HEALTH AND SAFETY PLAN
REMEDIAL INVESTIGATION/
FEASIBILITY STUDY

PICAYUNE WOOD TREATING SITE
Picayune, Pearl River County, Mississippi

---

SITE: Picayune Wood Treat
BREAK: 3.8
OTHER: 

---

10457911
Black & Veatch Special Projects Corp.
Site Health and Safety Program (HASP)
PICAYUNE WOOD TREATING SITE
PICAYUNE, PEARL RIVER COUNTY, MISSISSIPPI

July 6, 2006

Author: Steve Smith

Reviewed by: Scotti Bozeman, P.E.
Project Manager

Reviewed by: Shelly Pizzii, CSP
Director, Health and Safety Programs
Federal Services Divisions

Expiration Date: July 6, 2007

This HASP is produced for the use of Black & Veatch and specific designated contractors on the project indicated herein. This HASP is not intended or represented to be suitable for use by others on the project or for use on any other project. Any use without written verification or adaptation by Black & Veatch will be at the user's sole risk and without liability or legal exposure to Black & Veatch. Any use of this HASP without the written approval of the Black & Veatch Health and Safety Manager is not authorized.
Contents

Acronyms and Abbreviations ................................................ AA-1

1.0 Introduction ................................................................. 1-1
  1.1 Purpose ................................................................. 1-1
  1.2 Scope ................................................................. 1-1
  1.3 Compliance with Site HASP ........................................ 1-1

2.0 Site Background .............................................................. 2-1
  2.1 Site Location and Facility Description ......................... 2-1
  2.2 Operational History and Current Status ...................... 2-2
  2.3 Nature and Extent of Hazardous Materials .................... 2-4

3.0 Hazard Assessment .......................................................... 3-1
  3.1 Chemicals of Concern ................................................ 3-1
  3.2 Hazard Communication for Chemicals of Concern ............. 3-1

4.0 Personnel Qualifications ................................................ 4-1
  4.1 Training Requirements ................................................ 4-1
    4.1.1 Safety Meetings ............................................... 4-2
  4.2 Medical Surveillance Program ....................................... 4-2

5.0 Personal Protective Equipment ........................................ 5-1
  5.1 General .............................................................. 5-1
  5.2 Chemical Protective Equipment .................................... 5-1
    5.2.1 Levels of Protection .......................................... 5-1
    5.2.2 Chemical Ensembles ........................................... 5-2
  5.3 Hazards and Protection Level ...................................... 5-4
    5.4 Reassessment of Protection Level ............................. 5-5
  5.5 Inspection of PPE .................................................. 5-6
  5.6 Respiratory Protection .............................................. 5-6

6.0 Monitoring Program .......................................................... 6-1
  6.1 Real Time Monitoring ................................................ 6-1
  6.2 Air Monitoring Result Logging ..................................... 6-2

TOC-1
6.3 Personal Monitoring .............................................. 6-2
6.4 Operation, Maintenance and Calibration ...................... 6-3
6.5 Initial Survey ...................................................... 6-3
6.6 Periodic Survey ................................................... 6-4
6.7 Perimeter Monitoring ............................................. 6-4

7.0 Site Control ....................................................... 7-1
7.1 Site Mapping ....................................................... 7-1
7.2 Work Zones ....................................................... 7-1
  7.2.1 Exclusion Zone ............................................... 7-2
  7.2.2 Contamination Reduction Zone .............................. 7-2
  7.2.3 Support Zone .................................................. 7-4
7.3 Buddy System ..................................................... 7-5
7.4 Audits .............................................................. 7-6
7.5 Visitors ........................................................... 7-6

8.0 Safety and Emergency Procedures ................................ 8-1
8.1 Standing Safety Orders .......................................... 8-1
8.2 Medical Emergencies ............................................ 8-2
  8.2.1 Chemical Exposure Emergency ........................... 8-2
  8.2.2 Accident Reporting .......................................... 8-3
  8.2.3 Hospital Route ................................................. 8-5
8.3 Temperature Extremes ........................................... 8-5
  8.3.1 Heat Stress Monitoring .................................... 8-6
  8.3.2 Cold Stress Monitoring ..................................... 8-8
8.4 Decontamination Procedures .................................... 8-10
  8.4.1 General ......................................................... 8-10
  8.4.2 Emergency Decontamination ............................... 8-13
  8.4.3 PPE .............................................................. 8-14
  8.4.4 Instruments .................................................... 8-15
  8.4.5 Equipment ...................................................... 8-15
  8.4.6 Decontamination Solutions .............................. 8-15
  8.4.7 Vehicle Decontamination Station ....................... 8-16
8.5 Disposition of Decontamination Wastes ......................... 8-16
  8.5.1 Disposal Procedures ........................................ 8-16
  8.5.2 Contamination Reduction Corridor Breakdown .......... 8-17
8.6 Communications .................................................. 8-17

TOC-2
8.6.1 Internal Communication ........................................ 8-17
8.6.2 External Communications ....................................... 8-18
8.6.3 Communication Signals ......................................... 8-19
8.6.4 Hazard Communication ......................................... 8-19
8.7 Confined Space Entry Procedures .................................. 8-20

9.0 Emergency Action Plan .............................................. 9-1
  9.1 Preplanning ......................................................... 9-1
  9.2 Reporting Emergencies ........................................... 9-1
  9.3 Notification ........................................................ 9-2
  9.4 Emergency Contacts .............................................. 9-2
  9.5 Fire or Explosion ................................................. 9-2
  9.6 Spills or Leaks ..................................................... 9-3
  9.7 Evacuation Procedures ........................................... 9-3
  9.8 Critique of Response and Follow-up ............................. 9-3

10.0 Team Member Responsibilities .................................... 10-1
  10.1 Managerial Responsibility ....................................... 10-1
   10.1.1 Health and Safety Manager .................................. 10-1
   10.1.2 Project Manager ............................................... 10-1
  10.2 Team Organization/Responsibility ................................ 10-1
   10.2.1 Site Manager .................................................. 10-1
   10.2.2 Site Safety Coordinator ..................................... 10-1
   10.2.3 Field Team .................................................... 10-2

11.0 Certification ........................................................ 11-1

12.0 Record of Changes .................................................. 12-1

Tables

Table 8-1 Frequency of Physiological Monitoring ..................... 8-7
Table 8-2 Heat Stress Symptoms and Treatment ........................ 8-9
Table 8-3 Cold Work Environment Work Practice ....................... 8-12
TableA1-1 Emergency Contacts ........................................ App-1-5
TableA2-1 Chemicals of Concern and Applicable Regulatory Standards .......................... App-2-2
Figures

Figure 1  Site Location Map ........................................ App-1-2
Figure 2  Hospital Route Map ....................................... App-1-4

Appendices

Appendix 1 Site Maps and Emergency Information ................... App-1-1
Appendix 2 Chemicals of Concern and Applicable Regulatory Standards .... App-2-1
Appendix 3 Material Safety Data Sheets ................................ App-3-1
Appendix 4 Safety Meeting Checklist .................................. App-4-1
Appendix 5 Medical Monitoring Examination Elements .............. App-5-1
Appendix 6 Monitoring Equipment Action Levels ..................... App-6-1
Appendix 7 Decontamination Methods ................................. App-7-1

Attachments
Attachment A Task Hasp
## Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abs</td>
<td>Skin Absorption</td>
</tr>
<tr>
<td>ACGIH</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td>ACP</td>
<td>Access control point</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>BRA</td>
<td>Baseline Risk Assessment</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>CNS</td>
<td>Central nervous system</td>
</tr>
<tr>
<td>COC</td>
<td>Contaminants of concern</td>
</tr>
<tr>
<td>Con</td>
<td>Skin and/or eye contact</td>
</tr>
<tr>
<td>CPR</td>
<td>Cardio-pulmonary resuscitation</td>
</tr>
<tr>
<td>CRC</td>
<td>Contamination reduction corridor</td>
</tr>
<tr>
<td>CVS</td>
<td>Cardiovascular system</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation</td>
</tr>
<tr>
<td>ESD</td>
<td>Environmental Services Division</td>
</tr>
<tr>
<td>FID</td>
<td>Flame ionization detector</td>
</tr>
<tr>
<td>FS</td>
<td>Feasibility Study</td>
</tr>
<tr>
<td>GI Tract</td>
<td>Gastrointestinal tract</td>
</tr>
<tr>
<td>HASP</td>
<td>health and safety plan</td>
</tr>
<tr>
<td>HSM</td>
<td>health and safety manager</td>
</tr>
<tr>
<td>IDLH</td>
<td>Immediately dangerous to life or health</td>
</tr>
<tr>
<td>Ing</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Inh</td>
<td>Inhalation</td>
</tr>
<tr>
<td>LEL</td>
<td>Lower explosive limit</td>
</tr>
<tr>
<td>MAWPCC</td>
<td>Mississippi Air and Water Pollution Control Commission</td>
</tr>
<tr>
<td>MDNR</td>
<td>Mississippi Department of Natural Resources</td>
</tr>
<tr>
<td>MBPC</td>
<td>Mississippi Bureau of Pollution Control</td>
</tr>
<tr>
<td>mg/kg</td>
<td>milligrams per kilogram</td>
</tr>
<tr>
<td>MSDS</td>
<td>Material safety data sheet</td>
</tr>
<tr>
<td>MSHA</td>
<td>Mine Safety and Health Administration</td>
</tr>
<tr>
<td>NE</td>
<td>No evidence could be found for the existence of an IDLH</td>
</tr>
<tr>
<td>ng/kg</td>
<td>Nanograms per kilogram</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>NPL</td>
<td>National Priorities List</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>OSHA PEL</td>
<td>Occupational Safety and Health Administration Permissible Exposure Limit</td>
</tr>
</tbody>
</table>
OVA  Organic vapor analyzer
PA  Preliminary assessment
PAH  Polynuclear aromatic hydrocarbon
PCB  Polychlorinated biphenyl
PEL  Permissible exposure limit
PID  Photo ionization detector
PM  project manager
PNS  Peripheral nervous system
POTW  Publically Owned Treatment Works
PPE  Personal protective equipment
PPM  Parts per million
PVC  polyvinyl chloride
RBC  Red blood cell
REL  recommended exposure limits
RI  Remedial Investigation
ROD  Record of Decision
SARA  Superfund Amendments and Reauthorization Act
SCBA  Self-contained breathing apparatus
SM  Site manager
SSC  Site safety coordinator
skin  Danger of cutaneous absorption
TAL  Target analyte list
TCL  Target compound list
TCLP  Toxicity characteristic leaching procedure
TLV  Threshold limit value
TPH  Total petroleum hydrocarbons
TWA  Time-weighted average exposure concentration for normal 8-hour (TLV, PEL)
or up to a 10-hour (REL) workday and 40-hour workweek
UST  underground storage tank
USEPA  United States Environmental Protection Agency
VDS  Vehicle decontamination station
1.0 Introduction

1.1 Purpose
This site health and safety plan (HASP) will establish the site specific health and safety guidelines and procedures for activities at the Picayune Wood Treating Site (PWTS) located in Picayune, Pearl River County, Mississippi. The HASP will be based on existing data and site reconnaissance and will be in accordance with Occupational Safety and Health Administration (OSHA) Rules. The HASP will be approved by the Black & Veatch Special Projects Corp. (Black & Veatch) health and safety manager (HSM) or designee.

1.2 Scope
Specific information or procedures that are applicable to all operations and tasks at the site are included in Sections 1.0 through 9.0 of the HASP. These procedures are applicable to all site activities unless otherwise stated in the appendices. The appendices address specific tasks and operations performed at the PWTS, detailing the hazards and control measures. Attachment A will be referred to as task-specific health and safety plans (Task HASP).

1.3 Compliance with Site HASP
Consistent with the contents of this Site HASP, work will be conducted in a safe and environmentally acceptable manner and all field personnel under this HASP shall be required to comply with the health and safety requirements specified herein. All field personnel under this plan are required to read and familiarize themselves with the contents of this Site HASP and the associated Task HASPs. Field personnel will document this competency through the entry of a signature and date as specified in the Certification Section (Section 11.0) in this Site HASP and Task HASPs related to the work being performed.
2.0 Site Background

2.1 Site Location and Facility Description
The Picayune Wood Treating Site (PWTS) is a 30-acre site located at 403 Davis Street in the city of Picayune, Pearl River County, Mississippi. The site is located within an industrial complex that once included a sawmill, veneer mill, a wooden box factory, and a tung oil extraction facility. Abandoned buildings and concrete foundations of these former facilities are located near the northern and southern property lines.

The facility utilized a pressurized wood treating process to produce wood products (primarily utility poles and foundation piling). The wood preserving plant was constructed in 1945–1946 by Crosby Forest Products, Inc. Crosby Wood Preserving, Inc., purchased the plant and other manufacturing operations in 1963. Wood Treating, Inc. (WTI), purchased the wood preserving facility and approximately 30 acres of land in 1973 and operated the plant until it was closed in 1999.

The main process area was located near the eastern portion of the site. The main process area included the creosote, pentachlorophenol (PCP), and diesel storage tank area; oil/water separator tanks; the treatment vessels; and the treatment building. The closed cooling water impoundment and the biological treatment storage tanks were located to the north of the main process area. The wastewater treatment plant was located to the south of the main process area. The central portion of the site was the product storage area. The closed trench impoundments are in the western portion of the site.

Two industries are presently operating at the complex: a paint blending company located to the north of the site and a chromated copper arsenate (CCA) wood treating operation to the southwest of the site.
The site is bounded on the north by a residential, commercial, and industrial area; on the south by a public park, day care center, and residences; to the east by a commercial and industrial area; and on the west by the Southside Elementary School and residences.

CDM Federal (CDM) began the Remedial Investigation (RI) in 2002 in which they collected and analyzed soil, sediment, surface water, and groundwater samples. CDM prepared several Sampling and Analysis Plans, with the latest being prepared in March 2005, in support of their field sampling events. In addition, CDM documented the results of these remedial investigation (RI) activities in their Draft Data Summary Report, Phase IV Investigation, Picayune Wood Treating Site, Picayune, Mississippi, Dated July 2005. CDM prepared the Checklist for Ecological Assessment/Sampling, Picayune Wood Treating Site, Picayune, Mississippi, Dated October 2004.

2.2 Operational History and Current Status

The facility utilized a pressurized wood treating process to produce wood products (primarily utility poles and foundation piling). The wood preserving plant was constructed in 1945–1946 by Crosby Forest Products, Inc. Crosby Wood Preserving, Inc., purchased the plant and other manufacturing operations in 1963. Wood Treating, Inc. (WTI), purchased the wood preserving facility and approximately 30 acres of land in 1973 and operated the plant until it was closed in 1999.

WTI closed two surface impoundments that were used to manage wastewater and/or sludge generated during the treatment operations. The former condenser cooling water pond is located in the eastern portion of the site. The cooling water pond is believed to have been constructed when the facility began operations in 1946. The cooling water pond reportedly covered an area of approximately 5,000 square feet and had a maximum depth of about 8 feet. The other impoundment consists of three trenches in the western portion of the site that were constructed between 1975 and 1980. The three trench impoundments were reportedly 400 feet long, 25 feet wide, and 7 feet deep.
The Mississippi Department of Natural Resources (MDNR) and the Mississippi Department of Environmental Quality (MDEQ) inspected the PWTS several times starting in 1981. Groundwater contamination was discovered beneath the two closed impoundments in 1985. Subsequently, a groundwater quality assessment plan consisting of 37 soil borings and 29 monitoring wells, was implemented. The impoundments were closed by removing all pumpable sludges, solidification of the remaining sludges, and capping the impoundments with a “very impermeable” cap (Rollins 1987). The volume within the closed cooling water pond was estimated to be 30,000 cubic feet. The closed trench impoundments cover an area of about 27,000 square feet and contain an estimated total volume of 93,160 cubic feet.

In April 1988, the U.S. Environmental Protection Agency (EPA) issued a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) report that identified ten solid waste management units (SWMUs) and one area of concern (AOC). EPA issued a Hazardous and Solid Waste Amendment (HSWA) post-closure permit to WTI on September 22, 1989. As part of their permit requirements, a Corrective Action Plan (CAP) was implemented for remediation of the groundwater contamination. In October 1991, WTI installed six recovery wells as part of a groundwater pump and treat system. WTI operated the corrective action system to recover nonaqueous phase liquids (NAPLs) and contaminated groundwater.


On November 11, 1996, the facility submitted the Final Phase I RFI. On April 1, 1997, the facility submitted an Interim Measures Remediation Plan (IMRP) to address the concerns raised by EPA during the RFI. WTI proposed reclamation of useable fluids and sludge from the wood process, and on-site bioremediation of the contaminated soils. EPA approved the IMRP on July 29, 1997; however, in December 1997, WTI requested a postponement of the remedial activities due to litigation with the previous owner and operator. In January 1998, EPA notified WTI that implementation of the Phase II RFI work plan should begin within 30 days; however, on February 25, 1998, WTI requested a postponement of the Phase II RFI until a settlement could
be reached between the current and former owners. A second lawsuit was filed by the insurers of the facility to contest the insurance coverage. The facility ceased operations in 1999.

2.3 Nature and Extent of Hazardous Materials

CDM began the Remedial Investigation (RI) in 2002 in which they collected and analyzed soil, sediment, surface water, and groundwater samples. CDM prepared several Sampling and Analysis Plans, with the latest being prepared in March 2005, in support of their field sampling events. In addition, CDM documented the results of these remedial investigation (RI) activities in their Draft Data Summary Report, Phase IV Investigation, Picayune Wood treating Site, Picayune, Mississippi, Dated July 2005. CDM prepared the Checklist for Ecological Assessment/Sampling, Picayune Wood Treating Site, Picayune, Mississippi, Dated October 2004.

The results of this report gave the nature and extent of hazardous materials present at the PWTS as follows:

Surface Soils

- Carcinogenic PAHs were detected at each surface soil location above the PRG for BaP TEQs of 62 micrograms per kilogram [$\mu$g/kg (parts per billion, ppb)]. Concentrations ranged from 173 $\mu$g/kg to 405,490 $\mu$g/kg (CDM, 2005).
- Dioxin, as measured by its TEQ, was detected in each of the grids in which it was analyzed. Concentrations ranged from 4.3 to 30,630 nanograms (ng)/kg (parts per trillion, ppt) (CDM, 2005). The EPA’s current dioxin soil cleanup level for typical direct contact residential exposure is 1,000 ng/kg. This cleanup level is derived from EPA’s April 13, 1998, Office of Solid Waste and Emergency Response (OSWER) Directive titled Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites [9200.4-26 (EPA, 1998b)]. In this directive, EPA states that 1 $\mu$g/kg (1,000 ng/kg) TEQ is to be generally used as a starting point for setting cleanup levels for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal sites and as a PRG for remedial sites for dioxin in surface soil involving a residential exposure scenario. For commercial/industrial exposure scenarios, a soil level within the range of
5 μg/kg (5,000 ng/kg) to 20 μg/kg (20,000 ng/kg) TEQ should generally be used as a starting point for setting cleanup levels at CERCLA removal sites. The 1998 directive serves as an interim policy pending the release of EPA’s dioxin reassessment.

Subsurface Soil Samples (collected from 3 to 4 feet bls at 29 locations.)
- Carcinogenic PAHs were detected at 14 subsurface soil locations above the PRG for BaP TEQs of 62 micrograms per kilogram [μg/kg (parts per billion, ppb)]. Concentrations above the PRG ranged from 170 μg/kg to 24,000 μg/kg (CDM, 2005).
- PCP was detected at 4 subsurface soil locations above the PRG of 2,979 μg/kg. Concentrations above the PRG ranged from 3,300 μg/kg to 36,000 μg/kg (CDM, 2005).

Sediment Samples (collected from 0 to 6 inches at 66 locations)
- Carcinogenic PAHs were detected at 44 sediment locations above the PRG for PaP TEQ of 62 μg/kg. Concentrations above the PRG ranged from 62 to 55,570 μg/kg (CDM, 2005).
- PCP was detected at 3 sediment locations above the PRG of 2,979 μg/kg. Concentrations above the PRG ranged from 5,800 to 56,000 μg/kg (CDM, 2005).
- Dioxin, as measured by its TEQ, was detected in 6 sediment samples above the EPA soil cleanup level of 1,000 ppt. Concentrations ranged from 1,100 to 12,000 ng/kg (parts per trillion, ppt) (CDM, 2005).
3.0 Hazard Assessment

3.1 Chemicals of Concern
Chemicals of concern (COC) at the PWTS are listed in Appendix 2. The table lists the allowable exposure levels for the chemicals, signs and symptoms of exposure, dermal absorption hazards, carcinogenicity, immediately dangerous to life and health (IDLH) values, health hazards, physical hazards, Chemical Abstracts Service (CAS) registry numbers, and physical characteristics.

3.2 Hazard Communication for Chemicals of Concern
When COC concentrations exceed 1%, or 0.1% for a carcinogen, a Material Safety Data Sheet (MSDS) will be provided in Appendix 3, in accordance with Section 5.8.7 (Hazard Communication) of the Site HASP. The MSDSs may not be from the specific manufacturer, distributor, or potentially responsible parties that deposited the COCs. Although these are written by a specific manufacturer, they are not meant in any way to suggest that the waste products or contamination on the site conform to that particular manufacturer. They are intended to be used solely as an approximation for the waste product to provide safety and health hazard information, including symptoms of exposure, first-aid procedures and spill control measures.
4.0 Personnel Qualifications

4.1 Training Requirements

All personnel who will be engaged in hazardous waste operations must present to the site safety coordinator (SSC) a certificate of completion for an initial 40-hour hazardous waste operations training course or the most recent certificate of completion for an 8-hour refresher course. The course must have been completed within the 12 months of the individual being onsite performing hazardous waste operations. The training must comply with OSHA regulations found at 29 Code of Federal Regulations (CFR) 1910.120(e). The certification must be presented to the SSC before site activities begin.

All personnel must complete a minimum of three days on-the-job training under the direct supervision of a qualified SSC or site supervisor before they are qualified to work at a hazardous waste site unsupervised.

Consistent with OSHA 29 CFR 1910.120 paragraph (e)(4), individuals serving in a supervisory role, such as the field team leader or SSC, require an additional 8 hours of training. Black & Veatch individuals functioning in a SSC capacity shall also have at least 6 days of experience at the level of protection planned for in this HASP. A SSC qualified at a given level of protection is also qualified as a SSC at a lesser level of protection.

Two Black & Veatch personnel on site during site activities will be trained and currently certified in standard first aid and adult cardiopulmonary resuscitation (CPR).

Personnel who use air supplied respirators must provide the HSM written certification that they have been trained in the proper use, inspection, emergency use and limitations of the equipment by a competent person. The training must be current within 12 months prior to the use of the equipment.

Personnel who participate in permitted confined space entry, radiation work, asbestos work, lead work, or work involving lockout/tagout of energy sources must provide the HSM written
certification that they have been trained in accordance with the applicable OSHA regulations before performing such work.

Personnel who use health and safety monitoring equipment other than the type and model provided by the Black & Veatch equipment center must provide written certification to the HSM that they have been trained in the use, maintenance, calibration and operation of the equipment by a competent person before using the equipment.

4.1.1 Safety Meetings
Safety meetings with all team members will be conducted prior to initiating any site activity. In addition, periodic briefings will be held throughout the project, especially when unsafe practices are noted or a change in site conditions require modifications of the HASP. Periodic meetings will be held at least weekly where applicable. Similar meetings will be held with individuals who later become a part of the field team before they take part in site activities.

The Safety Meeting Checklist in Appendix 4 provides a guide of topics to be covered during the initial briefing and may be covered during periodic meetings. The Safety Meeting Checklist will be used to document the safety meeting topics discussed and attendance.

The SSC is responsible for conducting and documenting the pre-activity and periodic safety meetings.

4.2 Medical Surveillance Program
All Black & Veatch personnel who participate in hazardous waste site investigations will be enrolled in a medical monitoring program prior to initiating site activities. The medical monitoring program will consist of an initial baseline examination, periodic monitoring examinations and an exit examination.

All Black & Veatch personnel who will be engaged in hazardous waste operations must present to the SSC a certificate of completion of a comprehensive medical monitoring examination. The medical examination must have been completed within 24 months prior to the beginning of site
activities. All Black & Veatch subcontract personnel who will be engaged in hazardous waste operations must also present to the Black & Veatch SSC a certificate of completion of a comprehensive medical monitoring examination and the medical examination must have been completed within 12 months prior to the beginning of site activities. As a minimum, the medical monitoring examination will include the elements listed in Appendix 5.

Site-specific medical monitoring examinations or tests may be required to augment the standard examinations. Any additional examinations or tests required will be listed under the Site Specific Medical Monitoring Requirements section of the Task HASP.

Personnel who have the potential to wear respirators must present to the SSC a written documentation that a physician has determined that they are physically able to perform the work and use the respirator.
5.0 Personal Protective Equipment

5.1 General
All site activities require the following personal protective equipment (PPE) to be worn as a minimum:

- Safety glasses with side shields meeting the requirements and specifications of the current American National Standards Institute (ANSI) Z87 standard.
- Steel-toed boots meeting the requirements and specifications for class 75 occupational foot protection of the current ANSI Z41 standard.

The following PPE shall be provided, used and maintained in a sanitary and reliable condition whenever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

- Suitable eye protectors.
- Head protection.
- Extremities protection.
- Protective clothing.
- Shields and barriers.
- Face protection.
- Respiratory protection.
- Hearing protection.

5.2 Chemical Protective Equipment

5.2.1 Levels of Protection
Personnel will wear chemical protective equipment when activities involve known or suspected atmospheric contamination; when airborne vapors, gases or particulate may be generated by site activities; or when direct contact with skin-affecting substances may occur.
The specific level of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

**Level A**: Should be worn when the highest level of respiratory, skin and eye protection is needed. Note: Black & Veatch personnel are not authorized to work at Level A without additional training and written approval from the Black & Veatch HSM.

**Level B**: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments.

**Level C**: Should be worn when the criteria for using air-purifying respirators are met and a lesser level of skin protection is needed.

**Level D**: Should be worn as a basic work uniform and not in any area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

### 5.2.2 Chemical Ensembles

The following are the standard chemical protective equipment to be used for all hazardous waste operations. Combinations of chemical protective equipment other than those described for levels A, B, C and D protection may be more appropriate and may be used to provide the proper level of protection. Deviations from this standard are addressed in the Task HASP.

**Level B PPE**:

- Supplied-air respirator [Mine Safety and Health Administration/National Institute for Occupational Safety and Health (MSHA/NIOSH) approved]. Respirators may be positive pressure-demand self-contained breathing apparatus (SCBA) or positive pressure-demand airline respirator (with escape bottle for IDLH or potential for IDLH atmosphere).
- Hooded chemical-resistant one-piece suit (Saranex/Tyvek) with double bonded seams.
- Long cotton underwear (optional).
- Outer gloves, chemical-resistant (11 mil nitrile).
• Inner gloves, chemical-resistant (4 mil nitrile).
• Boots, chemical-resistant, steel toe and steel shank.
• Outer boot covers, chemical-resistant, disposable.
• Face shield (optional).
• Hardhat.

Level C PPE:

• Air Purifying respirator (MSHA/NIOSH approved) with an organic vapor/acid gas/high efficiency particulate filter cartridge.
• Chemical-resistant one or two-piece suit (Saranex/Tyvek) with double bonded seams.
• Long cotton underwear (optional).
• Outer gloves, chemical-resistant (4 mil nitrile).
• Inner gloves, chemical-resistant (4 mil nitrile).
• Boots, chemical-resistant, steel toe and steel shank.
• Outer boot covers, chemical-resistant, disposable.
• Face shield (optional).
• Hardhat.

Level D PPE:

• Tyvek for soil sampling, Saranex for water sampling.
• Boots, steel toe and steel shank.
• Outer boot covers, chemical-resistant, disposable.
• Inner gloves, chemical-resistant (4 mil nitrile).
• Outer gloves, chemical-resistant (11 mil nitrile).
• Safety glasses with side shields.
• Hardhat.

5.3 Hazards and Protection Level

The types of hazards for which levels A, B, C and D protection are appropriate and described below:

Level A protection should be used when:

• The hazardous substance has been identified and requires the highest level of protection for skin, eyes and the respiratory system based on either the measured (or potential for) high concentration of atmospheric vapors, gases or particulate; or the site operations and
work functions involve a high potential for splash, immersion or exposure to unexpected vapors, gases or particulate of materials that are harmful to skin or capable of being absorbed through the skin.

- Substances with a high degree of hazard to the skin are known or suspected to be present and skin contact is possible.
- Operations are being conducted in confirmed, poorly ventilated areas and the absence of conditions requiring level A have not yet been determined.

Level B protection should be used when:

- The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection.
- The atmosphere contains less than 19.5 percent oxygen.
- The presence of incompletely identified vapors or gases is indicated by a direct reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin.

Note: This involves atmospheres with IDLH concentrations of specific substances that present severe inhalation hazards and that do not represent a severe skin hazard; or that do not meet the criteria for use of air-purifying respirators.

Level C protection should be used when:

- The atmospheric contaminants, liquid splashes or other direct contact will not adversely affect or be absorbed through any exposed skin.
- The types of air contaminants have been identified, concentrations measured and an air-purifying respirator is available that can remove the contaminants.
- All criteria for the use of air-purifying respirators are met.

Level D protection should be used when:

- The atmosphere contains no known hazard.
- Work functions preclude splashes, immersion or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

5.4 Reassessment of Protection Level

The level of protection provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or findings of investigations. When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:
• Airborne concentrations of chemicals or physical hazards exceed action levels.
• Commencement of a new work phase, such as the start of drum sampling or work that begins on a different portion of the site.
• Change in job tasks during a work phase.
• Change of weather.
• When temperature extremes or individual medical considerations limit the effectiveness of PPE.
• Contamination other than those previously identified are encountered.
• Change in ambient levels of contaminants.
• Change in work scope which effects the degree of contact with contaminants.
• Detection of contamination by instrument, odor or sight.

5.5 Inspection of PPE

The user of the PPE is responsible for inspecting the equipment prior to immediate use. The PPE will not be used if the user is not familiar with the equipment's limitations.

The user's buddy is responsible for periodically checking on the proper use of the protective equipment while in use.

5.6 Respiratory Protection

Respiratory protection at hazardous waste sites consists of a fullface air purifying respirator as a minimum. Any use of an air supplied system, if required, will be specifically addressed in the Task HASP. Personnel will not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The determination will be documented in writing and provided to the SSC in accordance with Section 4.2.

Personnel who have the potential to wear the respirator onsite must be trained in the proper use of the respirators and their limitations. The training will allow users to handle their respirator to become familiar with all components, select the proper size for a comfortable fit, wear it in normal air to become used to the breathing resistance, visibly conduct a critical component inspection, and administer a positive and negative pressure fit check.
Respirators are not to be worn when conditions prevent a good full seal. Such conditions may be a growth of beard, sideburns, bangs, a skull cap or other clothing that projects under the facepiece or temple pieces on glasses. To assure proper protection, the respirator will be thoroughly inspected before each use and a positive and negative fit check will be performed each time the respirator is donned.

Respirators will be assigned to individuals for their exclusive use during the project. Air purifying respirators will be regularly cleaned and disinfected. As a minimum, respirators will be cleaned after each day's use or more often if necessary. Upon completion of the work task, the respirators will be disassembled, inspected, and thoroughly cleaned and disinfected. Worn or deteriorated parts will be replaced and the respirators will be stored in a clean and sanitary location in individual plastic bags.

Selection of the respirator is the responsibility of a person qualified by appropriate training or experience and will be noted in the Task HASP. Selection will be based on the physical, chemical, and physiological properties of the air contaminants and the concentration likely to be encountered. The quality of fit and the nature of the work being performed will also affect the choice of respirators. The capability of the respirators chosen is determined from appropriate governmental approvals, manufacturer's test, and the qualified person's experience with respirators.

All workers entering the Exclusion Zone or Contamination Reduction Zone at a site where use of a respirator is necessary or anticipated, must have passed at least a qualitative fit test in accordance with the guidelines established in the appendix of 29 CFR 1910.1025. Personnel must have been fit tested for the model and size of respirator issued to them. The fit test record must be current within the previous twelve months.
6.0 Monitoring Program

6.1 Real Time Monitoring
Direct reading instruments are used as real time air monitors. The results of the direct reading instruments are compared to the Monitoring Equipment Action Levels (Appendix 6) that describes the protective action that is to be taken to control exposure. The action levels describe the location of the real time monitoring activity and the action to be taken if predefined values are met or exceeded. Site specific operations or tasks may have other action levels established. Any change to the action level task will be noted in the appropriate Task HASP.

The frequency and location of all real time monitoring activity is based upon the nature of the site activity. Periodic real time monitoring will be performed, at a minimum, whenever the following activities occur.

- Beginning of site activity.
- Operations change.
- Work begins on a different portion of the site.
- Beginning of invasive site activity.
- Contaminants other than those previously identified are being handled.
- Personnel begin to handle obviously contaminated materials.
- Personnel are handling leaking drums or containers.
- Personnel are performing tasks that are likely to expose them to peak levels of contaminants.
- Instrumental or sensible detection of the presence of a chemical contaminant.
- Change in the weather.

6.2 Air Monitoring Result Logging
Before any field activities commence, the background levels of the site must be read and recorded. Daily background readings must be conducted away from areas of potential contamination to obtain accurate results.

All monitoring results must be recorded in the field log. The monitoring results should indicate the following information.
• Range of readings.
• Mode of readings.
• Time.
• Location of reading.
• Activity during reading.
• Weather conditions.
• Wind direction.
• Action taken.

6.3 Personal Monitoring

Personal monitoring will be performed whenever required by an OSHA chemical-specific standard found in 29 CFR 1910 Subpart G or Z, or 1926 Subpart D or Z when deemed necessary to protect the health of the field team members. All personal monitoring will be performed in accordance with accepted sampling and analytical procedures as defined by the HSM. Specifics of the monitoring will be described in the Task HASP.

Personnel who are likely to have exposures above OSHA-Permissible Exposure Limits (PELs) or published exposure levels for hazardous substances shall participate in a personal air sampling program. Air monitoring shall be used to identify and quantify airborne levels of hazardous substances in order to determine the appropriate level of employee protection needed onsite. Black & Veatch personnel will be stationed upwind of intrusive activities. Specifics of the monitoring will be described in the Task HASP.

