



# **U.S. Army Corps of Engineers**

New England District  
Concord, Massachusetts

**Soil and Sediment Remediation  
Open Burning Grounds  
Seneca Army Depot Activity  
Romulus, New York**

**Contract No. DACW33-95-D-0004**

**REVISED DRAFT  
SITE SAFETY AND HEALTH PLAN  
Delivery Order No. 0013  
DCN: SEDA-042399-AACO**

**April 1999**



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SOIL AND SEDIMENT REMEDIATION  
OPEN BURINING GROUNDS  
SENECA ARMY DEPOT ACTIVITY  
ROMULUS, NEW YORK**

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Prepared for:

**U.S. ARMY CORPS OF ENGINEERS  
NORTH ATLANTIC DIVISION  
NEW ENGLAND DIVISION  
696 Virginia Road  
Concord, MA 01742-2751**

Prepared by:

**Roy F. Weston, Inc.**  
1 Wall Street  
Manchester, NH 03101

April 1999

W.O. Number 03886-118-013-0150-01



SITE SAFETY AND HEALTH PLAN (SSH)  
SOIL AND SEDIMENT REMEDIATION  
OPEN BURNING GROUNDS  
SENECA ARMY DEPOT ACTIVITY  
ROMULUS, NEW YORK

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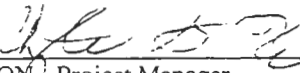
SITE SAFETY AND HEALTH PLAN APPROVALS

By their specific signature, the undersigned certify that this SSHASP is approved for use during soil and sediment remediation activities at the Seneca Army Depot Site, in Romulus, New York.

Signature, Name, Title

  
for WESTON - Program Manager  
Roberto Rico

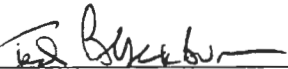
4-22-99  
Date

  
WESTON - Project Manager  
Christopher Kane

4/22/99  
Date

WESTON - Program CIH  
George M. Crawford, CIH

\_\_\_\_\_  
Date

  
WESTON - Program Safety Manager  
Theodore L. Blackburn, CSP, CET

4-22-99  
Date

WESTON - Site Manager

\_\_\_\_\_  
Date

WESTON - Site Safety and Health Officer

\_\_\_\_\_  
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\_\_\_\_\_  
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**ATTACHMENT 2 – SITE SPECIFIC HEALTH AND SAFETY PLAN**



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## LIST OF ACRONYMS

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ABIH	American Board of Industrial Hygiene
AIHA	American Industrial Hygiene Association
ANSI	American National Standards Institute
APR	Air-Purifying Respirator
BBP	Bloodborne Pathogens
BZ	Breathing Zone
CDC	Centers for Disease Control
CENAE	Corps of Engineers, North Atlantic Division
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGI	Combustible Gas Indicator
CIH	Certified Industrial Hygienist
CO	Contracting Officer
COR	Contracting Officer's Representative
CPR	Cardiopulmonary Resuscitation
CRC	Contamination Reduction Corridor
CRZ	Contamination Reduction Zone
DO	Delivery Order
DOD	U.S. Department of Defense
DOT	U.S. Department of Transportation
EC	Emergency Coordinator
EMR	Emergency Medical Resources, Inc.
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
eV	Electron Volt
EZ	Exclusion Zone
FAR	Federal Acquisition Regulations
FID	Flame Ionization Detector



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## LIST OF ACRONYMS (CONTINUED)

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FLD	Field Operating Procedures
FOP	Field Operating Plans
FS	Field Supervisor
GFCI	Ground Fault Circuit Interrupter
HAZWOPER	Hazardous Waste Operations and Emergency Response
HCS	Hazard Communication Standard
HEPA	High Efficiency Particulate Air
ID	Identification
IDLH	Immediately Dangerous To Life And Health
IH	Industrial Hygienist
LEL	Lower Explosive Limit
LOP	Level Of Protection
mA	Milliampere
MINIRAM	Miniature Real-Time Aerosol Monitor
mph	Miles Per Hour
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NEC	National Electrical Code
NESC	National Electrical Safety Code
NIOSH	National Institute for Occupational Safety and Health
OHP	Occupational Health Program
OHS	Occupational Health Services
OP	Operating Practice
OSHA	Occupational Safety and Health Administration
OVA	Organic Vapor Analyzer
OVM	Organic Vapor Meter
PCB	Polychlorinated Biphenyls
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PPE	Personal Protective Equipment



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**LIST OF ACRONYMS  
(CONTINUED)**

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QA	Quality Assurance
QC	Quality Control
RPP	Respiratory Protection Plan
SCBA	Self-Contained Breathing Apparatus
SOP	Standard Operating Procedure
SOW	Scope Of Work
SSHASP	Site-Specific Health and Safety Plan
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SZ	Support Zone
TLV	Threshold Limit Value
TSDF	Treatment, Storage, Disposal Facility
TWA	Time Weighted Average
TWP	Task Work Plan
UL	Underwriter's Laboratory
USACE	U.S. Army Corps of Engineers
UXO	Unexploded Ordnance
WESTON®	Roy F. Weston, Inc.





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**SECTION 1**

**INTRODUCTION**

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# 1. INTRODUCTION

## 1.1 PURPOSE/OBJECTIVES

The purpose of this document is to establish standard safety and health procedures for Roy F. Weston, Inc. (WESTON<sup>®</sup>) and subcontractor personnel in performance of their work. Any project activities shall be performed in accordance with this document and the attached Site Specific Health and Safety Plan (SSHASP). This Site Safety and Health Plan (SSHP) is a living document and is subject to change based on review and the implementation of additional tasks.

This SSHP establishes the work practices necessary to help ensure protection of site personnel, the local community, and U.S. Army Corps of Engineers (USACE) personnel during site activities. The objective of this SSHP is to provide a mechanism for the establishment of safe working conditions. Specific hazards control methodologies have been evaluated and selected in an effort to minimize the potential of accident or injury.

All site activities will be performed in accordance with this SSHP, applicable local and WESTON policies and procedures, Occupational Safety and Health Administration (OSHA), and USACE requirements. The levels of personal protection and the procedures specified in this plan and the SSHASP are based on the best information available from reference documents and current site data. Therefore, these recommendations represent the minimum health and safety requirements to be observed by all personnel engaged in this project. Unforeseeable site conditions or changes in Scope of Work (SOW) may warrant a reassessment of protection levels and controls stated. All adjustments to the SSHP must have prior approval by the Program Safety Manager, the Certified Industrial Hygienist (CIH) and Corps of Engineers, North Atlantic Division, New England District (CENAE).

All WESTON and subcontractor personnel involved in this project shall review and understand this document prior to the start of work. Any questions or concerns in reference to this SSHP shall be directed to the Site Safety and Health Officer (SSHO). All on-site personnel shall follow the designated safety and health procedures, be alert to the hazards associated with working on the site, and exercise reasonable caution at all times.

The regulations and guidelines listed in Subsection 1.2 provide employers and employees with the information and training necessary to improve workplace safety and health, thereby minimizing the potential for injury and illness resulting from hazardous waste operations.

This SSHP is designed to anticipate, identify, evaluate, and control safety and health hazards, in addition to providing emergency response procedures relative to operations conducted at the site.

## **1.2 REGULATIONS AND GUIDELINES**

The safety and health of on-site personnel, visitors, USACE and the local community will be insured by following all applicable requirements and regulations that are listed in the following publications:

- 29 CFR 1910
- 29 CFR 1926
- EM 385-1-1
- ER 385-1-92
- WESTON Corporate Health and Safety Program.

## **1.3 DRUG AWARENESS AND DRUG-FREE WORKPLACE**

WESTON fully supports all aspects of the Drug-Free Workplace Act of 1988. As such, WESTON has implemented Operating Practice 05-01-010 Drug-Free Workplace. Strict disciplinary actions are enforced for any violation of WESTON's Drug-Free Workplace policy. All WESTON employees, as a condition of employment, have documented understanding and receipt of this policy.

In the event that employee drug testing is required in the performance of individual delivery order work under this contract, those affected employees will be notified and actions taken in accordance with applicable rules and policies prior to initiation of site work activities.

WESTON subcontractors are expected to comply fully with the requirements of this policy and all provisions and clauses of the contract (see Federal Acquisition Regulation clause 52.223-6).

Unless specifically indicated in the SSHASP, employee drug testing is not required in the performance of this delivery order.

#### **1.4 SITE DESCRIPTION AND BACKGROUND**

A description of the site and site history is provided in the SSHASP.



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**SECTION 2**

**HEALTH AND SAFETY ORGANIZATION**

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## **2. HEALTH AND SAFETY ORGANIZATION**

### **2.1 GENERAL**

All operations and personnel having the potential for exposure to site hazards are subject to the requirements of this SSHP. Work shall not be performed in a manner that conflicts with the intent of, or the inherent safety health or environmental precautions expressed in this plan. After due warnings, personnel violating safety procedures will be dismissed from the site.

The health and safety requirements listed in this plan may change as work progresses at the site, however, no changes will be made without approval of the USACE Contracting Officer (CO) or his authorized representative. An Organizational Chart depicting the Chain of Command is contained in the SSHASP. Specific WESTON personnel (Project Manager, Site Quality Control (QC) Systems Manager, Site Safety and Health Officer) are listed in the SSHASP.

#### **2.1.1 Program Manager**

The Program Manager is responsible for establishing and executing program administrative matters, program controls, program-related policy matters, and program levels of authority, responsibility, and communication. The Program Manager is ultimately responsible for project health and safety.

Mr. Roberto Rico, will serve as the Program Manager. Mr. Rico has over 8 years of program management experience working on U.S. Army Corps of Engineers, U.S. Department of Defense (DOD), and U.S. Environmental Protection Agency (EPA) task order contracts.

#### **2.1.2 Deputy Program Manager**

The Deputy Program Manager is responsible for day-to-day operations and health and safety. The Deputy Program Manager will coordinate with the Program Manager and site personnel to ensure overall site health and safety.

Mr. Bruce Campbell will serve as the Deputy Program Manager for this project. Mr. Campbell has over 6 years of experience in private, federal, state, and local engineering projects with extensive experience directing field operations, human resources, equipment, and general construction administration/management.

### **2.1.3 Certified Industrial Hygienist (CIH)**

The CIH for this project is George M. Crawford, CIH. Mr. Crawford is certified in the comprehensive practice of industrial hygiene (CIH) by the American Board of Industrial Hygiene (ABIH). He has over 20 years of industrial hygiene and safety experience. The CIH will have the following responsibilities:

- Final approval of the SSHP and SSHASP in conjunction with the WESTON Project Safety Manager (PSM).
- Ensure that the SSHP complies with all federal, state, and local health and safety requirements. If necessary, modify specific aspects of the SSHP to adjust for on-site changes that affect safety.
- Evaluate and authorize any changes to the SSHP in conjunction with the PSM.
- Implementation and oversight of the Health and Safety Program.
- Assist in acting as liaison with government officials regarding health and safety related site matters.

