning its employment and advancement of handicapped individuals.
8. The supplier agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Assistant Secretary for Employment Standards, provided by the contracting officer stating supplier's obligation under the law to take affirmative action to employ and advance in employment qualified handicapped employees and applicants for employment and the rights and remedies available.
9. The supplier will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding that the supplier is bound by the terms of Section 503 of the Rehabilitation Act and is committed to take affirmative action to employ and advance in employment physically and mentally handicapped individuals.
10. If the supplier does not have a current written affirmative action program pursuant to this section at each of its establishments having 50 or more employees, the supplier agrees to develop and maintain such programs in accordance with 41 CFR 80-741 at each establishment within 120 days after the receipt of any contract or purchase order in the amount of \$50,000 or more.

\_\_\_\_\_  
FIRM/COMPANY NAME

\_\_\_\_\_  
DATE

\_\_\_\_\_  
SIGNATURE OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
PRINT OR TYPE NAME AND TITLE

APPENDIX C

# MALLINCKRODT

## Material Safety Data Sheet

Mallinckrodt, Inc. Science Products Division, P.O. Box M Paris, KY 40361

Mallinckrodt provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT MAKES NO REPRESENTATIONS, OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF

MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR TO THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

Emergency Telephone Number: 314-982-5000

## FORMALDEHYDE

### PRODUCT IDENTIFICATION:

Synonyms: Formaldehyde solution; Formaldehyde 37%; Formalin; Mordicid Acid

Formula CAS No.: 50-00-0

Molecular Weight: 30.03

Chemical Formula: CH<sub>2</sub>O

Hazardous Ingredients:

CAS # 67-56-1 Methanol (10-15%)  
50-00-0 Formaldehyde (37%)

### PRECAUTIONARY MEASURES

POTENTIAL CANCER HAZARD.

DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. SENSITIZER. MAY CAUSE BLINDNESS. COMBUSTIBLE.

Keep away from heat, sparks and flame.

Avoid breathing vapor.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

### EMERGENCY/FIRST AID

In all cases call a physician. If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes.

SEE SECTION 5.

DOT Hazard Class: ORM-A

### SECTION 1 Physical Data

Appearance: Clear, colorless liquid.

Odor: Pungent.

Solubility: Infinite in water.

Boiling Point: 96°C (205°F)

Melting Point: -15°C (5°F)

Specific Gravity (water = 1): 1.03

Vapor Density (Air = 1): 1.04

Vapor Pressure (mm Hg): No information found.

Evaporation Rate: No information found.

### SECTION 2 Fire and Explosion Information

Fire:

Combustible Liquid!

Flashpoint: 60°C (140°F) (10% Methanol)

Autoignition temperature: 300°C (572°F)

Flammable limits in air, % by volume:

lcl: 7.0 ucl: 73

Gas vaporizes readily from solution and is flammable in air.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above.

Fire Extinguishing Media:

Water spray can be used to extinguish fires and cool fire-exposed containers. Water spray may be used to keep fire exposed containers cool.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures.

### SECTION 3 Reactivity Data

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

If involved in a fire, irritating gaseous formaldehyde and carbon monoxide may be released.

Hazardous Polymerization:

Trioxymethylene precipitate can be formed on long standing at very low temperatures. Nonhazardous polymerization may occur at low temperatures, forming paraformaldehyde, a white solid.

Incompatibilities:

Incompatible with oxidizing agents and alkalis. Reacts explosively with nitrogen dioxide at ca. 180°C (356°F). Reacts violently with perchloric acid, perchloric acid-aniline mixtures, and nitromethane. Reaction with hydrochloric acid may form bis-chloromethyl ether, an OSHA regulated carcinogen.

### SECTION 4 Leak/Spill Disposal Information

Ventilate area of leak or spill. Remove all sources of ignition. Clean-up personnel require protective clothing and respiratory protection from vapors. Only specially trained or qualified personnel should handle the emergency. Do not flush to sewer or surface waters. Can be absorbed on inert material and disposed as hazardous waste in a RCRA approved facility or dissolved in an appropriate combustible solvent and atomized in a RCRA approved chemical incinerator equipped with an afterburner. Reportable Quantity (RQ) (CWA/CERCLA): 1000 lbs. Formaldehyde 5000 lbs. Methanol

Ensure compliance with local, state and federal regulations.