6.4 Operation, Maintenance and Calibration

The SSC is responsible for the proper operation, maintenance and calibration of each instrument to be used. The operation, maintenance and calibration instructions in the equipment manuals will be followed. The equipment manuals will be kept in the support zone during field activities. As a minimum, at the beginning of each day the instruments will be calibrated according to the manual. At the end of each day, a check of the calibration of the instrument will be performed. This end of the day check may be less stringent than the beginning of the day calibration as long as it verifies accurate readings were taken through the day.
6.5 Initial Survey

Prior to any site activities, the SSC will conduct perimeter and general site monitoring, upwind and downwind, to establish background levels.

If information from the site characterization indicates a potential for ionizing radiation or IDLH condition onsite or if insufficient information is available to demonstrate otherwise, then monitoring shall include: monitoring with direct reading ionizing radiation or IDLH conditions including oxygen, explosive and toxic atmospheres; and visual observations for actual or potential IDLH conditions onsite.

Upon initial entry to an area, representative air monitoring will be conducted using direct reading instruments to identify IDLH conditions, exposures above OSHA-PELs or other allowable exposure levels, including exposure to radiation, flammable atmospheres or oxygen deficient atmospheres.

6.6 Periodic Survey

Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is an indication that exposure may have risen over OSHA-PELs or published exposure levels for hazardous substances.

After site activities have commenced, the selective monitoring of high-risk workers, i.e., those who are closest to the source of contaminant generation, is essential. Those employees working closest with the source have the highest likelihood of being exposed to concentrations which exceed established exposure limits or action levels.

Monitoring efforts will focus on personnel most likely to receive the highest exposures and on all personnel likely to be exposed to any substance above the action level or OSHA-PEL. High risk workers will be monitored at least every 30 minutes when the potential for exposure exists.

Monitoring will be performed whenever new work begins on a different position of the site any time that new contaminants are encountered that differ from those initially encountered, every time a
different operation is initiated, whenever employees are working in areas of obvious liquid contamination or employees are handling leaking containers.

6.7 Perimeter Monitoring
The SSC is responsible for determining if site activities could negatively impact zones outside the contamination reduction zone. If action levels for airborne contaminants listed in the Action Level Table are exceeded, the SSC will perform monitoring at the perimeter of the contamination reduction zone to determine if the contaminants are getting out of the controlled zones. If action levels are exceeded at these locations, the SSC must advise the Project Manager (PM) and the Black & Veatch HSM. If necessary the control zones will be expanded to compensate for the presence of the contaminants.

If the release of contaminants could negatively impact the health and safety of the surrounding areas, the SSC will contact the local emergency response organization responsible for protecting public health from chemical exposures. This agency will be identified prior to the beginning of site activities as part of the emergency preplanning procedures. The SSC will then notify the site representative, PM and Black & Veatch HSM. The SM will notify the client of the chemical release and the actions taken by the SSC. Notification will be made in accordance with Section 9.6, Spills or Leaks.
7.0 Site Control

The objective of site control is to control the activities and movement of people and equipment at hazardous waste sites in order to minimize the potential for worker or public exposure to hazardous substances, the spread of hazardous substance in the environment or vandalism.

7.1 Site Mapping

A map of the site is located in Appendix 1. The purpose of this map is to assist site personnel in planning and organizing response activities.

The Task HASP will contain site maps that are specific to the area where specific tasks will take place. This map will include the following information: magnetic north, site drainage points, previous sampling locations, planned sampling locations, locations of expected contamination, planned control zones, all natural and man-made topographic features including the location of buildings, containers, impoundments, pits, ponds, tanks and any other site features.

The Task HASP specific site map will be upgraded to reflect new information gained after initial site entry or from subsequent sampling and analysis activities or changes in site conditions, including changes resulting from accidents, ongoing site operations, hazards not previously identified, new materials introduced onsite, unauthorized entry or vandalism or weather conditions.

Use of overlays or other mapping techniques may be used to reduce cluttering of information.

7.2 Work Zones

Work zones will be established to:

- Reduce the accidental spread of hazardous substances by workers or equipment from the contaminated areas to the clean areas.
- Confine work activities to the appropriate areas, thereby minimizing the likelihood of accidental exposure.
- Facilitate the location and evacuation of personnel in case of an emergency.
To accomplish this, the site will be divided into as many zones as necessary to ensure minimal employee exposure to hazardous substances. As a minimum, three zones will be identified, including the Exclusion Zone, the Contamination Reduction Zone, and the Support Zone. Movement of personnel and equipment between these zones should be minimized and restricted to specific Access Control Points to prevent cross-contamination from contaminated areas to clean areas.

The work site will be divided into the following three zones. These zones are established so field personnel can identify where the site hazards exist. The work zones will be established so nonessential personnel will not be affected by the hazards and the hazards do not leave the zones. Details of the work site control zones will be established by the SSC prior to starting site activities and will be established so that the support zone is upwind of the Exclusion Zone or at a distance far enough away that it is not affected by the dispersion of contaminants from the Exclusion Zone.

Following is a description of each work zone and the factors to be considered when establishing them.

### 7.2.1 Exclusion Zone

The Exclusion Zone is the innermost area of the three areas and is considered contaminated. Within this area, levels of protection prescribed in the HASP will be used by all personnel. An Access Control Point (ACP) will be established at the periphery of the Exclusion Zone to control the flow of personnel and equipment between it and the Contamination Reduction Zone and to check that entrance and exit procedures are followed. The extent of the Exclusion Zone is determined by the following:

1. Location, nature and toxicity of the waste materials.
2. Meteorological conditions affecting potential dispersion of contaminants.
3. Concern for minimal exposure of the unprotected public and investigation personnel.
4. Topography.
The Exclusion Zone boundary ("hot line") will be established at a reasonably safe distance from drums, tanks, ponds, liquid run-off or other physical indicators of hazardous substances. This distance will be established by the SSC before site activities begin and will take into account such factors as physical condition of site, weather conditions, sources of potential hazard and duration of activity. Subsequent to the start of operations, the boundary may be readjusted based on observation or measurements. The boundary will be physically secure and posted, well defined by geographical boundaries or otherwise delineated.

The Exclusion Zone could be further divided into zones with different levels of protection for each zone. Based upon environmental measurements or expected onsite work practices, locations within the Exclusion Zone would be defined in accordance with the level of protection required for that area. This procedure would allow for more flexibility in operation, decontamination procedures and resource utilization.

7.2.2 Contamination Reduction Zone

The area between the Exclusion and Support Zones is the Contamination Reduction Zone. The purpose of the Contamination Reduction Zone is to prevent the transfer of contaminants that may have been picked up by personnel or equipment leaving the Exclusion Zone. An area within the Contamination Reduction Zones is the Contamination Reduction Corridor (CRC). The CRC is a path that persons or vehicles must take during decontamination. The CRC controls access into and out of the Exclusion Zone and confines decontamination activities to a restricted area. The CRC must be laid with plastic sheeting or equivalent.

At the boundary between the Contamination Reduction Zone and the Exclusion Zone is the hot line and access control point. Entrance into the Exclusion Zone requires the wearing of the prescribed personal protection equipment and adherence to established site entry procedures. Equipment requirements for working in the Contamination Reduction Zone may be different than those for the Exclusion Zone. At a point close to the hot line, a decontamination station will be established for both personnel and equipment exiting the Exclusion Zone. Another decontamination station may be established closer to the contamination control line for those working only in the Contamination Reduction Zone. In addition, a vehicle decontamination station will be established as necessary.
The boundary between the Support Zone and the Contamination Reduction Zone is the contamination control line. Entry into the Contamination Reduction Zone from the Support Zone will be through a common point. Personnel entering at this station must be wearing the prescribed PPE for working in the decontamination area. Exiting the Contamination Reduction Zone to the Support Zone requires the removal of any suspected contaminated personal protection equipment and compliance with decontamination procedures.

All facilities and operations located in the Contamination Reduction Zone will be positioned upwind of the actual waste location whenever possible.

### 7.2.3 Support Zone

The Support Zone is the outermost region and is considered a non-contaminated or clean area. It will contain the field office, first aid area and other facilities necessary to support site activities. Change rooms, lunch and break areas, supplies, equipment storage and maintenance areas may be located in this area. Onsite eating, drinking and smoking will be allowed only in this area. Support facilities will be located upwind from the Exclusion and Contamination Reduction Zones in relation to the prevailing wind whenever possible.

A support center or command center will be established in the Support Zone for each activity and will include the following as a minimum:

- Fully stocked industrial first aid kit.
- 15 minute eye wash station.
- Fire extinguisher (10A60BC multipurpose dry chemical).
- Telephone or radio communications capability.
- Posted emergency telephone numbers.
- Posted HASP.
- Posted OSHA "Job Safety and Health Protection" poster.
- Posted OSHA Noise standard.
- Copy of Black & Veatch "Focus on Safety and Health".
- Posted map with route to hospital.
- Instrument manuals.
- Binder of MSDS.
At the discretion of the SSC, the support center may be based in an onsite vehicle.

### 7.3 Buddy System

Except for Level D work involving nonintrusive methods, the implementation of a buddy system is mandatory for entry into the Contamination Reduction Zones or the Exclusion Zone. The prime objective of the buddy system is to ensure rapid assistance in the event of an emergency. Each member of the field team will be designated by the SSC to observe at least one other field team member. The SSC will implement the system at the Access Control Point for personnel entering the Exclusion Zone.

As part of the buddy system, workers will remain close together and maintain visual contact with each other to provide assistance in the event of an emergency. Should an emergency situation arise, workers will use the communication signals established and agreed upon prior to entering the contaminated area. The communication signals are located in Section 8.7.3.

The responsibilities of workers utilizing the buddy system include:

- Providing their buddy with assistance.
- Observing their buddy for signs of chemical exposure.
- Observing their buddy for signs of stress due to temperature extremes.
- Observing their buddy for signs of stress or anxiety while wearing chemical protective clothing.
- Periodically checking the integrity of their buddy's PPE.
- Notifying the SSC or other site supervisory personnel if emergency assistance is needed.

Workers should not rely entirely on the buddy system to ensure that help will be provided in the event of an emergency. To augment this system, workers in contaminated areas should, whenever possible, remain in line-of-sight or communication contact with the SSC or other personnel in the Support Zone.

### 7.4 Audits

Inspection and audits of the work area will be conducted by the SSC as necessary to determine the effectiveness of the HASP or Task HASP. The HASP and Task HASP will be periodically
reviewed by the SSC to keep it current with respect to site conditions. The SSC will report their findings to the site manager. Correcting deficiencies in the effectiveness and application of the HASP is the responsibility of the site manager. Changes to the HASP to address any deficiencies will be made to the Task HASP in accordance with the Section 12 of the Task HASP.

7.5 Visitors

Black & Veatch recognizes that all visitors’ employers are ultimately responsible for their compliance with all applicable OSHA regulations while on a hazardous waste site. Black & Veatch personnel will be courteous to all visitors and adhere to the following procedures for the safety sake of the visitors.

- Visitors are expected to have the permission of the EPA to be on the site.
- The SSC will advise all visitors of the nature, level and degree of exposure likely as a result of Black & Veatch related activities and the emergency response procedures that pertains to the visitors for the site.
- The SSC will advise all subcontractors coming onto the site of the hazardous chemicals present, effect of exposure, location of the MSDSs, location of the emergency equipment and the emergency plan and evacuation procedures.
- Visitors entering the Contamination Reduction Zone and Exclusion Zone at the Site will be offered an opportunity to read the applicable provisions of this HASP.
- Visitors will be expected to comply with OSHA requirements such as medical monitoring, training and respiratory protection.
- Visitors will be expected to provide their own PPE.
- In the event that a visitor does not adhere to the provisions of the HASP, the SSC will request the visitor to leave the work area.
- If the visitor interferes with the work activity or poses a safety hazard to anyone onsite, the SSC will terminate work activities and the Black & Veatch PM and HSM will be contacted immediately.
- All nonconformance incidents will be recorded in the site log by the SSC.
- The client and governmental authorities may choose to adopt this plan or develop their own to protect their onsite employees, although Black & Veatch will not take responsibility for compliance of onsite personnel employed by these parties.
8.0 Safety and Emergency Procedures

8.1 Standing Safety Orders
The following standing orders are established to ensure safe work practices. Task specific standing orders are addressed in the Task HASP.

- Report any sign of radioactivity, explosivity or unusual conditions to the supervisor immediately.
- Check in and out at the entrance ACP of the Exclusion Zone.
- Maintain close contact with your buddy in the Exclusion Zone.
- Eating, drinking, chewing gum or tobacco, smoking or any practices that increases the probability of hand-to-mouth transfers and ingestion of material is prohibited in any controlled area such as Contaminant Reduction Zone and Exclusion Zone.
- Whenever decontamination procedures for outer garments are in effect, good personal hygiene will be practiced as soon as possible after the protective garment is removed (i.e., washing hands). A shower is recommended immediately after any work period.
- No facial hair that interferes with the effectiveness of a respirator will be permitted on personnel required or potentially required to wear respiratory protection equipment.
- Contact with potentially contaminated surfaces will be avoided whenever possible. Personnel should not walk through puddles, mud or other discolored surfaces or kneel on the ground. Personnel should not lean, sit or place equipment on drums, containers, vehicles or exposed surfaces without plastic covering.
- Medicine and alcohol can magnify the effect from exposure to certain compounds. It will be responsibility of each Black & Veatch employee and each subcontractor to notify, on a daily basis, the SSC of any individual who is using prescribed medication. Site personnel will not be allowed onsite while under the influence of alcohol or drugs that cannot be obtained over the counter without a physician's authorization.
- Personnel and equipment in the work areas will be minimized, but consistent with effective site operations.
- All unsafe or inoperable sampling or monitoring equipment left unattended will be identified by the SSC by a "DANGER-DO NOT OPERATE" tag.
- Work will be restricted to daylight hours only.

8.2 Medical Emergencies
At least two Black & Veatch team members conducting hazardous waste operations at the site will have successfully completed a sponsored course in standard first aid and Adult CPR. Prior to the
start of work, the SSC will make arrangements for medical facilities, ambulance service and medical personnel to be available for prompt attention to the injured.

Onsite activities will require a first-aid station which will be located within the Support Zone. First-aid kits will be, as a minimum, 16-unit first-aid kits and will be provided in the ratio of one for each 10 persons.

Portable 15-minute emergency eye-wash stations will be provided within the Support Zone. Identification markers will be provided to readily denote locations of the eyewash stations. Emergency telephone numbers and reporting instructions for ambulance, local physician, hospital, poison control center, fire and police will be conspicuously posted in the Support Zone.

The SSC will act as the emergency coordinator for all medical emergencies. If a person is injured or becomes ill, personnel identified as trained in first aid and CPR will be notified immediately. First aid and CPR will be administered immediately. In all cases, treatment for shock should be considered. After attending to the victim, the SSC will be notified. Depending on the severity of the injury or illness, the SSC may notify medical emergency response organizations. If the victim is transferred off-site, the SSC will assign a field team member to accompany the victim.

8.2.1 Chemical Exposure Emergency

If personnel experience any adverse effects or symptoms during field activity, the individuals will notify the SSC. The SSC will assess the situation and make a determination on the extent of medical attention needed. If it is determined that the problem was due to chemical exposure, first aid for chemical exposure will be administered as soon as possible. If necessary to transport the individual to the hospital the individual(s) exposed to those chemicals will be transported by an unexposed individual. The Site HASP and available MSDSs will accompany the group to the hospital. The incident must be reported to the HSM immediately. A written report of the incident will be distributed to the PM and the HSM within 48 hours.

The following first aid for chemical exposures will be administered as soon as possible;
Eye Exposure  If contaminated solid or liquid gets into the eyes, they will be washed immediately at the 15 minute emergency eyewash station using large amounts of water and lifting their lower and upper lids occasionally. Medical attention will be obtained immediately. (Personnel that wear contacts while working onsite must notify the SSC prior to commencing work).

Skin Exposure  If contaminated solid or liquid gets on the skin, the affected individual will promptly flush the skin for at least 15 minutes, then wash with soap or mild detergent and water. If contaminated solids or liquids penetrate through the clothing, clothing will be immediately removed and treatment for skin exposure administered. Medical attention will be obtained if symptoms warrant.

Inhalation  If a person breathes in a large volume of potentially toxic contaminants, the affected person will be moved to fresh air at once. If breathing has stopped, CPR will be performed. The affected person will be kept warm and at rest. Medical attention will be obtained immediately.

Ingestion  If contaminated solid or liquid is swallowed, medical attention will be obtained immediately.

8.2.2 Accident Reporting

Injuries or illnesses that require attention beyond simple first aid or requiring attention by a physician or involve exposure to blood or other potentially infectious materials must be reported to the Worker's Compensation Administrator and Black & Veatch HSM as soon as possible but no later than 24 hours after the accident. In the event of a fatality or more than one hospitalization, the notification to the Black & Veatch HSM must be immediate. The Black & Veatch HSM notification to the local OSHA area office must be within 8 hours. The SSC must complete the appropriate accident report forms and the required State Workers Compensation form. The SSC is responsible for contacting the State Worker's Compensation Office to obtain the necessary report form. The SSC is responsible for completing the forms and submitting the originals to the Black & Veatch HSM. Copies should be sent to the Worker's Compensation Administrator and PM. Copies must be filed in the project file.

Accidents that must be reported include:

8-3
• Injury or illnesses that require attention beyond simple first aid.
• Injury or illnesses that require attention by medical professionals.
• Injury or illnesses that result in time away from work.
• Injury or illnesses that restrict the ability of the injured to work.
• Unconsciousness, explained or unexplained.
• Exposures of personnel to blood or other potentially infectious agents.
• Exposures to chemical or physical agents that result in adverse signs or symptoms.

All incidents that are near miss injury or illness accidents or physical accidents must be summarized on the hazardous waste site investigation activity report form and submitted to the PM and Black & Veatch HSM as soon as possible.

The SSC is responsible for investigating the cause of all accidents and report on the findings and corrective actions taken in the manner described above. The SSC may request the assistance of the Black & Veatch HSM or other personnel to investigate the accident. The final report on the accident is the responsibility of the SSC.

Accident investigation and record keeping must comply with the Black & Veatch accident investigation and record keeping standard operating procedure.

8.2.3 Hospital Route
The route to the hospital is shown and described in Appendix 1. The route to the hospital will be conspicuously posted in the Support Zone. The SSC and key field personnel will drive the route to the hospital emergency room door prior to the start of site activities in order to become familiar with the route. The route will be driven at least weekly to confirm an unobstructed route.

8.3 Temperature Extremes

8.3.1 Heat Stress Monitoring
Heat stress poses a serious health danger to site workers and may create secondary safety hazards by impairing a worker's coordination and judgement. Heat stress can occur at almost any temperature and is more likely when PPE is in use.
The use of protective equipment may create heat stress. Monitoring of personnel will commence when the ambient temperature is 70°F or above. Table 8-1 presents the suggested frequency for such monitoring. Monitoring frequency is dependent on the type of protection worn (permeable or impermeable clothing), the dry bulb temperature and the amount of sunshine. Monitoring frequency should increase as the ambient temperature increases or as slow recovery rates are observed. Heat stress monitoring should be performed by a person with a current first aid certification who is trained to recognize heat stress symptoms. For monitoring the body's response to excess heat, one or more of the following techniques will be used.

### Table 8-1

**Suggested Frequency of Physiological Monitoring for Fit and Acclimatized Workers**

<table>
<thead>
<tr>
<th>Adjusted Temperatureb</th>
<th>Normal Work Ensemblec</th>
<th>Impermeable Ensembled</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 °F (32.2 °C) or above</td>
<td>After each 45 minutes of work</td>
<td>After each 15 minutes of work</td>
</tr>
<tr>
<td>87.5 to 90 °F (30.8 to 32.2 °C)</td>
<td>After each 60 minutes of work</td>
<td>After each 30 minutes of work</td>
</tr>
<tr>
<td>82.5 to 87.5 °F (28.1 to 30.8 °C)</td>
<td>After each 90 minutes of work</td>
<td>After each 60 minutes of work</td>
</tr>
<tr>
<td>77.5 to 82.5 °F (25.3 to 28.1 °C)</td>
<td>After each 120 minutes of work</td>
<td>After each 90 minutes of work</td>
</tr>
<tr>
<td>72.5 to 77.5 °F (22.5 to 25.3 °C)</td>
<td>After each 150 minutes of work</td>
<td>After each 120 minutes of work</td>
</tr>
</tbody>
</table>

---

**a** For work levels of 250 kilocalories/hour.

**b** Calculate the adjusted air temperature (ta adj) by using the equation:

\[ ta_{adj} \, ^\circ F = ta \, ^\circ F + (13 \times (% + 100) \, sunshine) \]

Measure air temperature (ta) with a standard alcohol-in-glass thermometer or equivalent, with the bulb shielded from radiant heat.

Estimate percent sunshine by judging the percent of time the sun is not covered by clouds that are thick enough to produce a shadow (100% sunshine = no cloud cover and a sharp distinct shadow; 0% sunshine = no shadows).

**c** A normal work ensemble consists of cotton overalls.

**d** An impermeable ensemble consists of tyvek overalls.
Heat stroke is a life-threatening heat disorder that requires life-saving first aid. Decontamination should be omitted prior to obtaining immediate medical attention.

Heat stress can become life threatening. Unless the victim is grossly contaminated, decontamination should be omitted or minimized and treatment begun immediately.

- Prevention of Heat Stress. Proper training and prevention measures will aid in averting serious illness and loss of productivity. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion that person may be predisposed to additional heat-related illnesses. To avoid heat stress, the SSC has the authority to take the following steps.
  - Adjust work schedules
    - Modify work/rest schedules according to monitoring requirements.
    - Mandate work slowdowns as needed.
    - Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
  - Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
  - Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal...
to the amount of water lost in sweat, e.g., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight loss. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, the workers will be encouraged to drink more. The following strategies may be useful:

- Provide drinking water as needed
  - Maintain water temperature at 50 to 60°F (10 to 16.6°C).
  - Provide dedicated personal bottles or containers that hold about 1 quart of water.
  - Dedicated personal bottles of water should be allowed in the Contamination Reduction Zone.
  - Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or diluted drinks) before beginning work.
  - Urge workers to drink a cup or two every 15 to 20 minutes or at each break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per person per day are recommended, but more may be necessary to maintain body weight. An additional water source should be maintained outside of Contamination Reduction Zone.

- Train workers to recognize the symptoms of heat-related illnesses. Table 8-2 presents a summary of typical symptoms and treatment of heat stress.

- Source of water should be available to spray down a person as a measure of preventing or treating heat stress.

**Table 8-2**

**Heat Stress Symptoms and Treatment**

<table>
<thead>
<tr>
<th>Type</th>
<th>Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Related Illness</td>
<td>Localized redness of skin and reduced sweating; reduced tolerance to heat.</td>
<td>Keep skin clean and dry.</td>
</tr>
<tr>
<td>Heat cramps</td>
<td>Muscle spasm and pain in extremities and abdomen.</td>
<td>Remove person to cool area. Give small amounts of salted water.</td>
</tr>
<tr>
<td>Heat Exhaustion</td>
<td>Weak pulse; shallow breathing; pale, cool, moist skin; profuse sweating; dizziness; fatigue.</td>
<td>Remove person to cool area, reduce body temperature. Cool by convection. Give small amounts of salted water. Do not allow person to become chilled.</td>
</tr>
<tr>
<td>Heat stroke</td>
<td>Red, hot, dry skin; body temperature of 105°F or greater; nausea; dizziness; confusion; strong rapid pulse; coma. Convulsions may occur.</td>
<td>Seek medical attention immediately. Get victim cool quickly, wrap in wet cloth, spray with cool water or immerse in cool water. Fan vigorously during transport to hospital. Apply cold packs, if available, avoiding direct contact between skin and pack/ice.</td>
</tr>
</tbody>
</table>
8.3.2 Cold Stress Monitoring

When ambient temperature reaches 45°F or below steps should be taken to prevent cold stress. Excessive exposure to low environmental air temperatures or immersion in low temperature water are usually fatal unless quickly remedied. Workers must be protected from exposure to cold so that the deep core temperature of the body does not fall below 96.8°F.

Pain in the extremities may be the first early warning of danger to cold stress. Severe shivering may occur if the body temperature drops to 95°F. Workers exhibiting signs of cold stress or hypothermia must get to a warm area.

- At air temperatures of 2°C (35.6°F) or less, it is imperative that workers who become immersed in water or whose clothing becomes wet be immediately provided a change of clothing and be treated for hypothermia.
- Provisions for additional total body protection are required if work is performed in an environment at or below 4°C (40°F). The workers shall wear cold protective clothing appropriate for the level of cold and physical activity.
- If only light work is involved and if the clothing on the worker may become wet on the job site, the outer layer of the clothing in use may be of a type impermeable to water. With more severe work under such conditions, the outer layer should be water repellent and their outerwear should be changed as it becomes wetted.

The outer garments must include provisions for easy ventilation in order to prevent wetting of inner layers by sweat. If work is done at normal temperatures or in a hot environment before entering the cold area, the employees shall make sure that their clothing is not wet as a consequence of sweating. If their clothing is wet, the employee shall change into dry clothes before entering the cold area.

- The workers shall change socks and any removable felt insoles at regular daily intervals or use vapor barrier boots. The optimal frequency of changes shall be determined empirically and will vary individually and according to the type of shoe worn and how much the individual's feet sweat.
- If extremities, ears, toes and nose, cannot be protected sufficiently to prevent sensation of excessive cold or frostbite by handware, footwear and face masks, these protective items shall be supplied in auxiliary heated versions.
• If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work shall be modified or suspended until adequate clothing is made available or until weather conditions improve.
• The recommended limits for properly clothed workers for periods of work at temperatures below freezing are listed in Table 8-3.

8.4 Decontamination Procedures

8.4.1 General
All personnel and equipment will be properly decontaminated prior to leaving a site. Decontamination methods could involve (1) physically removing contaminants, (2) neutralizing contaminants by chemical detoxification or disinfection or (3) removing contaminants through a combination of both physical and chemical means. The types, locations, physical states and concentrations of contaminations present will determine the degree of decontamination necessary.

As part of the system to prevent these physical transfers of contaminant by people or equipment from onsite to off-site areas, site specific procedures will be instituted for decontaminating all items leaving the Exclusion Zone and the Containment Reduction Zone. These procedures will include the decontamination of PPE, vehicles and all field equipment and use of correct methods of removing PPE to avoid transfer of contaminants from the clothing to the body and decontamination or disposal. In addition to the decontamination procedures, specific entry and exit routes through the Contamination Reduction Zone will be established for personnel, equipment and vehicles to minimize the possibilities of additional spread of contaminants. These site specific decontamination procedures are described in the Task HASP.

Equipment that is not decontaminated or not completely decontaminated will be disposed onsite or transferred in a controlled manner for subsequent decontamination in controlled situation. Such equipment will be bagged or wrapped in plastic for transferring to the decontamination location. The outside container of the equipment must be labeled as contaminated and list the potential contaminants and associated hazards. In order to minimize the need to decontaminate equipment, this type of equipment may be packaged or wrapped in a material that will protect them from contamination but does not interfere with their proper operation.
Table 8-3
Cold Work Environment Work Practice

Cooling Power of Wind on Exposed Flesh Expressed as an Equivalent Temperature (under calm conditions)*

<table>
<thead>
<tr>
<th>Estimated Wind Speed (in mph)</th>
<th>Actual Temperature Reading (°F)</th>
<th>Equivalent Chill Temperature (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>48</td>
<td>37</td>
</tr>
<tr>
<td>10</td>
<td>40</td>
<td>28</td>
</tr>
<tr>
<td>20</td>
<td>32</td>
<td>18</td>
</tr>
<tr>
<td>25</td>
<td>30</td>
<td>16</td>
</tr>
<tr>
<td>35</td>
<td>27</td>
<td>11</td>
</tr>
</tbody>
</table>

(Wind speeds greater than 40 mph have little additional effect.)

<table>
<thead>
<tr>
<th>Little Danger</th>
<th>Increasing Danger</th>
<th>Great Danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>In &lt;hr with dry skin.</td>
<td>Danger from freezing of exposed flesh within 1 min.</td>
<td>Flesh may freeze within 30 seconds.</td>
</tr>
</tbody>
</table>

Trenchfoot and immersion foot may occur at any point on this chart.

*Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

<table>
<thead>
<tr>
<th>Air Temperature Sunny Sky</th>
<th>No Noticeable Wind</th>
<th>5 mph Wind</th>
<th>10 mph Wind</th>
<th>15 mph Wind</th>
<th>20 mph Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C (appr.)</td>
<td>°F</td>
<td>Max. Work Period</td>
<td>No. of Breaks</td>
<td>Max. Work Period</td>
<td>No. of Breaks</td>
</tr>
<tr>
<td>1. -26 to -19</td>
<td>-26</td>
<td>1 Normal Break</td>
<td>1 Normal Break</td>
<td>75 min</td>
<td>2</td>
</tr>
<tr>
<td>2. -29 to -24</td>
<td>-29</td>
<td>1 Normal Break</td>
<td>55 min</td>
<td>2</td>
<td>55 min</td>
</tr>
<tr>
<td>3. -32 to -29</td>
<td>-32</td>
<td>75 min</td>
<td>5</td>
<td>40 min</td>
<td>4</td>
</tr>
<tr>
<td>4. -35 to -34</td>
<td>-35</td>
<td>55 min</td>
<td>3</td>
<td>40 min</td>
<td>4</td>
</tr>
<tr>
<td>5. -38 to -39</td>
<td>-38</td>
<td>40 min</td>
<td>4</td>
<td>30 min</td>
<td>5</td>
</tr>
<tr>
<td>6. -40 to -41</td>
<td>-40</td>
<td>30 min</td>
<td>5</td>
<td>Non-emergency work should cease</td>
<td></td>
</tr>
<tr>
<td>7. -43</td>
<td>-43</td>
<td>Non-emergency work should cease</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Schedule applies to moderate to heavy work activity with warmup breaks of 10 minutes in a warm location. For light to moderate work (limited physical movement) apply the schedule one step lower. For example, at -30 °F with no noticeable wind (Step 4), a worker at a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4-hour period (Step 5). The following is suggested as a guide for estimating wind velocity. If accurate information is not available: 5 mph - light flag moves; 10 mph - light flag fully extended; 15 mph - raises newspaper sheet; 20 mph - blowing and drifting snow.
The initial decontamination plan is based upon a nominal case situation. This initial decontamination plan will be modified, adding necessary stations or otherwise adapting it to site conditions when a worst-case situation occurs. Changes in the decontamination plan will be made and noted in the Task HASP by the SSC. If, on visual examination, chemical protective clothing appears grossly contaminated, a thorough decontamination is required.

The SSC is responsible for selecting and monitoring the decontamination procedures to verify their effectiveness of decontamination. When the decontamination procedures are found to be ineffective, appropriate steps will be taken to correct the deficiencies. Methods that have proven to be effective in removal of contaminants are included in Appendix 7.

8.4.2 Emergency Decontamination

In a medical emergency, the primary concern is to prevent the loss of life or severe injury to site personnel. Any person who becomes ill or injured in the Exclusion Zone must be decontaminated to the maximum extent possible before providing the necessary first aid or before permitting the person to enter the Support Zone.

If the patient's condition is serious, at least partial decontamination should be completed. This may be accomplished by:

- Complete disrobing of the patient and redressing in clean coveralls.
- Wrapping patient in a blanket or plastic.
- Spot decontamination.

If the injury or illness is minor, full decontamination will be completed and first aid administered prior to transport. The SSC will select the degree of needed decontamination in proportion to the potential hazards posed by the contaminants. When a person who is not fully decontaminated that requires transportation to the hospital, the SSC will have the surfaces covered with plastic to prevent spreading contamination. First aid should be administered while awaiting an ambulance or paramedics.
8.4.3 PPE

Personnel leaving the Exclusion Zone must remove potential contaminants in an orderly and controlled manner in order to avoid contamination of the person. Primary means of avoiding contamination of the person is to minimize contact with contaminants during site activities. Secondary means is to assume contamination and systematically reduce the contamination prior to doffing.

Personal decontamination involves the sequential doffing of PPE, starting with the most heavily contaminated and working to the least contaminated. This progression, in combination with separating each step of the recontamination procedure by a minimum of three feet, ensures contamination decreases as the person moves from one station to another further along the line. Wash and rinse steps may be needed in order to reduce the level of contamination to a level safe to handle. Since it is virtually impossible to prevent the transfer of contaminants on protective clothing to the wearer, thorough decontamination of the chemical protective clothing is necessary. When done effectively the amount of substance remaining on the chemical protective clothing is greatly reduced and the possibility of transfer is proportionately reduced. Therefore, heavily contaminated disposable chemical protective clothing should be washed and rinsed to minimize the spread of the contaminants during doffing. Unsoiled disposable chemical protective clothing may not require the wash and rinse steps.

Polyethylene plastic sheeting will be placed on the ground in the personal decontamination corridor and the decontamination stations arranged on the top of the plastic. The first station will be located within the Exclusion Zone and will be the station where gross contamination is removed.

As a minimum, the level of protection required for the personnel assisting with personal decontamination will be the most protective of either Level D or one level less than the level worn in the Exclusion Zone.

The SSC is responsible for monitoring the effectiveness of the decontamination procedures.
8.4.4 Instruments
Instrument decontamination requires that, as a minimum, all external surfaces and surfaces that came in contact with the contaminants be wiped with a cloth dampened with a trisodium phosphate detergent and wiped dry. Contamination should be prevented by packaging or wrapping the instrument in a material that will protect them from contamination but does not interfere with the proper operation.

Instruments that are internally contaminated or not completely decontaminated will be transferred in a controlled manner for subsequent decontamination. Such instruments will be bagged or wrapped in plastic for transferring to the decontamination location. The outside container of the instrument must be labeled as contaminated and list the potential contaminants and associated hazards.

8.4.5 Equipment
Equipment that came in direct contact with the contaminant must be decontaminated and shown to be clean before returning it to the owner or equipment center.