### **2.1.4 Project Manager**

The Project Manager (PM) has the overall responsibility for the project. The PM will coordinate with the Field Supervisor/Site Manager, the Certified Industrial Hygienist, and the Site Safety and Health Officer to ensure that the remedial action goals are completed in a manner consistent with the SSHP. The PM will be identified within the SSHASP.

### **2.1.5 Program Quality Control Manager**

The Program Quality Control (QC) Manager is responsible for ensuring that all program activities are conducted in compliance with the contract. The Program QC Manager is

responsible for overall management of QC and has the authority to act in all QC matters for WESTON. The QC Manager will provide oversight for the Site QC Systems Manager. The QC will be identified within the SSHASP.

### **2.1.6 Program Safety Manager**

The Program Safety Manager (PSM) for this project will be Mr. Theodore L. Blackburn, CSP, CET. Mr. Blackburn has over 15 years of Industrial Hygiene/Safety and Hazardous Waste experience and will act as the liaison between the Site Safety and Health Officer (SSHO) and the CIH. The PSM will have the following responsibilities:

- Developing and reviewing of the SSHP.
- Coordinating with the CIH and the SSHO for field implementation of the SSHP.
- Providing consultation to the SSHO and site personnel.
- Maintaining frequent communication with the SSHO regarding site activities and implementation of the SSHP.
- Assisting in training of site personnel in the site specific hazards.
- Ensuring site and personnel compliance with the WESTON Safety Program.
- Performance or oversight of incident investigations.

### **2.1.7 Field Supervisor (FS) or Site Manager (SM)**

The Field Supervisor (FS) or Site Manager (SM) reports to the PM and is responsible for supervising field implementation of the project. The FS or SM provides direct supervision of field staff and, together with the Site Safety and Health Officer, is responsible for ensuring that all personnel adhere to the requirements of the SSHP. The FS and/or SM will be identified within the SSHASP.

### **2.1.8 Site QC Systems Manager**

The Site QC Systems Manager is responsible for ensuring that field activities are conducted in accordance with the contract. The Site QC Systems Manager will report all deviations from the contract directly to the FS or SM. If the Site QC Systems Manager believes that the proper standards are not met after notification is given to the FS or SM, he will report the deficiencies to the Project Manager. This will ensure that:

- Applicable reports/inspections are completed daily.
- Deficiencies are corrected in a timely manner.
- Construction materials meet proper specifications.
- Waste materials are labeled and staged appropriately.
- Field sampling, monitoring, and analyses are performed in conformance with the Field Sampling and Analysis Plan (FSAP).
- Sample status and analytical results are properly documented and tracked.

The Site QC will be identified within the SSHASP.

### **2.1.9 Site Safety and Health Officer (SSHO)**

The SSHO has the following responsibilities:

- STOP WORK authority for health and safety reasons.
- Assist in the development of the SSHP.
- Implementation and enforcement of the SSHP.
- Conduct daily Safety Briefings.
- Training of employees in site specific hazards and completing the Documentation of Training Form.
- Specify proper levels of Personal Protective Equipment (PPE) according to the specifications of this SSHP.

- Develop additional health and safety procedures, as required.
- Investigate accidents/incidents and "near misses".
- Conduct visitor orientation.
- Conduct weekly safety audits and complete required documentation.
- Coordinate with CIH and PSM concerning monitoring, PPE and other safety issues.
- Conduct monitoring as specified in this SSHP.
- Ensure field implementation of the WESTON Safety Program.

WESTON has a pool of qualified individuals who can fulfill the role of SSHO. The SSHO for each site will be selected prior to field activities and will be identified within the SSHASP.

#### **2.1.10 Personnel Assigned to the Project**

All WESTON, USACE and subcontract personnel who will be involved in on-site activities are responsible for the following:

- Taking all reasonable precautions to prevent injury to themselves and to their fellow employees and being alert to potentially harmful situations.
- Performing only those tasks that they believe they can do safely and have been trained to do.
- Notifying the SSHO of any special medical conditions (i.e., allergies, contact lenses, diabetes) which may impact their ability to perform site work or require assistance from others.
- Notify the SSHO of any prescription and/or non-prescription medication which the worker may be taking that might cause drowsiness, anxiety or other unfavorable side affects.
- Preventing spillage and splashing of materials to the greatest extent possible.
- Practicing good housekeeping by keeping the work area neat, clean, and orderly.
- Immediately reporting all injuries to the SSHO.
- Complying with the SSHP and all health and safety recommendations and precautions, properly using the PPE as determined by this SSHP and/or the SSHO.

### **2.1.11 Subcontractor Responsibilities**

Subcontractors are responsible for:

- Providing on-site personnel that have read, understand and will comply with this SSHP.
- Providing equipment that is safe for operations and free from any obvious hazards.
- Providing and documenting inspections of equipment and tasks (e.g., excavations) as necessary to comply with applicable regulations.

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**SECTION 3**

**TASK DESCRIPTIONS**

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### **3. TASK DESCRIPTIONS**

Site-specific task descriptions are contained in the SSHASP attached to this SSHP.



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**SECTION 4**

**HAZARD IDENTIFICATION AND RISK ASSESSMENT**

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## **4. HAZARD IDENTIFICATION AND RISK ASSESSMENT**

### **4.1 PRELIMINARY EVALUATION**

The site comes under the provisions of 29 CFR 1910.120. Prior to work or specific tasks/activities, a preliminary evaluation of the site's characteristics will be performed by qualified personnel. This preliminary evaluation includes the completion of the Hazard Analysis Tables which identify hazardous conditions and aid in the selection of appropriate employee protection methods and PPE.

Evaluation of work site characteristics and hazards is an ongoing process and will continue throughout the duration of the project.

### **4.2 CHEMICAL HAZARD IDENTIFICATION**

All known or potential physical and chemical hazards that may pose a threat to the health and safety of site workers must be identified to ensure workers are adequately protected. Emphasis is placed on identifying conditions that may cause death or serious harm. All site workers must be vigilant in identifying hazards in the work place and bringing them to the attention of supervisory personnel.

Chemical hazards can present exposure hazards via inhalation, ingestion, absorption or contact with contaminants present in liquids, soil or air. The list of chemicals to which workers may be exposed will be developed through the use of several information sources, including archival research data and previous site characterization data. When SSHASPs are prepared, an evaluation of known or suspect contaminants will be made to ensure all chemical hazards have been covered.

Site-specific contaminants will be described in the site-specific descriptions provided in the Attachments (SSHASPs) to this SSHP.

### **4.3 PHYSICAL HAZARD IDENTIFICATION**

Physical hazards which may be encountered during field activities include: potential unexploded ordinance, cold stress; heat stress; flammable materials; hazards related to equipment handling; uneven/unstable surfaces; excessive noise; heavy equipment operation and decontamination.

The SSHO shall be responsible for thoroughly evaluating field operations with respect to potential physical hazards to personnel. These potential hazards and the specific procedures to be followed to help prevent or reduce exposure shall be reviewed and documented during the daily Safety Briefing.

### **4.4 BIOLOGICAL HAZARD IDENTIFICATION**

Biological hazards which may be encountered in the field includes: poisonous plants, wild and/or rabid animals, snakes ticks, and insects. The degree of hazard can range from annoyance to death from bites or anaphylactic shock. Recognition and avoidance are critical in maintaining a safe worksite.

Section 12 of this SSHP outlines common problems and corrective actions associated with various biological problems. Should unique biological hazards, not covered in Section 12, be verified on site, the SSHASP will identify the hazard and all personnel will be appropriately trained in recognition, avoidance and first aid procedures.

### **4.5 HAZARD COMMUNICATION**

In order to comply with the OSHA Hazard Communication Standard 29 CFR 1910.1200 (HCS), the following shall apply to all commercial products containing hazardous substances which are brought on-site:

- A written Hazard Communication Program will be made available to site personnel.
- Material Safety Data Sheets (MSDSs) will be maintained for each product containing a hazardous substance which is used on-site and which meets the regulatory requirements of the HCS.

- All containers not supplied with adequate hazard labeling shall have a hazard communication label affixed to the container that communicates the health and physical hazards associated with working with the material.
- Employees working with hazardous substances shall be trained in accordance with the requirements of 29 CFR 1910.1200.
- An inventory of all hazardous substances used on-site will be maintained.
- Personnel, to include subcontractors, affected by hazardous substances use shall be informed of the hazards and of the location of appropriate MSDS.

A Site-Specific Hazard Communication Program is presented in the SSHASP as an attachment.

#### **4.6 HAZARD ANALYSIS AND TASK HAZARD/PPE CHECKLIST**

Hazard Analysis Tables provide a task-specific evaluation of the known or potential hazards associated with performing individual tasks within the Scope of Work (SOW). Each analysis also contains task-specific information related to hazard control and mitigation, including: the use of specific engineering control measures, specific standard operating procedures to be implemented, and PPE to be used.

If site conditions or tasks change, the SSHO will evaluate the new conditions or task and contact the PSM and CIH for assistance in developing amendments to the SSHASP. The SSHO will then forward the forms to the PSM and CIH for approval as amendments to established SSHASPs and this SSHP.

A SSHASP will be prepared as an attachment to this SSHP. Appropriate Hazard Analyses Tables (AHAs) will be prepared to ensure the safety of personnel involved.

A WESTON Safety Officer Field Manual which combines specific field operating practices, procedures and programs will be required on site and is referenced within this SSHP and the SSHASP.





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**SECTION 5**

**TRAINING PLAN**

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## **5. TRAINING PLAN**

### **5.1 GENERAL**

All personnel assigned to or regularly entering the project site will have received the required training.

Any subcontractor employees handling UXO (if necessary) will be graduates of the Navel Explosive Ordinance School, Indian Head, Maryland.

In accordance with 29 CFR 1910.120 and other OSHA/USACE regulations, applicable required training for all site workers shall be in accordance with the following subsections.

#### **5.1.1 Basic OSHA Training**

All general site workers must have the 40 hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training course and 3 days field experience under the direct supervision of a trained experienced supervisor. The SSHO must have an additional 8 hours of specialized safety supervisory training. All workers must have an annual refresher (8 hours) if initial training is over 1 year old. All training will be documented.

#### **5.1.2 First Aid and CPR Training**

At least two employees per site will be certified in First-Aid and CPR. The training shall be equivalent to that provided by the American Red Cross.

#### **5.1.3 Site-Specific Safety and Health Training**

Site-specific health and safety training will be conducted prior to field activities at each site. In particular, the training will stress emergency response procedures and will cover the chemical and physical hazards of the site and site operations. Site-specific health and safety concerns are described in SSHASP Attachment(s) to this SSHP.

#### **5.1.4 Bloodborne Pathogen (BBP) Training**

The SSHO will primarily be responsible for administering first aid in the event of injury or accident. Therefore, the SSHO will receive training in controlling exposures to Bloodborne Pathogens (BBP). This training will consist of the following:

- Review of the bloodborne pathogen standards.
- Requirements of the Exposure Control Plan.
- Description of the risks of exposure and how BBP are transmitted.
- Management and Employee responsibilities.
- Methods of protection against exposure and procedures for decontamination.
- Post-exposure procedures.
- Labeling and color coding of infectious waste.