NFPA Ratings: Health: 2 Flammability: 2 Reactivity: 0

FORMALDEHYDE

## SECTION 5 Health Hazard Information

### A. EXPOSURE / HEALTH EFFECTS

The perception of formaldehyde by odor and eye irritation becomes less sensitive with time as one adapts to formaldehyde. This can lead to overexposure if a worker is relying on formaldehyde's warning properties to alert him or her to the potential for exposure.

#### **Inhalation:**

May cause sore throat, coughing, and shortness of breath. Causes irritation to the respiratory tract. Concentrations of 25 to 30 ppm cause severe respiratory tract injury leading to pulmonary edema and pneumonitis. May be fatal in high concentrations.

#### **Ingestion:**

Can cause severe abdominal pain, violent vomiting, headache, and diarrhea. Larger doses may produce decreased body temperature, pain in the digestive tract, shallow respiration, weak irregular pulse, unconsciousness and death. Methanol component affects the optic nerve and may cause blindness.

#### **Skin Contact:**

Toxic. May cause irritation to skin with redness, pain, and possibly burns. Skin absorption may occur with symptoms paralleling those from ingestion. Formaldehyde is a severe skin irritant and sensitizer. Contact causes white discoloration, smarting, cracking and scaling.

#### **Eye Contact:**

Vapors cause irritation to the eyes with redness, pain, and blurred vision. Higher concentrations or splashes may cause irreversible eye damage.

#### **Chronic Exposure:**

Frequent or prolonged exposure to formaldehyde may cause hypersensitivity leading to contact dermatitis. Repeated or prolonged skin contact with formaldehyde may cause an allergic reaction in some people. Vision impairment and enlargement of liver may occur from methanol component. Formaldehyde is a suspected carcinogen (positive animal inhalation studies).

#### **Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance. Previously exposed persons may have an allergic reaction to future exposures.

## B. FIRST AID

#### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

#### **Ingestion:**

If swallowed, induce vomiting immediately by giving two glasses of water, or milk if available and sticking finger down throat. Call a physician immediately. Never give anything by mouth to an unconscious person.

#### **Skin Exposure:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

#### **Eye Exposure:**

Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## C. TOXICITY DATA (RTECS, 1986)

Formaldehyde: Oral rat LD50: 800 mg/kg. Skin rabbit LD50: 270 mg/kg. Inhalation rat LC50: 590 mg/m<sup>3</sup>. Mutation references cited. Reproductive effects cited. Tumorigenic effects cited. Carcinogenic determination (Formaldehyde gas): Sufficient evidence in animals - Inadequate evidence in humans (IARC Supplement 4, 1982 Category 2B) Listed in the NTP 4th Annual Report on Carcinogens: May reasonably be anticipated to be a carcinogen. An OSHA regulated carcinogen. Methanol: Mutation and reproductive effects cited.

## SECTION 6 Occupational Control Measures

#### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

1 ppm (TWA), 2 ppm (STEL) formaldehyde  
200 ppm (TWA), 150 ppm (STEL) skin for methanol

-ACGIH Threshold Limit Value (TLV):

1 ppm (TWA) 2 ppm (STEL) formaldehyde  
Listed in Appendix A2 as Industrial Substances

Suspect of Carcinogenic Potential for Man.

200 ppm (TWA) 250 ppm (STEL) skin for methanol

#### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

#### **Personal Respirators: (NIOSH Approved)**

If the PEL is exceeded, a full-facepiece respirator with cartridges or canisters specifically approved for protection against formaldehyde may be worn up to concentrations of 10 ppm (10X PEL). See OSHA Standard for additional information.

#### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls to prevent skin contact.

#### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Contact lenses should not be worn when working with this material. Maintain eye wash fountain and quick-drench facilities in work area. See OSHA Standard for more information on personal protective equipment, engineering and work practice controls, medical surveillance, record keeping, and reporting requirements. (29 CFR 1910.1048)

## SECTION 7 Storage and Special Information

Keep in a tightly closed container. Protect against physical damage. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage room or cabinet. Separate from oxidizing materials. Storage and use areas should be No Smoking areas. Wear special protective equipment (Sec. 6) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Protect from freezing.