8.4.6 Decontamination Solutions
The standard decontamination solutions will be a solution of Alconox® or equivalent detergent. Generally a solution of trisodium phosphate detergent is sufficient for most site applications. The decontamination solution should be prepared in accordance with the manufacturer's instructions. In general, potable water is a sufficient rinse, although for specific equipment, decontamination may require the use of deionized or distilled water. Other decontamination solutions are listed in Appendix 7.

8.4.7 Vehicle Decontamination Station
At sites where drill rigs or other vehicles are used for onsite activities, it may be necessary to construct a vehicle decontamination station (VDS) to prevent the spread of contaminants to off-site locations. Typically, the VDS is a sloping area lined with plastic sheeting and gravel so that decontamination solutions can flow into a lined collection pit, sump or trench. The pit contents can then be pumped into Department of Transportation (DOT) approved 55 gallon drums or containers.
for later disposal. Other VDS configurations include plastic sheeting with wood runways to accommodate vehicles.

It is imperative that all vehicles used onsite be thoroughly decontaminated before being allowed to leave the site. Special attention should be paid to the treads or tracks and interior surfaces. Decontamination can be expedited if vehicle interiors are lined with plastic sheeting prior to commencing onsite activities.

When using a central vehicular decontamination station, gross dirt must be removed from the vehicle before leaving the Contamination Reduction Zone.

8.5 Disposition of Decontamination Wastes

All materials and equipment used for decontamination must be disposed of properly. Clothing, tools, buckets, brushes and other equipment that is contaminated must be secured in containers and labeled. Clothing not completely decontaminated onsite should be double bagged before being removed from the site. Spent decontamination soap/rinse solutions are transferred to drums which are labeled and disposed of with other substances onsite.

Commercial laundries or cleaning establishments that clean protective clothing or equipment shall be informed of the potentially harmful effects of exposures to the contaminants.

8.5.1 Disposal Procedures

All wash and rinse water will be transferred to a container that will be covered and labeled as to contents and stored onsite. If 55-gallon drums are used, they will be DOT-approved drums and lids will be put on all drums in the event of rain and at the close of each work day. Drums will be supported on wood blocks or pallets to reduce corrosion. Means and method of disposal of decontamination solutions will be decided on a case-by-case basis and will be detailed in the Task HASP.
8.5.2 Contamination Reduction Corridor Breakdown

When the Contamination Reduction Corridor is no longer needed, it must be closed down. All disposable clothing and plastic sheeting used during the operation must be double bagged and contained onsite in a labeled DOT-approved drum or container. All wash tubs, pails, containers, etc. must be thoroughly washed, rinsed and dried prior to removal from the site.

8.6 Communications

Communication systems will be established at the site for both internal and external communication for both routine and emergency operations.

8.6.1 Internal Communication

Internal communication refers to communication between workers operating in the Exclusion Zone or Contamination Reduction Zone or to communication from the Support Zone to these workers. Internal communication will be used to:

- Alert team members to emergency situations.
- Convey safety information (e.g., air time remaining in SCBA, heat stress check, hazards detected).
- Communicate changes in the work to be accomplished.
- Maintain site control.

The internal communication system may include such standard communication devices as radio, audible signals from noise makers or visual signals from hand or body movements.

Identification of individual workers is necessary to ensure commands are addressed to the right worker. This may be accomplished by one of several methods, depending on the specifics of the site activities.

- Marking the suit with the worker's name.
- Color coding, numbering or symbols for long-distance identification.
- Use of names for short distance, small work force tasks.

Standard audible and visual communication signals are listed in Section 8.7.3.
8.6.2 External Communications
External communications refers to communication between onsite and off-site personnel. An external communication system must be maintained in order to:

- Coordinate emergency response efforts with off-site responders.
- Report progress or problems to management.
- Maintain contact with essential off-site personnel.

The primary means of external communication are telephone and radio. Where telephones are not available immediately at the site, all team members will be notified of the location and dialing instructions of the nearest telephone. The correct change and necessary telephone numbers will be made readily available in the Support Zone. If radios are used, its location will be clearly marked. Clear instructions for its use will be posted with the radio at all times.

If access to external communications takes longer than five minutes to reach, the field team will be equipped to have immediate access to emergency response organizations.

Specifics of the internal and external communication methods will be detailed in the Task HASP.

8.6.3 Communication Signals
Purpose: To alert members of emergencies, convey safety information, communicate changes in the work to be accomplished and to maintain site control.

- Audible Internal Communications (whistle, vehicle horn, personal air horn)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) one long blast</td>
<td>evacuate area</td>
</tr>
<tr>
<td>2) two short blasts</td>
<td>localized problem, be on the alert</td>
</tr>
<tr>
<td>3) two long blasts</td>
<td>all clear, reentry permitted</td>
</tr>
<tr>
<td>4) three short blasts</td>
<td>cease work operations</td>
</tr>
</tbody>
</table>

- Visual Internal Communications (hand signals)
Signal | Definition
--- | ---
1) Hands clutching throat | Out of air/cannot breath
2) Hands on top of head | Need assistance
3) Thumbs up | OK/I am alright/I understand
4) Thumbs down | No/negative
5) Arms waiving upright | Send backup support
6) Grip partners wrist | Exit area immediately
7) Cross arms above head | Cease work operations

### 8.6.4 Hazard Communication

The following apply to all chemicals where the chemical concentration exceeds 1% or 0.1% for a carcinogen. This section is applicable to all chemicals brought onsite, used onsite or present as a contaminant onsite.

All chemicals will be accompanied by a MSDS. All MSDS's will be included in Appendix 3 of the Site HASP and made available to all personnel.

All containers of chemicals will be properly labeled with the chemical name and appropriate hazard warning statement.

All team members will be trained in the following at the initial safety briefing or wherever the presence of the chemicals is identified.

- Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area.
- The physical and health hazards of the chemical in the work area.
- The measures employees can take to protect themselves from these hazards.
- Location of the MSDS's.
- Explanation of the labeling system.

### 8.7 Confined Space Entry Procedures

Black & Veatch team members are not authorized to enter confined spaces without written authorization from the Black & Veatch HSM or designee. Confined spaces are defined as spaces that meet the following criteria.
EPA Contract No.: 68-W-99-043
Work Assignment No.: 678-RICO-A4W2
Picayune Wood Treating Site

- Large enough for a person to bodily enter.
- Limited or restricted means of entry or exit.
- Not designed for continuous employee occupancy.
9.0 Emergency Action Plan

In the event of any emergency, the SSC will act as the Emergency Coordinator. The SSC, will assess the emergency and determine if onsite resources are capable of responding to the emergency without exceeding the level of training and resources available. Otherwise, emergency response by Black & Veatch field team members will be to immediately evacuate the site in the event of a non-medical emergency. No member of the field team is permitted to assist in responding to a major non-medical emergency.

9.1 Preplanning

Arrangements will be made with the local response community (i.e. fire department or local response services) for them to respond to emergencies that may occur during site operations. The local response community will be provided information regarding site activities, including the types of operations being conducted at the site, the type and degree of contamination at the site, the location of the work zone and any other relevant information that may be necessary for an appropriate response. Such information will be provided to a supervisory level representative of the emergency response organization prior to the commencement of site operations.

9.2 Reporting Emergencies

Emergencies of all types must be reported to the SSC immediately through established communication means. If the SSC is not available, report the emergency to the nearest Black & Veatch supervisory representative.

The SSC, in conjunction with the PRP contractor’s health and safety coordinator, will assess the emergency and determine if onsite resources are capable of responding to the emergency without exceeding the level of training and resources available. If offsite emergency response organizations are needed, the appropriate notifications will be made in accordance with the preplanning arrangements made.
9.3 Notification
In the event of an emergency, Black & Veatch personnel will take direction from the SSC. The PRP contractor’s health and safety coordinator will notify the appropriate emergency response organization necessary to mitigate the emergency. As soon as possible, the SSC will make contact with the Black & Veatch PM and the Black & Veatch HSM. If an emergency response organization is notified to respond, the PRP contractor’s health and safety coordinator will dispatch a representative to the site entrance to escort the emergency response organization to the emergency scene. The PRP contractor’s health and safety coordinator will act as the liaison with the officer-in-charge of the emergency response organization.

9.4 Emergency Contacts
Appendix 1 lists emergency telephone numbers and reporting instructions for ambulance, physician, hospital, poison control center, fire, police, local hazmat team, emergency rescue team, client contact and site contact. Appendix 1 will be conspicuously posted in the Support Zone. Where phone numbers are not available for the above mentioned organization, the list will so indicate.

The present status and capabilities of emergency response teams that would provide assistance at the time of an emergency is described in the Task HASP.

9.5 Fire or Explosion
In the event of a fire or explosion, the local fire department should be notified immediately. The SSC or designated alternate will advise the fire commander of the location, nature and identification of the hazardous materials onsite. The SSC, in conjunction with the PRP contractor’s health and safety coordinator, will maintain contact with the emergency response organization officer-in-charge.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available onsite to control or extinguish incipient fires.
- Remove or isolate flammable or other hazardous materials they may contribute to the fire.
- Inform the site supervisor immediately.
- Inform the site contact immediately.
9.6 Spills or Leaks
In the event of a spill or a leak, site personnel will:

- Inform the site supervisor immediately.
- Inform the site contact immediately.
- Locate the source of the spillage and stop the flow if it can be done safely.
- Contain the spill.
- Notify the local emergency response organization if the spill cannot be controlled.
- Notify the local fire department if the chemical release has the potential of impacting the public health or environment off-site.
- Request off-site assistance in recovery of spilled material.

If the SSC, in conjunction with the PRP contractor’s health and safety coordinator, determines that a situation exists that could threaten human health or the environment outside the site area, the local fire department will be notified immediately. In accordance with USEPA SARA Title III, the SSC, in conjunction with the PRP contractor’s health and safety coordinator, will also immediately notify the National Response Center and the Black & Veatch PM. The telephone report will include:

- Name and telephone number of reporter.
- Name and address of facility.
- Time and type of incident (e.g., release, fire).
- Name and quantity of materials(s) involved, to the extent known and the location of the discharge within the facility.
- The extent of injuries, if any.
- The possible hazards to human health, or the environment, outside of the site area.
- Actions the person reporting the discharge proposes to take to contain, clean up and remove the substance.

9.7 Evacuation Procedures
At each work site, an evacuation route and rally point will be identified. The evacuation route will be selected to direct field personnel away from the Exclusion Zone to the nearest exit. During evacuation, every effort will be made to evacuate with their assigned buddy. The evacuation route will avoid high hazard areas and efficiently move personnel away from the emergency site.
The evacuation route will be towards a rally point. The rally point is a common area where all field team members are to meet following an evacuation. The purpose of the rally point is to remove personnel to a location a safe distance away from the emergency and away from high hazard areas and to give the SSC a location where all field personnel can be accounted. In the event of missing personnel, emergency response organizations will be notified immediately. The SSC will offer whatever assistance is requested by the emergency response organizations in the event search and rescue is necessary. In the event that the rally point is proximate to the hazard, the SSC will authorize the evacuees to move to a safer rally point. All personnel will remain at the rally point until authorized to leave by the SSC.

9.8 Critique of Response and Follow-up
A follow-up meeting will be held after any emergency situation to assess the actions taken. The meeting will be attended by the SSC and other individuals as appropriate. A record of the meeting will be kept by the SSC. Recommendations from the meeting will be incorporated into the future responses to emergency situations.
10.0 Team Member Responsibilities

10.1 Managerial Responsibility

10.1.1 Health and Safety Manager
The HSM is responsible for providing the PM with assistance and support with regard to all regulatory and safety aspects of site activity.

10.1.2 Project Manager
The Black & Veatch PM is responsible for technical direction and overall project administration. As a part of that function, the PM will ensure that, at a minimum, Black & Veatch's project plans meet OSHA requirements and that the health and safety of all site personnel are a primary concern.

10.2 Team Organization/Responsibility
The following personnel organization is critical to the planned activities at the site. The organizational structure is assigned and will be reviewed and updated periodically, by the PM.

10.2.1 Site Manager
The Black & Veatch site manager (SM) is responsible for leading the team in the planned field activities. The responsibilities include close attention to site conditions as they may affect the health and safety of all team members during their onsite activities. The SSC will assist the site manager in the site activities.

10.2.2 Site Safety Coordinator
The site safety coordinator (SSC) has total responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, it is vital that personnel assigned as SSC be experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120 and the Black & Veatch Safety and Health Program. The SSC is also responsible for conducting site inspections on a regular basis to ensure the effectiveness of the HASP.
10.2.3 Field Team

The field team is the Black & Veatch team personnel responsible for performing the activities described in the HASP under the SM's oversight. Each member is expected to handle the assigned duties with attention to the inherent hazards involved. All field team members agree to adhere to the provisions in the HASP.
11.0 Certification

All field team members are required to read and familiarize themselves with the contents of this HASP and then to document their competency through the entry of a signature and date on the section below. Any changes to the HASP will be made in accordance with Section 12.0, Record of Changes.

By my signature, I certify that:

- I have read,
- I understand and
- I will abide by the Health and Safety Plan for the Picayune Wood Treating Site.

<table>
<thead>
<tr>
<th>Printed Name</th>
<th>Signature</th>
<th>Date</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12.0 Record of Changes

Changes to this HASP must be made on the following form and submitted to the Black & Veatch PM and HSM for their approval. Field activities related to the potential for exposure to contaminants shall be halted until the HASP has been modified to reflect changed conditions and the Black & Veatch HSM has reviewed or approved the changes. All field team members who are affected by the changes must initial that they have been apprized of the changes.

<table>
<thead>
<tr>
<th>Revised Number</th>
<th>Subject</th>
<th>Section/Page</th>
<th>Initials/Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12-1
Appendix 1

Site Maps and 
Emergency Information
Picayune Wood Treating Site
Figure 1
Site Location Map
Picayune Wood Treating Site
Picayune, Mississippi
Hospital Emergency Route

Route to: Crosby Memorial Hospital (601-798-4711).

See the following page (Figure 2) for hospital route map.

- From the facility, turn left on to Davis Street
- Turn left on to Rosa Street
- Turn left on to Main Street
- Turn left on to Goodyear Street
FIGURE 2
HOSPITAL ROUTE MAP
PICAYUNE WOOD PRESERVING SITE
PICAYUNE, PEARL RIVER COUNTY, MISSISSIPPI
Table A-1
Emergency Contacts

<table>
<thead>
<tr>
<th>Organization</th>
<th>Name</th>
<th>Position</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire</td>
<td>Keith Brown</td>
<td>Fire Chief</td>
<td>601-798-7862/911</td>
</tr>
<tr>
<td>EMS, EmergyStat</td>
<td>Don Meiger</td>
<td>Dispatcher</td>
<td>601-749-5420/911</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>For cellphones may also dial *911</td>
</tr>
<tr>
<td>Crosby Memorial Hospital</td>
<td>TBD</td>
<td></td>
<td>1-601-798-4711</td>
</tr>
<tr>
<td>Black &amp; Veatch</td>
<td>Scotti Bozeman</td>
<td>Project Manager</td>
<td>770-521-8114 (w)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>678-852-8477 (cell)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>770-664-7683 (home cell)</td>
</tr>
<tr>
<td>Black &amp; Veatch</td>
<td>Chris Allen</td>
<td>Site Safety Coordinator</td>
<td>770-521-8113</td>
</tr>
<tr>
<td>Black &amp; Veatch</td>
<td>Shelly Pizzi</td>
<td>Health and Safety Manager</td>
<td>(913) 458-4516 (w)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TBD (h)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TBD (cell)</td>
</tr>
<tr>
<td>Black &amp; Veatch</td>
<td>Diane Gassman</td>
<td>Workers Compensation</td>
<td>913-458-8561</td>
</tr>
<tr>
<td>USEPA</td>
<td>Michael Taylor</td>
<td>Remedial Project Manager</td>
<td>404-562-8762</td>
</tr>
<tr>
<td>WorkCare</td>
<td>Dr. M. Donald Whorton</td>
<td>Medical Monitoring</td>
<td>714-978-7488</td>
</tr>
<tr>
<td>Poison Control</td>
<td></td>
<td>Poison Control Center</td>
<td>800-242-3171</td>
</tr>
</tbody>
</table>
Appendix 2

Chemicals of Concern and
Applicable Regulatory Standards
Picayune Wood Treating Site
<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Exposure Route</th>
<th>TWA Exposure Limits</th>
<th>IDLH</th>
<th>Hazard/Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthracene (PAH) CAS # 120-12-7</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 0.2 mg/m$^3$ Human Carcinogen</td>
<td></td>
<td>Skin irritation; increased incidence of lung cancer</td>
</tr>
<tr>
<td>Benzo[a]anthracene (PAH) CAS # 56-55-3</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 0.1 mg/m$^3$ Human Carcinogen</td>
<td></td>
<td>Skin irritation; increased incidence of lung cancer</td>
</tr>
<tr>
<td>Benzo[b]fluoranthene (PAH) CAS # 205-99-2</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 0.2 mg/m$^3$ Human Carcinogen</td>
<td></td>
<td>Skin irritation; increased incidence of lung cancer</td>
</tr>
<tr>
<td>Benzo[k]fluoranthene (PAH) CAS # 207-08-9</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 0.2 mg/m$^3$ Suspected Human Carcinogen</td>
<td></td>
<td>Skin irritation; increased incidence of lung cancer</td>
</tr>
<tr>
<td>Benzo[g,h,i]perylene (PAH) CAS # 191-24-2</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 0.2 mg/m$^3$</td>
<td></td>
<td>Irritant to skin and lungs, potential carcinogen</td>
</tr>
<tr>
<td>Benzo[a]pyrene (PAH) CAS # 50-32-8</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 0.2 mg/m$^3$</td>
<td></td>
<td>Irritant to lungs and skin</td>
</tr>
<tr>
<td>Bis-(2-ethylhexyl)phthalate (Diocetyl Phthalate) CAS # 117-81-7</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 5 mg/m$^3$ Carcinogenic</td>
<td></td>
<td>Irritant to eyes and mucous membranes</td>
</tr>
<tr>
<td>Chrysene (PAH) CAS # 218-01-9</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 0.2 mg/m$^3$ PEL: 0.2 mg/m$^3$ Human Carcinogen</td>
<td></td>
<td>Irritant to skin, increased incidence of lung cancer</td>
</tr>
<tr>
<td>Fluoranthe (PAH) CAS # 206-44-0</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 0.2 mg/m$^3$ Human Carcinogen</td>
<td></td>
<td>Irritant to skin, increased incidence of lung cancer</td>
</tr>
<tr>
<td>Indeno[1,2,3-cd]pyrene CAS # 193-39-5</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>TLV: 0.2 mg/m$^3$ PEL: --- Possible Human Carcinogen</td>
<td></td>
<td>Irritant to skin and lungs</td>
</tr>
<tr>
<td>Chemicals of Concern and Applicable Regulatory Standards at the Picayune Wood Treating Site (continued)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semivolatiles (Continued)</td>
<td>4-Methylphenol (p-Cresol) CAS # 106-44-5</td>
<td>Inhalation, Absorption, Ingestion, Skin Contact</td>
<td>TLV: 10 ppm PEL: 5 ppm REL: 2.3 ppm</td>
<td>250 ppm</td>
</tr>
<tr>
<td></td>
<td>Naphthalene CAS # 91-20-3</td>
<td>Inhalation, Ingestion, Skin Contact</td>
<td>REL/PEL: 10 ppm</td>
<td>500 ppm</td>
</tr>
<tr>
<td></td>
<td>Pentachlorophenol (PAH) CAS # 87-86-5</td>
<td>Inhalation, Skin Absorption, Ingestion, Skin and/or Eye Contact</td>
<td>REL/PEL: 0.5 mg/m³</td>
<td>2.5 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Phenanthrene (PAH) CAS # 85-01-8</td>
<td>Inhalation</td>
<td>TLV: 0.2 mg/m³ Human Carcinogen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phenols CAS # 108-95-2</td>
<td>Inhalation, Skin Absorption, Ingestion, and Eye Contact</td>
<td>PEL for pure phenol PEL/REL: 5 ppm ceiling 15.6 ppm</td>
<td>250 ppm IDLH</td>
</tr>
<tr>
<td></td>
<td>Pyrene (PAH) CAS # 129-00-0</td>
<td>Inhalation</td>
<td>TLV: 0.2 mg/m³ Human Carcinogen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Furan &amp; Dioxin CAS # 110-00-9</td>
<td>Inhalation, Skin Absorption, Ingestion</td>
<td>Human Carcinogen STEL 0.5 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>
Notes and Abbreviations

OSHA PEL/Carcinogen/
OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit.
TWA: Time-weighted average exposure concentration for normal 8-hour (TLV, PEL) or up to a 10-hour (REL) workday and 40-hour workweek.
IDLH: Immediately dangerous to life or health concentrations.
NE: No evidence could be found for the existence of an IDLH.
CNS: Central Nervous System
PNS: Peripheral Nervous System
RBC: Red Blood Cell
Inh: Inhalation
Con: Skin and/or eye contact
(a): From Black & Veatch compilation of existing data pertinent to RA 2 Site, September 1993.

Carcinogen Designations:
TLV-A2: Suspected human carcinogen, based on either limited epidemiologic evidence or demonstration.
EPA-B: Probable Human Carcinogen; weight of evidence of human carcinogenicity based on epidemiologic studies is limited; agents for which weight of evidence of carcinogenicity based on animal studies is sufficient.
EPA-B-2: Sufficient evidence from animal studies; inadequate evidence or no data from epidemiologic studies.
IARC-2A: Possibly carcinogenic to humans; limited human evidence, sufficient evidence in experimental animals.
IARC-2B: Possibly carcinogenic to humans; limited evidence in humans in the absence of sufficient evidence in experimental animals.
MAK-A1: Capable of inducing malignant tumors as shown by experience with humans.
MAK-A2: Unmistakably carcinogenic in animal experimentation only.
NIOSH-X: Carcinogen defined with no further categorization.
NTP-2: Reasonably anticipated to be a carcinogen; limited evidence from studies in humans or sufficient evidence from studies in experimental animals.
Appendix 3

Material Safety Data Sheets
Picayune Wood Treating Site
J T BAKER -- 9083, 2-PROPANOL - 2-PROPANOL, ANA
MATERIAL SAFETY DATA SHEET
NSN: 6810008538751
Manufacturer's CAGE: 70829
Part No. Indicator: A
Part Number/Trade Name: 9083, 2-PROPANOL

General Information

Item Name: 2-PROPANOL, ANA
Company's Name: J T BAKER INC
Company's Street: 222 RED SCHOOL LANE
Company's City: PHILLIPSBURG
Company's State: NJ
Company's Country: US
Company's Zip Code: 08865-2219
Company's Emerg Ph #: 908-859-2151;800-424-9300(CHEMTREC)
Company's Info Ph #: 800-582-2537
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 10APR90
Safety Data Review Date: 18MAY92
MSDS Serial Number: BPHNM
Hazard Characteristic Code: NK

Ingredients/Identity Information

Proprietary: NO
Ingredient: ISOPROPYL ALCOHOL; (2-PROPANOL)
Ingredient Sequence Number: 01
Percent: 99-100
NIOSH (RTECS) Number: NT8050000
CAS Number: 67-63-0
OSHA PEL: 400 PPM;500 STEL
ACGIH TLV: 400 PPM;500 STEL

Physical/Chemical Characteristics

Appearance And Odor: CLEAR, COLORLESS LIQUID. ALCOHOL ODOR.
Boiling Point: 180F,82C
Melting Point: -128F,-89C
Vapor Pressure (MM Hg/70 F): 33 @ 20C
Vapor Density (Air=1): 2.1
Specific Gravity: 0.79 (H*20=1)
Evaporation Rate And Ref: 2.5 (BUTYL ACETATE=1)
Solubility In Water: COMPLETE 100 %
Percent Volatiles By Volume: 100
pH: N/A

Fire and Explosion Hazard Data

Flash Point: 53.0F,11.7C
Flash Point Method: CC
Lower Explosive Limit: 2 %
Upper Explosive Limit: 12 %
Extinguishing Media: USE ALCOHOL FOAM, DRY CHEMICAL OR CO*2. CLASS B
EXTINGUISHER. (WATER MAY BE INEFFECTIVE).
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPRVD SCBA & FULL PROT
EQUIP(FP N). MOVE CNTNRS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE
H*20 TO KEEP FIRE-EXPOSED CNTNRS COOL.
Unusual Fire And Expl Hazards: VAPS MAY FLOW ALONG SURF TO DISTANT IGNITION
SOURCES & FLASH BACK. CLSD CNTNRS EXPOSED TO HEAT MAY EXPLODE. CNTCT WITH
STRONG OXIDIZERS MAY CAUSE FIRE.
Reactivity Data

Stability: YES
Cond To Avoid (Stability): HEAT FLAME, OTHER SOURCES OF IGNITION.
Materials To Avoid: STRONG OXIDIZING AGENTS, ALUMINUM, STRONG ACIDS, NITRIC ACID, SULFURIC ACID, HALOGENS, ACTIVE HALOGEN CMPNDs, (SUPP DATA)
Hazardous Decomp Products: CO, CO\textsuperscript{2}.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD\textsubscript{50}–LC\textsubscript{50} Mixture: LD\textsubscript{50} (ORAL, RAT) 5840 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: INHAL: IRRIT OF NOSE & THROAT, HDCH, NAUSEA, DIZZ, DROWSINESS, IRRIT OF UPPER RESP TRACT, NARCOSIS, CNS DEPRESSION, DFCLT BIRTHG, PULM EDEMA, UNCON. SKIN: IRRIT PRLNGD CNTCT MAY CAUSE DERMATITIS. EYE: IRRIT, MAY CAUSE CORNEAL DAMAGE. SKIN ABSORB: RAPID ABSORPTION. INGEST: HDCH, NAUSEA, VOMIT, (EFTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: HLTH HAZ: DIZZINESS, GI IRRITATION, NARCOSIS, CENTRAL NERVOUS SYSTEM DEPRESSION, UNCONSCIOUSNESS. CHRONIC: NONE IDENTIFIED. TARGET ORGANS: EYES, SKIN, RESPIRATORY SYSTEM, LUNGS, CNS.
Med Cond Aggravated By Exp: SKIN DISORDERS, EYE DISORDERS, RESPIRATORY SYSTEM DISEASE.
Emergency/First Aid Proc: INGEST: CALL MD. IF CONSCIOUS, GIVE LRG AMTS OF H\textsubscript{2}O. INDUCE VOMIT. INHAL: REMOVE TO FRESH AIR. IF NOT BIRTHG, GIVE ARTF RESP. IF BIRTHG IS DFCLT, GIVE O\textsubscript{2}. SKIN: IMMEDIATELY FLUSH SKIN W/PLENTY OF H\textsubscript{2}O FOR @ LST 15 MIN WHILE REMOVING CONTAM CLTHG & SHOES. WASH CLTHG BEFORE RE-PROVIDE PREPLACEMENT & PERIODIC EXAM W/EMPHASIS (SUPP DATA)

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WEAR SUITABLE PROT CLTHG. SHUT OFF IGNIT SOURCES; NO FLARES, SMOKING/FLAMES IN AREA. STOP LEAK IF YOU CAN DO SO WITHOUT RISK USE H\textsubscript{2}O SPRAY TO REDUCE VAPS. TAKE UP W/SAND/OTHER NON-COMBUST ABSORB MATL & PLACE INTO CNTNR FOR LATER DISP. (SUPP DATA)
Neutralizing Agent: JT BAKER SOLUSORB SOLVENT ADSORBENT IS RECOMMENDED FOR SPILLS.
Waste Disposal Method: DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.
Precautions-Handling/Storing: KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED, FLAMMABLE LIQUID STORAGE AREA. DO NOT STORE NEAR OXIDIZING MATERIALS.
Other Precautions: BOND AND GROUND CONTAINERS WHEN TRANSFERRING LIQUID. HIGHLY FLAMMABLE. KEEP AWAY FROM SOURCES OF IGNITION-NO SMOKING. AVOID CNTCT W/EYES, SKIN, CLOTHING. AVOID BREATHING VAPOR. USE WITH ADEQUATE VENTILATION.

Control Measures

Respiratory Protection: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE CONC EXCEEDS TLV. AT CONC UP TO 1000 PPM, NIOSH/MSHA APPROVED CHEMICAL CARTRIDGE RESP W/ORGANIC VAPOR CARTRIDGE IS RECOMMENDED. ABOVE THIS LEVEL, A NIOSH/MSHA APPROVED SCBA IS RECOMMENDED.
Ventilation: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV REQUIREMENTS. VENT HOOD.
Protective Gloves: NEOPRENE GLOVES.
Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).
Other Protective Equipment: UNIFORMS, APRON, & LAB COAT ARE RECOMMENDED.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.

Suppl. Safety & Health Data: MATLS TO AVOID: AMINES & AMMONIA, ALDEHYDES.

FIRST AID PROC: ON SKIN, SINUSES, AND RESPIRATORY SYSTEM. SPILL PROC: FLUSH AREA WITH WATER. DO NOT ALLOW SPILL TO ENTER DRAINS OR SEWER SYSTEM.