#### **5.1.5 Hearing Conservation Training**

All site personnel exposed to noise levels exceeding 85 dBA 8-hour time-weighted average (TWA) will be provided with training which addresses the following topics:

- Physical and psychological effects of high noise exposure.
- Noise exposure limits.
- Elements of the Hearing Conservation Program.
- Selection, use and limitations of hearing protection devices.

#### **5.1.6 Respiratory Protection Training**

In accordance with 29 CFR 1910.134, all site personnel required to use respiratory protection devices will have received equipment specific training. This training covers the use, limitations, inspection, maintenance and cleaning of respiratory protection devices required for use under the conditions of this SSHP. Site-specific briefing/training will reinforce knowledge as necessary.

WESTON's Respiratory Protection Program can be found within the Safety Officer's Field Manual.

### **5.1.7 Personal Protective Equipment**

In accordance with OSHA 29 CFR 1910, Subpart I (Personal Protective Equipment) all personal protective equipment will be provided, used and maintained in a sanitary and reliable condition. All personal protective equipment (PPE) will be of construction, design, and material to provide employees protection against known or anticipated hazards. PPE will be selected which properly and appropriately fits the employee.

WESTON employees have been provided with training in accordance with the standard. Any concerns regarding the use of appropriate PPE will be brought the attention of the SSHO, who is directed to contact the PSM and the CIH for assistance in evaluation of PPE as necessary.

WESTON's PPE Program can be found within the Safety Officer's Field Manual.

## **5.2 DAILY SAFETY MEETINGS**

Each day, prior to commencing work on site, all employees (to include WESTON subcontractors and government employees) will be given a safety brief by the SSHO that identifies potential hazards and risks that may be encountered during that day's activities.

Additional training in the use of safety equipment, emergency medical procedures, emergency assistance notification procedures, accident prevention and discussion of the work plan will serve to insure that accomplishment of the work project can be carried out in a safe and effective manner.

## **5.3 VISITOR TRAINING**

Site visitors are defined as persons who are not employed at the project site, who do not routinely enter restricted work areas or whose presence is of short duration (i.e., 1 to 2 days at one time or per month).

Visitors who do not enter the exclusion zone (EZ) are required to meet the requirements of Subsections 5.3.1 and 5.3.2. These visitors may include client personnel, WESTON personnel,

commercial vendors, political representatives, and auditors or inspectors from local, district, or federal agencies.

Visitors who enter the EZ during site operations will meet the additional requirements found in Subsection 5.3.3.

### **5.3.1 General Requirements**

The following requirements apply to visitors whose purpose is to observe site conditions or field activities without entering the EZ:

- The senior WESTON on-site representative and the SSHO will be notified of the nature and duration of the visit before visitors are permitted to enter the site.
- The visitor's log will be completed, including the individual's name, date, and the name of the company or agency represented.
- The site visitor will be escorted by a WESTON representative at all times while in the area. The SSHO, or his designee, will be a member of the escorting party.
- Visitors will comply with specific health and safety requirements described below, as applicable.

### **5.3.2 Training Requirements**

All visitors will receive site-specific training to ensure that potential hazards and risks are identified. This training will consist of a safety briefing by the SSHO that will include:

- Location and description of potential hazards and risks.
- Required PPE.
- Areas of the site that are closed to visitors.
- The site evacuation plan and emergency procedures.
- Other topics as deemed appropriate.

### **5.3.3 Additional Visitor Requirements (Entry into the EZ)**

Site visitors wishing to enter the EZ during site operations will be subject to the same medical surveillance and OSHA training requirements as assigned site personnel. Documentation of Training and Medical Surveillance will be presented to the SSHO prior to entry into the EZ.

### **5.4 SPECIAL MEDICAL TRAINING**

Any special training will be evaluated, as necessary, and documented within the SSHASP.

### **5.5 SUPPLEMENTAL TRAINING**

Supplemental training may be required for site-specific contaminants or as required due to changes in site conditions. Supplemental training may include: Confined Space, Hazcom, OSHA chemical-specific requirements, etc. In the event supplemental training is required, documentation will be noted within the SSHASP.

### **5.6 WEEKLY TRAINING**

At the start of each work period, which is normally Monday, a site-specific safety topic will be selected and discussed in detail.

All site personnel are required to attend the training and the SSHO will document this training. The training will consist of site-specific hazards and/or appropriate safety-related concerns.

### **5.7 BUDDY SYSTEM TRAINING**

Workers shall be instructed that all site work will be performed using the buddy system. Team members will keep in visual contact with each other at all times.

Team members will be made aware of any slip, trip, and lifting hazards along with any potential exposure to chemical substances, heat or cold stress, and general hazards within their work area.





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**SECTION 6**

**MEDICAL PLAN**

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## **6. MEDICAL PLAN**

### **6.1 MEDICAL SUPPORT FUNCTIONS**

WESTON has established a comprehensive Occupational Health Program (OHP) in compliance with 29 CFR 1910. All site personnel, subcontractors and USACE safety representatives who enter the EZ when site operations are being conducted must comply with the requirements of an OHP.

#### **6.1.1 Occupational Health Program (OHP)**

In order to comply with the requirements of 29 CFR 1910 (specifically, 29 CFR 1910.120) WESTON has designated Dr. Elayne F. Theriault of Continuum Healthcare, Inc. (CHI) to oversee the site-specific medical surveillance and OHP. Dr. Theriault is a board-certified physician in internal and occupational medicine.

The purpose of the OHP is to ensure suitable job placement of employees, to monitor the health effects of hazards encountered in the work place and to maintain and promote good health through preventative measures. Medical examination criteria are established by CHI in compliance with 29 CFR 1910.120.

##### **6.1.1.1 Occupational Health Services (OHS)**

The following OHS will be provided by WESTON for its employees:

- Site-Specific Medical Tests - To be determined, as necessary for each site-specific HASP.
- Termination Examination - Upon termination of employment, WESTON personnel who have worked continuously at a hazardous waste project site for more than 6 months will be given the opportunity to undergo a termination examination equivalent to the baseline health assessment. All personnel who terminate employment within a 6 month period will undergo an examination based upon their exposure at the site. Specific examination tests will be determined by the physician.

- Supplemental Examination - Any worker receiving a potentially harmful level of exposure to hazardous chemical/biological material or exhibiting signs or symptoms of possible exposure will undergo a supplemental examination. The physician will certify in writing that the employee is fit to return to work. If necessary, activity restrictions will also be specified in writing. Additional tests will be conducted if contaminants/potential exposures so dictate and will be determined by the examining physician.

### **6.1.1.2 Health Care Administrative Services**

Medical records are established and maintained by CHI in support of the WESTON Medical Monitoring Program. These records will be treated as private and confidential information and will be complete enough to provide data for use in health maintenance, treatment, epidemiologic studies and in helping WESTON with program evaluation and improvement.

The medical record will contain sufficient information to identify the patient, support the diagnosis, justify the treatment and document additional follow-up case or referrals. The physician's written opinion for all medical examinations will be as specified in 29 CFR 1910.120, Subpart (f)(7).

## **6.2 FIRST AID**

On-site First Aid/CPR support will be provided by a minimum of two appropriately trained WESTON personnel.

In the event specialized or more advanced care is necessary, the injured person will be transported to the appropriate medical facility by either WESTON or the on call EMT/ambulance service.

If site conditions and hazards warrant, the services of on-site EMT's may be necessary. If so, this information will be found within the SSHASP.

### **6.2.1 Hospitals**

Routes and telephone numbers to hospitals are given in the SSHASP.

## **6.2.2 Medical Supplies**

Medical supplies required to be on-site are listed in Section 14 of this SSHP as well as within the SSHASP.

## **6.2.3 Medical Emergency and Personal Injury**

The first worker who notices that a medical emergency or personal injury has occurred shall immediately make a subjective decision as to whether the emergency is life-threatening and/or otherwise serious.

### ***6.2.3.1 Life-Threatening and/or Otherwise Serious Incident***

If a life-threatening incident occurs, Emergency Medical Services (EMS) will be immediately notified. If an apparent life-threatening and/or otherwise serious incident has occurred, the first person who identifies the situation will summon the SSHO or Field Supervisor/Site Manager to the Contamination Reduction Zone (CRZ). The SSHO or the Field Supervisor/Site Manager, whoever arrives first, will assume the role of Emergency Coordinator (EC).

The EC shall be apprised of the situation and told where the victim(s) is/are located. As the EC proceeds to the accident scene, communications channels shall be opened and kept on standby until the EC has surveyed the scene and performed a primary survey of the victim.

The EC shall then determine if EMS should be summoned, the information that must be relayed, and provide emergency action principles that are consistent with the injury. The EC shall appoint a staff person or persons who will meet the EMS and have them quickly taken to the victim. If necessary, decontamination of the individual shall be performed at the direction of the EC.

### ***6.2.3.2 Nonlife-Threatening Incident***

Should it be determined that no threat to life is present, the worker shall assist the injured person to the CRZ and contact the SSHO.

Specific response requirements can be found within the Emergency Response and Contingency Plan (ERCP) located as an attachment to the SSHASP.

### **6.3 TRAINING**

All required training is covered in Section 5 of this SSHP.

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**SECTION 7**

**SITE CONTROL AND LAYOUT**

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## **7. SITE CONTROL AND LAYOUT**

The boundaries of each work site area, regardless of its configuration, will be clearly identified to prevent accidental intrusion by personnel not immediately involved in site operations, and will be identified as the Exclusion Zone (EZ).

Each work site will have a Support Zone (SZ) that will be utilized as a staging area for personnel and equipment to support operations in the EZ. The SZ will include the site access control point, an area for visitors, and a break area for site workers.

Where necessary, a Contamination Reduction Zone (CRZ) will be established to serve as a buffer to reduce the possibility of the SZ becoming contaminated or being affected by other existing hazards. The CRZ provides additional assurance that the physical transfer of contamination on people, equipment, or in the air is limited through a combination of decontamination, distance between exclusion and support zones, zone restrictions and work functions.

The SSHO will delineate and control these zones based on site conditions and activities. The zones will be marked on the site map, and the map will be posted at the entrance to each site.

### **7.1 EXCLUSION ZONE (EZ)**

The EZ is the area where the greatest potential for exposure to site hazards exists or where contamination known or potential contamination exists. All personnel entering the exclusion zone must wear prescribed levels of PPE. A separate entry and exit check point will be established at the EZ to regulate the flow of personnel and equipment into and out of the EZ.

The entry and exit check point is used to ensure that personnel and equipment are protected and the contamination is properly contained. The entry/exit point will be established with the prevailing wind to the backs of the entrants as possible. No eating, chewing, smoking, or drinking is allowed in this area.