FORMA  
0410

# MALLINCKRODT

## Material Safety Data Sheet

Mallinckrodt, Inc. Science Products Division, P.O. Box M Paris, KY 40361

Mallinckrodt provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. **MALLINCKRODT MAKES NO REPRESENTATIONS, OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF**

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Emergency Telephone Number: 314-982-5000

### Addendum to Material Safety Data Sheet

### REGULATORY STATUS

This Addendum Must Not Be

Detached from the MSDS

Identifies SARA 313 substance(s)

Any copying or redistribution of the MSDS

must include a copy of this addendum

(Chem.Key: FORMA)

Hazard Categories for SARA  
Section 311/312 Reporting

Acute	Chronic	Fire	Pressure	Reactive
X	X	X		

Product or Components of Product:	SARA EHS Sect. 302		SARA Section 313 Chemicals		CERCLA Sec.103	RCRA
	RQ (lbs.)	TPQ (lbs.)	Name List	Chemical Category	RQ (lbs.)	Sec. 261.33
FORMALDEHYDE						
Formaldehyde (50-00-0) 37%	1000	500	Yes	No	1000	U122
Methyl alcohol (67-56-1) 10-15%	No	No	Yes	No	5000	U154

SARA Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous Substance. An asterisk (\*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.

SARA Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA Sec. 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4

RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

3400





# J. T. Baker Chemical Co. 3 4

0421

222 Red School Lane Phillipsburg, N.J. 08865  
24-Hour Emergency Telephone -- (201) 859-2151

Chemtrec # (800) 424-9300  
National Response Center # (800) 424-8802

**MATERIAL  
SAFETY DATA  
SHEET**

F5522 -01  
Effective: 10/04/85

Formaldehyde, 37% Solution

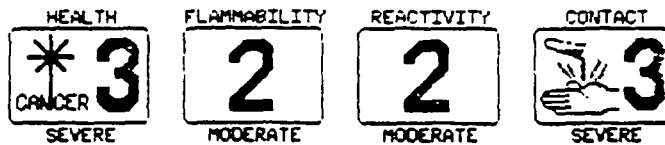
Page:  
Issued: 10/07/85

## SECTION I - PRODUCT IDENTIFICATION

Product Name: Formaldehyde, 37% Solution  
Formula: HCHO  
Formula Wt: 30.03  
CAS No.: 50-00-0  
NIOSH/RTECS No.: LP8925000Q  
Common Synonyms: Formalin; Methylene Oxide; Methyl Aldehyde, Methanol  
Product Codes: 2106, 2112, 2105

## PRECAUTIONARY LABELLING

BAKER SAF-T-DATA™ System



### Laboratory Protective Equipment



### Precautionary Label Statements

**POISON! DANGER!  
CAUSES BURNS**

**HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN  
MAY CAUSE ALLERGIC SKIN REACTION - COMBUSTIBLE**

NOTE: Reported as causing cancer in laboratory animals. Exercise due care. Keep away from heat, sparks, flame. Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Keep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling. In case of fire, use water spray, alcohol foam, dry chemical, or carbon dioxide. Flush spill area with water spray.

## SECTION II - HAZARDOUS COMPONENTS

<u>Component</u>	<u>%</u>	<u>CAS No.</u>
Formaldehyde, 37% Solution	37-38	50-00-0
Methanol	10-15	67-56-1

Continued on Page: 2



# J. T. Baker Chemical Co. 3 4

222 Red School Lane Phillipsburg, N.J. 08865  
24-Hour Emergency Telephone -- (201) 859-2151

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0422

**MATERIAL  
SAFETY DATA  
SHEET**

5522 -01  
Effective: 10/04/85

Formaldehyde, 37% Solution

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## SECTION III - PHYSICAL DATA

Boiling Point:	96°C ( 205°F)	Vapor Pressure(mmHg):	N/A
Melting Point:	N/A	Vapor Density(air=1):	1.0
Specific Gravity: (H <sub>2</sub> O=1)	0.82	Evaporation Rate: (Butyl Acetate=1)	N/A
Solubility(H <sub>2</sub> O):	Complete (in all proportions)	% Volatiles by Volume:	N/A

Appearance & Odor: Colorless liquid, pungent odor.

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point:	50°C ( 122°F)	NEPA 704M Rating:	2-2-
Flammable Limits:	Upper - 73 %	Lower -	7.0 %

### Fire Extinguishing Media

Use water spray, alcohol foam, dry chemical or carbon dioxide.