Transportation Data

Trans Data Review Date: 92324
DOT PSN Code: HWY
DOT Proper Shipping Name: ISOPROPNAL OR ISOPROPYL ALCOHOL
DOT Class: 3
DOT ID Number: UN1219
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: ITA
IMO Proper Shipping Name: ISOPROPNAL
IMO Regulations Page Number: 3244
IMO UN Number: 1219
IMO UN Class: 3.2
IMO Subsidiary Risk Label: -
IATA PSN Code: ONH
IATA UN ID Number: 1219
IATA Proper Shipping Name: ISOPROPNAL
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: ONH
AFI Prop. Shipping Name: ISOPROPNAL
AFI Class: 3
AFI ID Number: UN1219
AFI Pack Group: II
AFI Label: FLAMMABLE LIQUID
AFI Basic Pac Ref: 7-7

Disposal Data

Label Required: YES
Technical Review Date: 18MAY92
Label Date: 14MAY92
Label Status: G
Common Name: 9083, 2-PROPANOL
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: FLAMMABLE LIQUID. AVOID HEAT, FLAME, OTHER IGNITION SOURCES, STRONG OXIDIZING AGENTS, STRONG ACIDS. ACUTE: INHALATION MAY CAUSE IRRITATION OF NOSE, THROAT AND UPPER RESPIRATORY TRACT, HEADACHE, NAUSEA, DIZZINESS, DROWSINESS, NARCOSIS, CNS DEPRESSION, DIFFICULT BREATHING, PULMONARY EDEMA & UNCONSCIOUSNESS. EYE CONTACT MAY CAUSE IRRITATION AND CORNEAL DAMAGE. SKIN CONTACT MAY CAUSE IRRITATION & DERMATITIS. INGESTION MAY CAUSE GI IRRITATION, HEADACHE,NAUSEA, VOMITING, DIZZINESS, NARCOSIS, CNS DEPRESSION & UNCONSCIOUSNESS. CHRONIC: NONE LISTED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: J T BAKER INC
Label Street: 222 RED SCHOOL LANE
Label City: PHILLIPSBURG
Label State: NJ
Label Zip Code: 08865-2219
Label Country: US
Label Emergency Number: 908-859-2151;800-424-9300(CHEMTREC)

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
J T BAKER — NITRIC ACID, 9601 — NITRIC ACID, REAGENT

MATERIAL SAFETY DATA SHEET

NSN: 6810001856977
Manufacturer's CAGE: 70829
Part No. Indicator: A
Part Number/Trade Name: NITRIC ACID, 9601

General Information

Item Name: NITRIC ACID, REAGENT
Company's Name: J T BAKER INC
Company's Street: 222 RED SCHOOL AND
Company's City: PHILLIPSBURG
Company's State: NJ
Company's Country: US
Company's Zip Code: 08865
Company's Emerg Ph #: 800-424-9300 (CHEMTREC)
Company's Info Ph #: 908-859-2151
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 23SEP94
Safety Data Review Date: 22JUN95
MSDS Serial Number: BKMWQ
Hazard Characteristic Code: NK

Ingredients/Identity Information

Proprietary: NO
Ingredient: NITRIC ACID (SARA 302/313) (CERCLA). LD50: (ORAL, RAT) 2500 PPM
Ingredient Sequence Number: 01
Percent: 65-71
NIOSH (RTECS) Number: QU5775000
CAS Number: 7697-37-2
OSHA PEL: 2 PPM
ACGIH TLV: 2 PPM/4 STEL

Proprietary: NO
Ingredient: WATER
Ingredient Sequence Number: 02
Percent: 29-35
NIOSH (RTECS) Number: ZC0110000
CAS Number: 7732-18-5
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)

Proprietary: NO
Ingredient: SPILL RELEASE: WATER. KEEP COMBUST (WOOD, PAPER, UIL, ETC) AWAY FROM SPILLED MATL.
Ingredient Sequence Number: 03
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: OTHER PREC: DETONATABLE. SPILLAGE MAY CAUSE FIRE.
Ingredient Sequence Number: 04
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: EYE PROT: FULL LENGTH FACESHIELD (FP N).
Ingredient Sequence Number: 05
NIOSH (RTECS) Number: 9999999ZZ
### Physical/Chemical Characteristics

**Appearance And Odor:** CLEAR, COLORLESS LIQUID, SUFFOCATING ODOR.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
<td>249°F, 121°C</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-43°F, -42°C</td>
</tr>
<tr>
<td>Vapor Pressure (MM Hg/70°F)</td>
<td>9 @ 20°C</td>
</tr>
<tr>
<td>Vapor Density (Air=1)</td>
<td>N/A</td>
</tr>
<tr>
<td>Specific Gravity (H20=1)</td>
<td>1.41</td>
</tr>
<tr>
<td>Evaporation Rate And Ref</td>
<td>NOT APPLICABLE</td>
</tr>
<tr>
<td>Solubility In Water</td>
<td>COMPLETE</td>
</tr>
<tr>
<td>Percent Volatiles By Volume</td>
<td>100</td>
</tr>
<tr>
<td>pH</td>
<td>SUPDAT</td>
</tr>
</tbody>
</table>

### Fire and Explosion Hazard Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Lower Explosive Limit</td>
<td>N/A</td>
</tr>
<tr>
<td>Upper Explosive Limit</td>
<td>N/A</td>
</tr>
<tr>
<td>Extinguishing Media</td>
<td>USE WATER, DRY CHEMICAL, OR SODA ASH.</td>
</tr>
<tr>
<td>Special Fire Fighting Proc</td>
<td>NIOSH/MSHA APPRVD SCBA &amp; FULL FACEPIECE OPERATED IN POS PRESS MODE. MOVE EXPOS CNTNRS FROM FIRE AREA IF IT CAN BE DONE W/O RISK. USE WATER TO KEEP SUPDAT</td>
</tr>
<tr>
<td>Unusual Fire And Expl Hazards</td>
<td>STRONG OXIDIZER. CONT W/COMBUST MATLS, FLAM MATLS/POWDERED METALS CAN CAUSE FIRE/EXPLO. REACTS W/MOST METALS TO PRDCE HYDROGEN GAS, WHICH CAN FORM EXPLO(SUPDAT)</td>
</tr>
</tbody>
</table>

### Reactivity Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>YES</td>
</tr>
<tr>
<td>Cond To Avoid (Stability)</td>
<td>HEAT, LIGHT, MOISTURE.</td>
</tr>
<tr>
<td>Materials To Avoid</td>
<td>STRONG BASES, CARBONATES, SULFIDES, CYANIDES, COMBUST MATLS, ORG MATLS, STRONG REDUCING AGENTS, MOST COMMON (SUPDAT)</td>
</tr>
<tr>
<td>Hazardous Decomp Products</td>
<td>OXIDES OF NITROGEN, HYDROGEN.</td>
</tr>
<tr>
<td>Hazardous Poly Occur</td>
<td>NO</td>
</tr>
<tr>
<td>Conditions To Avoid (Poly)</td>
<td>NOT RELEVANT.</td>
</tr>
</tbody>
</table>

### Health Hazard Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/LC50 Mixture</td>
<td>SEE INGREDIENT 1</td>
</tr>
<tr>
<td>Route Of Entry - Inhalation</td>
<td>YES</td>
</tr>
<tr>
<td>Route Of Entry - Skin</td>
<td>YES</td>
</tr>
<tr>
<td>Route Of Entry - Ingestion</td>
<td>YES</td>
</tr>
<tr>
<td>Health Haz Acute And Chronic</td>
<td>TARGET ORGANS: EYES, SKIN, MUCOUS MEMBRANES, RESPIRATORY SYSTEM, LUNGS, TEETH, GI TRACT. ACUTE: INHALATION: SEVERE IRRITATION/BURNS OF RESPIRATORY SYSTEM, COUGHING, DIFFICULT BREATHING, CHEST PAINS, PULMONARY EDEMA, LUNG INFLAMMATION, UNCONSCIOUSNESS, &amp; MAY BE FATAL. SKIN/EYE: SEVERE IRRITATION OR BURNS. (EFTS OF OVEREXP)</td>
</tr>
<tr>
<td>Carcinogenicity - NTP</td>
<td>NO</td>
</tr>
<tr>
<td>Carcinogenicity - IARC</td>
<td>NO</td>
</tr>
<tr>
<td>Carcinogenicity - OSHA</td>
<td>NO</td>
</tr>
<tr>
<td>Explanation Carcinogenicity</td>
<td>NOT RELEVANT.</td>
</tr>
<tr>
<td>Signs/Symptoms Of Overexp</td>
<td>HLTH HAZ: INGESTION: Nausea, VOMITING, SEVERE BURNS, ULCERATION- MOUTH, THROAT, STOMACH, AND MAY BE FATAL. CHRONIC: DAMAGE TO LUNGS, TEETH.</td>
</tr>
<tr>
<td>Med Cond Aggravated By Exp</td>
<td>DAMAGED SKIN, EYE DISORDERS, CARDIOPULMONARY DISEASE, LUNG DISEASE.</td>
</tr>
<tr>
<td>Emergency/First Aid Proc</td>
<td>INGEST: CALL PHYS. IF SWALLOWED, DO NOT INDUCE VOMIT. IF CONSCIOUS, GIVE WATER, MILK/MILK OF MAGNESIA. INHAL: REMOVE TO FRESH AIR. IF NOT BIRTHG, GIVE ARTF RESP. IF BIRTHG IS DFLT, GIVE OXYG. PROMPT ACTION IS ESSNTL. SKIN: IMMED FLUSH W/PLENITY OF WATER FOR @ LEAST 15 IMMED FLUSH W/PLENITY OF WATER FOR @ LEAST 15 MINS.</td>
</tr>
</tbody>
</table>
Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WEAR NIOSH/MSHA APPROVED SCBA & FULL PROT CLTHG. STOP LEAK IF YOU CAN DO SO W/O OUT RISK. VENTILATE AREA. NEUT SPILL W/ SODA ASH/LIME. WITH CLEAN SHOVEL, CAREFULLY PLACE MATL INTO CLEAN, DRY CNTRN & COVER. REMOVE FROM AREA. FLUSH SPILL AREA WITH (ING 3) Neutralizing Agent: MFR NEUTRASORB(R) OR TEAM(R) 'LOW NA+' ACID NEUT ARE FOR SPILLS OF THIS PROD. Waste Disposal Method: DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, D002, D003 (CORROSIVE, REACTIVE WASTE). Precautions-Handling/Storing: KEEP CNTNR TIGHTLY CLSD. STORE SEPARATELY & AWAY FROM FLAM & COMBUST MATLS. ISOLATE FROM INCOMPAT MATLS. KEEP PROD OUT OF LIGHT. Other Precautions: NITRIC ACID INCREASES FLAMMABILITY OF, & CAN IGNITE MANY ORG MATLS SUCH AS WOOD, SOLVS, ETC, & CAN RELEASE TOX OXIDES OF NITROGEN. IN ADDN CERTAIN MIX OF STRONG NITRIC ACID W/BENZENE, 1,2-DICHLOROETHANE, OR DICHROMETHANE MAY BE (ING 4)

Control Measures


Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING. Suppl. Safety & Health Data: PH:1.0 (0.1M SOLN). FIRE FIGHT PROC: FIRE- EXPOS CNTNRs COOL; DO NOT GET WATER INSIDE CNTNRs. EXPLO HAZ:MIX W/ AIR. VIOLENT EXOTHERMIC RXN OCCURS W/ WATER. SUFFICIENT HEAT MAY BE PROCED TO IGNITE COMBUST MATLS. MATLS TO AVOID: METALS, POWDERED METALS, CARBIDES, AMMONIUM HYDROXIDE, WATER, ALCOHOLS.

Transportation Data

Trans Data Review Date: 91248
DOT PSN Code: KFD
DOT Proper Shipping Name: NITRIC ACID
DOT Class: 8
DOT ID Number: UN2031
DOT Pack Group: II
DOT Label: CORROSIVE
IMO PSN Code: KPF
IMO Proper Shipping Name: NITRIC ACID
IMO Regulations Page Number: 8195
IMO UN Number: 2031
IMO UN Class: 8
IMO Subsidiary Risk Label: -
IATA PSN Code: RWF
IATA UN ID Number: 2031
IATA Proper Shipping Name: NITRIC ACID
IATA UN Class: 8
IATA Label: CORROSIVE
AFI PSN Code: RWF
AFI Symbols: 0
AFI Prop. Shipping Name: NITRIC ACID
AFI Class: 8
AFI ID Number: UN2031
AFI Pack Group: II
AFI Label: CORROSIVE
AFI Basic Pac Ref: 12-14

Disposal Data


Label Data

Label Required: YES
Technical Review Date: 22JUN95
Label Date: 10JUL95
Label Status: B
Common Name: NITRIC ACID, 9601
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Moderate: X
Contact Hazard-Severe: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: AVOID WATER. ACUTE:INHALATION:SEVERE IRRITATION/BURNS OF RESPIRATORY SYSTEM, COUGHING, DIFFICULT BREATHING, CHEST PAINS, PULMONARY EDEMA, LUNG INFLAMMATION, UNCONSCIOUSNESS, & MAY BE FATAL. SKIN/EYE:SEVERE IRRITATION OR BURNS. INGESTION:NAUSEA, VOMITING, SEVERE BURNS, ULCERATION OF MOUTH, THROAT, STOMACH. MAY BE FATAL. TARGET ORGANS:EYES, SKIN, MUCOUS MEMBRANES, RESPIRATORY SYSTEM, LUNGS, TEETH, GI TRACT. CHRONIC:DAMAGE TO LUNGS TO TEETH.
Protect Eye: X
Protect Skin: X
Protect Respiratory: X
Label Name: J T BAKER INC
Label Street: 222 RED SCHOOL AND
Label City: PHILLIPSBURG
Label State: NJ
Label Zip Code: 08865
Label Country: US
Label Emergency Number: 800-424-9300 (CHEMTREC)

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please send updates to dan@siri.org.
AIRGAS -- HYDROGEN
MATERIAL SAFETY DATA SHEET
NSN: 683000N075377
Manufacturer's CAGE: OMN39
Part No. Indicator: A
Part Number/Trade Name: HYDROGEN

General Information

Company's Name: AIRGAS
Company's Street: 5 RADNOR CORP CENTER, 100 MATSONFORD RD
Company's City: RADNOR
Company's State: PA
Company's Zip Code: 19087
Company's Emerg Ph #: 215-687-5253
Company's Info Ph #: 215-687-5253
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 00MAY90
Safety Data Review Date: 12DEC96
MSDS Serial Number: CCTXW

Ingredients/Identity Information

Proprietary: NO
Ingredient: HYDROGEN
Ingredient Sequence Number: .01
NIOSH (RTECS) Number: MW8900000
CAS Number: 1333-74-0
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)

Proprietary: NO
Ingredient: SUPP DATA: BE MOVED TO UNCONTAM AREA, GIVEN MOUTH-TO-MOUTH
RESUSCITATION & SUPP OXYG. FURTHER TREATMENT SHOULD BE (ING 3)
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 99999992Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 2: SYMPTOMATIC & SUPPORTIVE.
Ingredient Sequence Number: 03
NIOSH (RTECS) Number: 99999992Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: OTHER PREC USE CHECK VALVE/TRAP IN DISCHARGE LINE TO PVNT HAZ
BACK FLOW INTO CYL. PROT CYLS FROM PHYSICAL DMG. (ING 5)
Ingredient Sequence Number: 04
NIOSH (RTECS) Number: 99999992Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 4: STORE IN COOL, DRY, WELL-VENTED AREA OF NONCOMBUST
CONSTRUCTION AWAY FROM HEAVILY TRAFFICKED AREAS & EMER (ING 6)
Ingredient Sequence Number: 05
NIOSH (RTECS) Number: 99999992Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Ingredient: ING 5: EXITS. DO NOT ALLOW TEMP WHERE CYLS ARE STORED TO EXCEED 130°F (54°C). CYLS SHOULD BE STORED UPRIGHT & FIRMLY (ING 7)
Ingredient Sequence Number: 06
NIOSH (RTECS) Number: 9999999Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO

Ingredient: ING 6: SECURED TO PVNT FALLING/BEING KNOCKED OVER. FULL & EMPTY CYLS SHOULD BE SEGREGATED. USE "FIRST IN-FIRST (ING 8)
Ingredient Sequence Number: 07
NIOSH (RTECS) Number: 9999999Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO

Ingredient: ING 7: OUT" INVENTORY SYS TO PVNT FULL CYLS BEING STORED FOR EXCESSIVE PERIODS OF TIME. POST "NO SMOKING/OPEN (ING 9)
Ingredient Sequence Number: 08
NIOSH (RTECS) Number: 9999999Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO

Ingredient: ING 8: FLAMES" SIGNS IN STOR/USE AREA. THERE SHOULD BE NO SOURCES OF IGNIT IN STOR/USE AREA. FOR ADDNL HNDLG/STOR(ING 10)
Ingredient Sequence Number: 09
NIOSH (RTECS) Number: 9999999Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO

Ingredient: ING 9: RECS, CONSULT COMPRESSED GAS ASSOC'S PAMPHLETS G-5, P-1, P-14 & SFTY BULLETIN SB-2. HYDROGEN IS NONCORR (ING 11)
Ingredient Sequence Number: 10
NIOSH (RTECS) Number: 9999999Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO

Ingredient: ING 10: & MAY BE USED W/ANY COMMON STRUCTURAL MATL. EARTH-GROUND & BOND ALL LINES & EQUIP ASSOC W/HYDROGEN SYS. (ING 12)
Ingredient Sequence Number: 11
NIOSH (RTECS) Number: 9999999Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO

Ingredient: ING 11: ELEC EQUIP SHOULD BE NON-SPARKING/EXPLO PROOF. COMPRESSED GAS CYLS SHOULD NOT BE REFILLED EXCEPT BY (ING 13)
Ingredient Sequence Number: 12
NIOSH (RTECS) Number: 9999999Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO

Ingredient: ING 12: QUALIFIED PROCRS OF COMPRESSED GASES. SHIPMENT OF COMPRESSED GAS CYL WHICH HAS NOT BEEN FILLED BY OWNER/ (ING 14)
Ingredient Sequence Number: 13
NIOSH (RTECS) Number: 9999999Z
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO

Ingredient: ING 13:
Ingredient: ING 13: WITH HIS (WRITTEN) CONSENT IS A VIOLATION OF FED LAW
(49 CFR). ALWAYS SECURE CYLS IN UPRIGHT POS BEFORE (ING 15)
Ingredient Sequence Number: 14
NIOSH (RTECS) Number: 999999922
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 14: TRANSPORTING THEM. NEVER TRANSPORT CYLS IN TRUNKS OF
VEHICLES, ENCLSD VANS, TRUCK CABS/IN PASSENGER (ING 16)
Ingredient Sequence Number: 15
NIOSH (RTECS) Number: 999999922
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 15: COMPARTMENTS. TRANSPORT CYLS SECURED IN OPEN FLATBED OR
IN OPEN PICK-UP TYPE VEHICLES.
Ingredient Sequence Number: 16
NIOSH (RTECS) Number: 999999922
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS, ODORLESS GAS.
Boiling Point: -423F, -253C
Melting Point: -435F, -259C
Vapor Pressure (MM Hg/70 F): >-399.8F
Specific Gravity: 0.069 (AIR=1)
Evaporation Rate And Ref: NOT APPLICABLE
Solubility In Water: VERY SLIGHTLY

Fire and Explosion Hazard Data

Flash Point: GAS
Lower Explosive Limit: 4%
Upper Explosive Limit: 74.5%
Extinguishing Media: WATER, CARBON DIOXIDE, DRY CHEMICAL.
Special Fire Fighting Proc: USE NIOSH APRVD SCBA & FULL PROT EQUIP (FP)
N. IF POSS, STOP FLOW OF HYDROGEN. COOL SURROUND CNTNRS W/WATER SPRAY.
HYDROGEN BURNS W/ALMOST INVISIBLE (SUPPDATA)
Unusual Fire And Expl Hazards: HYDROGEN IS FLAMM OVER VERY WIDE RANGE IN
AIR. HYDROGEN IS VERY LIGHT & RISES VERY RAPIDLY IN AIR. SHOULD HYDROGEN
FIRE BE EXTING & FLOW OF GAS (SUPP DATA)

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NOT APPLICABLE
Materials To Avoid: OXIDIZERS.
Hazardous Decomp Products: NONE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: HYDROGEN IS DEFINED AS A SIMPLE ASPHYXIANT.
OXYGEN LEVELS SHOULD BE MAINTAINED AT >18 MOLAR PERCENT AT NORMAL
ATMOSPHERIC PRESSURE WHICH IS EQUIVALENT TO PARTIAL PRESSURE OF 135 MM HG.
INHALATION: HIGH CONCENTRATIONS OF HYDROGEN SO AS TO EXCLUDE ADEQUATE SUPPLY
OF OXYGEN TO LUNGS CAUSES DIZZINESS. (EFTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: HLTH HAZ: DEEPER BREATHING DUE TO AIR HUNGER,
POSSIBLE NAUSEA & EVENTUAL UNCONSCIOUSNESS. HYDROGEN IS INACTIVE
BIOLOGICALLY & ESSENTIALLY NONTOXIC; THEREFORE, MAJOR PROPERTY IS EXCLUSION
OF ADEQUATE SUPPLY OF OXYGEN TO LUNGS.
Med Cond Aggravated By Exp: PERSONS IN ILL HEALTH WHERE SUCH ILLNESS WOULD
BE AGGRAVATED BY EXPOSURE TO HYDROGEN SHOULD NOT BE ALLOWED TO WORK WITH OR
HANDLE THIS PRODUCT.
Emergency/First Aid Proc: PROMPT MED ATTN IS MANDATORY IN ALL CASES OF
OVEREXP TO HYDROGEN. RESCUE PERS SHOULD BE EQUIPPED W/NIOSH APPRV'D SCBA &
BE COGNIZANT OF EXTREME FIRE & EXPLO HAZ. INGEST: CALL MD IMMEDIATELY (FP N).
EYES: IMMEDIATELY FLUSH W/POTABLE WATER FOR MIN OF 15 MINS, SEEK ASSISTANCE FROM
CONSCIOUS PERS SHOULD BE ASSISTED TO UNCONTAM AREA & INHALE (SUPDAT)

Precautions for Safe Handling and Use
Steps If Matl Released/Spill: EVACUATE ALL PERS FROM AFFECTED AREA. USE
APPROPRIATE PROTECTIVE EQUIPMENT. IF LEAK IS IN USER'S EQUIP., BE CERTAIN TO PURGE PIPING
W/INERT GAS PRIOR TO ATTEMPTING REPAIRS. IF LEAK IS IN CNTNR VALVE, CONT
YOUR CLOSEST SUPPLIER LOCATION/CALL EMERGENCY TELEPHONE # LISTED.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DO NOT ATTEMPT TO DISPOSE OF WASTE/UNUSED QTYS. RETURN
IN SHIPPING CNTNR PROPERLY LABELED, W/ANY VALVE OUTLET PLUGS/CAPS SECURED &
VALVE PROT CAP IN PLACE TO YOUR SUPPLIER. FOR EMERGENCY DISPOSAL, CONT
YOUR CLOSEST SUPPLIER LOCATION/CALL EMERGENCY (SUPDAT)
Precautions-Handling/Storing: FLAMMABLE GAS. USE ONLY IN WELL-VENTED
AREAS. VALVE PROT CAPS MUST REMAIN IN PLACE UNLESS CNTNR IS SECURED W/VALVE
OUTLET PIPPED TO USE POINT.
Other Precautions: DO NOT DRAG, SLIDE/ROLL CYLS. USE SUITABLE HAND TRUCK
FOR CYL MOVEMENT. USE PRESS REDUCING REGULATOR WHEN CONNECTING CYL TO LOWER
PRESS (<3,000 PSI) PIPING/SYS. DO NOT HEAT CYL BY ANY MEANS TO INCR
DISCHARGE RATE OF PROD FROM CYL. (ING 4)

Control Measures
Respiratory Protection: NIOSH APPROVED POSITIVE PRESSURE AIR LINE W/MASK
OR SELF-CONTAINED BREATHING APPARATUS SHOULD BE AVAILABLE FOR EMERGENCY
USE.
Ventilation: HOOD W/FORCED VENTILATION. LOCAL EXHAUST TO PREVENT
ACCUMULATION ABOVE LEL. MECHANICAL (GENERAL): I/A/W ELECTRICAL CODES.
Protective Gloves: PLASTIC OR RUBBER GLOVES.
Eye Protection: ANSI APPROVED CHEM WORKERS GOGGS (FP N).
Other Protective Equipment: EYE WASH FOUNTAIN & DELUGE SHOWER WHICH MEET
ANSI DESIGN CRITERIA (FP N). SAFETY SHOES.
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Suppl. Safety & Health Data: FIRE FIGHT PROC: FLAME OF RELATIVELY LOW
THERMAL RADIA. EXPLO HAZ: CONTINUE, INCR VENT TO PVNT EXPLO HAZ,
PARTICULARLY IN UPPER PORTIONS OF BLDGS/SHEDS WHERE GAS MIGHT "COLLECT".
WASTE DISP METH: TELEPHONE NUMBER LISTED. FIRST AID PROC: FRESH AIR. QUICK
REMOVAL FROM CONTAM AREA IS MOST IMPORTANT. UNCON PERS SHOULD (ING 2)

Transportation Data

Disposal Data

Label Data
Label Required: YES
Technical Review Date: 12DEC96
Label Date: 05DEC96
Label Status: B
Common Name: HYDROGEN
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Moderate: X
Contact Hazard-None: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: EXTREMELY FLAMMABLE. ACUTE: HYDROGEN IS DEFINED AS A SIMPLE ASPHYXIANT. OXYGEN LEVELS SHOULD BE MAINTAINED AT >18 MOLAR PERCENT AT NORMAL ATMOSPHERIC PRESSURE WHICH IS EQUIVALENT TO PARTIAL PRESSURE OF 135 MM HG. INHALATION: HIGH CONCENTRATIONS OF HYDROGEN SO AS TO EXCLUDE ADEQUATE SUPPLY OF OXYGEN TO LUNGS CAUSES DIZZINESS, DEEPER BREATHING, NAUSEA AND UNCONSCIOUSNESS. CHRONIC: NONE LISTED BY MANUFACTURER.
Protect Eye: X
Protect Skin: X
Protect Respiratory: X
Label Name: AIRGAS
Label Street: 5 RDNOR CORP CENTER, 100 MATSONFORD RD
Label City: RDNOR
Label State: PA
Label Zip Code: 19087
Label Country: US
Label Emergency Number: 215-687-5253
---------------------------------------------------------------
URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
AIRGAS -- COMPRESSED AIR; AIR; COMPRESSED AIR, BREATHING
MATERIAL SAFETY DATA SHEET
NSN: 683000N063264
Manufacturer's CAGE: OMN39
Part No. Indicator: A
Part Number/Trade Name: COMPRESSED AIR; AIR; COMPRESSED AIR, BREATHING
QUALITY

General Information

Company's Name: AIRGAS
Company's Street: 100 MATSON RD
Company's City: RODNOR
Company's State: PA
Company's Country: US
Company's Zip Code: 19067
Company's Emerg Ph #: 215-687-5253
Company's Info Ph #: 215-687-5253
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 06MAY90
Safety Data Review Date: 06SEP95
MSDS Serial Number: BZBLH

Ingredients/Identity Information

Proprietary: NO
Ingredient: NITROGEN
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: QW9700000
CAS Number: 7727-37-9
OSHA PEL: N/K (FP N)
ACGIH TLV: ASPHYXIANT

Proprietary: NO
Ingredient: WASTE DISP METH: NUMBER LISTED HEREIN. DISPOSE OF IN ACCORDANCE WITH STATE, LOCAL, AND FEDERAL REGULATIONS (FP N).
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: OTHER PREP: DISCHARGE LINE TO PREVENT HAZ BACK FLOW INTO CYL. FOR ADDNL HNDLG REC, CONSULT COMPRESSED GAS (ING 4)
Ingredient Sequence Number: 03
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 3: ASSOCIATION'S PAMPHLETS P-1, P-9, P-14, & SFTY BULLETIN SB-2. PROT CYL FROM PHYSICAL DMG. STORE IN COOL, (ING 5)
Ingredient Sequence Number: 04
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 4: DRY, WELL-VENT AREA AWAY FROM HEAVILY TRAFFICKED AREAS & EMER EXITS. DO NOT ALLOW TEMP WHERE CYL ARE (ING 6)
Ingredient Sequence Number: 05
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 5: STORED TO EXCEED 130°F (54°C). CYL SHOULD BE STORED UPRIGHT & FIRMLY SECURED TO PREVENT FALLING/BEING (ING 7)
Ingredient Sequence Number: 06
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 6: KNOCKED OVER. FULL & EMPTY CYL SHOULD BE SEGREGATED. USE "FIRST IN-FIRST OUT" INVENTORY SYS TO PREVENT (ING 8)
Ingredient Sequence Number: 07
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 7: FULL CYL BEING STORED FOR EXCESS PERIODS OF TIME. FOR ADDNL STOR REC, CONSULT COMPRESSED GAS (ING 9)
Ingredient Sequence Number: 08
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 8: ASSOCIATION'S PANPHLETS P-1, P-9, P-14 & SFTY BULLETIN SB-2. NITROGEN IS NON-CORR & MAY BE USED W/ANY (ING 10)
Ingredient Sequence Number: 09
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 9: COMMON STRUCTURAL MATLS. COMPRESSED GAS CYL SHOULD NOT BE REFILLED EXCEPT BY QUALIFIED PRODUCERS OF (ING 11)
Ingredient Sequence Number: 10
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 10: COMPRESSED GASES. SHIPMENT OF COMPRESSED GAS CYL WHICH HAS NOT BEEN FILLED BY OWNER OR W/HIS (WRITTEN) (ING 12)
Ingredient Sequence Number: 11
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 11: CONSENT IS A VIOLATION OF FED LAW (49CFR). ALWAYS SECURE CYL IN UPRIGHT POSITION BEFORE TRANSPORTING (ING 13)
Ingredient Sequence Number: 12
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 12: THEM. NEVER TRANSPORT CYLINDERS IN TRUNKS OF VEHICLES, CLOSED VANS, TRUCK CABS OR IN PASSENGER (ING 14)
Ingredient Sequence Number: 13
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO
Ingredient: ING 13: COMPARTMENTS. TRANSPORT CYLINDERS SECURED IN OPEN
FLATBED OR IN OPEN PICK-UP TYPE VEHICLES.
Ingredient Sequence Number: 14
NIOSH (RTECS) Number: 999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS, ODORLESS GAS
Boiling Point: -321°F, -196°C
Vapor Pressure (MM Hg/70 F): >-232.6°F
Specific Gravity: 0.97 (AIR=1)
Evaporation Rate And Ref: N/A
Solubility In Water: VERY SLIGHTLY

Fire and Explosion Hazard Data

Flash Point: N/A
Flash Point Method: N/A
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: NON-FLAMMABLE, INERT GAS. USE MEDIA SUITABLE FOR
SURROUNDING FIRE (FP N).
Special Fire Fighting Proc: IF CYLINDERS ARE INVOLVED IN A FIRE, SAFELY
RELOCATE OR KEEP COOL WITH WATER SPRAY. WEAR NIOSH/MSHA APPROVED SCBA &
FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazards: NOT APPLICABLE.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NOT APPLICABLE.
Materials To Avoid: NONE.
Hazardous Decomp Products: NONE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: TINGLING OF TONGUE, FINGERTIPS/TOES.
WEAKENED SPEECH LEADING TO INABILITY TO UTTER SOUNDS. RAPID REDUCTION IN
ABILITY TO PERFORM MOVEMENTS. REDUCED CONSCIOUSNESS OF SURROUNDINGS. LOSS
OF TACTILE SENSATIONS. HEIGHTENED MENTAL ACTIVITY. IT SHOULD BE RECOGNIZED
THAT IT IS POSS THAT NONE OF THE (EFFECTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT.
Signs/Symptoms Of Overexp: HLTH HAZ: ABOVE SYMP MAY OCCUR IN GAS ASPHY SO
THAT THERE ARE NO DEFINITE WARNING SYMP. AIR IS NON-TOX & NEC TO SUPPORT
LIFE. INHAL OF AIR IN HIGH PRESS ENVIRONMENT SUCH AS UNDERWATER DIVING,
CAISSONS/HYPERBARIC CHAMBERS CAN RSLT IN SYMP SIMILAR TO OVEREXP TO PURE
OXYGEN. THESE INCL TINGLING OF FINGERS & (SUP DAT)
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: FACILITIES/PRACT AT WHICH AIR IS BREATHED IN
HIGH PRESS ENVIRONMENT SHOULD BE PREPARED TO DEAL W/ILLNESSES ASSOC W/
DECOMPRESSION (BENDS/CAISSON DISEASES). DECOMPRESSION EQUIP MAY BE
REQUIRED. EYES: FLUSH W/POTABLE WATER FOR AT LEAST 15 MIN. SEE MD (FP N).
SKIN: FLUSH WITH COPIOUS AMOUNTS OF WATER. SEE MD (FP N). INHAL: REMOVE TO FRESH AIR. SUPPORT BREATHING (GIVE OXYGEN/ARTIFICIAL RESPIRATION) (FP N). INGEST: (SUPPLEMENTAL)

Precautions for Safe Handling and Use

Steps If Material Released/Spilled: EVACUATE ALL PERSONNEL FROM AFFECTED AREA. USE APPROPRIATE PROTECTIVE EQUIPMENT. IF LEAK IS IN CONTAINER OR CONTAINER VALVE, CONTACT YOUR CLOSEST SUPPLIER LOCATION OR CALL THE EMERGENCY TELEPHONE NUMBER LISTED HEREIN.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: DO NOT ATTEMPT TO DISPOSE OF WASTE/UNUSED QUANTITIES. RETURN IN SHIPPING CONTAINER PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS/CAPS SECURED AND VALVE PROTECTIVE CAP IN PLACE TO YOUR SUPPLIER FOR EMERGENCY DISPERSION ASSISTANCE, CONTACT YOUR CLOSEST SUPPLIER LOCATION/CALL EMERGENCY TELEPHONE (ING 2)

Precautions—Handling/Storing: USE ONLY IN WELL-VENTILATED AREAS. VALVE PROTECTION CAPS MUST REMAIN IN PLACE UNLESS CYLINDER IS SECURED WITH VALVE OUTLET PIPED TO USE POINT. DO NOT DRAG, SLIDE, ROLL CYLINDER.

Other Precautions: USE SUITABLE HAND TRUCK FOR CYLINDER MOVEMENT. USE PRESSURE REDUCING REGULATOR WHEN CONNECTING CYLINDER TO LOWER PRESSURE (<3000 PSIG) PIPING/ SYSTEM. DO NOT HEAT CYLINDER BY ANY MEANS TO INCREASE DISCHARGE RATE OF PRODUCT FROM CYLINDER. USE CHECK VALVE/TRAP IN THE LINE (ING 3).

Control Measures

Respiratory Protection: NIOSH/MSHA APPROVED POSITIVE PRESSURE AIR LINE WITH MASK OR NIOSH/MSHA APPROVED SCBA SHOULD BE AVAILABLE FOR EMERGENCY USE.

Ventilation: LOCAL EXHAUST TO PREVENT ACCUMULATION OF HIGH CONCENTRATIONS SO AS TO REDUCE OXYGEN LEVEL IN AIR TO LESS THAN 18 MOLAR PERCENT.

Protective Gloves: ANY MATERIAL GLOVES.

Eye Protection: ANSI APPROVED CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment: SAFETY SHOES. EMERGENCY EYEWASH & DELUGE SHOWER MEETING ANSI DESIGN CRITERIA (FP N).

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Supplemental Safety & Health Data: EFFECTS OF OVEREXPOSURE: TOES, ABNORMAL SENSATIONS, IMPAIRED COORDINATION & CONFUSION. DECOMPRESSION SICKNESS, PAINS/BENDS ARE POSSIBLE FOLLOWING RAPID DECOMPRESSION. HIGH PRESSURE EFFECTS (> 2 ATMOSPHERES OF OXYGEN) ARE ON CNS. IMPROPER DECOMPRESSION RESULT IN ACCUMULATION OF NITROGEN IN BLOOD.

FIRST AID PROCEDURE: CALL MD IMMEDIATELY (FP N).