## **7.2 CONTAMINATION REDUCTION ZONE (CRZ)**

The CRZ is located between the exclusion zone and the support zone and provides a transition between contaminated and clean zones. It serves as a buffer to reduce the probability of the SZ becoming contaminated or being affected by other existing hazards. It provides additional assurance that the physical transfer of contaminating substances on people, equipment, or in the air is limited through a combination of decontamination, distance between exclusion and support zones, air dilution, zone restriction, and work functions.

The CRZ will contain the Contamination Reduction Corridor (CRC), which will serve as the exit point from the EZ. The CRZ contains all equipment and supplies required to decontaminate site personnel and equipment as they exit the EZ. No eating, chewing, smoking, or drinking is allowed in this area.

## **7.3 SUPPORT ZONE (SZ)**

The SZ is located outside the CRZ and is the location of the administrative and other support functions. The SZ is an area where no significant air or surface contamination exists.

The SZ includes facilities such as the change area, lunch and break areas, office spaces and supply storage areas. Specific areas within the SZ will be designated for smoking, chewing, eating, and drinking.

## **7.4 SITE MAPS**

SSHASPs will include site maps depicting appropriate control zones as well as emergency equipment locations and evacuation routes.

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**SECTION 8**

**MONITORING PLAN**

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## 8. MONITORING PLAN

Appropriate monitoring will be conducted during specified site activities so as to evaluate potential physical and chemical hazards. Evaluation of these hazards will assist in determining: the effectiveness of control measures; requirements for upgrading or downgrading PPE; and the effectiveness of work zones and safe work practices.

Various direct reading instruments will be used during operations to detect and quantify the potential presence of airborne chemical hazards. Additional monitoring for physical hazards (e.g., noise, radiation) may be necessary based upon site conditions.

Action levels and instrumentation necessary are listed within the SSHASP. Should site conditions change to indicate new contaminants or that action levels selected are no longer adequate, the SSHASP must be amended to show new or necessary modifications.

### 8.1 AIR MONITORING RESPONSIBILITIES

Monitoring will be conducted by the SSHO and other site personnel trained in the proper calibration and operation of monitoring equipment.

Any readings above the specified action levels will be reported to the Project CIH and Project Safety Manager. The CIH will be contacted to determine if personal sampling is to be performed for the specified contaminant. If personal sampling is conducted, the Monitoring Plan will be revised to reflect the addition of personal sampling.

Any personal breathing samples requested by the CIH will be collected using appropriate National Institute for Occupational Safety and Health (NIOSH)/OSHA sampling criteria and methods. The samples will be sent to an AIHA accredited laboratory which will use NIOSH or OSHA approved analytical methods.

Monitoring equipment to be used during operations may include:

- Photo Ionization Detectors (PIDs).

- Flame Ionization Detectors (FIDs).
- Miniature real-time air monitor (MiniRAM).
- Colorimetric Tubes.
- Combustible Gas Indicator/Oxygen Meter (CGI/O<sub>2</sub>).

The selection of the above monitoring equipment, or others, will be determined by site-specific contaminants, as described in the SSHASP.

## 8.2 AIR-MONITORING SCHEDULE

Exposure monitoring will focus on the potential exposure to airborne contamination generated during site activities. Real time monitoring, using direct reading instruments, will be conducted to identify potential exposure levels or immediately dangerous to life or health (IDLH) conditions and will also be used to identify the need for integrated sampling methods.

The SSHASP identifies the type of monitoring equipment, the contaminant or hazard to be monitored for, assignment of monitoring responsibility, the monitoring method to be employed, the contaminant/hazard action level and the positive monitoring result action.

The following guidelines represent general requirements. Monitoring frequency will be escalated or reduced based on the results of previous monitoring and/or other signs of potential exposures (odors, etc.). Monitoring in the Breathing Zone (BZ) will be conducted as a basis for worker exposure potential.

## 8.3 LOCATION

**Personnel or Zone Monitoring:** Personnel monitoring (using direct-reading/real-time instrumentation) will be undertaken to characterize the worker exposure to site contaminants. Employee or location selection should be based on work task and duration of exposure.

Areas monitored (e.g., exclusion zone, contamination reduction zone, support zone) and personnel selected for breathing zone monitoring will be chosen to determine worst-case exposure potential.

**Confined Space Entry:** Air monitoring for 1) Oxygen, 2) Lower Explosive Limit , and 3) Toxics will be conducted, in the order given, in the entryway, and at all levels of the confined space (top, middle, and bottom), and thereafter in the workers' breathing zone.

**Perimeter Monitoring:** Real-time air monitoring around the perimeter of the exclusion zone for the purpose of controlling on-site operations with respect to off-site receptors may be required.

Contaminants selected and instrumentation utilized for any of the above locations will be identified within the SSHASP.

#### **8.4 FREQUENCY AND DURATION**

**Personnel Monitoring:** Breathing zone samples will be conducted to determine workers' exposure to contaminants using direct-reading instruments. Personnel monitoring will be conducted at each active site at least three times per day. Background samples will be obtained daily prior to work start-up. Additional personnel monitoring should be conducted whenever there has been a change of equipment, process, control, personnel or a new task has been initiated that may result in additional employees being exposed.

**Confined Space Entry:** Prior to entry, monitoring will initially be conducted at the entryway (breathing zone and directly at entryway) and then within all levels of the confined space. Monitoring instruments will be kept running during the entire entry. Breathing zone sample results should be documented every 15 minutes, or as needed.

**Perimeter Monitoring:** Background reading should be taken in an area known to be clean. Monitoring around the perimeter of the site will be conducted at the work startup and periodically thereafter. Whenever possible, monitoring instruments will be kept running during the entire operation. At a minimum, perimeter monitoring results will be determined and documented three times per day.

#### **8.5 METHODS/INSTRUMENTS/EQUIPMENT**

Instrumentation, equipment and methods required will be identified within the SSHASP.

## **8.6 ACTION LEVELS, REPORTING, AND DOCUMENTATION**

Action levels for worker or community exposure will be documented in the SSHASP. If monitored levels warrant upgrading or downgrading the level of PPE, WESTON will document the results and their justification for upgrade or downgrade.

WESTON is required to record the results of all initial and periodic monitoring conducted at the sites. Documentation at the site is to include the following information: date, type of equipment utilized, equipment identification number, monitoring results for each work location monitoring station with time of readings, weather conditions (e.g., wind direction, precipitation, temperature), and miscellaneous information related to monitoring/sampling performed.

Air monitoring will be conducted on this project to ensure personnel safety. The measurements obtained by these instruments are intended to indicate when the use of respirators are required, validate the use of air-purifying respirators, determine when or if supplied air respirators are required, alert personnel of potentially explosive conditions, and to ensure sufficient oxygen for work.

Daily monitoring will be conducted as dictated by the schedule of work activities for each day. Air monitoring will be under the direction of the SSHO.

## **8.7 ESTABLISHMENT OF BACKGROUND CONCENTRATIONS**

Before operations begin, the SSHO will monitor the site using the direct reading instruments to determine the meter's response in the air in a uncontaminated area (generally upwind of the site). This is referred to as a background concentration and will be subtracted from measurements made during actual measurements in potentially contaminated areas.

## **8.8 TASK MONITORING**

The SSHO will be responsible for identifying areas where exposure is a possibility during all field activities. Air monitoring will be performed at these areas using instruments identified in the SSHASP.



## **8.9 AIR-MONITORING LOG**

The SSHO will ensure that all air monitoring data are logged into the air monitoring logbook. Data will include instruments used, calibration data, work process, and instrument readings. As necessary, quality control/quality assurance will be maintained, including laboratory procedure records, sealed laboratory and field blanks, and use of chain-of-custody forms.

## **8.10 CALIBRATION AND MAINTENANCE REQUIREMENTS**

Instruments will be calibrated daily prior to use. A log will be kept detailing date, time, span gas or other standard, and name of person performing the calibration. Maintenance of the instruments will be as specified in the referenced manuals.

## **8.11 WRITTEN-AIR MONITORING (PERSONNEL SAMPLING) COMPLIANCE PROGRAM**

If concentrations of contaminants, or tasks performed are such that personal air sampling is required, a sampling plan, approved by a qualified individual (CIH or IH) will be initiated. This plan and specific requirements for same will be outlined in the SSHASP.



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**SECTION 9**

**PERSONAL PROTECTIVE EQUIPMENT PROGRAM**

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## 9. PERSONAL PROTECTIVE EQUIPMENT PROGRAM

All personnel performing operations on-site shall be required to use the appropriate level of protection as specified in the SSHASP.

This SSHP makes generic provisions for use of levels "D", "Modified D", "C", and "B" as required for the hazards associated with a given task, operation, or expected contaminant level. All PPE requirements for site operations, activities, or zones are based upon available historical site characterization data provided by the USACE. Changes in levels of PPE will be made and upgraded or downgraded based on information derived from site-specific data. The levels of PPE will also need to be reassessed if any of the following occur:

- Presence of or potential for previously unidentified chemicals or conditions.
- Airborne concentrations of known chemicals exceed the action levels.
- Changes in ambient weather conditions.
- Introduction of a new task or expansion in the scope of a previously evaluated task.
- For tasks or contaminants not listed in the Site-Specific HASP attachments, additional PPE requirements will be prepared under the direction of the PSM and CIH.

### 9.1 LEVEL D PPE

Level D PPE will be worn during task activities such as; site mobilization/demobilization and support zone activities and consists of:

- Work clothes, e.g. coveralls (cotton).
- Work gloves - leather or cotton as necessary for physical hazards.
- Boots, ANSI approved.
- Safety glasses (as necessary).
- Hard hat (as necessary).

## 9.2 MODIFIED LEVEL D PPE

Modified Level D PPE will be worn when conducting activities with known or potential contact with minimally contaminated materials. Modified Level D consists of:

- Chemical resistant coveralls.
- Chemical resistant overboots or chemical boot covers.
- Gloves - nitrile or latex inner; chemical resistant outer.
- Eye protection - safety glasses or goggles.

## 9.3 LEVEL C PPE

Level C PPE will be worn during site activities according to site-specific action levels. Level C PPE consists of:

- Chemical-resistant coveralls.
- Chemical resistant overboots or chemical boot covers.
- Fullface APR with HEPA OV/AG filter (NIOSH/MSHA approved).
- Gloves - nitrile or latex inner; and chemical resistant outer.

## 9.4 LEVEL B PPE

Level B PPE will be worn if appropriate action levels are reached during site activities. Level B PPE consists of:

- Chemical resistant coveralls.
- Self Contained Breathing Apparatus (SCBA) or air-line system, (NIOSH/MSHA approved).
- Coveralls - cotton or other appropriate work uniform.
- Chemical resistant overboots.
- Gloves - nitrile or latex inner; and chemical resistant outer.

## 9.5 HIGH HAZARD PPE

High hazard PPE is defined as EPA Level of Protection A, UXO Ballistic Armor and other types of PPE not typical for general use. Use of this PPE requires additional training and skills. In the

event site activities and hazards dictate the use of high hazard PPE specific mention and discussion will be documented in the SSHASP.