### Special Fire-Fighting Procedures

Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode. Move containers from fire area if it can be done without risk. Use water to keep fire-exposed containers cool.

### Usual Fire & Explosion Hazards

Vapors may flow along surfaces to distant ignition sources and flash back. Closed containers exposed to heat may explode. Contact with strong oxidizers may cause fire.

### Toxic Gases Produced

formaldehyde

## SECTION V - HEALTH HAZARD DATA

This substance is listed as one which may be reasonably anticipated to be a carcinogen by the National Toxicity Program (NTP).

Threshold Limit Value (TLV/TWA): 1.5 mg/m<sup>3</sup> (1 ppm)

Toxicity:	LD <sub>50</sub> (oral-rat)(mg/kg)	-	800
	LC <sub>50</sub> (inhl-rat) (mg/kg)	-	590
	LD <sub>50</sub> (skin-rabbit)(mg/kg)	-	270

Continued on Page: 3



# J. T. Baker Chemical Co. 3 4

0423

222 Red School Lane Phillipsburg, N.J. 08865  
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Chemtrec # (800) 424-9300  
National Response Center # (800) 424-8802



F5522 -01

Formaldehyde, 37% Solution

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SECTION V - HEALTH HAZARD DATA (Continued)  
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Effects of Overexposure

Vapors may be irritating to skin, eyes, nose and throat.  
Inhalation of vapors may cause severe irritation of the respiratory system.  
Contact with skin or eyes may cause severe irritation or burns.  
Ingestion may cause severe burning to mouth and stomach.

Emergency and First Aid Procedures

If swallowed, if conscious, give large amounts of water. Induce vomiting.  
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.  
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Flush skin with water.

-----  
SECTION VI - REACTIVITY DATA  
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Stability: Stable

Hazardous Polymerization: May occur

Conditions to Avoid: heat, flame, sources of ignition

Incompatibles: strong oxidizing agents, hydrogen chloride,  
strong acids, strong bases  
-----

SECTION VII - SPILL AND DISPOSAL PROCEDURES  
-----

Steps to be taken in the event of a spill or discharge

Wear self-contained breathing apparatus and full protective clothing.  
Shut off ignition sources; no flares, smoking or flames in area. Stop leak if you can do so without risk. Use water spray to reduce vapors. Take up with sand or other non-combustible absorbent material and place into container for later disposal. Flush area with water.

Disposal Procedure

Dispose in accordance with all applicable federal, state, and local environmental regulations.  
-----

SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT  
-----

Ventilation: Use adequate general or local exhaust ventilation to keep vapor and mist levels as low as possible.

Respiratory Protection: Respiratory protection required if airborne concentration exceeds TLV. At concentrations up to 50 ppm, a chemical cartridge respirator with organic vapor cartridge is recommended. Above this level, a self-contained breathing apparatus is recommended.

Eye/Skin Protection: Safety goggles and face shield, uniform,



J. T. Baker Chemical Co. 3 4

0424

222 Red School Lane Phillipsburg, N.J. 08865  
24-Hour Emergency Telephone -- (201) 859-2151

Chemtrec # (800) 424-9300  
National Response Center # (800) 424-8802



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Effective: 10/04/85 Issued: 10/07/85

SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT (Continued)

protective suit, proper gloves are recommended.

SECTION IX - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA™ Storage Color Code: Red

Special Precautions

Keep container tightly closed. Store in a cool, dry, well-ventilated, flammable liquid storage area or cabinet. Store above 15°C.

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

Proper Shipping Name Formaldehyde solution (flash pt. below 141 F.)  
Hazard Class Combustible liquid  
UN/NA UN1198  
els NO LABEL REQUIRED UNDER 110 GALLONS

INTERNATIONAL (I.M.O.)

Proper Shipping Name Formaldehyde, solutions  
Hazard Class 3.3  
UN/NA UN1198  
Labels FLAMMABLE LIQUID

N/A = Not Applicable or Not Available  
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The information published in this Material Safety Data Sheet has been compiled from our experience and data presented in various technical publications. It is the user's responsibility to determine the suitability of this information for the adoption of necessary safety precautions. We reserve the right to revise Material Safety Data Sheets periodically as new information becomes available.