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 06SEP95
Label Date: 06SEP95
Label Status: B
Common Name: COMPRESSED AIR; AIR; COMPRESSED AIR, BREATHING QUALITY
Chronic Hazard: NO
Signal Word: WARNING
Acute Health Hazard—Moderate: X
Contact Hazard—Moderate: X
Fire Hazard—None: X
Reactivity Hazard—None: X
Special Hazard Precautions: ACUTE: TINGLING OF TONGUE, FINGERTIPS/TOES. WEAKENED SPEECH LEADING TO INABILITY TO UtTER SOUNDS. RAPID REDUCTION IN ABILITY TO PERFORM MovEMENTS. REDUCED CONSCIOUSNESS OF SURROUNDINGS. LOSS OF TACTILE SENSATIONS. HEIGHTENED MENTAL ACTIVITY. IT SHOULD BE RECOGNIZED THAT IT IS POSSIBLE THAT NONE OF THE ABOVE SYMPTOMS MAY OCCUR. THERE ARE NO
DEFINITIVE WARNING SYMPTOMS. IMPAIRED COORDINATION AND CONFUSION. BENDS AND DECOMPRESSION SICKNESS. CENTRAL NERVOUS SYSTEM EFFECTS. CHRONIC: NONE SPECIFIED BY MANUFACTURER.
Protect Eye: X
Protect Skin: X
Protect Respiratory: X
Label Name: AIRGAS
Label Street: 100 MATSON RD
Label City: RODNOR
Label State: PA
Label Zip Code: 19067
Label Country: US
Label Emergency Number: 215-687-5253

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
AIRGAS -- METHANE
MATERIAL SAFETY DATA SHEET
NSN: 683000N063089
Manufacturer's CAGE: OMN39
Part No. Indicator: A
Part Number/Trade Name: METHANE

General Information

Company's Name: AIRGAS
Company's Street: 100 MATSONFORD RD
Company's City: RADNOR
Company's State: PA
Company's Country: US
Company's Zip Code: 19087
Company's Emerg Ph #: 215-687-1052
Company's Info Ph #: 215-687-1052
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 01MAY90
Safety Data Review Date: 30AUG95
MSDS Serial Number: BYWLM

Ingredients/Identity Information

Proprietary: NO
Ingredient: METHANE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: PA1490000
CAS Number: 74-82-8
OSHA PEL: N/K (FP N)
ACGIH TLV: ASPHYXIANT

Proprietary: NO
Ingredient: SUPDAT:RESUSCITATION AND SUPPLEMENTAL OXYGEN. FURTHER TREATMENT SHOULD BE SYMPTOMATIC AND SUPPORTIVE.
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: SPILL PROC:PHONE NUMBER LISTED HEREIN.
Ingredient Sequence Number: 03
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: WASTE DISP METH:CONTACT YOUR CLOSEST SUPPLIER LOCATION OR CALL THE EMERGENCY TELEPHONE NUMBER LISTED HEREIN.
Ingredient Sequence Number: 04
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: OTHER PREC:DISCHARGE LINE TO PNT HAZ BACK FLOW INTO CYL. FOR ADDNL HNDLG RECS, CONSULT "COMPRESSED GAS ASSOC'S" (ING 6)
Ingredient Sequence Number: 05
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
Proprietary: NO
Ingredient: ING 5: PAMPHLETS P-1, P-14, & SFTY-BULLETIN SB-2. PROT CYLS FROM PHYSICAL DMG. STORE IN COOL, DRY, WELL-VENT (ING 7).
Ingredient Sequence Number: 06
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 6: AREA OF NONCOMBUST CONSTRUCTION AWAY FROM HEAVILY TRAFFICKED AREAS & EMER EXITS. DO NOT ALLOW TEMP WHERE (ING 8)
Ingredient Sequence Number: 07
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 7: CYLS ARE STORED TO EXCEED 130F (54C). CYLS SHOULD BE STORED UPRIGHT & FIRMLY SECURED TO PVNT FALLING OR (ING 9)
Ingredient Sequence Number: 08
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 8: BEING KNOCKED OVER. FULL & EMPTY CYLS SHOULD BE SEGREGATED. USE "FIRST IN-FIRST OUT" INVENTORY SYS TO PVNT (ING 10)
Ingredient Sequence Number: 09
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 9: FULL CYLS BEING STORED FOR EXCESSIVE PERIODS OF TIME. POST "NO SMKING/OPEN FLAMES" SIGNS IN STOR/USE AREA. (ING 11)
Ingredient Sequence Number: 10
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 10: THERE SHOULD BE NO SOURCES OF ING'T IN STOR/USE AREA. FOR ADDNL STOR RECS, CONSULT "COMPRESSED GAS (ING 12)
Ingredient Sequence Number: 11
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 11: ASSOC'S PAMPHLETS P-1, P-14, & SFTY BULLETIN SB-2. METHANE IS NON CORROSIVE & MAY BE USED W/ANY COMMON (ING 13)
Ingredient Sequence Number: 12
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 12: STRUCTURAL MATL. EARTH-GROUND & BOND ALL LINES & EQUIP ASSOC W/METHANE SYS. ELEC EQUIP SHOULD BE NON- (ING 14)
Ingredient Sequence Number: 13
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 13: SPKING/EXPLO PROOF. COMPRESSED GAS CYLS SHOULD NOT BE REFILLED EXCEPT BY QUALIFIED PROCESSES OF COMPRESSED (ING 15)
Ingredient Sequence Number: 14
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 14: GASES. SHIPMENT OF COMPRESSED GAS CYL WHICH HAS NOT BEEN FILLED BY OWNER/W/HIS (WRITTEN) (ING 16)
Ingredient Sequence Number: 15
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 15: CONSENT IS VIOLATION OF FED LAW (49 CFR). ALWAYS SECURE CYLS IN UPRIGHT POSITION BEFORE TRANSPORTING (ING 17)
Ingredient Sequence Number: 16
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 16: THEM NEVER TRANSPORT CYLS IN TRUNKS OF VEHICLES, ENCLSD VAN, TRUCK CABS/IN PASSENGER COMPARTMENTS. (ING 18)
Ingredient Sequence Number: 17
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 17: TRANSPORT CYLS SECURED IN OPEN FLATBED OR IN OPEN PICK-UP TYPE VEHICLES.
Ingredient Sequence Number: 18
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS, ODORLESS GAS.
Boiling Point: -259F, -161C
Melting Point: -297F, -183C
Vapor Pressure (MM Hg/70 F): SUPP DATA
Specific Gravity: SUPP DATA
Evaporation Rate And Ref: NOT APPLICABLE
Solubility In Water: NEGLIGIBLE

Fire and Explosion Hazard Data

Flash Point: -306F, -188C
Flash Point Method: CC
Lower Explosive Limit: 5%
Upper Explosive Limit: 15%
Extinguishing Media: WATER, CARBON DIOXIDE, DRY CHEMICAL.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N). IF POSSIBLE, STOP THE FLOW OF METHANE. USE WATER SPRAY TO COOL SURROUNDING CONTAINERS.
Unusual Fire And Expl Hazards: SHOULD FLAME BE EXTING & FLOW OF GAS CONTINUE, INCREASE VENTN TO PVNT FLAM/EXPLO MIX FORM. FORMS EXPLO/FLAM MIX W/MOST OXIDIZERS (OXYG, CHLORINE, (SUPP DATA)

Reactivity Data
Stability: YES
Cond To Avoid (Stability): NOT APPLICABLE.
Materials To Avoid: OXIDIZERS.

Health Hazard Data

Precautions for Safe Handling and Use

Control Measures

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 31AUG95
Label Status: B
Common Name: METHANE
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: EXTREMELY FLAMMABLE. ACUTE: INHALATION: HIGH CONCENTRATIONS OF METHANE SO AS TO EXCLUDE AN ADEQUATE SUPPLY OF OXYGEN TO LUNGS CAUSES DIZZINESS, DEEPER BREATHING DUE TO AIR HUNGER, POSSIBLE NAUSEA AND EVENTUAL UNCONSCIOUSNESS. METHANE IS INACTIVE BIOLOGICALLY AND ESSENTIALLY NONTOXIC; THEREFORE, MAJOR PROPERTY IS EXCLUSION OF ADEQUATE SUPPLY OF OXYGEN TO LUNGS. METHANE IS DEFINED AS SIMPLE ASPHYXIANT. OXYGEN LEVELS SHOULD BE MAINTAINED AT GREATER THAN 18 MOLAR PERCENT. CHRONIC: NONE LISTED BY MANUFACTURER.
Protect Eye: X
Protect Skin: X
Protect Respiratory: X
Label Name: AIRGAS
Label Street: 100 MALSONFORD RD
Label City: RADNOR
Label State: PA
Label Zip Code: 19087
Label Country: US
Label Emergency Number: 215-687-1052

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please send updates to dan@siri.org.
General Information

Item Name: SULFURIC ACID, ACS
Company’s Name: J T BAKER INC
Company’s Street: 222 RED SCHOOL LANE
Company’s City: PHILLIPSBURG
Company’s State: NJ
Company’s Country: US
Company’s Zip Code: 08865-2219
Company’s Emerg Ph #: 201-859-2151; 800-424-9300 (CHEMTREC)
Company’s Info Ph #: 201-582-2537
Record No. For Safety Entry: 004
Total Safety Entries This Stock#: 005
Status: SMJ
Date MSDS Prepared: 01MAY89
Safety Data Review Date: 06MAY92
MSDS Serial Number: BNPLN
Hazard Characteristic Code: C1
Unit Of Issue Container Qty: 1.000 POUND
Type Of Container: BOTTLE
Net Unit Weight: 1.000 LB

Ingredients/Identity Information

Proprietary: NO
Ingredient: SULFURIC ACID
Ingredient Sequence Number: 01
Percent: 90-98
NIOSH (RTECS) Number: WS5600000
CAS Number: 7664-93-9
OSHA PEL: 1 MG/M3
ACGIH TLV: 1 MG/M3; 3 MG/M3 STEL

Proprietary: NO
Ingredient: WATER
Ingredient Sequence Number: 02
Percent: 2-10
NIOSH (RTECS) Number: ZC0110000
CAS Number: 7732-18-5
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Physical/Chemical Characteristics

Appearance And Odor: CLEAR, COLORLESS TO YELLOW VISCOUS LIQUID. ODORLESS.
Boiling Point: 620F, 327C
Melting Point: 28.4F, -2.0C
Vapor Pressure (MM Hg/70 F): < 0.3 @ 20C
Vapor Density (Air=1): 3.4
Specific Gravity: 1.84
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: < 1 (BUTYL ACETATE = 1)
Solubility In Water: COMPLETE
Viscosity: UNKNOWN
Corrosion Rate (IFY): UNKNOWN

Fire and Explosion Hazard Data
Flash Point: NOT APPLICABLE
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: USE DRY CHEMICAL OR CARBON DIOXIDE. DO NOT USE WATER.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT. DO NOT GET WATER INSIDE CONTAINERS.
Unusual Fire And Expl Hazards: REACTS W/MOST METALS TO PRODCE HYDROGEN GAS, WHICH CAN FORM AN EXPLO MIX W/AIR. A VIOLENT EXOTHERMIC RXN OCCURS W/H2O. SUFFICIENT HEAT MAY BE PROD (SUPP DATA)

Reactivity Data
Stability: YES
Cond To Avoid (Stability): MOISTURE, HEAT.
Materials To Avoid: WATER, MOST METALS, ORGANIC MATERIALS, STRONG REDUCING AGENTS, COMBUSTIBLE MATLS, STRONG BASES, CARBONATES, (SUPP DATA)
Hazardous Decomp Products: OXIDES OF SULFUR, HYDROGEN.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data
LD50-LC50 Mixture: LD50:(ORAL,RAT)2140 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE: INHALATION: SEVERE IRRITATION OR SEVERE BURNS. SKIN ABSORPTION: NONE IDENTIFIED. INGESTION: NAUSEA, VOMITING, SEVERE BURNS TO MOUTH, THROAT, AND STOMACH, KIDNEY DISFUNCTION. CHRONIC: LUNG DAMAGE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Med Cond Aggravated By Exp: RESPIRATORY SYSTEM DISEASE.
Emergency/First Aid Proc: INGESTION: CALL A DOCTOR. DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LARGE AMOUNTS OF WATER. INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. SKIN: IMMEDIATELY FLUSH WITH WATER FOR AT LEAST 15 IMMEDIATELY FLUSH WITH WATER FOR AT LEAST 15 MINUTES.

Precautions for Safe Handling and Use
Steps If Matl Released/Spill: WEAR NIOSH/MSHA APPVRD SCBA & FULL PROT CLTHG. STOP LEAK IF YOU CAN DO SO W/OUT RISK. DO NOT USE WATER. NEUTRALIZE SPILL &/OR WASHING WITH SODA ASH OR LIME. W/CLEAN SHOVEL, PLACE MATL INTO CLEAN, DRY CONTR & COVER. MOVE CONTR(S) FROM SPILL AREA.
Neutralizing Agent: J.T. BAKER NEUTRASORB (R) OR TEAM 'LOW NA+' ACID NEUTRALIZERS. SODA ASH/LIME.
Waste Disposal Method: DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, D002, D003 (CORROSIVE, REACTIVE WASTE).
Precautions-Handling/Storing: KEEP CONTAINERS TIGHTLY CLOSED. LOOSEN CLOSURE CAUTIOUSLY. STORE IN CORROSION-PROOF AREA. KEEP CONTAINERS OUT OF SUN AND AWAY FROM HEAT.
Other Precautions: ISOLATE FROM INCOMPATIBLE MATERIALS. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. DO NOT BREATHE VAPORS.

Control Measures
Respiratory Protection: NONE REQUIRED WHERE ADEQUATE VENTILATION CONDITIONS EXIST. IF AIRBORNE CONCENTRATION EXCEEDS TLV, NIOSH/MSHA APPROVED SCBA IS ADVISED.
Ventilation: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV REQUIREMENTS. VENT HOOD.
Protective Gloves: RUBBER GLOVES.
Eye Protection: CHEMICAL WORK GOGGLES, FULL FACESHIELD
Other Protective Equipment: UNIFORM, PROTECTIVE SUIT, LAB COAT, APRON.
DELU GE SHOWER AND EMERGENCY EYE WASH
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
TO IGNITE COMBUSTIBLE MATERIALS. MATERIALS TO AVOID: SULFIDES, CYANIDES,
STRONG OXIDIZING AGENTS, CARBIDES.

Transportation Data

Trans Data Review Date: 92241
DOT PSN Code: NUC
DOT Proper Shipping Name: SULFURIC ACID
DOT Class: 8
DOT ID Number: UN1830
DOT Pack Group: II
DOT Label: CORROSIVE
IMO PSN Code: OFJ
IMO Proper Shipping Name: SULPHURIC ACID
IMO Regulations Page Number: 8230
IMO UN Number: 1830
IMO UN Class: 8
IMO Subsidiary Risk Label: -
IATA PSN Code: XIX
IATA UN ID Number: 1830
IATA Proper Shipping Name: SULPHURIC ACID
IATA UN Class: 8
IATA Label: CORROSIVE
AFI PSN Code: XIX
AFI Prop. Shipping Name: SULPHURIC ACID
AFI Class: 8
AFI ID Number: UN1830
AFI Pack Group: II
AFI Label: CORROSIVE
AFI Special Prov: 2, A3, A7, N34
AFI Basic Pac Ref: 12-5

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 06MAY92
Label Date: 05MAY92
Label Status: G
Common Name: 9680, SULFURIC ACID
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Slight: X
Contact Hazard-Severe: X
Fire Hazard-None: X
Reactivity Hazard-Slight: X
Special Hazard Precautions: CORROSIVE! POISON! REACTS WITH METALS TO
PRODUCE FLAMMABLE H2 GAS. REACTS VIOLENTLY WITH WATER. CONTACT WITH OTHER
MATERIALS MAY CAUSE FIRE. ACUTE: EYE/SKIN CONTACT CAUSES SEVERE BURNS.
INHALATION CAUSES SEVERE BURNS OR IRRITATION OF THE RESPIRATORY SYSTEM,
PULMONARY EDEMA, LUNG INFLAMMATION. INGESTION CAUSES NAUSEA, VOMITING,
SEVERE BURNS TO MOUTH, THROAT, & STOMACH. CHRONIC: MAY CAUSE LUNG DAMAGE.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: J T BAKER INC
Label Street: 222 RED SCHOOL LANE
Label City: PHILLIPSBURG
Label State: NJ
Label Zip Code: 08865-2219
Label Country: US
Label Emergency Number: 201-859-2151; 800-424-9300 (CHEMTREC)

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please send updates to dan@siri.org.
Material Safety Data Sheet

General Information

Item Name: SODIUM HYDROXIDE, ACS
Company's Name: J.T. BAKER INC.
Company's Street: 222 RED SCHOOL LANE
Company's City: PHILLIPSBURG
Company's State: NJ
Company's Country: US
Company's Zip Code: 08865-2219
Company's Emerg Ph #: 201-859-2151
Company's Info Ph #: 201-859-2151
Record No. For Safety Entry: 010
Tot Safety Entries This Stk#: 010
Status: SE
Date MSDS Prepared: 01MAY89
Safety Data Review Date: 02MAY91
Supply Item Manager: CX
MSDS Serial Number: BDFQQ
Specification Number: O-C-265
Hazard Characteristic Code: C2
Unit Of Issue: LB
Unit Of Issue Container Qty: 1.0LB
Type Of Container: BOTTLE
Net Unit Weight: 500.0 GM

Ingredients/Identity Information

Proprietary: NO
Ingredient: SODIUM HYDROXIDE (SARA III)
Ingredient Sequence Number: 01
Percent: 98-100%
NIOSH (RTECS) Number: WB4900000
CAS Number: 1310-73-2
OSHA PEL: 2 MG/M3
ACGIH TLV: C 2 MG/M3; 9293
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: WHITE PELLETS OR FLAKES, ODORLESS.
Boiling Point: 253°F, 1390°C
Melting Point: 60°F, 318°C
Vapor Pressure (MM Hg/70 F): < 1
Specific Gravity: 2.130
Decomposition Temperature: UNKNOWN
Solubility In Water: APPRECIABLE
Percent Volatiles By Volume: 0
Corrosion Rate (IPY): UNKNOWN

Fire and Explosion Hazard Data

Extinguishing Media: USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.
Special Fire Fighting Proc: WEAR FIRE FIGHTING PROTECTIVE EQUIPMENT AND A FULL FACED SELF CONTAINED BREATHING APPARATUS. FLOOD WITH WATER, DO NOT SPLATTER OR SPLASH THIS MATERIAL.
Unusual Fire And Expl Hazards: CONTACT WITH MOISTURE OR WATER MAY GENERATE SUFFICIENT HEAT TO IGNITE COMBUSTIBLE MATERIALS. REACTS WITH MOST METALS TO
PRODUCE HYDROGEN GAS.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): MOISTURE
Materials To Avoid: WATER, STRONG ACIDS, MOST COMMON METALS, COMBUSTIBLE MATERIALS, ORGANIC MATERIALS, ZINC, ALUMINUM, PEROXIDES.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE

Health Hazard Data

LD50-LC50 Mixture: LD50 (ORAL RAT) IS UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: CORROSIVE TO ALL BODY TISSUES W/ WHICH IT COMES IN CONTACT. CHRONIC: SUPERFICIAL DESTRUCTION OF THE SKIN AND OF PRIMARY IRRITANT DERMATITIS. INHALATION OF DUST, SPRAY OR MIST MAY RESULT IN VARYING DEGREES OF IRRITATION OR DAMAGE TO THE RESPIRATORY TRACT TISSUES AND AN INCREASED POSSIBILITY OF RESPIRATORY ILLNESS.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE OF THE CHEMICALS IN THIS PRODUCT IS LISTED BY IARC, NTP OR OSHA AS A CARCINOGEN.


Med Cond Aggravated By Exp: PERSONS WITH A HISTORY OF SKIN AND RESPIRATORY DISORDERS MAY BE AT INCREASED RISK FROM EXPOSURE.

Emergency/First Aid Proc: SKIN: WASH W. SOAP & H*2O. EYES: FLUSH W. H*2O. INGESTED: DON'T INDUCE VOMITING. INHALED: REMOVE TO FRESH AIR. GIVE CPR/ OXYGEN IF NEED. KEEP WARM & QUIET. REMOVE CONTAMINATED CLOTHING. NEVER GIVE ANYTHING BY MOUTH TO UNCONSCIOUS PERSON.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WEAR SCBA AND FULL PROTECTIVE CLOTHING. WITH CLEAN SHOVEL, CAREFULLY PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND COVER; REMOVE FROM AREA. FLUSH SPILL AREA WITH WATER.
Neutralizing Agent: NONE APPLICABLE FOR THIS MATERIAL
Waste Disposal Method: DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
Precautions-Handling/Storing: STORE IN COOL, DRY, WELL VENTILATED AREA AWAY FROM MOISTURE, SOLVENTS, ACIDS, AND ORGANIC MATTER. KEEP CONTAINERS CLOSED.
Other Precautions: THIS MATERIAL GENERATES CONSIDERABLE HEAT WHEN DISSOLVED IN WATER: WHEN MIXING WITH WATER ALWAYS ADD CAUSTIC SODA SLOWLY TO WATER AND STIR CONTINUOUSLY. NEVER ADD WATER TO CAUSTIC SODA.

Control Measures

Respiratory Protection: RESPIRATION PROTECTION IS NOT REQUIRED UNDER NORMAL USE. USE NIOSH/MSHA APPROVED RESPIRATORS WHERE DUST, MIST OR SPRAY MAY BE GENERATED.
Ventilation: USE ADEQUATE LOCAL EXHAUST VENTILATION WHERE DUST, MIST, OR SPRAY MAY BE GENERATED.
Protective Gloves: NATURAL OR BUTYL RUBBER
Eye Protection: CHEMICAL SAFETY GOGGLES/FACE SHIELD
Other Protective Equipment: SAFETY SHOWER AND EYE BATH. OTHER EQUIPMENT AS
REQUIRED TO MINIMIZE EXPOSURE FROM PROLONGED OR REPEATED CONTACT.
Work Hygienic Practices: WASH THROUGHLY AFTER HANDLING AND BEFORE EATING.
LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

Transportation Data

Trans Data Review Date: 91122
DOT PSN Code: NGU
DOT Proper Shipping Name: SODIUM HYDROXIDE, SOLID
DOT Class: 8
DOT ID Number: UN1823
DOT Pack Group: II
DOT Label: CORROSIVE
IMO PSN Code: NSX
IMO Proper Shipping Name: SODIUM HYDROXIDE, SOLID
IMO Regulations Page Number: 8225-1
IMO UN Number: 1823
IMO UN Class: 8
IMO Subsidiary Risk Label: -
IATA PSN Code: WSO
IATA UN ID Number: 1823
IATA Proper Shipping Name: SODIUM HYDROXIDE, SOLID
IATA UN Class: 8
IATA Label: CORROSIVE
AFI PSN Code: WSO
AFI Prop. Shipping Name: SODIUM HYDROXIDE, SOLID
AFI Class: 8
AFI ID Number: UN1823
AFI Pack Group: II
AFI Label: CORROSIVE
AFI Basic Pac Ref: 12-7

Disposal Data

Disposal Data Review Date: 88036
Rec # For This Disp Entry: 04
Tot Disp Entries Per NSN: 004
Landfill Ban Item: YES
Disposal Supplemental Data: MSDS EFFECTIVE: 10/8/85, ISSUED ON 12/17/85;
SPEC REFERENCE: O-C-265B REGULATED PER DLA/DoD REQUIREMENTS; CHECK 40 CFR
261 FOR EPA REGULATORY POLICY.
1st EPA Haz Wst Code New: D002
1st EPA Haz Wst Name New: CORROSIVE
1st EPA Haz Wst Char New: CORROSIVITY
1st EPA Acute Hazard New: NO

Label Data

Label Required: YES
Technical Review Date: 02MAY91
Label Status: F
Common Name: SODIUM HYDROXIDE
Signal Word: DANGER!
Acute Health Hazard-Moderate: X
Contact Hazard-Severe: X
Fire Hazard-None: X
Reactivity Hazard-Slight: X
Special Hazard Precautions: CONTACT CAUSES BURNS TO SKIN AND EYES. IF
INHALED, MAY BE HARMFUL. FIRE MAY PRODUCE IRRITATING OR POISONOUS GASES.
SUPERFICIAL DESTRUCTION OF THE SKIN AND OF PRIMARY IRRITANT DERMATITIS.
INALATION OF DUST, SPRAY OR MIST MAY RESULT IN VARYING DEGREES OF
IRRITATION OR DAMAGE TO THE RESPIRATORY TRACT TISSUES AND AN INCREASED
POSSIBILITY OF RESPIRATORY ILLNESS. STORE IN COOL, DRY, WELL VENTILATED
AREA AWAY FROM MOISTURE, SOLVENTS, ACIDS, AND ORGANIC MATTER. KEEP
CONTAINERS CLOSED.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: J.T. BAKER INC.
Label Street: 222 RED SCHOOL LANE
Label City: PHILLIPSBURG
Label State: NJ
Label Zip Code: 08865-2219
Label Country: US
Label Emergency Number: 201-859-2151

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
# J T BAKER — 5367, HYDROCHLORIC ACID - HYDROCHLORIC ACID

---

## General Information

- **Material Safety Data Sheet**
- **NSN:** 681000N030077
- **Manufacturer's CAGE:** 70829
- **Part No. Indicator:** A
- **Part Number/Trade Name:** 5367, HYDROCHLORIC ACID

---

### Ingredients/Identity Information

- **Proprietary:** NO
- **Ingredient:** HYDROCHLORIC ACID
  - **Ingredient Sequence Number:** 01
  - **Percent:** 33-40
  - **NIOSH (RTECS) Number:** MW4025000
  - **CAS Number:** 7647-01-0
  - **OSHA PEL:** 5 PPM, C
  - **ACGIH TLV:** 5 PPM, C

- **Proprietary:** NO
- **Ingredient:** WATER
  - **Ingredient Sequence Number:** 02
  - **Percent:** 60-67
  - **NIOSH (RTECS) Number:** ZC0110000
  - **CAS Number:** 7732-18-5
  - **OSHA PEL:** NOT APPLICABLE
  - **ACGIH TLV:** NOT APPLICABLE

---

### Physical/Chemical Characteristics

- **Appearance And Odor:** CLEAR, COLORLESS FUMING LIQUID; PUNGENT ODOR.
- **Boiling Point:** 230°F, 110°C
- **Melting Point:** -13°F, -25°C
- **Vapor Pressure (MM Hg/70 F):** N/A
- **Vapor Density (Air=1):** 1.3
- **Specific Gravity:** 1.19 (H2O=1)
- **Evaporation Rate And Ref:** NOT APPLICABLE
- **Solubility In Water:** COMPLETE (100%)
- **Percent Volatiles By Volume:** SUPDAT
- **pH:** SUPDAT

---

### Fire and Explosion Hazard Data

- **Flash Point:** NOT APPLICABLE
- **Flash Point Method:** CC
- **Lower Explosive Limit:** N/A
- **Upper Explosive Limit:** N/A
Extinguishing Media: USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

Special Fire Fighting Proc: WEAR NIOSH/MSHA APRV'D SCBA & FULL PROT EQUIP (EP N). MOVE CNTNR'S FROM FIRE AREA IF IT CAN BE DONE W/OUT RISK. USE H2O TO KEEP FIRE-EXPOS CNTNR'S COOL. (SUPDAT)

Unusual Fire And Expl Hazards: MAY EMIT HYDROGEN GAS UPON CONTACT WITH METAL. TOXIC GASES PRODUCED: HYDROGEN CHLORIDE, HYDROGEN.

--------

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HEAT, MOISTURE.

Materials To Avoid: MOST COMMON METALS, WATER, AMINES, METAL OXIDES, ACETIC ANHYDRIDE, PROPIONLACTONE, VINYL ACETATE, MERCURIC (SUPP DATA)

Hazardous Decomp Products: HYDROGEN CHLORIDE, HYDROGEN, CHLORINE.

Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

--------

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: ACUTE: INHAL: PULMONARY EDEMA, CIRCULATORY FAILURE, RESPIRATORY SYSTEM DAMAGE, COLLAPSE, COUGHING, DIFFICULTY BREATHEING & MAY BE FATAL, SEVERE BURNS TO MOUTH, THROAT & STOMACH, NAUSEA, VOMITING. TARGET ORGANS: RESPIRATORY SYSTEM, (EFTS OF OVEREXP)

Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT RELEVANT

Signs/Symptoms Of Overexp: HLTH HAZ: EYES, SKIN. CHRONIC: NONE IDENTIFIED.

Med Cond Aggravated By Exp: NONE IDENTIFIED.

Emergency/First Aid Proc: INGEST: CALL MD. DO NOT INDUCE VOMIT. IF CONSCIOUS, GIVE WATER, MILK OR MILK OF MAGNESIA. INHAL: REMOVE TO FRESH AIR. IF NOT BRTHG, GIVE ARTF RESP. IF BRTHG IS DFCLT, GIVE O2. SKIN: IMMEDIATELY FLUSH W/PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING & SHOES. WASH CLOTHES BEFORE RE-USE. EYE: IMMEDIATELY FLUSH W/PLENTY OF WATER FOR AT LEAST 15 MINUTES.

--------

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WEAR NIOSH/MSHA APRV'D SCBA & FULL PROT EQUIP. STOP LEAK IF YOU CAN DO SO W/OUT RISK. VENT AREA. NEUT SPILL W/SODA ASH/LIME. WITH CLEAN SHOVEL, CAREFULLY PLACE MATL INTO CLEAN, DRY CNTNR & COVER; REMOVE FROM AREA. FLUSH SPILL AREA W/WATER. (SUPDAT)

Neutralizing Agent: SEE SPILL PROCEDURES.


Precautions-Handling/Storing: KEEP CNTNR TIGHTLY CLSD. LOOSEN TIGHTLY CLSD. LOOSEN TIGHTLY CLSD. STORE IN CORROSION-PROOF AREA. ISOLATE FROM INCOMPAT MATLS. DO NOT STORE NEAR OXIDIZING MATLS.

Other Precautions: CORROSIVE. POISON DANGER. DO NOT GET IN EYES, ON SKIN, ON CLOTHING. DO NOT BREATHE VAPOR. USE W/ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN.

--------

Control Measures

Respiratory Protection: RESPIRATORY PROTECTION REQD IF AIRBORNE CONC EXCEEDS TLV. AT CONC UPS TO 100 PPM, A NIOSH/MSHA APRV'D CHEM CARTRIDGE RESPIRATOR W/ACID CARTRIDGE IS RECOM. ABOVE THIS LEVEL, A NIOSH/MSHA APRV'D SCBA IS ADVISED.

Ventilation: USE GENERAL/LOCAL EXHAUST VENTILATION TO MEET TLV REQUIREMENTS. VENT HOOD.
Protective Gloves: NEOPRENE GLOVES.
Eye Protection: CHEM WORK GOOG & FULL LGTH FCSHLD(FP N).
Other Protective Equipment: UNIFORM, PROTECTIVE SUIT, LAB COAT & APRON.
EMERGENCY EYE WASH & DELUGE SHOWER (FP N).
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: PH:1 (0.1M SOLN). % VOLAT:100 @ 21C. FIRE FIGHT PROC: DO NOT GET H2O INSIDE CNTNRS. MAILS TO AVOID: SULFATE, CALCIUM PHOSPHATE, FORMALDEHYDE, ALKALIES, CARBONATES, STRONG BASES, SULFURIC ACID, CHLOROSULFONIC ACID. SPILL PROC: J.T.BAKER NEUTRASORB(R) OR TEAM 'LOW NA+ ACID NEUTRALIZERS ARE RECOM FOR SPILLS OF THIS PROD.

Transportation Data

- Trans Data Review Date: 92309
- DOT PSN Code: HJG
- DOT Proper Shipping Name: HYDROCHLORIC ACID, SOLUTION
- DOT Class: 8
- DOT ID Number: UN1789
- DOT Pack Group: II
- DOT Label: CORROSIVE
- IMO PSN Code: IEX
- IMO Proper Shipping Name: HYDROCHLORIC ACID
- IMO Regulations Page Number: 8183
- IMO UN Number: 1789
- IMO UN Class: 8
- IMO Subsidiary Risk Label: -
- IATA PSN Code: NPG
- IATA Propr.Shipping Name: HYDROCHLORIC ACID *
- IATA UN ID Number: 1789
- IATA Proper Shipping Name: HYDROCHLORIC ACID *
- IATA UN Class: 8
- IATA Label: CORROSIVE
- AFI PSN Code: NFG
- AFI Prop. Shipping Name: HYDROCHLORIC ACID, SOLUTION
- AFI Class: 8
- AFI ID Number: UN1789
- AFI Pack Group: II
- AFI Label: CORROSIVE
- AFI Special Prov: A3,A6,N41
- AFI Basic Pac Ref: 12-5

Disposal Data

- Label Required: YES
- Technical Review Date: 17APR92
- Label Date: 15APR92
- Label Status: G
- Common Name: 5367, HYDROCHLORIC ACID
- Chronic Hazard: NO
- Signal Word: DANGER!
- Acute Health Hazard-Severe: X
- Contact Hazard-Severe: X
- Fire Hazard-None: X
- Reactivity Hazard-Slight: X
- Special Hazard Precautions: INCOMPATIBLE W/MOST COMMON METALS, WATER, AMINES, METAL OXIDES, FORMALDEHYDE, SOME ACIDS, STRONG BASES AND OTHER CORROSIVE! POISON! MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES PULMONARY EDEMA, CIRCULATORY FAILURE, RESPIRATORY SYSTEM DAMAGE, COLLAPSE, COUGH, DIFFICULT BREATHING, NAUSEA, VOMIT. CONTACT CAUSES SEVERE BURNS TO MOUTH, THROAT, STOMACH, SKIN, EYES.
- Protect Eye: Y
- Protect Skin: Y
Protect Respiratory: Y
Label Name: J T BAKER INC
Label Street: 222 RED SCHOOL LANE
Label City: PHILLIPSBURG
Label State: NJ
Label Zip Code: 08865-2219
Label Country: US
Label Emergency Number: 908-859-2151; 800-424-9300 (CHEMTREC)

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please send updates to dan@siri.org.
J T BAKER -- WATER, 4218-3 -- WATER HPLC GRADE

MATERIAL SAFETY-DATA SHEET

MATERIAL SAFETY-DATA SHEET

Manufacturer's CAGE: 70829
Part No. Indicator: A
Part Number/Trade Name: WATER, 4218-3

Item Name: WATER HPLC GRADE
Company's Name: J.T. BAKER COMPANY
Company's Street: 222 RED SCHOOL LANE
Company's City: PHILLIPSBURG
Company's State: NJ
Company's Country: US
Company's Zip Code: 08865
Company's Emerg Ph #: 908-859-2151/800-424-9300 (CHEMTREC)
Company's Info Ph #: 908-859-2151
Record No. For Safety Entry: 001
Total Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 05MAY94
Safety Data Review Date: 27SEP95
Supply Item Manager: KX
MSDS Preparer's Name: UNKNOWN
MSDS Serial Number: BXTJH
Specification Number: NONE
Spec Type, Grade, Class: NONE
Hazard Characteristic Code: N1
Unit Of Issue: BT
Unit Of Issue Container Qty: 4 L
Type Of Container: BOTTLE
Net Unit Weight: 8.8 LBS
NRC/State License Number: NOT RELEVANT

Ingredients/Identity Information

Proprietary: NO
Ingredient: WATER
Ingredient Sequence Number: 01
Percent: 99 - 100
NIOSH (RTECS) Number: ZC0110000
CAS Number: 7732-18-5
OSHA PEL: NOT RELEVANT
ACGIH TLV: NOT RELEVANT
Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: CLEAR, COLORLESS LIQUID - ODORLESS
Boiling Point: 212F, 100C
Melting Point: 32.0F, 0.0C
Vapor Pressure (MM Hg/70 F): 17.5 @ 68F
Vapor Density (Air=1): <1
Specific Gravity: 1.00
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: <1 (N-BUTYL ACETATE=1)
Solubility In Water: NOT RELEVANT
Percent Volatiles By Volume: 100
Viscosity: NOT RELEVANT
pH: 7.0

Fire and Explosion Hazard Data

Flash Point: NONE
Extinguishing Media: WATER SPRAY, CARBON DIOXIDE, FOAM OR DRY CHEMICAL FOR SURROUNDING FIRE. USE WATER SPRAY TO COOL FIRE EXPOSED CONTAINERS.

Special Fire Fighting Proc: AS WITH ANY FIRE, WEAR PROTECTIVE CLOTHING AND NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS, IF NEEDED.