## **9.6 SPECIAL PPE**

Additional PPE, such as Personal Floatation Devices, Hearing Protection, Vibration dampening gloves, Cold Protection, Heat Protection, Welding/Cutting Protection and Fall Protection may be required based upon site conditions. In the event special protective equipment is required, specific mention and discussion will be documented in the SSHASP.

## **9.7 SPECIAL INSTRUCTIONS:**

The SSHASPs will specify appropriate chemical resistant PPE materials based upon an evaluation of site-specific contaminants.





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**SECTION 10**  
**RESPIRATORY PROTECTION PLAN**

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## **10. RESPIRATORY PROTECTION PLAN**

A site-specific Respiratory Protection Plan will be developed based on site history and characterization data. This information will be outlined within the SSHASP.

Compliance with WESTON's Respiratory Protection Program will be maintained at all times. WESTON's Respiratory Protection Program is found within the Safety Officer Field Manual.



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**SECTION 11**

**DECONTAMINATION PLAN**

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## 11. DECONTAMINATION PLAN

The following plan will be implemented whenever it is necessary to set up a Decontamination Line. Any modification to the following procedures will be identified within the SSHASP.

### 11.1 PERSONNEL HYGIENE AND DECONTAMINATION

Only personnel who have completed the requisite training and medical exams/tests may enter the EZ. Personnel decontamination facilities will be established on-site to ensure that personnel maintain a high degree of personal hygiene and minimize the possibility of exposure to chemical hazards. The personnel hygiene facilities will conform to the requirements specified in 29 CFR Part 1910 or Part 1926.

A personnel decontamination line will be established in the CRZ to facilitate decontamination and protective clothing removal. Storage and disposal containers will be used for the disposable of outerwear. If there is a rip or tear in the employee's chemical protective clothing, that individual will remove the torn garment in the decontamination area and don new protective clothing. If respiratory equipment becomes defective or damaged, the wearer will leave the EZ immediately and repair or replace the defective part or mask.

As personnel move through the decontamination line, PPE will be removed in the order of highest to lowest potential contamination. This outside-in removal minimizes contamination of inner clothing or body. All personnel exiting the EZ will pass through the decontamination line. Respirators will be inspected daily, washed, and scrubbed in a detergent/water solution. Clean respirators will be left to dry in an uncontaminated protected atmosphere.

All PPE and PPE clothing for decontamination line attendants will be removed on the decontamination line. An emergency eyewash will be located in the CRZ adjacent to the decontamination line.

Personnel are required to wash hands, face, and other exposed skin areas prior to leaving the CRZ for breaks or lunch. Towels and soap will be provided for personnel.

The use of tobacco products, eating, or drinking will be prohibited except in a designated break area within the Support Zone.

## **11.2 ROUTINE EQUIPMENT DECONTAMINATION**

Any equipment or vehicle taken into the EZ must be assumed to be potentially contaminated and will be routinely inspected and decontaminated in the CRZ prior to leaving the site. It will be the responsibility of the SSHO or designee to properly inspect and approve for general cleanliness, all tools or hand operated equipment and the frame and tires of all vehicles or heavy equipment leaving the CRZ.

In order for vehicles and heavy equipment to pass inspection, they must be free of loose dirt or stabilized material on tailgates, axles, wheels, etc. Approval will be based on visual inspection of all exposed surfaces.

If necessary, WESTON will use an equipment decontamination pad located at the entrance to the CRZ. This pad will be used to remove soil from all equipment leaving the work area. In this instance, decontamination procedures will consist of high-pressure steam cleaning of equipment to remove mud and/or dirt. All equipment requiring maintenance or repair will be staged in the CRZ prior to servicing. Equipment wash water residue will be collected and disposed as either solid or hazardous waste based upon site conditions. Only clean water is to be used for decontamination of personnel, equipment and vehicles.

Personnel assigned to vehicle decontamination will wear the protective equipment, clothing, and respiratory protection consistent with the established health and safety program as defined in the SSHASP. Seats and flooring in equipment and vehicles that are to be used in the Exclusion Zone will be covered to the extent possible with disposable polyethylene (as necessary).

## **11.3 PPE AND DECONTAMINATION PROCEDURES**

As necessary, the Field Supervisor/Site Manager or SSHO will designate personnel to assist the work party in the donning and doffing of personal protective equipment (PPE) as they proceed in and out of the CRZ. Decontamination is accomplished to ensure the materials that personnel and



equipment may have contacted in the exclusion zone are removed in the contamination reduction zone before passing into the support zone.

### **11.3.1 Modified Level D**

The following sequence of events will be the procedure for Modified Level D personnel decontamination:

- Any site equipment will be deposited in a segregated area prior to entering the contamination reduction zone.
- At the perimeter of the exclusion zone, rain gear or splash protection (if worn) will be damp-wiped or wet sprayed to remove any adhered particulates or corrosive liquids.
- Over boots or over-the-sock boots will be scrubbed with a detergent-water solution. The boots will be removed and placed on a rack to dry.
- Hard hats will be removed and properly stored. Hard hats will be scrubbed with detergent if grossly contaminated.
- Outer gloves will be cleaned and removed, and depending on condition, will be discarded (if damaged or uncleanable).
- Splash gear will be removed, cleaned, and hung to dry (if worn).
- Tyvek or Saranex suits will be discarded.
- Latex inner gloves will be discarded.
- Personnel will wash their hands, arms, neck, and face.

At the discretion of the SSHO, and based on site conditions, exposure potential, and tasks performed, dry decontamination procedures may be utilized for disposable PPE to eliminate the generation of unnecessary amounts of decontamination water. At a minimum, facilities for washing the face and hands of personnel will be established.

### 11.3.2 Level C/Level B

The following sequence of events will be the procedure for Level C personnel decontamination:

- Deposit any site used equipment in a segregated area prior to entering the contamination reduction zone.
- At the perimeter of the exclusion zone, rain gear or splash protection (if worn) will be damp-wiped or wet sprayed to remove any adhered particulates or corrosive liquids.
- Outer boot covers or over-the-sock boots will be scrubbed with a detergent-water solution. The boots will be removed and placed on a rack to dry.
- Hard hats will be removed and properly stored. Hard hats will be scrubbed with detergent if grossly contaminated.
- Outer gloves will be cleaned and removed, and depending on condition, will be discarded (if damaged or uncleanable).
- Splash gear will be removed, cleaned, and hung to dry (if worn).
- Tyvek or Saranex suits will be discarded.
- Respirators will be removed and prepared for reuse or decontamination.
- Latex inner gloves will be discarded.
- Personnel will wash their hands, arms, neck, and face.

At the discretion of the SSHO, and based on site conditions, exposure potential, and tasks performed, dry decontamination procedures may be utilized for disposable PPE to eliminate the generation of unnecessary amounts of decontamination water.

### 11.3.3 High Hazard Decontamination

Decontamination procedures for high hazard levels of protection will be identified in the SSHASP.

### **11.3.4 Equipment Decontamination**

Any equipment, vehicles, or tools that have entered an exclusion zone will be cleaned with water. Some equipment decontamination may require pressurized water or steam cleaning. Equipment removed from the exclusion zone will be decontaminated in the CRZ. All water and material will be collected and placed in the designated waste disposal area.

Following this cleaning, all items will be inspected and approved by the field supervisor prior to removal from the site. The following subsections outline procedures to be used for specific site equipment.

#### Vehicles and Heavy Equipment

The following procedure will be used when decontaminating vehicles and heavy equipment:

- Don appropriate PPE.
- Scrape or brush off gross residues.
- Pressure wash outside of equipment, paying particular attention to tires and tracks.
- Sweep and wipe down interior.
- Dispose of residues and clean surfaces.

### **11.3.5 Disposal of Decontamination Wastes**

All liquids and disposable clothing will be treated as contaminated waste and disposed of properly. Personnel handling contaminated equipment will wear Modified Level D protection. Equipment must be cleaned prior to demobilization. Washwaters and residues must be collected for treatment and/or proper disposal.

### **11.3.6 Decontamination Facilities (Long-Term)**

Personal decontamination and hygiene facilities will be provided in accordance with EM385-1-1 (28.I.07), if necessary. A decontamination/personal hygiene trailer or equivalent will be set up at the SZ/CRZ boundary to provide a place to discard PPE, change clothing, and shower.

## 11.4 EMERGENCY DECONTAMINATION

In the event that a site worker in the EZ is injured or appears to exhibit signs of chemical exposure, emergency decontamination will be performed. Supplies for the emergency decontamination will be placed in the CRZ prior to site activities, and shall include:

- Eyewash.
- First Aid/BBP kit.
- Plastic sheeting or disposable rescue blanket.

These materials will be required in addition to the general decontamination equipment required for standard decontamination activities.

As necessary, specific procedures and equipment requirements for both routine and high hazard decontamination that are different than identified above can be found within the ERCP.

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**SECTION 12**

**GENERAL SITE SAFETY PROCEDURES**

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## 12. GENERAL SITE SAFETY PROCEDURES

### 12.1 GENERAL

The following sections contain general site safety information. WESTON Field Operating Procedures, contained in the Site Health and Safety Officer's Manual maintained on-site, will also be followed.

Hazards due to normal site activities can be reduced by using common sense and following safe practices. The following practices are expressly forbidden:

- Running and horseplay.
- Smoking, eating, drinking, applying cosmetics, or chewing gum or tobacco within the Restricted Access or Exclusion Zone or any potentially contaminated area.
- Ignition of flammable materials in the work zone without the proper Hot-Work Permit. Equipment will be bonded, grounded, and explosion resistant, as appropriate.
- Performance of tasks in the restricted area individually (i.e. working alone).
- Personnel must keep the following guidelines in mind when conducting field activities:
  - Hazard assessment is a continuous process: personnel must be aware of their surroundings and constantly aware of the chemical and physical hazards that are or may potentially be present.
  - The number of personnel in the SZ or EZ will be the minimum number necessary to perform work tasks in a safe and efficient manner. The use of the Buddy System is mandatory for EZ work.
  - Team members will be familiar with the physical characteristics of each site including wind direction, site access, and the location of communication devices and safety equipment.
  - The location of overhead power lines and underground utilities must be established prior to conducting excavation or drilling activities.

Team members will be familiar with emergency hand signals:

- Hand Gripping Throat: "Respirator or breathing problems, can't breathe."
- Thumbs up: "OK, I'm all right, I understand."
- Thumbs down: "No, negative."
- Hand(s) on top of head: "Need assistance."
- Grab buddy's wrist: "Evacuate site now, no questions."

## **12.2 PHYSICAL HAZARDS**

### **12.2.1 Heavy Equipment Operation**

Heavy equipment will be operated under the following conditions according to EM 385-1-1, OSHA, and WESTON Field Operating Procedures.

- The operation of heavy equipment will be limited to authorized personnel specifically trained for this task.
- The operator will use the safety devices provided with the equipment, including seat belts. Backup warning indicators and horns will be operable at all times or a trained spotter will direct equipment operations.
- While heavy equipment is in operation, all personnel not directly required in the area will keep a safe distance from the equipment.
- Personnel will avoid moving into the path of operating equipment and areas blinded from the operator's vision will be avoided.
- Additional riders will not be allowed on equipment unless it is specifically designed for that purpose, i.e., there is an additional seat with a seat belt.
- The operator will document inspection of heavy equipment daily prior to operation.

### **12.2.2 Mechanical Equipment Operation**

Operation of mechanical equipment presents another potential source for physical hazards and includes the following requirements, in addition to EM 385-1-1, OSHA and WESTON Field Operating Procedures:



- Operation will be conducted by authorized personnel familiar with the machine, its operation, and safety provisions.
- Mechanical equipment will be inspected prior to use.
- Any equipment found to be defective in any manner will be removed from service and repaired prior to use.
- Hands, feet, etc., will be kept away from all moving parts.
- Maintenance and/or adjustments to machinery will be not conducted while in operation. Power will be disconnected prior to maintenance activities.
- An adequate operating area will be provided, allowing sufficient clearance and access for operation.
- Good housekeeping practices will be followed.

### **12.2.3 Material Lifting**

Many types of objects are handled in normal day to day operations. Care should be taken in lifting and handling heavy or bulky items because they are the cause of many back injuries. The following fundamentals address the proper lifting of materials to avoid back injuries:

- The size, shape and weight of the object to be lifted must be considered. A worker shall not lift more than one person can handle comfortably.
- A firm grip on the object is essential; gloves shall be used if necessary, to protect the hands.
- The hands and object shall be free of oil, grease and water, which might prevent a firm grip, and the fingers shall be kept away from any points that cause them to be pinched or crushed, especially when setting the object down.
- The item shall be inspected for metal slivers, jagged edges, burrs, rough or slippery surfaces and pinch points.
- The feet shall be placed far enough apart for good balance and stability. The footing surface should be firm.
- The worker shall get as close to the load as possible. The legs shall be bent at the knees.
- The back shall be kept as straight as possible.

- To lift the object, the legs are straightened from their bending position.
- A worker shall never carry a load that cannot be seen over or around.
- When placing an object down, the stance and position are identical to that for lifting. The legs are bent at the knees, back straight, and the object lowered.

In addition, relevant WESTON Field Operating Procedures shall be followed. When two or more workers are required to handle an object, coordination is essential to ensure that the load is lifted uniformly and that the weight is equally divided between the individuals carrying the load. When carrying the object, each worker, if possible, shall face the direction in which the object is being carried.

#### **12.2.4 Electrical Hazards**

Electrical wiring and apparatus safety procedures will be conducted in accordance with OSHA, EM 385-1-1, and WESTON Field Operating Procedures.

The requirements include, but are not limited to:

- All electrical wiring and equipment will be of a type listed by Underwriters Laboratories (UL) or Factory Mutual Engineering Corp. (FM) for the specific application.
- All installations will comply with the National Electrical Safety Code (NESC) or the NEC regulations.
- All work will be accomplished by personnel familiar with and qualified for the class of work to be performed.
- Live parts of wiring or equipment will be guarded to protect all individuals or objects from harm.
- Electric wire or flexible cord passing through work areas will be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, or pinching.
- Temporary power lines, switch boxes, receptacle boxes, metal cabinets, and enclosures around equipment will be marked to indicate the maximum operating voltage.
- Patched, oil-soaked, worn, or frayed electric cords or cables will not be used.

- Extension cords or cables will not be fastened with staples, hung from nails, or suspended by wire.
- All electrical circuits will be grounded in accordance with the NEC.
- Portable and semi-portable electrical tools and equipment will be grounded by a multi-conductor cord having an identified grounding conductor and a multi-contact polarized plug-in receptacle.
- Semi-portable equipment, floodlights, and work lights will be grounded. The protective ground of such equipment should be maintained during moving unless supply circuits are de-energized.
- Tools protected by an approved system of double insulation or its equivalent, need to be grounded. Double insulated tools will be distinctly marked and listed by UL or FM.
- Ground fault circuit interrupters (GFCIs) are required in all circuits used for portable electric tools. The GFCI will be calibrated to trip within the threshold values of 3-7 mA as specified in UL Standard 943. All GFCIs will be UL listed and installed in accordance with the most recent edition of the NEC. The permanent wiring will be electrical circuits grounded in accordance with the NEC. GFCIs may be sensitive to some equipment such as concrete vibrators. In these instances, an assured equipment grounding conductor program is acceptable.
- Flexible cord will be of a type listed by the UL. Flexible cord sets will contain the number of conductors required for the services plus an equipment ground wire. The cords will be hard usage or extra hard usage as specified in the NEC. Approved cords may be identified by the word "outdoor" or letters "WA" on the jacket.
- Bulbs attached to festoon lighting strings and extension cords will be protected by wire guards or equivalent unless deeply recessed in a reflector.
- Temporary wiring will be guarded, buried, or isolated by elevation to prevent accidental contact by workers or equipment.

### **12.2.5 Ladders/Scaffolds**

Ladders and scaffolds will be used according to EM 385-1-1, OSHA, and WESTON Field Operating Procedures.

### **12.2.5.1 Ladders**

The following guidelines will be employed when using ladders:

- Manufactured ladders will be constructed of heavy duty grade; Type II minimum, conforming to applicable ANSI standards.
- Ladders will not be spliced together to make a longer ladder.
- Straight ladders for egress will extend at least 3 ft. above the landing and, when possible, secured.
- Ladders will be inspected prior to use and defective ladders will be removed from service and repaired.
- The base of straight ladders will be set back a safe distance from the vertical; approximately one-fourth the working length of the ladder from the vertical plane of the top of support.
- Stepladders will be fully opened to permit the spreader to lock. Stepladders will not be closed and leaned against an object for access.
- Metal ladders will not be used for electrical work or in areas where they could contact energized wiring.
- "Job-made" ladders will be constructed in accordance with OSHA 1926 Subpart X.

### **12.2.5.2 Scaffolds**

The following guidelines will be employed when using scaffolding:

- All scaffolds will be erected and maintained in accordance with OSHA and the manufacturer's recommendations.
- Scaffold planks will be full-cut, undressed lumber, 2- by 10-in. scaffold grade lumber or equivalent.
- Guardrails, midrails, and toe boards will be installed on all open sides of scaffolds as required.
- Access ladders will be provided unless the scaffold design incorporates an approved ladder.

- The height of a rolling scaffold will not exceed four times the minimum base dimension.

### **12.2.6 Pressurized Hoses**

Observe the following rules when using hoses:

- Before use, inspect hoses for defects, cuts, loose clamps, improper fittings, etc.
- Never apply air from an air hose to any part of the body or clothing.
- Use only standard fittings for all hoses.
- All quick make up connections must be secured with safety lashing.

### **12.2.7 Explosive Atmosphere and Ignition Sources**

Explosions and fires may arise spontaneously. However, more commonly, they result from site activities, such as moving drums, accidentally mixing incompatible chemicals, or introducing an ignition source (such as a spark from equipment) into an explosive or flammable environment.

Explosions and fires not only pose the obvious hazards of intense heat, open flames, smoke inhalation, and flying objects, but may also cause the release of toxic chemicals into the environment. Such releases can threaten both personnel on-site and members of the general public living or working nearby.

WESTON provides the following to protect against these hazards: monitoring is conducted for explosive atmospheres and flammable vapors using a combustible gas indicator; all potential ignition source are kept away from an explosive or flammable environment; non-sparking, explosion-proof equipment is used; and safe practices are followed when performing any task that might result in the agitation or release of chemicals. Some potential causes of explosions and fires include:

- Chemical reactions that produce explosion, fire or heat.
- Ignition of explosive or flammable chemical gases or vapors.
- Ignition of materials due to oxygen enrichment.
- Agitation of shock or friction-sensitive compounds.
- Sudden release of materials under pressure.

### **12.2.8 Hand Tools**

Hand tools will be used according to EM 385-1-1, OSHA, and WESTON Field Operating Procedures. Only tools that are in good condition shall be used. Improper and defective tools contribute to accidents. The following safe practices shall be observed when using hand tools:

- Use tools in the manner for which they were designed.
- Be sure of footing before using any tool.
- Do not use tools that have split handles, mushroom heads, worn jaws, or other defects.
- Do not use makeshift tools or other improper tools.
- Use spark proof tools where there are explosive vapors, gases, or residue.

### **12.2.9 Sanitation**

Applicable sanitation requirements are contained in EM 385-1-1, OSHA, and WESTON Field Procedures and include the following:

- Field office/break trailers will be equipped with power and water. At a minimum, washing facilities will be set up using handi-wipes or a suitable equivalent.
- Appropriate numbers of Port-a-Jons will be obtained. The units will be serviced as necessary.
- All work areas, to include the office/break trailer, will have trash receptacles. Areas will be kept free of trash and any equipment not being used will be removed and stored in the office/break trailer.

### **12.2.10 Illumination**

Most work will be conducted during daylight hours. If field activities will be conducted from dusk until dawn, appropriate lighting will be supplied to allow illumination according to EM 385-1-1, OSHA, and WESTON Field Procedures.

## **12.2.11 Heat Stress**

One of the most common types of stress that can affect field personnel is heat stress. Heat stress may be one of the most serious hazards to workers at waste sites due to the PPE required. Engineering controls should be considered as the first measure to be taken to reduce hazards rather than the donning of PPE.

### ***12.2.11.1 Causes and Preventative Measures***

Heat stress associated with hazardous waste operations is usually a result of protective clothing decreasing natural body ventilation and therefore cooling; however, it may occur at any time work is being performed at elevated temperatures.

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur ranging from mild (such as fatigue, irritability, anxiety, and decreased concentration, dexterity, or movement) to fatal. Because heat stress is one of the most common and potentially serious illnesses that hazardous waste site workers encounter, regular monitoring and other preventative measures are vital.

Site workers must learn to recognize and treat the various forms of heat stress. All sites will adhere to the following procedures:

- Suggest workers drink 16 ounces of water prior to the start of work in the morning and during lunch. Provide water and disposable cups. Urge workers to drink 1-2 gallons per day. Provide a cool, preferably air-conditioned area for rest/breaks. Discourage the use of alcohol and discourage the intake of coffee during working hours. Monitor for signs of heat stress. If an individual has high blood pressure, he/she must be monitored more often and take precautions (i.e., drink more water).
- Acclimate workers to site work conditions by slowly increasing work-loads, i.e., do not begin site work activities with extremely demanding activities instead gradually work up to the more physically demanding tasks.
- Consider providing cooling devices to aid natural body ventilation. These devices add weight, however, and their use should be balanced against worker efficiency. An example of a cooling aid is long cotton underwear which acts as a wick to help absorb moisture and protect the skin from direct contact with heat-absorbing protective clothing.
- Install showers and/or hose-down facilities to reduce body temperature and cool protective clothing.
- Ensure that adequate shelter is available to protect personnel against heat, as well as rain which can decrease physical efficiency and increase the probability of heat stress. If possible, set up the command post in a shady area protected from the wind.
- Good hygienic standards must be maintained by frequent changes of clothing and showering. Clothing should be permitted to dry during rest periods. Individuals who notice skin problems should immediately consult medical personnel.