Unusual Fire And Expl Hazards: NONE

Reactivity Data

Stability: YES
Cond To Avoid (Stability): EXCESSIVE HEAT
Materials To Avoid: STRONG REDUCING AGENTS, ACID CHLORIDES, PHOSPHORUS TRICHLORIDE/PENTACHLORIDE/OXYCHLORIDE, WATER REACTIVE MATERIALS (NA)
Hazardous Decomp Products: NONE
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: LD50 (ORAL, RAT) IS NOT KNOWN.
Route Of Entry - Inhalation: NO
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: TARGET ORGANS:NONE. ACUTE AND CHRONIC- EYES/SKIN/INHALATION/INGESTION: NONE IDENTIFIED.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: NONE
Med Cond Aggravated By Exp: OPEN WOUNDS
Emergency/First Aid Proc: NONE REQUIRED.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: REMOVE WITH A SPONGE.
Neutralizing Agent: NOT RELEVANT
Waste Disposal Method: NONE REQUIRED.
Precautions-Handling/Storing: KEEP CONTAINER TIGHTLY CLOSED. KEEP AWAY FROM INCOMPATIBLE MATERIALS. STORAGE COLOR CODE IS ORANGE.
Other Precautions: NONE

Control Measures

Respiratory Protection: NONE REQUIRED.
Ventilation: NONE REQUIRED.
Protective Gloves: LATEX TO PROTECT OPEN WOUND
Eye Protection: NONE REQUIRED.
Other Protective Equipment: NONE
Work Hygienic Practices: OBSERVE GOOD INDUSTRIAL HYGIENE PRACTICES AND RECOMMENDED PROCEDURES.

Transportation Data

Trans Data Review Date: 95270
DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
API PSN Code: ZZZ
API Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

Disposal Data
Label Data

Label Required: NO
Technical Review Date: 27SEP95
Label Status: N

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
HACH -- ALCONOX DETERGENT, 20880-00 -- DETERGENT, HOSPITAL GLASSWARE AND INSTRUMENT

MATERIAL SAFETY DATA SHEET

NSN: 7930013416365
Manufacturer's CAGE: 4T252
Part No. Indicator: A
Part Number/Trade Name: ALCONOX DETERGENT, 20880-00

General Information

Item Name: DETERGENT, HOSPITAL GLASSWARE AND INSTRUMENT
Company's Name: HACH CO.
Company's Street: 100 DAYTON RD.
Company's P. O. Box: 907
Company's City: AMES
Company's State: IA
Company's Country: US
Company's Zip Code: 50010-6402
Company's Emerg Ph #: 800-227-4224/515-232-2533
Company's Info Ph #: 800-227-4224
Distributor/Vendor # 1: HACH CO. (800-227-4224)
Distributor/Vendor # 1 Cage: 91224
Record No. For Safety Entry: 002
Tot Safety Entries This Stck#: 002
Status: SE
Date MSDS Prepared: 16MAR90
Safety Data Review Date: 04JUN93
Supply Item Manager: KX
MSDS Serial Number: BOSYT
Hazard Characteristic Code: N1
Unit Of Issue: EA
Unit Of Issue Container Qty: 4.0 LBS
Type Of Container: NOT KNOWN
Net Unit Weight: 4.0 LBS

Ingredients/Identity Information

Proprietary: YES
Ingredient: PROPRIETARY
Ingredient Sequence Number: 01

Proprietary: YES
Ingredient: PROPRIETARY
Ingredient Sequence Number: 02

Proprietary: YES
Ingredient: PROPRIETARY
Ingredient Sequence Number: 03

Proprietary: YES
Ingredient: PROPRIETARY
Ingredient Sequence Number: 04

Physical/Chemical Characteristics

Appearance And Odor: WHITE POWDER AND OFF-WHITE FLAKES, ODORLESS
Melting Point: NOT KNOWN
Specific Gravity: NOT KNOWN
Decomposition Temperature: UNKNOWN
Solubility In Water: VERY SOLUBLE
Corrosion Rate (IPY): UNKNOWN

Fire and Explosion Hazard Data

Flash Point: NONE
Extinguishing Media: WATER, DRY CHEMICAL, ALCOHOL FOAM OR CARBON DIOXIDE
Special Fire Fighting Proc: WEAR PROTECTIVE CLOTHING AND NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS IF NEEDED.

Unusual Fire And Expl Hazards: NONE

----------------------------------------------------------------------------------
Reactivity Data

Stability: YES
Cond To Avoid (Stability): EXCESSIVE HEAT
Materials To Avoid: NONE KNOWN.
Hazardous Decomp Products: MAY EMIT CARBON DIOXIDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE

----------------------------------------------------------------------------------
Health Hazard Data

LD50-LC50 Mixture: LD50 (ORAL RAT) IS UNKNOWN.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE- THIS PRODUCT MAY BE IRRITATING TO EYES AND RESPIRATORY TRACT. CHRONIC- NOT DETERMINED.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Signs/Symptoms Of Overexp: EYES AND RESPIRATORY TRACT IRRITATION
Med Cond Aggravated By Exp: NONE REPORTED
Emergency/First Aid Proc: GET MEDICAL ATTENTION IF SYMPTOMS PERSIST.
EYE:FLUSH WITH WATER FOR 15 MINUTES. HOLD EYELIDS OPEN. SKIN:FLUSH WITH WATER. INHALED:REMOVE TO FRESH AIR. ORAL:IF CONSCIOUS, DRINK LARGE AMOUNT OF WATER OR MILK. SEEK MEDICAL ATTENTION.

----------------------------------------------------------------------------------
Precautions for Safe Handling and Use

Steps If Matl Released/Spill: WEAR PROTECTIVE EQUIPMENT. SWEEP UP SPILLAGE. AVOID CREATING DUST. DISSOLVE IN WATER. FLUSH DOWN THE DRAIN WITH EXCESS WATER IF PERMITTED.
Neutralizing Agent: NOT RELEVANT
Waste Disposal Method: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
Precautions-Handling/Storing: STORE IN AIRTIGHT CONTAINER. USE WITH ADEQUATE DUST CONTROL.
Other Precautions: DO NOT RAISE DUST. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. AVOID BREATHING CHEMICALS. WASH THOROUGHLY AFTER HANDLING MATERIAL.

----------------------------------------------------------------------------------
Control Measures

Respiratory Protection: NONE NORMALLY REQUIRED.
Ventilation: ADEQUATE
Protective Gloves: RUBBER/PLASTIC RECOMMENDED
Eye Protection: DUST-RESISTANT SAFETY GOGGLES
Other Protective Equipment: EYE WASH STATION, EMERGENCY SHOWER, APPROPRIATE LABORATORY COAT TO COVER EXPOSED SKIN
Work Hygienic Practices: DO NOT PERMIT EATING, DRINKING OR SMOKING NEAR THIS MATERIAL.

----------------------------------------------------------------------------------
Transportation Data

Trans Data Review Date: 93155
DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
Disposal Data

Label Data

Label Required: YES
Technical Review Date: 04JUN93
MFR Label Number: NOT APPLICABLE
Label Status: F
Common Name: ALCONOX DETERGENT, 20880-00
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: ACUTE- THIS PRODUCT MAY BE IRRITATING TO EYES AND RESPIRATORY TRACT. CHRONIC- NOT DETERMINED. STORE IN AIRTIGHT CONTAINER. USE WITH ADEQUATE DUST CONTROL. IN CASE OF SPILL: WEAR PROTECTIVE EQUIPMENT. SWEEP UP SILLAGE. AVOID CREATING DUST. DISSOLVE IN WATER. FLUSH DOWN THE DRAIN WITH EXCESS WATER IF PERMITTED. FIRST AID- GET MEDICAL ATTENTION IF SYMPTOMS PERSIST. EYE: FLUSH WITH WATER FOR 15 MINUTES. HOLD EYELIDS OPEN. SKIN: FLUSH WITH WATER. INHALED: REMOVE TO FRESH AIR. ORAL: IF CONSCIOUS, DRINK LARGE AMOUNT OF WATER OR MILK. SEEK MEDICAL ATTENTION.

Protect Eye: Y
Label Name: HACH CO.
Label Street: 100 DAYTON RD.
Label P.O. Box: 907
Label City: Ames
Label State: IA
Label Zip Code: 50010-6402
Label Country: US
Label Emergency Number: 800-227-4224/515-232-2533

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please send updates to dan@siri.org.
AMERICAS, INC., CARBON DIOXIDE DIVISION
MATERIAL SAFETY DATA SHEET
NSN: 6830006826841
Manufacturer's CAGE: 1DE98
Part No. Indicator: A
Part Number/Trade Name: CARBON DIOXIDE

General Information

Item Name: CARBON DIOXIDE
Company's Name: AMERICAS, INC., CARBON DIOXIDE DIVISION
Company's Street: 17304 PRESTON ROAD, SUITE 1000
Company's P. O. Box: NK
Company's City: DALLAS
Company's State: TX
Company's Zip Code: 75252-5613
Company's Emerg Ph #: 214-380-5600
Company's Info Ph #: 214-380-5600
Record No. For Safety Entry: 004
Total Safety Entries This Stock: 013
Date MSDS Prepared: 08SEP88
Safety Data Review Date: 16OCT89
Supply Item Manager: GSA
MSDS Preparer's Name: NK
Preparer's Company: AMERICAS, INC., CARBON DIOXIDE DIVISION
Preparer's St Or P. O. Box: 17304 PRESTON ROAD, SUITE 1000
Preparer's City: DALLAS
Preparer's State: TX
Preparer's Zip Code: 75252-5613
MSDS Serial Number: BHDSW
Specification Number: NK
Spec Type, Grade, Class: NK
Unit Of Issue: CY
Unit Of Issue Container Qty: 1 CY
Type Of Container: METAL
Net Unit Weight: NK
NRC/State License Number: NK
Net Explosive Weight: NK
Net Propellant Weight-Ammo: NK
Coast Guard Ammunition Code: NK

Ingredients/Identity Information

Proprietary: NO
Ingredient: CARBON DIOXIDE
Ingredient Sequence Number: 01
Percent: NK
NIOSH (RTECS) Number: FF6400000
CAS Number: 124-38-9
OSHA PEL: 5000 PPM
ACGIH TLV: 5000PPM/30000STEL; 93
Other Recommended Limit: NOT ESTABLISHED

Physical/Chemical Characteristics

Appearance And Odor: AT ROOM TEMPERATURE CARBON DIOXIDE IS A COLORLESS, ODORLESS GAS.
Boiling Point: NK
Melting Point: NK
Vapor Pressure (MM Hg/70 F): @21.1C 70F
Vapor Density (Air=1): NK
Specific Gravity: NK
Decomposition Temperature: NK
Evaporation Rate And Ref: NK
Solubility In Water: @1ATM 25C 7 g OG64
Percent Volatiles By Volume: NK
Viscosity: NK
pH: NK
Radioactivity: NK
Corrosion Rate (IPY): NK
Autoignition Temperature: NK

Fire and Explosion Hazard Data

Flash Point: NK
Lower Explosive Limit: NK
Upper Explosive Limit: NK
Extinguishing Media: NK
Special Fire Fighting Proc: CARBON DIOXIDE IS NONFLAMMABLE & AS SUCH DOES NOT CREATE A FIRE HAZARD HOWEVER, CYLINDERS THAT ARE EXPOSED TO FIRE MAY RUPTURE W/VIOLENT FORCE.
Unusual Fire And Expl Hazards: NK

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NK
Materials To Avoid: SODIUM PEROXIDE W/ALUMINUM OR MAGNESIUM.REACTIVE METALS ALKALI METALS,MAGNESIUM,ALUMINUM,TITANIUM, OR ZIRCONIUM.
Hazardous Decomp Products: NK
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): IT DOES CAUSE VIOLENT POLYMERIZATION OF ACRYLALDEHYDE OR ETHYLENEMINE.

Health Hazard Data

LD50-LC50 Mixture: NK
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: PHYSIOLOGICAL EFFECT OF CARBON DIOXIDE IS TO STIMULATE THE RESPIRATORY CENTER.IT IS ABLE TO CAUSE DILATION & CONSTRUCTION OF BLOOD VESSELS & VITAL CONSTITUENT OF THE ACID BASE MECHANISM THAT CONTROLS THE PH OF THE BLOOD.CARBON DIOXIDE ACTS AS A STIMULANT & A DEPRESSANT ON THE CENTRAL NERVOUS SYSTEM. INCREASES HEART RATE.
Explanation Carcinogenicity: NK
Signs/Symptoms Of Overexp: SKIN OR MOUTH CONTACT W/SOLID CO2 OR W/GAS OR LIQ CO2 DISCHARGED FROM A CONTAINER MAY RESULT IN FROSTBITE, CAUSING SKIN LESIONS OR MORE SERIOUS INJURY FROM DEEP FREEZING OF THE TISSUES.EYE CONTACT W/SOLID CO2 CONSIDERED AS A CORNEAL BURN.FROSTBITE OF THE EYE STRUCTURE MAY ALSO OCCUR.
Med Cond Aggravated By Exp: NK
Emergency/First Aid Proc: MOVE VICTIM TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH.CALL A PHYSICIAN. TREAT FOR FROSTBITE.FROSTBITE SYMPTOMS ARE: FLUSHED SKIN THAT TURNS WHITE OR GRAYISH YELLOW.BLISTERS MAY APPEAR.DO NOT RUB THE AREA.QUICKLY WARM BY IMMERSING IN TEPID WATER (102F-105F). CONSULT PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: VENTILATE THE AREA.CARBON DIOXIDE CAN ACT AS A SIMPLE ASPHYXIANT BY DISPLACING AIR.PERSONNEL ENTERING THE AREA SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS.
Neutralizing Agent: NK
Waste Disposal Method: NK
Precautions-Handling/Storing: CYLS SHOULD BE STORED & USED IN DRY, WELL VENTILATED AREAS AWAY FROM SOURCES OF HEAT.
Other Precautions: THE CONTAINER SPECIFICATIONS OF REGULATORY AUTHORITIES REQUIRE, AMONG OTHER THINGS, THAT THE MATERIALS USED FOR LIQ CO2 CONTAINERS
Control Measures

Respiratory Protection: APPROVED RESPIRATORY EQUIPMENT MUST BE WORN W/ AIRBORNE CONCENTRATIONS EXCEED SAFE LIMITS.
Ventilation: NK
Protective Gloves: RECOMMENDED FOR HANDLING CYLS OR DRY ICE
Eye Protection: SAFETY GLASSES SHOULD BE WORN
Other Protective Equipment: NK
Work Hygienic Practices: NK
Suppl. Safety & Health Data: NK

Transportation Data

Trans Data Review Date: 89289
DOT PSN Code: CUX
DOT Proper Shipping Name: CARBON DIOXIDE
DOT Class: 2.2
DOT ID Number: UN1013
DOT Label: NONFLAMMABLE GAS
DOT/DoD Exemption Number: NK
IMO PSN Code: EQH
IMO Proper Shipping Name: COMPRESSED GAS, N.O.S.
IMO Regulations Page Number: 2124
IMO UN Number: 1956
IMO UN Class: 2(2.2)
IMO Subsidiary Risk Label: -
IATA PSN Code: HDO
IATA UN ID Number: 1956
IATA Proper Shipping Name: COMPRESSED GAS, N.O.S.
IATA UN Class: 2.2
IATA Label: NON-FLAMMABLE GAS
AFI PSN Code: FHH
AFI Prop. Shipping Name: CARBON DIOXIDE
AFI Class: 2.2
AFI ID Number: UN1013
AFI Label: NON-FLAMMABLE GAS
AFI Basic Pac Ref: 6-6,6-8,6-10
MMAC Code: NK
N.O.S. Shipping Name: NK
Additional Trans Data: NK

Disposal Data

Label Data

Label Required: YES
Label Status: F
Special Hazard Precautions: VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION. CONTACT WITH LIQUID MAY CAUSE FROSTBITE. FIRE MAY PRODUCE IRRITATING OR POISONOUS GASES.
Label Name: SQUIBB-OWEN SALES INC
Label Street: 4550 MCKNIGHT RD
Label P.O. Box: 11125
Label City: PITTSBURGH
Label State: PA
Label Zip Code: 15237-3162
Label Country: US

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
General Information

Item Name: GASOLINE, AUTOMOTIVE
Company's Name: U S OIL CO INC
Company's Street: 425 S WASHINGTON AVE
Company's City: COMBINED LOCKS
Company's State: WI
Company's Country: US
Company's Zip Code: 54113-1049
Company's Emerg Ph #: 414-739-6100
Company's Info Ph #: 414-739-6100
Record No. For Safety Entry: 102
Tot Safety Entries This Stk#: 102
Status: SE
Date MSDS Prepared: 01MAR89
Safety Data Review Date: 21DEC92
Supply Item Manager: KY
MSDS Serial Number: BPNVQ
Specification Number: VV-G-1690A
Spec Type, Grade, Class: CL A-E, GR PREM
Hazard Characteristic Code: F2
Unit Of Issue: GL
Unit Of Issue Container Qty: BULK
Type Of Container: BULK
Net Unit Weight: BULK

Ingredients/Identity Information

Proprietary: NO
Ingredient: HYDROCARBONS
Ingredient Sequence Number: 01
Percent: >50%
NIOSH (RTECS) Number: 1000011HC
OSHA PEL: UNKNOWN
ACGIH TLV: UNKNOWN
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: BENZENE (SARA III)
Ingredient Sequence Number: 02
Percent: .1-4.9%
NIOSH (RTECS) Number: CY1400000
CAS Number: 71-43-2
OSHA PEL: 1PPM/STEL;1910.1028
ACGIH TLV: 10 PPM; A2; 9293
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: ETHYL BENZENE (SARA III)
Ingredient Sequence Number: 03
Percent: 2%
NIOSH (RTECS) Number: DA0700000
CAS Number: 100-41-4
OSHA PEL: 100 PPM/125 STEL
ACGIH TLV: 100 PPM/125STEL 9293
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: CUMENE (SARA III)  
Ingredient Sequence Number: 04  
Percent: 1%  
NIOSH (RTECS) Number: GR8575000  
CAS Number: 98-82-8  
OSHA PEL: S, 50 PPM  
ACGIH TLV: S, 50 PPM; 9293  
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: 1,2,4-TRIMETHYLBENZENE (SARA III)  
Ingredient Sequence Number: 05  
Percent: 2%  
NIOSH (RTECS) Number: DC3325000  
CAS Number: 95-63-6  
OSHA PEL: 25 PPM  
ACGIH TLV: 25 PPM; 9293  
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: TOLUENE (SARA III)  
Ingredient Sequence Number: 06  
Percent: 15%  
NIOSH (RTECS) Number: XS5250000  
CAS Number: 108-88-3  
OSHA PEL: 200 PPM/150 STEL  
ACGIH TLV: 50 PPM; 9293  
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: XYLENES (O-,M-,P- ISOMERS) (SARA III)  
Ingredient Sequence Number: 07  
Percent: 12%  
NIOSH (RTECS) Number: ZE2100000  
CAS Number: 1330-20-7  
OSHA PEL: 100 PPM/150 STEL  
ACGIH TLV: 100 PPM/150STEL; 9293  
Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: WATER WHITE TO STRAW YELLOW LIQUID; GASOLINE ODOR.
Boiling Point: 85-437F
Melting Point: NA
Vapor Pressure (MM Hg/70 F): 275-475
Vapor Density (Air=1): >1 AIR=1
Specific Gravity: 0.70-.77
Decomposition Temperature: NA
Evaporation Rate And Ref: NA
Solubility In Water: MAY BE SLIGHTLY SOL.
Percent Volatiles By Volume: 100%
Viscosity: NA
pH: NA
Corrosion Rate (IPY): NA
Autoignition Temperature: UNKNON

Fire and Explosion Hazard Data

Flash Point: -50F, -46C
Flash Point Method: TCC
Lower Explosive Limit: <1
Upper Explosive Limit: 8
Extinguishing Media: USE DRY CHEMICAL, CARBON DIOXIDE, FOAM. WATER MAY BE INEFFECTIVE TO EXTINGUISH, USE WATER TO COOL FIRE EXPOSED CONTAINER
Special Fire Fighting Proc: IF LEAK/SPILL HAS NOT IGNITED, USE WATER SPRAY
TO DISPERSE THE VAPORS & TO PROTECT PERSONNEL ATTEMPTING TO STOP LEAK. USE WATER SPRAY TO FLUSH SPILL FROM AREA.

Unusual Fire And Expl Hazards: HIGHLY FLAMMABLE. DO NOT ENTER ENCLOSED/CONFINED SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT INCLUDING RESPIRATORY PROTECTION. FUMES OF CARBON MONOXIDE & DIOXIDE.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): UNDUE EXPOSURE TO AIR, HEAT, FLAME.
Materials To Avoid: OXIDIZING MATERIALS.
Hazardous Decomp Products: CARBON MONOXIDE MAY BE FORMED FROM INCOMPLETE COMBUSTION.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE

Health Hazard Data

LD50-LC50 Mixture: LD50 (ORAL RAT) IS UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: THE PRODUCT CONTAINS PETROLEUM HYDROCARBON, & AS WITH MANY PETROLEUM PRODUCTS, IT MAY CAUSE IRRITATION TO THE EYES, SKIN & LUNGS AFTER PROLONGED OR REPEATED EXPOSURE. A FEW STUDIES HAVE INDICATED THAT WORKERS EXPOSED MANY YEARS TO HIGH CONCENTRATIONS OF BENZENE HAVE A SLIGHTLY HIGHER INCIDENCE OF LEUKEMIA.
Carcinogenicity - NTP: YES
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: YES
Explanation Carcinogenicity: BENZENE IS A KNOWN HUMAN CARCINOGEN.
Signs/Symptoms Of Overexp: OVEREXPOSURE MAY CAUSE WEAKNESS, HEADACHE, NAUSEA, CONFUSION, BLURRED VISION, DROWSINESS AND OTHER NERVOUS SYSTEM EFFECTS; GREATER EXPOSURE MAY CAUSE DIZZINESS, SLURRED SPEECH, FLUSHED FACE, UNCONSCIOUSNESS OR CONVULSION. BENZENE CAN ALSO BE TOXIC TO THE BLOOD AND BLOOD-FORMING TISSUES.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: EYES: IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MIN. CALL A PHYSICIAN. SKIN: IMMEDIATELY WASH SKIN REMOVE TO FRESH AIR. IF NOT BREATHING, PERFORM CPR. IF HARD TO BREATHE, GIVE OXYGEN. CALL PHYSICIAN. INGESTION: DO NOT INDUCE VOMITING. GIVE LARGE QUANTITIES OF WATER. CALL A PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: THIS MATERIAL IS FLAMMABLE. CONTAIN SPILL. RECOVER AS MUCH OF PRODUCT AS POSSIBLE. NONRECOVERABLE PRODUCT, CONTAMINATED SOIL, DEBRIS & OTHER MATERIAL SHOULD BE PLACED IN PROPER CONTAINERS FOR ULTIMATE DISPOSAL. AVOID MATERIAL ENTERING SEWERS.
Neutralizing Agent: NA
Waste Disposal Method: RECYCLE AS MUCH OF THE RECOVERABLE PRODUCT AS POSSIBLE. TREATMENT, STORAGE, TRANSPORTATION & DISPOSAL MUST BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE/PROVINCIAL, AND LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN ACCORDANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION REGULATIONS.
Other Precautions: NOTES TO PHYSICIAN: GASTRIC LAVAGE BY QUALIFIED MEDICAL PERSONNEL MAY BE CONSIDERED, DEPENDING ON QUANTITY OF MATERIAL INGESTED.

Control Measures

Respiratory Protection: SELECT APPROPRIATE NIOSH-APPROVED RESPIRATORY PROTECTION WHERE NECESSARY TO MAINTAIN EXPOSURE BELOW THE APPLICABLE LIMITS.
Ventilation: USE SUFFICIENT VENTILATION TO MAINTAIN ATMOSPHERIC
CONCENTRATIONS BELOW PERMISSIBLE EXPOSURE LIMITS.
Protective Gloves: NBR OR NEOPRENE GLOVES
Eye Protection: GOGGLES OR FACE SHIELD
Other Protective Equipment: SUFFICIENT PROTECTIVE CLOTHING TO MINIMIZE SKIN EXPOSURE.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING, DRINKING OR SMOKING. LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.
Suppl. Safety & Health Data: AVOID CONTACT WITH EYES, SKIN, OR CLOTHING.

Transportation Data

Trans Data Review Date: 92357
DOT PSN Code: GTN
DOT Proper Shipping Name: GASOLINE
DOT Class: 3
DOT ID Number: UN1203
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: HRV
IMO Proper Shipping Name: GASOLINE
IMO Regulations Page Number: 3141
IMO UN Number: 1203
IMO UN Class: 3.1
IMO Subsidiary Risk Label: -
IATA PSN Code: RMF
IATA UN ID Number: 1203
IATA Proper Shipping Name: MOTOR SPIRIT
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: MUC
AFI Prop. Shipping Name: GASOLINE
AFI Class: 3
AFI ID Number: UN1203
AFI Pack Group: II
AFI Label: FLAMMABLE LIQUID
AFI Basic Pac Ref: 7-7
MMAC Code: NR
N.O.S. Shipping Name: GASOLINE

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 21DEC92
MFR Label Number: UNKNOWN
Label Status: F
Common Name: UNLEADED GASOLINE N/O*
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Slight: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: BENZENE IS A KNOWN HUMAN CARCINOGEN. STORE IN ACCORDANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION REGULATIONS. HIGHLY FLAMMABLE. DO NOT ENTER ENCLOSED/CONFINED SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT INCLUDING RESPIRATORY PROTECTION. FUMES OF CARBON MONOXIDE & DIOXIDE. IN CASE OF SPILL: THIS MATERIAL IS FLAMMABLE. CONTAIN SPILL. RECOVER AS MUCH OF PRODUCT AS POSSIBLE. NONRECOVERABLE PRODUCT, CONTAMINATED SOIL, DEBRIS & OTHER MATERIAL SHOULD BE PLACED IN PROPER CONTAINERS FOR ULTIMATE DISPOSAL. AVOID WMATERIAL ENTERING SEWERS.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: U S OIL CO INC
Label Street: 425 S WASHINGTON AVE
Label City: COMBINED LOCKS
Label State: WI
Label Zip Code: 54113-1049
Label Country: US
Label Emergency Number: 414-739-6100

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please send updates to dan@siri.org.
GALLARD-SCHLESINGER INDUSTRIES -- XX5205 SILICON DIOXIDE GRANULES - SILICON DIOXIDE
MATERIAL SAFETY DATA SHEET
NSN: 681000F016635
Manufacturer's CAGE: 38445
Part No. Indicator: A
Part Number/Trade Name: XX5205 SILICON DIOXIDE GRANULES

General Information

Item Name: SILICON DIOXIDE
Company's Name: GALLARD-SCHLESINGER INDUSTRIES INC
Company's Street: 584 MINEOLA AVENUE
Company's City: CARIE PLACE
Company's State: NY
Company's Zip Code: 11514-1731
Company's Emerg Ph #: (516) 333-5600
Company's Info Ph #: (516) 333-5600
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Date MSDS Prepared: 03OCT88
Safety Data Review Date: 19JUN91
Preparer's Company: GALLARD-SCHLESINGER INDUSTRIES INC
Preparer's St Or P. O. Box: 584 MINEOLA AVENUE
Preparer's City: CARIE PLACE
Preparer's State: NY
Preparer's Zip Code: 11514-1731
MSDS Serial Number: BKGYS

Ingredients/Identity Information

Proprietary: NO
Ingredient: SILICA AMORPHOUS HYDRATED, SILICEOUS EARTH, FUMED SILICA,
COLLOIDAL SILICON DIOXIDE, (SUSPECTED HUMAN CARCINOGEN)
Ingredient Sequence Number: 01
Percent: 100%
NIOSH (RTECS) Number: W7310000
CAS Number: 112945-52-5
OSHA PEL: 80 MG/CUM (%SiO2+2)
ACGIH TLV: 0.2 MG/CUM RESP/DUST
Other Recommended Limit: 20 MPPCF

Physical/Chemical Characteristics

Appearance And Odor: SOLID TRANSPARENT CRYSTALS, ODORLESS.
Specific Gravity: 2.650

Fire and Explosion Hazard Data

Flash Point: NONFLAMMABLE
Extinguishing Media: USE AN EXTINGUISHER APPROPRIATE TO THE SURROUNDING
MATERIAL THAT IS BURNING.

Reactivity Data

Stability: YES
Materials To Avoid: HYDROFLUORIC ACID
Hazardous Decomp Products: SILICON TETRAFLUORIDE GAS
Hazardous Poly Occur: NO

Health Hazard Data

Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
DUST MAY CAUSE IRRITATION TO THE LUNGS & FIBROSIS OF THE LUNG (SILICOSIS).
Carcinogenicity - NTP: YES
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: THERE IS SUFFICIENT EVIDENCE IN EXPERIMENTAL ANIMALS THAT CRYSTALLINE SILICA IS A PROBABLE HUMAN CARCINOGEN.
DUST MAY CAUSE IRRITATION TO THE LUNGS & FIBROSIS OF THE LUNG (SILICOSIS).

Emergency/First Aid Proc: SKIN/EYE: FLUSH AREA W/LUKEWARM WATER FOR AT LEAST 15 MINS. INHALATION: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION OR CPR IF NEEDED. INGESTION: NEVER GIVE ANYTHING BY MOUTH IF VICTIM IS RAPIDLY LOSING CONSCIOUSNESS, OR IS UNCONSCIOUS OR CONVULSING. RINSE MOUTH THOROUGHLY W/WATER. DON'T INDUCE VOMITING. DRINK 200-400 ML OF WATER TO DILUTE. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: USE APPROPRIATE RESPIRATOR WHILE CONTAINING MATERIAL. SWEEP UP CAREFULLY, TRANSFER TO A CONTAINER & ARRANGE FOR REMOVAL BY A DISPOSAL COMPANY.

Waste Disposal Method: FOLLOW ALL FEDERAL, PROVINCIAL, & LOCAL REGULATIONS FOR DISPOSAL. USE ONLY LICENSED DISPOSAL & WASTE HAULING COMPANIES.

Precautions-Handling/Storing: STORE IN SUITABLE LABELED CONTAINERS. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE & WHEN EMPTY. PROTECT FROM DAMAGE.

Other Precautions: ALLOW ROUTINE SAFETY HANDLING PROCEDURES. AVOID GENERATING DUST & INHALATION OF COMPOUND.

Control Measures

Respiratory Protection: USE A SELF-CONTAINED BREATHING APPARATUS. ENGINEERING CONTROL METHODS ARE PREFERRED.

Ventilation: PROVIDE MECHANICAL/LOCAL EXHAUST VENTILATION TO KEEP <TLV.

Protective Gloves: RUBBER, PLASTIC

Eye Protection: CHEMICAL SAFETY GOGGLES

Other Protective Equipment: APRON, BOOTS, & OTHER PERSONAL PROTECTIVE EQUIPMENT.

Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Label Status: G

Common Name: XX5205 SILICON DIOXIDE GRANULES
DUST MAY CAUSE IRRITATION TO THE LUNGS & FIBROSIS OF THE LUNG (SILICOSIS).

Label Name: GALLARD-SCHLESINGER INDUSTRIES INC
Label Street: 584 MINEOLA AVENUE
Label City: CARIE PLACE
Label State: NY
Label Zip Code: 11514-1731
Label Emergency Number: (516) 333-5600

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
General Information

Company's Name: CALAVERAS CEMENT CO
Company's Street: KERN COUNTY
Company's City: MONOLITH
Company's State: CA
Company's Country: US
Company's Zip Code: 93548
Company's Emerg Ph #: 415-256-8837
Company's Info Ph #: 805-872-4445
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 002
Status: SMJ
Date MSDS Prepared: 20NOV89
Safety Data Review Date: 02MAY95
MSDS Preparer's Name: C TRUSTY
Preparer's Company: SAME
MSDS Serial Number: BXRFQ
Hazard Characteristic Code: NK

Ingredients/Identity Information

Proprietary: NO
Ingredient: TRICALCIUM SILICATE; (3CAO.SIO2); ACGIH TLV:TOTAL DUST CNTNG NO ASBESTOS & LESS THAN 1% SILICA-10 MG/M3. OSHA (ING 2)
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: 1004122TS
CAS Number: 12168-85-3
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)
-----------------------------
Proprietary: NO
Ingredient: ING 1:PEL (TRANSITIONAL) TOTAL DUST-50 MILLION PARTICLE/FT3; (FINAL) TOTAL DUST-10 MG/M3 RESPIRABLE DUST 5 MG/M3.
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
-----------------------------
Proprietary: NO
Ingredient: DICALCIUM SILICATE; (2CAO.SIO2)
Ingredient Sequence Number: 03
NIOSH (RTECS) Number: 1004123DS
CAS Number: 10034-77-2
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)
-----------------------------
Proprietary: NO
Ingredient: TRICALCIUM ALUMINATE; (3CAO.AL2O3)
Ingredient Sequence Number: 04
NIOSH (RTECS) Number: 1004124TA
CAS Number: 12042-78-3
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)
-----------------------------
Proprietary: NO
Ingredient: TETRACALCIUM ALUMINOFERRATE; (4CAO.AL2O3.FE2O3)
Ingredient Sequence Number: 05
<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Sequence Number</th>
<th>CAS Number</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gypsum; (CAS04.XH20)</td>
<td>06</td>
<td>13397-24-5</td>
<td>N/K (FP N)</td>
<td>N/K (FP N)</td>
</tr>
<tr>
<td>Calcium Oxide; (CA*0)</td>
<td>07</td>
<td>1305-78-8</td>
<td>N/K (FP N)</td>
<td>N/K (FP N)</td>
</tr>
<tr>
<td>Magnesium Oxide; (MG*0)</td>
<td>08</td>
<td>1309-48-4</td>
<td>N/K (FP N)</td>
<td>N/K (FP N)</td>
</tr>
<tr>
<td>Potassium Bisulfate; (K2SO4)</td>
<td>09</td>
<td>7646-93-7</td>
<td>N/K (FP N)</td>
<td>N/K (FP N)</td>
</tr>
<tr>
<td>Sodium Sulfate; (NA2SO4)</td>
<td>10</td>
<td>7757-82-6</td>
<td>N/K (FP N)</td>
<td>N/K (FP N)</td>
</tr>
<tr>
<td>Silica (Type Not Specified); (75% Insol Residue, Fraction of Residues May Be Free Crystalline Silica), % (WT): Fraction</td>
<td>11</td>
<td>See ING</td>
<td>N/K (FP N)</td>
<td>N/K (FP N)</td>
</tr>
</tbody>
</table>

**Physical/Chemical Characteristics**

- Appearance And Odor: GRAY OR WHITE POWDER; NO ODOR.
- Boiling Point: N/A
- Melting Point: N/A
- Vapor Pressure (MM Hg/70 F): N/A
- Vapor Density (Air=1): N/A
- Specific Gravity: 3.15 (H2O=1)
- Evaporation Rate And Ref: NOT APPLICABLE
- Solubility In Water: SLIGHT (0.1-1.0%)
- pH: 12.4
Fire and Explosion Hazard Data

Flash Point: SUPDAT
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: NOT APPLICABLE. MEDIA SUITABLE FOR SURROUNDING FIRE (FP N).
Special Fire Fighting Proc: NOT APPLICABLE. USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazards: NONE SPECIFIED BY MANUFACTURER.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): KEEP DRY UNTIL USED.
Materials To Avoid: ALUMINUM POWDER & OTHER ALKALI & ALKALINE EARTH ELEMENTS WILL REACT IN WET MORTAR/CONCRETE, LIBERATING HYDROGEN GAS.
Hazardous Decomp Products: NONE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: WET CEMENT, ESPECIALLY AS INGREDIENT IN PLASTIC (UNHARDENED) CONCRETE, MORTAR/SLURRIES CAN DRY SKIN & CAUSE CAUSTIC BURNS. DIRECT CONT W/EYES CAN CAUSE IRRIT. INHALATION CAN IRRITATE UPPER RESP SYS. CHRONIC: CEMENT DUST CAN CAUSE INFLAM OF LINING TISSUE OF INTERIOR OF NOSE & INFLAM OF CORNEA. (EFFECTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT.
Signs/Symptoms Of Overexp: HLTH HAZ: HYPERSENSITIVE INDIVIDUALS MAY DEVELOP AN ALLERGIC DERMATITIS. CEMENT MAY CONTAIN TRACE (LESS/0.05%) AMOUNTS OR CHROMIUM SALTS/CMPS INCLUDG HEXAVALENT CHROMIUM/OTHER METALS FOUND TO BE HAZ/TOX IN SOME CHEM FORMS. (OTHER METALS ARE MOSTLY PRESENT AS TRACE SUBSTITUTIONS W/IN PRINCIPLE MINERALS.)
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: USE DRY CLEANUP METHODS THAT DO NOT DISPERSE DUST INTO AIR. AVOID BREATHING DUST. EMERGENCY PROCEDURES ARE NOT REQUIRED.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: SM AMTS OF MATL CAN BE DISPOSED OF AS COMMON WASTE/RETURNED TO CNTNR FOR LATER USE IF IT IS NOT CONTAM. LG VOLUMES MAY REQ SPECIAL HANDLING. DISPOSAL MUST BE I/A/W FEDERAL, STATE & LOCAL REGULATIONS (FP N).
Precautions-Handling/Storing: PRECAUTIONS MUST BE TAKEN. CEMENT BURNS WITH LITTLE WARNING-LITTLE HEAT IS SENSED.
Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).
Ventilation: LOCAL EXHAUST CAN BE USED TO CONTROL AIRBORNE DUST LEVELS.