Specific symptoms, causes, preventive measures and first aid procedures for; heat stroke, heat exhaustion, heat cramps and heat rash are outlined in WESTON's Field OP (FLd05) Heat Stress Prevention and Monitoring.



### **12.2.11.2 Heat Stress Monitoring and Work Cycle Management**

For field activities that are part of on-going site work activities in hot weather, the following procedures may be used to monitor the body's physiological response to heat and to manage the work cycle. These procedures may be instituted when the temperature exceeds 70°F:

- Measure Heart Rate (HR). Heart rate should be measured by the radial pulse for 30 seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats/minute for most individuals. The maximum rate is based on an individual's base rate. Base rates vary across the population. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 110 beats/minute at the beginning of the next rest period, the following work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 110 beats/minute.

Additional monitoring procedures, as outlined in FLD05 may be instituted as necessary.

### **12.2.12 Cold Stress**

Persons working in temperatures at or below freezing may be frostbitten. Experiencing extreme cold for a short time may cause severe injury to exposed body surfaces or result in profound generalized cooling, causing death. Areas of the body which have high surface area-to-volume ratios, such as fingers, toes, and ears, are the most susceptible.

Two factors influence the development of a cold injury: ambient temperature and the velocity of the wind. Wind chill describes the chilling effect of moving air in combination with low temperature. For instance, 10 degrees Fahrenheit and a wind speed of 15 miles per hour (mph) is equivalent in chilling effect to still air at -18 degrees Fahrenheit.

As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. Additionally, water conducts heat 240 times faster than air. Thus, the body cools suddenly when chemical-protective equipment is removed if the clothing underneath is perspiration-soaked.

Frostbite includes local injuries resulting from cold. There are several degrees of damage.

Systemic hypothermia is caused by exposure to freezing or rapidly dropping temperature but can occur in milder temperatures when the victim becomes wet, typically from water immersion. Its symptoms are usually exhibited in various stages ranging from; shivering, apathy, listlessness, sleepiness, unconsciousness, glassy stare, slow pulse, slow respiratory rate and death.

Specific symptoms, causes, preventive measures and first aid procedures for cold-stress related injuries can be found in WESTON's Field OP (FLd06) Cold Stress.

### **12.2.13 Shipping and Transportation**

The following procedures should be used to minimize hazards during shipping and transportation of hazardous materials:

- Drums and containers shall be identified, classified, and segregated to assure material compatibility.
- Drum or container staging areas shall be prepared, maintained, and kept to the minimum number necessary to safely identify and classify materials and prepare them for transport.
- Staging areas shall be provided with adequate access and egress routes.
- Bulking of hazardous wastes shall be permitted only after a thorough characterization of the materials has been completed.
- Drums and containers used during site removal shall meet the applicable DOT, OSHA, and EPA regulations for the hazardous wastes they contain.

Shipment of materials to off-site treatment, storage, or disposal facilities involves the entry of waste hauling vehicles into the site. U.S. Department of Transportation (DOT) hazardous materials regulations (49 CFR Parts 171-178) and EPA hazardous waste transporter standards (40 CFR Part 263) for shipment of hazardous wastes must be complied with. The following guidelines can enhance the safety of these operations:

- Locate the final staging (bulking) area as close as possible to the site exit.
- Prepare a circulation plan that minimizes conflict between cleanup teams and waste haulers. Install traffic signs, lights, and other control devices as necessary.

- Provide adequate area for on-site and hauling vehicles to turn around. Where necessary, build or improve on-site roads.
- Stage hauling vehicles in a safe area until ready for loading with drivers remaining in cab. Minimize the time that drivers spend in hazardous areas.
- Hauling-vehicle drivers must have the applicable training and appropriate protective equipment for areas of the site they utilize.
- If drums are shipped, tightly seal the drums prior to loading. Overpack leaking or deteriorated drums prior to shipment. (Under most circumstances, overpack drums used for hazardous wastes may not be reused [49 CFR Part 173.3(c)]). Make sure that truck bed and walls are clean and smooth to prevent damage to drums. Do not double stack drums. Secure drums to prevent shifting during transport.
- Keep bulk solids several inches below the top of the truck container. Cover loads with a layer of clean soil, foam, and/or tarp. Secure the load to prevent shifting or release during transport.
- Weigh vehicles periodically to ensure that vehicle and road weight limits are not exceeded.
- Decontaminate vehicle tires prior to leaving the site to ensure that contamination is not carried onto public roads.
- Check periodically to ensure that vehicles are not releasing dust or vapor emissions off the site.
- Develop procedures for responding quickly to off-site vehicle breakdown and accidents to ensure minimal public impact.

## **12.3 BIOLOGICAL HAZARDS**

### **12.3.1 Tick Bites**

The Center for Disease Control (CDC) has noted the increase of Lyme Disease and Rocky Mountain Spotted Fever (RMSF) which are caused by bites from infected ticks that live in and near wooded areas, tall grass, and brush. Ticks are small, ranging from the size of a comma up to about one quarter inch. They are sometimes difficult to see. The tick season extends from spring through summer

Lyme disease has occurred in almost all states. It is caused by ticks which have become infected with a type of spirochete bacteria. Deer ticks are about one quarter inch in size, and black or brick red in color. Male deer ticks are smaller, and all black. The deer tick larva are extremely small, approximately the size of a period (.).

RMSF has occurred in over one-half of the states, with the heaviest concentrations in Oklahoma, North Carolina, South Carolina, and Virginia. It is caused by Rocky Mountain wood ticks and dog ticks which have become infected with rickettsia bacteria . Both are black or tan in color.

Standard field gear (work boots, socks and light-colored coveralls) provide good protection against tick bites, particularly if the joints are taped. However, even then wearing field gear, the following precautions should be taken when working in areas that might be infested with ticks:

- When in the field, check yourself often for ticks, particularly on your lower legs and areas covered with hair. Look for "a freckle that moves".
- Spray outer clothing, particularly your pant legs, crotch, boots, and socks, **BUT NOT YOUR SKIN**, with an insect repellent that contains permethrin or permethrin.
- Follow manufacture's instructions if using an insect repellent on the skin. For sampling activities be aware of potential cross contamination of samples.
- When walking in wooded areas, avoid contact with bushes, tall grass, or brush as much as possible.
- If you suspect that a tick is present, remove it with tweezers only, and not with matches or a lit cigarette. Grasp the tick near the head with the tweezers and pull gently. Do not use nail polish or any other type of chemical. Be sure and remove all parts of the tick's body. Once removed, disinfect the area with alcohol or a similar antiseptic. Keep the tick in a plastic bag and report the incident to the SSHO.
- Look for signs of the onset of Lyme disease, such as a rash that looks like a bullseye or an expanding red circle surrounding a light area, frequently with a small welt in the center. This rash can appear from several days to several weeks after the tick bite.
- Also look for signs of the onset of RMSF, an inflammation which is visible in the form of a rash comprised of many red spots under the skin, which appears 3 to 10 days after the tick bite. The rash frequently occurs on the ankles and wrists.
- The first symptoms of either disease are flu like chills, fever, headache, dizziness, fatigue, stiff neck, and bone pain. If immediately treated by a physician, most

individuals recover fully in a short period of time. If not treated, more serious symptoms can occur.

If any of the signs and symptoms noted above appear, contact the SSHO. Consult with a physician for an examination and possible treatment.

### **12.3.2 Snakes**

If bitten by a snake, remain calm and keep the affected area below the level of the heart and walk, do not run, to the nearest aid station for assistance. The SSHO will immediately transport the victim to the closest medical facility for treatment or send for appropriate medical assistance, whichever is faster.

THE USE OF SNAKE BITE KITS IS NOT AUTHORIZED. If at all possible, the snake should be identified to assure prompt medical treatment by the physician.

### **12.3.3 Poisonous Plants**

Site personnel will need to be alert to the presence of poisonous plants. The most common types of poisonous plant are poison ivy, poison oak and poison sumac. Skin contact with these plants can cause skin sensitization resulting in reddening, swelling and itching of the affected areas. Skin exposure can result from either direct contact with the plant or contact with clothing/equipment previously exposed to the plant.

Site personnel will receive training in the recognition of poisonous plants and methods for preventing exposure during the site specific safety briefing.

### **12.3.4 Animal or Insect Bites**

Animal bites or stings are usually nuisances (localized swelling, itching, and minor pain) that can be handled by first-aid treatment. The bites of certain snakes, lizards, spiders, and scorpions contain sufficient poison to warrant medical attention. In addition, there are several species of

caterpillars that contain stinging hairs which may cause a rash on contact or respiratory distress if the hairs are inhaled.

There are diseases that can be transmitted by insect and animal bites (e.g., Rocky Mountain spotted fever, Lyme disease [tick], rabies [mainly dogs, skunks, raccoons, and foxes], malaria, and equine encephalitis [mosquitoes]). The greatest hazard and most-common cause of fatalities from animal bites, particularly bees, wasps, and spiders, is from a sensitivity reaction. Shocks due to stings can lead to severe reactions in the circulatory, respiratory, and central nervous systems, which also can result in death.

If an assigned employee has a history of allergic reactions to bites, they will be required to have their prescribed treatment with them, and first aid personnel will know where it is located. All stings or bites will be taken seriously. Anyone stung or bitten will be required to stop work while that person is observed for signs of severe swelling, shortness of breath, nausea, or shock. If there is any doubt, medical attention will be obtained.

All wild animals are to be avoided, particularly wild animals that are unusually passive or aggressive. Any such animals will be reported to appropriate site personnel. Skunks, raccoons, foxes, and bats are wild animals most frequently found to be infected with rabies; however, any warm-blooded animal could be infected. If an individual is bitten by an animal suspected of rabies infection, an attempt will be made to keep the animal under surveillance until appropriate assistance is called to take care of the animal. The animal should then be tested. A dead animal suspected of infection should also be preserved and tested. Health departments are often sources of testing or obtaining information about where testing can be done.

The bite area should be washed with soap and water and disinfected with 70% alcohol as quickly as possible, followed by treatment by a doctor or emergency room.

Rabies is preventable, even after being bitten, if treatment is begun soon enough. Hence, prompt medical attention and determining whether the animal that has bitten you is infected are very important. Rabies is not curable once symptoms or signs appear.

## 12.4 CONFINED SPACE OPERATIONS

A confined space is potentially any space which meets the following characteristics:

- Is large enough and so configured that an employee can enter and perform assigned work.
- Has limited or restricted means of entry or exit.
- Is not designed for continuous human occupancy.

A permit space additionally has the following characteristics:

- Contains or could potentially contain a hazardous atmosphere.
- Contains a material that could potentially engulf the entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated.
- Contains any other recognized serious safety or health hazard.