Protective Gloves: IMPERVIOUS, ABRASION- & ALKALI-(SUPDAT)

Eye Protection: ANSI APPRVD CHEM WORKERS GOGGLES (FP N).

Other Protective Equipment: ANSI APPRVD EMERGENCY EYE WASH & DELUGE SHOWER (FP N). USE BARRIER CREAMS, BOOTS & PROT CLTHG.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Suppl. Safety & Health Data: FL PT: NONCOMBUSTIBLE AND NOT EXPLOSIVE. PROT GLOVES: RESIST GLOVES.

Transportation Data

Disposal Data

Label Data

Label Required: YES

Technical Review Date: 02MAY95

Label Date: 04MAY95

Label Status: M

Common Name: PORTLAND CEMENT

Chronic Hazard: YES

Signal Word: WARNING!

Acute Health Hazard-Moderate: X

Contact Hazard-Moderate: X

Fire Hazard-None: X

Reactivity Hazard-None: X

Special Hazard Precautions: CAUSTIC. ACUTE: WET CEMENT, ESPECIALLY AS INGREDIENT IN PLASTIC (UNHARDENESS) CONCRETE, MORTAR/SURJURIES CAN DRY SKIN & CAUSE CAUSTIC BURNS. DIRECT CONT W/EYES CAN CAUSE IRRIT. INHALATION CAN IRRITATE UPPER RESP SYS. CHRONIC: CEMENT DUST CAN CAUSE INFLAM OF LINING TISSUE OF INTERIOR OF NOSE & INFLAM OF CORNEA. HYPERSENSITIVE INDIVIDUALS MAY DEVELOP AN ALLERGIC DERMATITIS. (CEMENT MAY CONTAIN TRACE (LESS/0.05%) AMTS OR CHROMIUM SALTS OR CMPDS INCLDG HEXAVENTAL CHROMIUM/OTHER METALS FOUND TO BE HAZ/TOX IN SOME CHEM FORMS. (OTHER METALS ARE MOSTLY PRESENT AS TRACE SUBSTITUTIONS W/IN THE PRINCIPLE MINERALS.)

Protect Eye: Y

Protect Skin: Y

Protect Respiratory: Y

Label Name: CALAVERAS CEMENT CO

Label Street: KERN COUNTY

Label City: MONOLITH

Label State: CA

Label Zip Code: 93548

Label Country: US

Label Emergency Number: 415-256-8837

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
MG INDUSTRIES — N-HEXANE - HEXANE, ACS
MATERIAL SAFETY DATA SHEET
NSN: 6810009490257
Manufacturer's CAGE: 08772
Part No. Indicator: A
Part Number/Trade Name: N-HEXANE

General Information

Item Name: HEXANE, ACS
Company's Name: MG INDUSTRIES
Company's Street: 2460 BOULEVARD OF THE GENERALS
Company's P. O. Box: 945
Company's City: VALLEY FORGE
Company's State: PA
Company's Country: US
Company's Zip Code: 19482
Company's Emerg Ph #: 215-630-5422
Company's Info Ph #: 800-424-9300, CHEMTREC
Record No. For Safety Entry: 003
Tot Safety Entries This Stk#: 016
Status: SEU
Date MSDS Prepared: 13NOV90
Supply Item Manager: CX
MSDS Serial Number: BMWJR
Specification Number: O-C-265
Hazard Characteristic Code: F4
Unit Of Issue: GL
Unit Of Issue Container Qty: 1 GL
Type Of Container: UNKNOWN
Net Unit Weight: 5.5 LBS
NRC/State License Number: NOT APPLICABLE

Ingredients/Identity Information

Proprietary: NO
Ingredient: HEXANE (N-HEXANE)
Ingredient Sequence Number: 01
Percent: 100
NIOSH (RTECS) Number: MN9275000
CAS Number: 110-54-3
OSHA PEL: 500 PPM
ACGIH TLV: 50 PPM; 9293
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: CLEAR, COLORLESS MOBILE LIQUID WITH A MILD GASOLINE-LIKE ODOR.
Boiling Point: 156F, 69C
Melting Point: -139F, -95C
Vapor Pressure (MM Hg/70 F): 124 MM HG
Vapor Density (Air=1): 3.0
Specific Gravity: 0.6603
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: 15.8 (N-BUTYL ACETATE=1)
Solubility In Water: 0.014% AT 20C
Percent Volatiles By Volume: 100
Viscosity: 0.32 CPS
Corrosion Rate (IPY): UNKNOWN
Autoignition Temperature: 437F

Fire and Explosion Hazard Data
Flash Point: -7F, -22C
Flash Point Method: CC
Lower Explosive Limit: 1.1
Upper Explosive Limit: 7.5
Extinguishing Media: DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM.

Special Fire Fighting Proc: MOVE CONTAINER FROM AREA IF YOU CAN DO SO WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT.

Unusual Fire And Expl Hazards: STAY AWAY FROM ENDS OF TANKS. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE. USE WATER IN FLOODING AMOUNTS.

Reactivity Data
Stability: YES
Cond To Avoid (Stability): HIGH TEMPERATURES, SPARKS AND OPEN FLAMES.
Materials To Avoid: SODIUM AND CALCIUM HYPOCHLORITE, CHLORINE, DINITROGEN TETRAOXIDE, OXIDIZERS, OXYGEN, PLASTICS, RUBBER AND COATINGS.
Hazardous Decomp Products: TOXIC OXIDES OF CARBON.

Health Hazard Data
LD50-LC50 Mixture: LC50: 120 GM/M3 INHALATION-MOUSE
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE- INHALATION: IRRITANT, NARCOTIC, NEUROTOXIN. SKIN: IRRITANT. EYES: IRRITANT. INGESTION: NARCOTIC. CHRONIC- REPEATED OR PROLONGED EXPOSURE MAY CAUSE POLYNEUROPATHY. MAY CAUSE DERMATITIS.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT APPLICABLE
Signs/Symptoms Of Overexp: INHALATION: SLIGHT NAUSEA AND HEADACHE. VERTIGO, GIDDINESS, INCOORDINATION, NUMBNESS OF THE LIMBS, ANOREXIA, TASTE BLISTER FORMATION, ITCHING, ERYTHEMA, PIGMENTATION AND PAIN. EYE: REDNESS AND PAIN. INGESTION: HEADACHE, NAUSEA, VOMITING, ETC.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Precautions for Safe Handling and Use
Steps If Matl Released/Spill: SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. DIKE LARGE SPILLS. NO SMOKING, FLAMES OR FLARES.
Neutralizing Agent: NONE
Waste Disposal Method: DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001. 100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.
Precautions-Handling/Storing: STORE IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.
Other Precautions: VAPORS MAY BE EXPLOSIVE. AVOID OVERHEATING OF CONTAINERS. CONTAINERS MAY VIOLENTLY RUPTURE IN HEAT OF FIRE. AVOID CONTAMINATION OF WATER SOURCES.
Control Measures


Ventilation: PROVIDE GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

Protective Gloves: IMPERVIOUS GLOVES RECOMMENDED

Eye Protection: SPLASH-PROOF OR DUST-RESISTANT GOGGLES

Other Protective Equipment: IMPERVIOUS CLOTHING, EYEWASH STATION AND SAFETY SHOWER.

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING THIS MATERIAL.

Suppl. Safety & Health Data: NONE

Transportation Data

Trans Data Review Date: 92147
DOT PSN Code: HEX
DOT Proper Shipping Name: HEXANES
DOT Class: 3
DOT ID Number: UN1208
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: IBK
IMO Proper Shipping Name: HEXANES
IMO Regulations Page Number: 3129
IMO UN Number: 1208
IMO UN Class: 3.1
IMO Subsidiary Risk Label: -
IATA PSN Code: NKG
IATA UN ID Number: 1208
IATA Proper Shipping Name: HEXANES
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: NKG
AFI Prop. Shipping Name: HEXANES
AFI Class: 3
AFI ID Number: UN1208
AFI Pack Group: II
AFI Label: FLAMMABLE LIQUID
AFI Basic Pac Ref: 7-7

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 26MAY92
Label Date: 26MAY92
Label Status: F
Common Name: N-HEXANE
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Moderate: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: ACUTE- INHALATION: IRRITANT, NARCOTIC, NEUROTOXIN. SKIN: IRRITANT. EYES: IRRITANT. INGESTION: NARCOTIC. CHRONIC- INHALATION: REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. ADMINISTER BREATHING SUPPORT MEASURES IF NEEDED. GET MEDICAL ATTENTION IMMEDIATELY. SKIN: REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE QUANTITIES OF WATER. EYES: WASH
IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE. INGESTION: INDUCE VOMITING. PREVENT ASPIRATION.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: MG INDUSTRIES
Label Street: 2460 BOULEVARD OF THE GENERALS
Label P.O. Box: 945
Label City: VALLEY FORGE
Label State: PA
Label Zip Code: 19482
Label Country: US
Label Emergency Number: 215-630-5422
URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
SCOTT SPECIALTY GASES -- ISOBUTYLENE
MATERIAL SAFETY DATA SHEET
NSN: 683000N042744
Manufacturer's CAGE: 51847
Part No. Indicator: A
Part Number/Trade Name: ISOBUTYLENE

General Information

Company's Name: SCOTT SPECIALTY GASES
Company's Street: ROUTE 611
Company's City: PLUMSTEADVILLE
Company's State: PA
Company's Country: US
Company's Zip Code: 18949
Company's Emerg Ph #: 215-766-8861
Company's Info Ph #: 215-766-8861
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 14SEP89
Safety Data Review Date: 13SEP95
MSDS Serial Number: BSXZH
Hazard Characteristic Code: G2

Ingredients/Identity Information

Proprietary: NO
Ingredient: PROPENE, 2-METHYL-; (ISOBUTYLENE)
Ingredient Sequence Number: 01
Percent: 100
NIOSH (RTECS) Number: UD0890000
CAS Number: 115-11-7
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS, ETHEREAL ODOR.
Boiling Point: 19.6F, -6.9C
Vapor Pressure (MM Hg/70 F): 2.65@21.1C
Vapor Density (Air=1): 1.947
Specific Gravity: 0.588 (H2O=1)
Evaporation Rate And Ref: NOT APPLICABLE
Solubility In Water: SLIGHT
Percent Volatiles By Volume: 100

Fire and Explosion Hazard Data

Flash Point: -105F, -76C
Lower Explosive Limit: 1.8%
Upper Explosive Limit: 9.6%
Extinguishing Media: DO NOT EXTING BURNING GAS IF FLOW CANNOT BE SHUT OFF. USE WATER SPRAY TO KEEP FIRE EXPOS CYLS COOL. MOVE CYL (SUPDAT)
Special Fire Fighting Proc: USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N). FLAMMABLE HIGH PRESSURE LIQUID OR GAS.
Unusual Fire And Expl Hazards: DANGEROUS. VAP MAY TRAVEL CONSIDERABLE DIST TO SOURCE OF IGNIT & FLASH BACK. MAY FORM EXPLO MIXTS W/AIR. CAN REACT VIGOROUSLY W/OXIDIZING MATLS.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.
Materials To Avoid: OXIDIZING MATERIALS.
Hazardous Decomp Products: CARBON MONOXIDE, CARBON DIOXIDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE: ASPHYXIANT. SYMPTOMS INCLUDE RAPID RESPIRATION, MUSCULAR INCOORDINATION, FATIGUE, NAUSEA & VOMITING. LOSS OF CONSCIOUSNESS & DEATH MAY OCCUR. CONTACT W/LIQUID MAY RESULT IN SYMPTOMS OF FROSTBITE. CHRONIC: NONE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanaion Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexposure: SEE HEALTH HAZARDS.
Med Cond Aggravated By Exp: NONE
Emergency/First Aid Proc:
INGEST: CALL MD IMMEDIATELY (FP N). INHAL: IMMEDIATELY REMOVE VICTIM TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. SKIN: IMMEDIATELY FLUSH AREA WITH PLentiful AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAM CLTHS. IF FROSTBITE OCCURS, WARM AFFECTED AREA W/WATER OR TOWEL. EYE: IMMEDIATELY FLUSH EYE WITH PLentiful AMOUNTS OF WATER FOR AT LEAST 15 MINUTES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE & VENTILATE AREA. REMOVE LEAKING CYLINDER TO EXHAUST HOOD OR SAFE OUTDOORS AREA IF THIS CAN BE DONE SAFELY.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISP MUST BE I/A/W FED, STATE & LOC REGS (FP N).
RETURN CYL TO SUPPLIER FOR PROPER DISP W/ANY VALVE OUTLET PLUGS/CAPS SECURED & VALVE PROT CAP IN PLACE. DO NOT REUSE CYL. EMPTY CYL WILL CONTAIN HAZ RESIDUE.
Precautions - Handling/Storing: STORE IN WELL VENTED ABOVE-GROUND AREA AWAY FROM HEAT & IGNIT SOURCES & OXIDIZING MATLS. PROT CNTNRS FROM PHYSICAL DMG. DO NOT DEFACE CYLS/LABELS.
Other Precautions: KEEP VALVE PROT CAP ON CYLS WHEN NOT IN USE & SECURE CYL WHEN USING TO PROT FROM FALLING. USE SUITABLE HAND TRUCK TO MOVE CYLS. CYLS SHOULD BE REFILLED BY QUALIFIED PRDCRS OF COMPRESSED GASES. SHIPMENT OF COMPRESSED GAS CYL WHICH (UPDATE)

Control Measures

Respiratory Protection: USE NIOSH/MSHA APPROVED SCBA IN CASE OF EMERGENCY OR NON-ROUTINE USE.
Ventilation: PROVIDE ADEQUATE LOCAL EXHAUST VENTILATION TO MAINTAIN CONCENTRATION BELOW EXPOSURE LIMITS.
Protective Gloves: IMPERVIOUS GLOVES (FP N).
Eye Protection: SAFETY GOGGLES.
Other Protective Equipment: SAFETY SHOES WHEN HANDLING CYLINDERS.
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
Suppl. Safety & Health Data: EXTING MEDIA: AWAY FROM FIRE IF THERE IS NO RISK. OTHER PREC: HAS NOT BEEN FILLED BY THE OWNER OR W/HIS WRITTEN CONSENT IS A VIOLATION OF FEDERAL LAW (49 CFR).

Transportation Data

Disposal Data

Label Data
Label Required: YES

Technical Review Date: 08SEP93
Label Date: 23AUG93
Label Status: G
Common Name: ISOBUTYLENE
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Moderate: X
Contact Hazard-Slight: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: EXTREMELY FLAMMABLE HIGH PRESSURE LIQUID OR GAS. ACUTE: ASPHYXIANT. SYMPTOMS INCLUDE RAPID BREATHING, MUSCULAR INCOORDINATION, FATIGUE, NAUSEA & VOMITING. LOSS OF CONSCIOUSNESS & DEATH NONE LISTED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: SCOTT SPECIALTY GASES
Label Street: ROUTE 611
Label City: PLUMSTEADVILLE
Label State: PA
Label Zip Code: 18949
Label Country: US
Label Emergency Number: 215-766-8861

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please send updates to dan@siri.org.
SANFORD -- MEAN STREAK WATERPROOF MARKING STICK, WHITE
MATERIAL SAFETY DATA SHEET
NSN: 752000N035056
Manufacturer's CAGE: 86874
Part No. Indicator: A
Part Number/Trade Name: MEAN STREAK WATERPROOF MARKING STICK, WHITE

General Information

Company's Name: SANFORD CORP
Company's Street: 2740 WASHINGTON BLVD
Company's City: BELLWOOD
Company's State: IL
Company's Country: US
Company's Zip Code: 60104
Company's Emerg Ph #: 800-228-5635
Company's Info Ph #: 800-228-5635
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 31JUL92
Safety Data Review Date: 25SEP92
MSDS Serial Number: BQFVQ
Hazard Characteristic Code: F8

Ingredients/Identity Information

Proprietary: NO
Ingredient: PIGMENTS
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: 1000046PI
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: GELLING AGENTS
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 1001835GA
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ETHANOL, 2-BUTOXY-; (EGBE) (ETHYLENE GLYCOL MONOBUTYL ETHYL) (SOLVENT)
Ingredient Sequence Number: 03
NIOSH (RTECS) Number: KJ8575000
CAS Number: 111-76-2
OSHA PEL: S, 50 PPM
ACGIH TLV: S, 25 PPM; 9293

Physical/Chemical Characteristics

Appearance And Odor: WATER-WHITE LIQUID; ETHER-LIKE ODOR.
Boiling Point: 340F, 171C
Vapor Pressure (MM Hg/70 F): 0.6 @ 68F
Vapor Density (Air=1): 4.1
Specific Gravity: SUPP DATA
Evaporation Rate And Ref: 0.07 (BUTYL ACETATE=1)
Solubility In Water: COMPLETE

Fire and Explosion Hazard Data

Flash Point: 150F, 66C
Flash Point Method: TCC
Lower Explosive Limit: 1.1% @ 200F
Upper Explosive Limit: 12.7% @ 275°F
Extinguishing Media: USE MEDIA SUITABLE FOR SURROUNDING FIRE (FP N).
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL
PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazards: NONE SPECIFIED BY MANUFACTURER.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NOT AVAILABLE.
Materials To Avoid: NOT AVAILABLE.
Hazardous Decomp Products: NOT AVAILABLE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: AVOID EYE CONT AS IRRITATION MAY RESULT.
FLUSH THOROUGHLY AND CALL MD IF ACCIDENTAL EYE CONTACT OCCURS. MAY BE
HARMFUL IF SWALLOWED. THIS PRODUCT IS CONSIDERED SAFE WHEN USED UNDER
NORMAL USE CONDITIONS. ANIMAL STUDIES CLEARLY DEMONSTRATED DOSE-RELATED
ADVERSE EFTS ON THE CNS, THE HEMATOPOIETIC TISS, (EFTS OF OVEREXP)
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT
Signs/Symptoms Of Overexp: HLTH HAZ: THE BLOOD, THE KIDNEYS AND THE LIVER,
ASSOCIATED WITH THE ADMINISTRATION OF ETHYLENE GLYCOL MONOBUTYL ETHER
(EGBE) AND ETHYLENE GLYCOL MONOBUTYL ETHER ACEATE (EGBEA). (EXTRACTED FROM
DHHS (NIOSH) PUBLICATION NO. 90-118) (FP N).
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
REMOVE TO FRESH AIR. SUPPORT BREATHING (GIVE O2/ARTIFICIAL RESPIRATION)
CALL MD (FP N). EYES: IMMEDIATELY FLUSH W/POTABLE WATER FOR A MINIMUM OF 15
MINUTES, SEEK ASSISTANCE FROM MD (FP N). SKIN: FLUSH W/COPIOUS AMOUNTS OF
WATER. CALL MD (FP N).

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: DISCARD AS SOLID WASTE.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISCARD AS SOLID WASTE. DISPOSE OF I/A/W FEDERAL,
STATE AND LOCAL REGULATIONS (FP N).
Precautions-Handling/Storing: KEEP CAP ON MARKER WHEN NOT IN USE.
Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: NONE UNDER NORMAL USE CONDITIONS. NIOSH/MSHA
APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).
Ventilation: NONE UNDER NORMAL USE CONDITIONS.
Protective Gloves: NONE UNDER NORMAL USE CONDITIONS.
Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).
Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Suppl. Safety & Health Data: SPEC GRAV: 0.9 @ 68/68°F (WATER=1).

Transportation Data

Trans Data Review Date: 93104
DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI PSN Code: ZZZ
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
Additional Trans Data: NOT REGULATED FOR TRANSPORTATION

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 25SEP92
Label Status: G
Common Name: MEAN STREAK WATERPROOF MARKING STICK, WHITE
Chronic Hazard: YES
Signal Word: WARNING!
Acute Health Hazard-Moderate: X
Contact Hazard-Slight: X
Fire Hazard-Moderate: X
Reactivity Hazard-None: X
Special Hazard Precautions: COMBUSTIBLE. ACUTE: MAY BE HARMFUL IF SWALLOWED. MAY CAUSE EYE IRRITATION. CHRONIC: MAY CAUSE ADVERSE EFFECTS ON THE CNS, THE BLOOD-FORMING TISSUE, BLOOD, LIVER AND KIDNEYS.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: SANFORD CORP
Label Street: 2740 WASHINGTON BLVD
Label City: BELLWOOD
Label State: IL
Label Zip Code: 60104
Label Country: US
Label Emergency Number: 800-228-5635

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
AMERICAN COLLOID -- 1-2 VOLCLAY TABLETS
MATERIAL SAFETY DATA SHEET
NSN: 685000N021272
Manufacturer's CAGE: 84066
Part No. Indicator: A
Part Number/Trade Name: 1/2 VOLCLAY TABLETS

General Information

Company's Name: AMERICAN COLLOID CO
Company's Street: 1500 WEST SHURE DR
Company's City: ARLINGTON HEIGHTS
Company's State: IL
Company's Country: US
Company's Zip Code: 60004
Company's Emerg Ph #: 312-392-4600
Company's Info Ph #: 312-392-4600
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 31AUG88
Safety Data Review Date: 18AUG95
MSDS Serial Number: BLLQV
Hazard Characteristic Code: N1

Ingredients/Identity Information

Proprietary: NO
Ingredient: SILICA, CRYSTALLINE - QUARTZ
Ingredient Sequence Number: 01
Percent: 2-6
NIOSH (RTECS) Number: VV7330000
CAS Number: 14808-60-7
OSHA PEL: SEE TABLE 23
ACGIH TLV: 0.1 MG/M3 RDUST;9293

Proprietary: NO
Ingredient: BENTONITE (CLAY)
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: CT9450000
CAS Number: 1302-78-9
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Physical/Chemical Characteristics

Appearance And Odor: PALE GREY TO BUFF TABLETS; ODORLESS
Boiling Point: N/A
Melting Point: N/A
Vapor Pressure (MM Hg/70 F): N/A
Vapor Density (Air=1): N/A
Specific Gravity: 2.5
Evaporation Rate And Ref: NOT APPLICABLE
Solubility In Water: NEGLIGIBLE

Fire and Explosion Hazard Data

Flash Point: NOT APPLICABLE
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: NOT APPLICABLE. USE MEDIA SUITABLE FOR SURROUNDING FIRE (FP N).
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N). INORGANIC MINERAL/NON-FLAMMABLE.
Unusual Fire And Expl Hazards: NOT APPLICABLE
Reactivity Data

Stability: YES
Cond To Avoid (Stability): NONE KNOWN.
Materials To Avoid: NONE KNOWN.
Hazardous Decomp Products: NONE KNOWN.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: MAY CAUSE DELAYED RESPIRATORY DISEASE IF DUST INHALED OVER A PROLONGED PERIOD OF TIME.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: SILICA, CRYSTALLINE: CLASS 2A
Signs/Symptoms Of Overexp: EXCESSIVE INHALATION OF DUST MAY RESULT IN SHORTNESS OF BREATH AND REDUCED PULMONARY FUNCTION.
Med Cond Aggravated By Exp: INDIVIDUALS WITH PULMONARY AND/OR RESPIRATORY DISEASE INCLUDING BUT NOT LIMITED TO ASTHMA AND BRONCHITIS SHOULD BE PRECLUDED FROM EXPOSURE TO DUST.

Precautions for Safe Handling and Use


Control Measures


Transportation Data

Trans Data Review Date: 91361
DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
AFI_PSN Code: ZZZ
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
Additional Trans Data: NOT REGULATED FOR TRANSPORTATION

Disposition Data

Label Data

Label Required: YES
Technical Review Date: 31OCT91
Label Status: G
Common Name: 1/2 VOLCLAY TABLETS
Chronic Hazard: YES
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-None: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: ACUTE: EXCESSIVE INHALATION OF DUST MAY RESULT IN SHORTNESS OF BREATH & REDUCED PULMONARY FUNCTION. AVOID BREATHING DUST. CHRONIC: SUSPECT CANCER HAZARD. MAY CAUSE DELAYED RESPIRATORY DISEASE IF DUST INHALED OVER A PROLONGED PERIOD OF TIME.
Protect Eye: Y
Protect Respiratory: Y
Label Name: AMERICAN COLLOID CO
Label Street: 1500 WEST SHURE DR
Label City: ARLINGTON HEIGHTS
Label State: IL
Label Zip Code: 60004
Label Country: US
Label Emergency Number: 312-392-4600

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
PATTERSON VERMICULITE -- VERMICULITE 1
MATERIAL SAFETY DATA SHEET
NSN: 685000F026460
Manufacturer's CAGE: PATTE
Part No. Indicator: A
Part Number/Trade Name: VERMICULITE 1

General Information

Company's Name: PATTERSON VERMICULITE COMPANY
Company's Street: RT. 1
Company's P. O. Box: 93
Company's City: ENCREE
Company's State: SC
Company's Country: US
Company's Zip Code: 29335
Company's Emerg Ph #: 803-969-2650
Company's Info Ph #: 803-969-2650
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 20JAN90
Safety Data Review Date: 18MAR93
Preparer's Company: PATTERSON VERMICULITE COMPANY
Preparer's St Or P. O. Box: RT. 1
Preparer's City: ENCREE
Preparer's State: SC
Preparer's Zip Code: 29335
MSDS Serial Number: BQJGX

Ingredients/Identity Information

Proprietary: NO
Ingredient: SILICA, MICA, MUSCOVITE
Ingredient Sequence Number: 01
Percent: 100
NIOSH (RTECS) Number: VV8760000
CAS Number: 12001-26-2
OSHA PEL: 20 MPCCF
ACGIH TLV: 3 MG/M3 RNDUST: 9293

Physical/Chemical Characteristics

Appearance And Odor: LIGHT TO DARK BROWN COLORED FLAKES; ODORLESS.
Specific Gravity: 0.16
Solubility In Water: INSOLUBLE

Fire and Explosion Hazard Data

Stability: YES
Hazardous Poly Occur: NO

Reactivity Data

Health Hazard Data

Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: INHALATION: COUGHING, SHORTNESS OF BREATH IF
SENSITIVE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE

Signs/Symptoms: Of Overexp: INHALATION: PULMONARY FIBROSIS.
Med Cond Aggravated By Exp: PULMONARY ABNORMALITIES.
REMO E TO FRESH AIR. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: IF MATERIAL IS UNCONTAMINATED, SWEEP UP & CONTAINERIZE FOR FUTURE USE.
Waste Disposal Method: CONTAMINATED MATERIAL CAN REMAIN AS HAZARDOUS AS THE MATERIAL IT HAS ABSORBED. DISPOSE OF IN ACCORDANCE W/FEDERAL, STATE & LOCAL REGULATIONS.

Precautions-Handling/Storing: KEEP DRY DURING STORAGE. HAZARDS OF THE MATERIAL THAT HAS BEEN ABSORBED WILL DICTATE THE WORK/HYGIENIC PRACTICES.

Other Precautions: AVOID UNINTENTIONAL CONTACT WITH LIQUIDS.

Control Measures

Respiratory Protection: MSHA/NIOSH APPROVED RESPIRATORY PROTECTION FOR INDIVIDUALS SENSITIVE TO DUST & AIRBORNE PARTICLES.
Ventilation: MECHANICAL (GENERAL): SUFFICIENT TO KEEP EXPOSURES BELOW PEL.
Protective Gloves: NOT REQUIRED
Eye Protection: SAFETY GOGGLES
Other Protective Equipment: PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS DEPEND UPON THE MATERIAL THAT HAS BEEN ABSORBED.

Work Hygienic Practices: REMOVE & WASH CONTAMINATED CLOTHES BEFORE REUSE. WASH HANDS THOROUGHLY AFTER HANDLING.

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 18MAR93
Label Date: 10FEB93
Label Status: F
Common Name: VERMICULITE 1
Chronic Hazard: YES
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: INHALATION: COUGHING, SHORTNESS OF BREATH IF SENSITIVE. TARGET ORGANS: LUNGS. CARCINOGEN: CARBON BLACK IS A SUSPECTED HUMAN CARCINOGEN.
Protect Eye: Y
Label Name: PATTERSON VERMICULITE COMPANY
Label Street: RT. 1
Label P.O. Box: 93
Label City: ENCREE
Label State: SC
Label Zip Code: 29335
Label Country: US
Label Emergency Number: 803-969-2650
Year Procured: UNK

URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
PYRO CHEM DIV OF BAKER INDUSTRIES -- PYRO CHEM ABC MULTIPURPOSE - DRY CHEMICAL FIRE EXTINGUISHING POWDER

GENERAL INFORMATION

Item Name: DRY CHEMICAL FIRE EXTINGUISHING POWDER
Company's Name: PYRO CHEM, INC. DIV OF BAKER INDUSTRIES INC.
Company's Street: 301 DIVISION STREET
Company's City: BOONTON
Company's State: NJ
Company's Country: US
Company's Zip Code: 07005-1826
Company's Emerg Ph #: 201-335-9750
Company's Info Ph #: 201-335-9750
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 010
Status: SE
Date MSDS Prepared: 01JUN88
Safety Data Review Date: 23JUN92
Preparer's Company: PYRO CHEM, INC. DIV OF BAKER INDUSTRIES
Preparer's St Or P. O. Box: 301 DIVISION STREET
Preparer's City: BOONTON
Preparer's State: NJ
Preparer's Zip Code: 07005-1826
MSDS Serial Number: BNKJY

INGREDIENTS/IDENTITY INFORMATION

Proprietary: NO
Ingredient: AMMONIUM PHOSPHATE MONOBASIC, AMMONIUM DIHYDROGEN PHOSPHATE
Ingredient Sequence Number: 01
Percent: > 90
NIOSH (RTECS) Number: 1003633AP
CAS Number: 7722-76-1
Proprietary: NO
Ingredient: SILICA, MICA, MUSCOVITE
Ingredient Sequence Number: 02
Percent: < 5%
NIOSH (RTECS) Number: VV8760000
CAS Number: 12001-26-2
OSHA PEL: 20 MPPCF
ACGIH TLV: 3 MG/M3 RDUST; 9293

PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance And Odor: ODORLESS FINE YELLOW POWDER
Solubility In Water: SLIGHT

FIRE AND EXPLOSION HAZARD DATA

Flash Point: NON-FLAMMABLE

REACTIVITY DATA

Stability: YES
Materials To Avoid: ALKALINE COMPOUNDS
Hazardous Decomp Products: AMMONIA GENERATION UNDER ALKALINE CONDITIONS
Hazardous Poly Occur: NO

HEALTH HAZARD DATA

1 of 3
02/23/98 11:51
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: INHALATION: IRRITATE RESPIRATORY TRACT. EYES & SKIN: IRRITATION.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: INHALATION: IRRITATION RESPIRATORY TRACT. SKIN & EYES: IRRITATION.
Med Cond Aggravated By Exp: SKIN SENSITIVITY; RESPIRATORY DISORDER
WASH WELL W/WATER. INHALATION: REMOVE FROM AREA OF EXPOSURE. OBTAIN MEDICAL CARE FOR IRRITATION, DISCOMFORT OR GROSS INGESTION.

Precautions for Safe Handling and Use
Steps If Matl Released/Spill: SIMPLE CLEANUP, CONTAINMENT, AND DISPOSAL.
Waste Disposal Method: CONSULT W/FEDERAL, STATE OR LOCAL ENVIRONMENTAL REGULATORY AGENCIES FOR ACCEPTABLE DISPOSAL PROCEDURES.
Precautions-Handling/Storing: STORE IN CLOSED CONTAINERS. KEEP DRY AND AT MODERATE TEMPERATURES.
Other Precautions: AVOID CONTAMINATION W/ALKALINE MATERIALS.

Control Measures
Respiratory Protection: NIOSH/MSHA APPROVED DUST RESPIRATOR
Ventilation: LOCAL EXHAUST
Protective Gloves: AS REQUIRED
Eye Protection: SAFETY GOGGLES
Other Protective Equipment: WASHING FACILITIES
Work Hygienic Practices: NORMAL CARE AND AWARENESS

Transportation Data

Disposal Data

Label Data
Label Required: YES
Technical Review Date: 23JUN92
Label Date: 28MAY92
Label Status: F
Common Name: PYRO CHEM ABC MULTIPURPOSE EXTINGUISHING POWDER
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: INHALATION: IRRITATE RESPIRATORY TRACT. EYES & SKIN: IRRITATION. IVER, KIDNEY, CENTRAL NERVOUS SYSTEM, & SKIN.
Protect Eye: Y
Protect Respiratory: Y
Label Name: PYRO CHEM, INC. DIV OF BAKER INDUSTRIES INC.
Label Street: 301 DIVISION STREET
Label City: BOONTON
Label State: NJ
Label Zip Code: 07005-1826
Label Country: US
Label Emergency Number: 201-335-9750
Year Procured: UNK
URL for this msds http://siri.org. If you wish to change, add to, or delete information in this archive please sent updates to dan@siri.org.
Appendix 4

Safety Meeting Checklist
Picayune Wood Treating Site
Picayune Wood Treating Site
Safety Meeting Checklist

<table>
<thead>
<tr>
<th>Site Safety Coordinator</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attendee Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SSC Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

Review Immediate and Pertinent Work Plans
Collect Current Medical Monitoring Certificates
Collect Current Respirator Fit Test Record
Collect Current Training Certificates
Hazardous Waste Operations 40 hr (OSHA 1910.120)
Hazardous Waste Operations Refresher (OSHA 1910.120)
Hazardous Waste Operations Supervisor (OSHA 1910.120)
Confined Space Entry
Air Supplied Respirators
Monitoring Equipment (other than Black & Veatch supplied)
First Aid/CPR
Other

Review Standing Safety Orders
Review personal protective equipment requirements
Review Emergency Action Plan
Anticipated emergency response discussed
Identify First Aid/CPR Trained Personnel to Team Members
Personnel trained to respond identified to team
Review Evacuation and Rally Procedures with Team Members
Conduct Chemical Hazard Training for Team Members
Detection Methods
Protective Measures
Location of MSDS
Labeling System used onsite
Signs/Symptoms of Overexposure
Review Communication Systems with Team Members

App-4-2
Note: If an item is not applicable, insert "N/A".

Safety briefings are to be held prior to initiating any site activity and at such times as necessary to ensure that employees are apprized of the site safety plan and that the plan is followed.
Appendix 5

Medical Monitoring Examination Elements
Picayune Wood Treating Site
Medical Monitoring Examination Elements

Baseline
- Medical History
- Respirator User Assessment
- Assessment for Hazardous Waste Worker
- Physical Examination
- Electrocardiogram (EKG)
- Pulmonary function test
- Chest X-ray
- Audiometry
- Vision Screen
- Stool Occult Blood
- Urinanalysis
- Hematology
- Blood Chemistry
- Coagulation
- Physician discretion exams

Biannual
- Baseline minus the X-ray
- Physician discretion exams

Exit
- Baseline minus EKG and respirator user assessment
- Physician discretion exams

Physician Discretion exams
- Annual chest X-ray
- Tetanus booster
- Serum PCB levels
- RBC Cholinesterase
- Plasma Cholinesterase
- Stress EKG
- 24 hr Dioxin in urine
- Heavy metals in urine

App-5-2
Appendix 6

Monitoring Equipment Action Levels
Picayune Wood Treating Site
Monitoring Equipment
Action Levels

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Reading</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>O₂ Meter (measure at source for LEL Meter, in breathing zone for PPE)</td>
<td>Less than 19.5% O₂.</td>
<td>Withdraw. Ventilate with fresh air. Explosimeter readings not valid if O₂ &lt; 10%.</td>
</tr>
<tr>
<td></td>
<td>Greater than 23% O₂.</td>
<td>Withdraw. Explosion hazard. Consult with Black &amp; Veatch HSM.</td>
</tr>
<tr>
<td>LEL Meter (measure at source)</td>
<td>Up to 5% LEL.</td>
<td>Continue activities.</td>
</tr>
<tr>
<td></td>
<td>5-10% LEL.</td>
<td>Continue. ID source.</td>
</tr>
<tr>
<td></td>
<td>Greater than 10% LEL.</td>
<td>Withdraw. Explosion hazard. Consult with Black &amp; Veatch HSM.</td>
</tr>
<tr>
<td>Organic Vapor Detector (PID or FID) (measure in breathing zone)</td>
<td>Background.</td>
<td>Level D</td>
</tr>
<tr>
<td></td>
<td>Up to 5 ppm above background.</td>
<td>Level C</td>
</tr>
<tr>
<td></td>
<td>Greater than 5 ppm above background.</td>
<td>Withdraw. Consult with Black &amp; Veatch HSM.</td>
</tr>
</tbody>
</table>
Appendix 7

Decontamination Methods
Picayune Wood Treating Site
## Personnel Decontamination

<table>
<thead>
<tr>
<th>Method*</th>
<th>Surface</th>
<th>Action</th>
<th>Technique</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soap and water</td>
<td>Skin and hands</td>
<td>Emulsifies and dissolves contaminant</td>
<td>Wash 2-3 minutes and monitor. Do not wash more than 3-4 times.</td>
<td>Readily available and effective for most contamination.</td>
<td>Continued washing will defat the skin. Indiscriminate washing of other than affected parts may spread contamination.</td>
</tr>
<tr>
<td>Lava soap, soft brush, and water</td>
<td>Skin and hands</td>
<td>Emulsifies, dissolves, and erodes</td>
<td>Use light pressure with heavy lather. Wash for 2 minutes, 3 times. Rinse and monitor. Use care not to scratch or erode the skin. Apply lanolin or hand cream to prevent chapping.</td>
<td>Readily available and effective for most contamination.</td>
<td>Continued washing will abrade the skin.</td>
</tr>
<tr>
<td>Tide or other detergent (plain)</td>
<td>Skin and hands</td>
<td>Emulsifies, dissolves, and erodes</td>
<td>Make into a paste. Use with additional water with a mild scrubbing action. Use care not to erode the skin.</td>
<td>Slightly more effective than washing with soap.</td>
<td>Will defat and abrade skin and must be used with care.</td>
</tr>
<tr>
<td>Mixture of 50% Tide and 50% cornmeal</td>
<td>Skin and hands</td>
<td>Emulsifies, dissolves, and erodes</td>
<td>Make into a paste. Use with additional water with a mild scrubbing action. Use care not to erode the skin.</td>
<td>Slightly more effective than washing with soap.</td>
<td>Will defat and abrade skin and must be used with care.</td>
</tr>
</tbody>
</table>
**Area and Material Decontamination**

<table>
<thead>
<tr>
<th>Method*</th>
<th>Surface</th>
<th>Action</th>
<th>Technique</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam</td>
<td>Non-porous surfaces <em>(especially painted or oiled surfaces)</em></td>
<td>Dissolves and erodes</td>
<td>Work from top to bottom and from upwind. Clean surface at a rate of 4 square feet per minute. The cleaning efficiency of steam will be greatly increased by using detergent.</td>
<td>Contamination may be reduced approximately 90% on painted surfaces.</td>
<td>Stream subject to same limitations as water. Spray hazard makes the wearing of waterproof outfits necessary.</td>
</tr>
<tr>
<td>Detergents</td>
<td>Non-porous surfaces <em>(metal, painted, glass, plastic, etc.)</em></td>
<td>Emulsifies contaminant and increases wetting power of water and efficiency of steam</td>
<td>Rub surface 1 minute with a rag moistened with detergent solution then wipe with dry rag; use clean surface of the rag for each application. Use a power rotary brush with pressure feed for more efficient cleaning. Apply solution from a distance with pressure proportioned. Do not allow solution to drip onto other surface. Mist application is all that is necessary.</td>
<td>Dissolve industrial film and other materials which hold contamination. Contamination may be reduced by 90%.</td>
<td>May require personal contact with surface. May not be efficient on longstanding contamination.</td>
</tr>
<tr>
<td>Method*</td>
<td>Surface</td>
<td>Action</td>
<td>Technique</td>
<td>Advantages</td>
<td>Disadvantages</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------------</td>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Complexing agents</td>
<td>Non-porous surfaces</td>
<td>Forms soluble complexes with contaminated material</td>
<td>Complexing agent solution should contain 3% (by weight) of agent. Spray surface with solution. Keep surface moist 30 minutes by spraying with solution periodically. After 30 minutes, flush material off with water. Complexing agents may be used on vertical and overhead surfaces by adding chemical foam (sodium carbonate or aluminum sulfate).</td>
<td>Holds contamination in solution. Contamination may be reduced by 75% in 4 minutes on unweathered surfaces. Easily stored; carbonates and citrates are nontoxic, noncorrosive.</td>
<td>Requires application for 5 to 30 minutes. Little penetrating power; of small value on weathered surfaces.</td>
</tr>
<tr>
<td>Organic solvents</td>
<td>Non-porous surfaces</td>
<td>Dissolves organic materials (oil, paint, etc.)</td>
<td>Immerse entire unit in solvent or apply by wiping procedure (see Detergents).</td>
<td>Quick dissolving action. Recovery of solvent possible by distillation.</td>
<td>Requires good ventilation and fire precautions. Toxic to personnel. Material bulky.</td>
</tr>
</tbody>
</table>

App-7-4
# Area and Material Decontamination

<table>
<thead>
<tr>
<th>Method*</th>
<th>Surface</th>
<th>Action</th>
<th>Technique</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic acids</td>
<td>Metal surfaces (especially with porous deposits; i.e., rust or calcerous growth); circulatory pipe systems</td>
<td>Dissolve porous deposits</td>
<td>Use dip-bath procedure for movable items. Acid should be kept at a concentration of 1 to 2 normal (9 to 18% hydrochloric, 3 to 6% sulfuric acid). Leave on weathered surfaces for 1 hour. Flush surface with water, scrub with a water-detergent solution, and rinse. Leave in pipe circulatory system 2 to 4 hours; flush with plain water, a water-detergent solution, then again with plain water.</td>
<td>Corrosive action on metal and porous deposits. Corrosive action may be moderated by addition of corrosion inhibitors to solution.</td>
<td>Personal hazard. Wear goggles, rubber boots, gloves, and aprons. Good ventilation required because of toxicity and explosive gases. Acid mixtures should not be heated. Possibility of excessive corrosion if used without inhibitors. Sulfuric acid not effective on calcerous deposits.</td>
</tr>
<tr>
<td>Acid mixtures: Hydrochloric, sulfuric, acetic, citric acids, acetates, citrates</td>
<td>Non-porous surfaces (especially with porous deposits); circulatory pipe systems</td>
<td>Dissolves porous deposits</td>
<td>Same as for inorganic acids. A typical mixture consists of 0.1 gal. hydrochloric acid, 0.2 lb. sodium acetate, and 1 gal. water.</td>
<td>Contamination may be reduced by 90% in 1 hour (unweathered surfaces). More easily handled than inorganic acid solution.</td>
<td>Weathered surfaces may require prolonged treatment. Same safety precautions as required for inorganic acids.</td>
</tr>
</tbody>
</table>
# Area and Material Decontamination

<table>
<thead>
<tr>
<th>Method*</th>
<th>Surface</th>
<th>Action</th>
<th>Technique</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caustics:</strong> lye (sodium hydroxide), calcium hydroxide, potassium hydroxide</td>
<td>Painted surfaces (horizontal)</td>
<td>Softens paint (harsh method)</td>
<td>Allow paint-remover solution to remain on surface until paint is softened to the point where it may be washed off with water. Remove remaining paint with long-handled scrapers. Typical paint remover solution: 10 gal. water, 4 lb. lye, 6 lb. boiler compound, 0.75 lb. cornstarch.</td>
<td>Minimum contact with contaminated surfaces. Easily stored.</td>
<td>Personal hazard (will cause burns). Reaction slow; thus, it is not efficient on vertical or overhead surfaces. Should not be used on aluminum or magnesium.</td>
</tr>
<tr>
<td>Trisodium phosphate</td>
<td>Painted surfaces (vertical, overhead)</td>
<td>Softens paint (mild method)</td>
<td>Apply with 10% solution by rubbing and wiping procedure (see Detergent).</td>
<td>Contamination may be reduced to tolerance in one or two applications.</td>
<td>Destructive effect on paint. Should not be used on aluminum or magnesium.</td>
</tr>
<tr>
<td>Abrasion</td>
<td>Non-porous surfaces</td>
<td>Removes surfaces</td>
<td>Use conventional procedures, such as sanding, filing and chipping; keep surface damp to avoid dust hazard.</td>
<td>Contamination may be reduced to as low a level as desired.</td>
<td>Impractical for porous surfaces because of penetration by moisture.</td>
</tr>
<tr>
<td>Sandblasting</td>
<td>Non-porous</td>
<td>Removes surfaces</td>
<td>Keep sand wet to loosen.</td>
<td>Practical for large surface areas.</td>
<td>Impractical for porous surfaces because of penetration by moisture.</td>
</tr>
</tbody>
</table>
## Area and Material Decontamination

<table>
<thead>
<tr>
<th>Method*</th>
<th>Surface</th>
<th>Action</th>
<th>Technique</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>

- Begin with the first listed method and then proceed step by step to the more severe methods, as necessary.
The following Task Health and Safety Plan (HASP) is health and safety information specific to the tasks described within. This Task HASP is an extension of the Site HASP and as such must be used in conjunction with that document.
Contents

1.0 Scope of Work ................................................. A-1

2.0 Site Background ............................................. A-2
  2.1 Task Specific Background ................................. A-2

3.0 Hazard Assessment ............................................ A-7
  3.1 Chemical Hazards ......................................... A-7
  3.2 Physical Hazards .......................................... A-7
    3.2.1 Drilling Services .................................. A-7
    3.2.2 Overhead Utilities ................................ A-8
    3.2.3 Underground Utilities ............................ A-8
    3.2.4 Soil Gas Pockets .................................. A-8
    3.2.5 Environmental Sampling .......................... A-8
    3.2.6 Staging Drums ..................................... A-8
    3.2.7 Surveying Oversight ............................... A-8
  3.3 Overall Hazard Level .................................... A-9
  3.4 Personal Protective Equipment (PPE) ................. A-9
  3.5 Decontamination ......................................... A-9

4.0 Personnel Qualifications ................................. A-11
  4.1 Training Requirements ................................ A-11
  4.2 Medical Monitoring ..................................... A-11

5.0 Personal Protective Equipment ........................ A-12

6.0 Monitoring Program ...................................... A-13

7.0 Site Control ............................................... A-14

8.0 Safety and Emergency Procedures ..................... A-15

9.0 Emergency Action Plan ................................ A-16

10.0 Team Member Responsibilities ......................... A-17

11.0 Certification ............................................. A-18

12.0 Record of Changes ..................................... A-19

TCA-1
Figures

Figure 1  Site Location Map ............................................. A-5
Figure 2  Site Layout Map ............................................... A-6

Tables

Table 3-1  Task 1 Hazard Analysis ...................................... A-10
1.0 Scope of Work

This Task Health and Safety Plan (HASP) applies to all Black & Veatch Special Projects, Corp. (Black & Veatch) personnel and their subcontractors who will be providing services at the Picayune Wood Treating (PWT) site, located in Picayune, Pearl River County, Mississippi.

This Task HASP encompasses the proposed activities at the PWT site including: direct push technology (DPT) drilling services, soil and sediment sampling; and surveying using a handheld global positioning system (GPS) unit. Advancement of the soil borings and all sampling will be conducted in accordance with the standards established in the Environmental Compliance Branch's Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), United States Environmental Protection Agency Region 4, SESD, November 2001. The proposed soil boring advancement and sampling locations are presented in Section 3.0 of the FSP. Permits to advance the soil borings will be secured from the appropriate authorities, where appropriate, by Black & Veatch's drilling subcontractor prior to commencement of drilling activities.

The Black & Veatch field team will consist of the following members:

- Site Manager: Phillip Cole
- Site Safety Coordinator: Chris Allen
- Site Sample Coordinator: Chris Allen
- Site Geologist: Phillip Cole
- Site Samplers: Ryan Brown, Endalew Gedafie

The starting date for the Remedial Investigation (RI) field event will be July 10, 2006.

The subcontractor for DPT drilling is Zebra Environmental, Inc. The site is accessible from 403 Davis ST., Picayune, MS 39466-4313. The location of the equipment decontamination will be determined by the site conditions.
2.0 Site Background

The PWT site is a 30-acre site located at 403 Davis Street in the city of Picayune, Pearl River County, Mississippi. The site is located near the center of Section 15, Township 16 South, Range 17 West at longitude 89° 41' 30" and latitude 30° 31' 30". Figure 1 shows the location of the site. A site layout map is provided in Figure 2.

2.1 Task Specific Background

The PWT site is located within an industrial complex that once included a sawmill, veneer mill, a wooden box factory, and a tung oil extraction facility. Abandoned buildings and concrete foundations of these former facilities are located near the northern and southern property lines.

The facility utilized a pressurized wood treating process to produce wood products (primarily utility poles and foundation piling). The wood preserving plant was constructed in 1945–1946 by Crosby Forest Products, Inc. Crosby Wood Preserving, Inc., purchased the plant and other manufacturing operations in 1963. Wood Treating, Inc. (WTI), purchased the wood preserving facility and approximately 30 acres of land in 1973 and operated the plant until it was closed in 1999.

Figure 2 shows the layout of the site when it was operational. The main process area was located near the eastern portion of the site. The main process area included the creosote, pentachlorophenol (PCP), and diesel storage tank area; oil/water separator tanks; the treatment vessels; and the treatment building. The closed cooling water impoundment and the biological treatment storage tanks were located to the north of the main process area. The wastewater treatment plant was located to the south of the main process area. The central portion of the site was the product storage area. The closed trench impoundments are in the western portion of the site.

Two industries are presently operating at the complex: a paint blending company located to the north of the site and a chromated copper arsenate (CCA) wood treating operation to the southwest of the site.

The site is bounded on the north by a residential, commercial, and industrial area; on the south by a public park, day care center, and residences; to the east by a commercial and industrial area; and on the to the west by the Southside Elementary School and residences.
Figure 1
Site Location Map
Picayune Wood Treating Site
Picayune, Mississippi
Figure 2
Site Layout
Picayune Wood Treating Site
Picayune, Mississippi
The site is located in the Pine Meadows Belt of the East Gulf Coastal Plain Physiographic Province. The Pine Meadows Belt consists of Pleistocene Terraces featuring low, seaward facing scarps and shallow swales bordered by slightly higher ground having the appearance of natural levees. Surface deposits in this belt are described as loam, sand, gravel, and clay.

Maximum relief within the entire site area is less than 7 feet with an average elevation of 59 feet National Geodetic Vertical Datum (NGVD). Site runoff is collected in surface ditches and is eventually discharged into Mill Creek, a small tributary to Pearl River. Pearl River is located approximately 3 miles to the southwest of the site.

The area surrounding the site in Pearl River County has an humid subtropical climate. The annual average temperature in the area near the site is 64° F. Average monthly temperatures range from a high of 92° F in July to a low of 38° F in January. The average annual precipitation in the area is approximately 53 inches and the mean annual lake evaporation is 43 inches, yielding a net annual precipitation of 9 inches (USGS, 1972; USDC, 1983). The 2-year, 24-hour rainfall event for the area is approximately 3.8 inches (USDC, 1961).

2.2 Nature and Extent of Hazardous Materials

CDM began a RI in 2002 in which they collected and analyzed soil, sediment, surface water, and groundwater samples. CDM prepared several Sampling and Analysis Plans, with the latest being prepared in March 2005, in support of their field sampling events. In addition, CDM documented the results of these RI activities in their Draft Data Summary Report, Phase IV Investigation, Picayune Wood Treating Site, Picayune, Mississippi, Dated July 2005 (CDM, 2005).

The results of this report gave the nature and extent of hazardous materials present at the PWT site as follows:

Surface Soils

- Carcinogenic PAHs were detected at each surface soil location above the PRG for BaP TEQs of 62 micrograms per kilogram [µg/kg (parts per billion, ppb)]. Concentrations ranged from 173 µg/kg to 405,490 µg/kg (CDM, 2005).
- Dioxin, as measured by its TEQ, was detected in each of the grids in which it was analyzed. Concentrations ranged from 4.3 to 30,630 nanograms (ng)/kg (parts per trillion, ppt) (CDM, 2005). The EPA’s current dioxin soil cleanup level for typical direct contact residential exposure is 1,000 ng/kg. This cleanup level is derived from EPA’s April 13, 1998, Office of Solid Waste and Emergency Response (OSWER) Directive titled Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites [9200.4-26 (EPA, 1998b)]. In this directive, EPA states that 1 µg/kg (1,000 ng/kg) TEQ is to be generally
used as a starting point for setting cleanup levels for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal sites and as a PRG for remedial sites for dioxin in surface soil involving a residential exposure scenario. For commercial/industrial exposure scenarios, a soil level within the range of 5 μg/kg (5,000 ng/kg) to 20 μg/kg (20,000 ng/kg) TEQ should generally be used as a starting point for setting cleanup levels at CERCLA removal sites. The 1998 directive serves as an interim policy pending the release of EPA’s dioxin reassessment.

Subsurface Soil Samples (collected from 3 to 4 feet bls at 29 locations.)
- Carcinogenic PAHs were detected at 14 subsurface soil locations above the PRG for BaP TEQs of 62 micrograms per kilogram [μg/kg (parts per billion, ppb)]. Concentrations above the PRG ranged from 170 μg/kg to 24,000 μg/kg (CDM, 2005).
- PCP was detected at 4 subsurface soil locations above the PRG of 2,979 μg/kg. Concentrations above the PRG ranged from 3,300 μg/kg to 36,000 μg/kg (CDM, 2005).

Sediment Samples (collected from 0 to 6 inches at 66 locations)
- Carcinogenic PAHs were detected at 44 sediment locations above the PRG for PaP TEQ of 62 μg/kg. Concentrations above the PRG ranged from 62 to 55,570 μg/kg (CDM, 2005).
- PCP was detected at 3 sediment locations above the PRG of 2,979 μg/kg. Concentrations above the PRG ranged from 5,800 to 56,000 μg/kg (CDM, 2005).
- Dioxin, as measured by its TEQ, was detected in 6 sediment samples above the EPA soil cleanup level of 1,000 ppt. Concentrations ranged from 1,100 to 12,000 ng/kg (parts per trillion, ppt) (CDM, 2005).
3.0 Hazard Assessment

3.1 Chemical Hazards
Although the work to be conducted under this Task HASP is intrusive, chemical hazards are considered to be low. Potential sources of contamination include the former eight to ten septic waste lagoons and the waste pile.

Contaminants of concern at the PWT site are listed in Appendix 2, Table 2-1 of the Site HASP. The table lists the exposure routes, allowable exposure levels for the chemicals, signs and symptoms of exposure, immediately dangerous to life and health (IDLH) values, and Chemical Abstracts Service (CAS) registry numbers.

3.2 Physical Hazards
Except as noted in Section 3.4, Black & Veatch and their subcontracting personnel present during any of the previous listed activities will wear modified level D safety equipment including steel toed boots and eye protection. Potential physical hazards include slip, trip, and fall hazards associated with an overgrown site as well as physical hazards associated with heavy equipment (i.e., drilling equipment, lifting of samples, and sampling equipment). Additional physical hazards such as drowning may be associated with collecting sediment and surface water samples from pond embankments. Biological hazards include insect bites, snakes, and other pests associated with the overgrown areas of the site.

3.2.1 Drilling Services
Physical hazards associated with drilling services include fire or explosion while refueling engines, accidents associated with overhead hoisting, heavy swinging loads overhead, entanglement in ropes and cables. Other hazards include hand and finger injury from crushing or entanglement in ropes and cables, splash hazard from drilling fluids or liquid from wells, eye injury from water or decontamination solvent spray, and slips or falls from wet platforms. Additional potential physical hazards include overhead and underground utilities (see Sections 3.2.2 and 3.2.3), proximity to heavy equipment (i.e., drilling equipment), soil gas pockets (see Section 3.2.4), and noise hazards. Black & Veatch will provide subcontractor (to be determined) oversight and air monitoring during drilling services. All drilling activity will be halted during thunderstorms with lightning, to include lowering the boom. No confined space entry is anticipated at the site, nor will any confined space entry be conducted without written authorization from the DHS or designee.
3.2.2 Overhead Utilities
Potential hazards include electric shock from contacting electrical utility lines with equipment drill rig masts.

3.2.3 Underground Utilities
Potential hazards include fire and explosion from gas leaks from buried gas lines and electrical shock hazards from underground electrical lines resulting from contact or penetration with soil boring equipment.

3.2.4 Soil Gas Pockets
Potential hazards include fire and explosion from release of gas pockets beneath impermeable surfaces and exposure to toxic substances from gas pockets. Release is usually due to penetration of the gas pocket by drilling or sampling rods.

3.2.5 Environmental Sampling
Physical hazards associated with hand augering soil and sediment samples include back strains and slips, trips, and falls. Physical hazards associated with sediment sampling also include splash hazard from overlying surface water and eye injury from water and preservative chemicals; sediment samples will be collected from the bank and not from a boat.

3.2.6 Staging Drums
Potential hazards include accidents while hoisting drums, crushing injuries to hands and feet, and back injury from improper lifting.

3.2.7 Surveying
Black & Veatch will perform the surveying activities. Potential hazards during surveying activities include potential biological hazards (e.g., insect bites or snakes) in the overgrown areas. Surveying will not be performed along active highways.

3.3 Overall Hazard Level
During soil boring advancement, the potential for exposure to contaminants by inhalation or direct skin contact and the potential for accidents due to mechanical failure or operator negligence create a moderate hazard level. During environmental sampling and surveying, the overall hazard level will be low as risk to contaminant exposure is reduced and risk of mechanical failure or operator negligence will be eliminated. During drum staging, the overall hazard level is moderate resulting from a higher potential to contact chemical contaminants, and from increased potential for physical injury from material handling. Table 3-1 presents a summary of the major hazards associated with primary task activities. Appendix 6 of the Site HASP provides requirements for monitoring equipment and action levels.
3.4 Personal Protective Equipment (PPE)
Due to the low to moderate hazard levels expected during field activities, Black & Veatch and its subcontractors will conduct the aforementioned tasks in modified level D, except as otherwise noted in Table 3-1, which includes pants with long sleeves, steel toed boots, eye protection, and a double layer of nitrile gloves as noted in Section 5.0. Hard hats will be required for activities with overhead hazards as noted in Table 3-1. If upgrade to Level C PPE is required, see Section 5.2 of the Site HASP.

3.5 Decontamination
All dirty equipment and PPE will be stored in the contamination reduction zone. Field equipment and personnel will be decontaminated in the contamination reduction zone prior to entering the support zone in order to eliminate the spread of contamination. The decontamination of field personnel and field equipment will be completed following the procedures in Appendix 7 of the Site HASP. A location for the decontamination zone will be in the field. This location will be established prior to beginning activities and will be drawn onto the site map and posted at the command post.
<table>
<thead>
<tr>
<th>Principle Steps</th>
<th>Potential Safety or Health Hazards</th>
<th>Monitoring Requirements</th>
<th>Action Levels</th>
<th>Personal Protective Equipment</th>
<th>Recommended Controls</th>
<th>Training Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drilling Soil Borings</td>
<td>Refer to Sections 3.2.1, 3.2.2, 3.2.3, and 3.2.4; exposure to contaminant concentrations</td>
<td>FID; O2/LEL; Visual awareness for other safety hazards.</td>
<td>No Change.</td>
<td>Level D. Upgrade as required.</td>
<td>Underground utilities will be marked and overhead utilities will be noted prior to drilling. Drilling equipment will be moved in a controlled manner; keep alert for overhead hazards and slippery surfaces.</td>
<td>No modifications.</td>
</tr>
<tr>
<td>Collecting Soil and Sediment Samples</td>
<td>Exposure to contaminant concentrations; slip, trip, and fall hazards.</td>
<td>FID; visual awareness</td>
<td>No Change.</td>
<td>Modified Level D. Upgrade as required.</td>
<td>Secure footing and maintain proper balance when using hand augering equipment. The equipment will be gently lowered into the water when collecting sediment samples to minimize splash hazard.</td>
<td>No modifications.</td>
</tr>
</tbody>
</table>
4.0 Personnel Qualifications

4.1 Training Requirements

Personnel, who will be working onsite at the PWT site, must present to the Black & Veatch site safety coordinator (SSC) a certificate of completion of an initial 40-hour hazardous waste operations training course and, or the most recent certificate of completion for an 8-hour refresher course. The course must have been completed within the 12 months of the individual being onsite performing hazardous waste operations. The training must comply with OSHA regulations found at 29 Code of Federal Regulations (CFR) 1910.120(e). The certification must be presented to the SSC before site activities begin.

All personnel must complete a minimum of three days on-the-job training under the direct supervision of a qualified SSC or site supervisor before they are qualified to work at a hazardous waste site unsupervised.

Consistent with OSHA 29 CFR 1910.120 paragraph (e)(4), individuals serving in a supervisory role, such as the field team leader or SSC, requires an additional 8 hours of training. Black & Veatch individuals functioning in a SSC capacity shall also have at least 6 days of experience at the level of protection planned for in this HASP. A SSC qualified at a given level of protection is also qualified as a SSC at a lesser level of protection.

4.2 Medical Monitoring

All Black & Veatch personnel who engage in onsite operations at the PWT site must present, to the Black & Veatch SSC, certification of completion, within the 24 months prior to the beginning of site activities, a comprehensive medical monitoring examination. All subcontractor personnel who engage in hazardous waste operations must present, to the Black & Veatch SSC, certification of completion, within 12 months prior to the beginning of site activities, a comprehensive medical examination. The examination must comply with OSHA regulation found at 29 CFR 1910.120 et. seq. The certification must be signed by a medical doctor and indicate any work limitations placed on the individual. The certification also must specify that the individual is capable of working while wearing respiratory protective equipment. The certification must be presented before site activities begin.
5.0 Personal Protective Equipment

Personnel protective equipment will be worn for this task as described in Section 3.3. PPE generated by Black & Veatch will be treated as Investigation-Derived Waste, (IDW). IDW staged on the site, including drumming.

Please refer to Table 3-1 for task specific monitoring requirements. Information on additional monitoring equipment requirements and action levels is discussed in Appendix 6 of the Site HASP.

Potential levels of protection and their specific PPE for this site are as follows:

**Level D PPE:**
- Tyvek for soil sampling, Saranex for water sampling.
- Boots, steel toe.
- Outer boot covers, chemical-resistant, disposable.
- Outer gloves, chemical-resistant (11 mil nitrile).
- Inner gloves, chemical-resistant (4 mil nitrile).
- Hardhat
- Safety glasses with sideshields.

**Level D PPE - Modified**
- Work clothes
- Boots, steel toe.
- Work gloves
- Outer gloves, chemical-resistant (11 mil nitrile).
- Inner gloves, chemical-resistant (4 mil nitrile).
- Hardhat
- Safety glasses with sideshields.

See Section 5.2 of the Site HASP for Level C PPE Requirements.
6.0 Monitoring Program

Please refer to Table 3-1 for task specific onsite monitoring requirements. If conditions appear to warrant further protection, work activities will be discontinued.
7.0 Site Control

Black & Veatch will limit access of personnel to the work zones through the use of orange cones and caution flagging to denote potentially hazardous work areas. Work zones, as discussed in the HASP, will be established prior to the performance of site activities. The support area will be set up in a location outside the contamination reduction zone and will be utilized as a command post. The contamination reduction zone will be located just beyond the support zone and will be utilized for storage of used equipment and decontamination of equipment and personnel if required. The exclusion zone will be marked in accordance with work activities. Work zones, once established, will be drawn onto the site map and posted at the command post.

Black & Veatch personnel will use the established hand signals when verbal communication is not practical. Information on the nearest medical facility route to the facility, and emergency numbers are included in the Site HASP. A map depicting the hospital as well as written directions is included in the Site HASP.
8.0 Safety and Emergency Procedures

Emergencies will be responded to as discussed in the Site HASP.
9.0 Emergency Action Plan

The Emergency Action Plan, as discussed in section 9.0 of the Site HASP, will be implemented as necessary under the guidelines of the Site HASP.
10.0 Team Member Responsibilities

Black & Veatch personnel are responsible for all sampling activities conducted during the PWT site RI field effort.

The Black & Veatch field team will consist of the following members:

- Site Manager: Phillip Cole
- Site Safety Coordinator: Chris Allen
- Site Sample Coordinator: Chris Allen
- Site Geologist: Phillip Cole
- Site Samplers: Ryan Brown, Endalew Gedafie
11.0 Certification
Picayune Wood Treating Site
Certification Record

By my signature, I certify that:

- I have read, I understand, and I will abide by this Task 2 Health and Safety Plan for the PWT site.

<table>
<thead>
<tr>
<th>PRINTED NAME</th>
<th>SIGNATURE</th>
<th>DATE</th>
<th>AFFILIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12.0 Record of Changes

Changes to this Task HASP must be made on the following form and submitted to the Black & Veatch PM and HSM for their approval. Field activities related to the potential for exposure to contaminants shall be halted until the Task HASP has been modified to reflect changed conditions and the Black & Veatch HSM has reviewed or approved the changes. All field team members who are affected by the changes must initial that they have been apprized of the changes.

<table>
<thead>
<tr>
<th>REVISION NUMBER</th>
<th>SUBJECT</th>
<th>SECTION/PAGE</th>
<th>INITIALS/DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A-19