As required by 29 CFR 1910.146, WESTON will use an entry permit and trained personnel for all confined space entry work. This permit must conform to the requirements of the standard and from a monitoring standpoint include, at a minimum: acceptable entry conditions, the results of initial and periodic monitoring tests performed, names and initials of testers, the time testing was conducted, and monitoring instrumentation used.

If monitoring results are within the levels determined to be acceptable for entry, work can proceed according to permit requirements. If during the course of work monitoring shows deviations outside acceptable ranges, work will halt and workers will immediately exit the confined space.

Additional criteria, and WESTON's Confined Space Program, can be found in the Site Safety Officer's Manual maintained on-site.

## 12.5 EXCAVATION OPERATIONS

In accordance with OSHA requirements, all excavation activities will be in compliance with 29 CFR 1926 Subpart P and USACE EM 385-1-1, Section 25. Specific requirements include routine inspections by qualified personnel to verify safe work conditions, location of utilities, and appropriate worker knowledge of safe work practices.

Protective systems for workers will be in accordance with Subpart P and encompass one or more of the following: sloping, shoring, or shielding. Any protective system for an excavation greater than 20 feet in depth (or as otherwise determined by site conditions or Subpart P) will require the services and approval of a registered professional engineer.

Additional criteria, and WESTON's excavation safety practice can be found in the Site Safety Officer's Manual which is maintained on-site.



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**SECTION 13**

**UXO OR CHEMICAL WARFARE MATERIALS SAFETY PRACTICES**

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### **13. UXO OR CHEMICAL WARFARE MATERIALS SAFETY PRACTICES**

For the majority of work sites, it is unlikely that any unexploded ordinance (UXO) or chemical warfare materials (CWM) will be found. However, if any suspected UXO or CWM are discovered, WESTON will notify the CENAE Contracting Officer's Representative, the PSM and the Project Manager.

For any site indicated by background research to contain or possibly contain UXO or CWM, a site-specific Safety Plan will be prepared as an attachment to the SSHASP.



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**SECTION 14**

**EMERGENCY RESPONSE PROCEDURES AND EQUIPMENT**

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## **14. EMERGENCY RESPONSE PROCEDURES AND EQUIPMENT**

### **14.1 GENERAL**

Emergency situations can be minimized through proper implementation of the SSHP and SSHASP. If an emergency situation develops, the initial response will be to handle it in a calm, deliberate manner so that it is controlled and the health and safety of the site workers and surrounding community are not jeopardized.

Should an incident occur resulting in a fatality, \$100,000 or more in property damage, three or more persons being hospitalized, or any incident which would result in adverse publicity to USACE, the Contracting Officer's Representative will be immediately notified.

While the following gives general guidance for emergency operations and/or prevention, specific emergency procedures, phone numbers, personnel and equipment requirements can be found in the ERCP as attached to the SSHASP.

### **14.2 HOSPITAL ROUTE**

A map showing the route to the hospitals will be posted near the site telephone. A written description of the route will be attached to the map. A copy of the hospital route map and a written description of the route are included in the SSHASP.

### **14.3 FIRE PREVENTION AND PROTECTION**

#### **14.3.1 Fire Prevention**

The following rules, which were developed using EM 385-1-1, OSHA, and WESTON Field Procedures, will be enforced to prevent fires:

- Smoking will be prohibited at, or in the vicinity of, operations which may present a fire hazard; "No Smoking or Open-Flame" markings will be conspicuously posted.

- Flammable/combustible liquids will be stored in a designated area posted as a "No Smoking" or "No Open Flame" area with a 4A:20B:C fire extinguisher located within 25-75 feet.
- When used on-site, flammable and/or combustible liquids must be handled only in approved, properly labeled metal safety cans equipped with flash arrestors and self-closing lids.
- Transfer of flammable liquids from one metal container to another will be done only when the containers are electrically interconnected (bonded).
- The motors of all equipment being fueled will be shut off during the fueling operations.
- When necessary for use on-site, flammable/combustible liquids stored in metal drums will be equipped with self-closing safety faucets, vent bung fittings, and drip pans. Such containers will be stored outside buildings in an area approved by the SSHO and will be properly grounded.

### **14.3.2 Fire Protection**

The following measures will be used to protect against fires:

- All earth moving equipment (back hoes, bulldozers, drill rigs, etc.) will be equipped with a fire extinguisher of 2A:10B:C units or higher.
- All vehicles used in the transport of fuel will be equipped with a minimum of one extinguisher of 2A:20B:C units or higher.
- Temporary offices will be equipped with a fire extinguisher of 2A:10B:C units or higher.
- At least one portable fire extinguisher of 4A:20B:C units will be located at each work site.

### **14.4 FIRE EXTINGUISHERS**

A dry-chemical-type 4A:20B:C fire extinguisher will be available at each individual work site. Appropriate fire extinguishers will be provided at any other site location where flammable materials may present a fire risk. Additionally, a fire extinguisher rated at least 2A:10B:C will be located with each piece of heavy equipment and in each site vehicle.



## **14.5 FIRST AID KITS**

The size and number of kits will be sufficient to accommodate the maximum number of people (including government personnel and visitors) on-site at any given time. The kits will be located at each work site and the location will be made known by all personnel.

Kit locations will be provided with adequate water and other supplies necessary to cleanse and decontaminate burns or other wounds.

## **14.6 INCLEMENT WEATHER**

In the event of inclement weather, electrical storms or extremely hot or cold weather, it may be necessary to cease operations and evacuate the site. The SSHO will be responsible for contacting the U.S. Weather Service as necessary to ascertain forecast conditions.

Additional criteria can be found within the ERCP.



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**SECTION 15**

**LOGS, REPORTS, AUDITS, INSPECTIONS AND RECORDKEEPING**

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## **15. LOGS, REPORTS, AUDITS, INSPECTIONS AND RECORDKEEPING**

### **15.1 SAFETY LOG**

The SSHO will maintain a Safety Log of all safety- related activities.

The SSHO is responsible for ensuring that health and safety activities for the day, as well as Safety Meeting minutes, are included within the log or filed appropriately.

### **15.2 INJURY/ILLNESS/ACCIDENT REPORTS**

In the event that a reportable accident/incident occurs at the job site, the WESTON Accident Form and the USACE Engineering Form 3394 will be completed and forwarded within 48 hours to WESTON and the contracting officer's representative.

For any incident or near miss, appropriate investigation, documentation and corrective actions will be completed.

### **15.3 TRAINING LOG**

The SSHO is responsible for ensuring that all training conducted relative to job site activities is documented appropriately.

Documentation of training for all site workers will be available on site or with the RSO dependent upon site requirements.

### **15.4 VISITOR LOG**

A Visitor Log will be maintained at the entrance to all work sites to record visitations to the job site.

## 15.5 INSPECTION FORMS

Daily health and safety inspections will be conducted by the SSHO with the results recorded in the Safety Log or files appropriately. Periodic inspections (e.g., weekly) will also be conducted as necessary.

The PSM will conduct periodic health and safety audits to ensure site personnel are performing the tasks in accordance with the Work Plan, the SSHP, and the SSHASP.

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**SECTION 16**

**REFERENCES**

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## 16. REFERENCES

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**ATTACHMENT 1**

**EMERGENCY RESPONSE AND CONTINGENCY PLAN**

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**EMERGENCY RESPONSE AND CONTINGENCY PLAN  
SOIL AND SEDIMENT REMEDIATION  
OPEN BURNING GROUNDS  
SENECA ARMY DEPOT ACTIVITY  
ROMULUS, NEW YORK**

**REVISED DRAFT**

Contract No. DACW33-95-D-0004  
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Prepared for:

**U.S. ARMY CORPS OF ENGINEERS  
NORTH ATLANTIC DIVISION  
NEW ENGLAND DISTRICT**  
696 Virginia Road  
Concord, MA 01742-2751

Prepared by:

**ROY F. WESTON, INC**  
One Wall Street  
Manchester, New Hampshire 03101-1501

April 1999

W.O. No. 03886-118-013-0150-01



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APPENDIX E — SITE PLAN, EVACUATION ROUTES, AND EQUIPMENT  
LOCATIONS



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## LIST OF ACRONYMS

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CFR	Code of Federal Regulations
CSM	Chemical Surety Material
CRZ	Contamination Reduction Zone
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
ERC	Emergency Response Coordinator
ERCP	Emergency Response and Contingency Plan
ERT	Emergency Response Team
EZ	Exclusion Zone
HAZWOPER	Hazardous Waste Operations and Emergency Response
MSDS	Material Safety Data Sheet
OSHA	Occupational Safety and Health Administration
PM	Project Manager
PPE	Personal Protective Equipment
PSM	Program Safety Manager
RSO	Regional Safety Officer
SHSC	Site Health and Safety Coordinator
SSHASP	Site Specific Health and Safety Plan
UXO	Unexploded Ordnance



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**SECTION 1**

**INTRODUCTION**

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## 1. INTRODUCTION

This Emergency Response and Contingency Plan (ERCP) has been prepared by Roy F. Weston, Inc. (WESTON®) to describe actions that will be taken by WESTON site personnel in the event of an emergency.

The purpose of this plan is to:

- a) Act as a guide in the event of an emergency situation.
- b) Minimize hazards to human health and the environment from anticipated emergency events.
- c) Familiarize response personnel with equipment and procedures

This plan is determined to comply with the requirements of OSHA, specifically 29 CFR 1910.38 and 29 CFR 1910.120.





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**SECTION 2**

**PRE-EMERGENCY PLANNING**

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## 2. PRE-EMERGENCY PLANNING

In order to handle emergencies properly and effectively, planning and training is essential. Pre-emergency planning procedures must be in place to immediately respond to emergency situations. Site personnel must be knowledgeable of their roles and responsibilities and act within their abilities and training. WESTON will prohibit its employees from responding to emergency situations that would require them to be exposed to hazards beyond their degree of training. As necessary and prior to site activities, the Site Health and Safety Coordinator (SHSC) or project staff will communicate with outside response agencies (e.g., fire, police, ambulance, and medical) to coordinate response efforts. Contacts with each response agency will be informed of any changing site conditions that may affect emergency response. A complete list of emergency contacts can be found in Section 7.0 of the SSHASP.



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**SECTION 3**

**ROLES AND RESPONSIBILITIES**

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### 3. ROLES AND RESPONSIBILITIES

The Site Health and Safety Coordinator (SHSC) will be the primary Emergency Response Coordinator (ERC). The SHSC or designated alternate will contact the appropriate personnel or authorities as determined by the type and nature of incident. Appendix A lists emergency contacts and serves as documentation of this site-specific chain-of-command.

This chain-of-command is established to minimize confusion and to leave no doubt as to whom has decision-making authority in the event of an emergency situation.

#### 3.1 ERC ROLE

ERC responsibilities during emergency situations are as follows:

- Evaluate emergency situation and special needs.
- Direct all emergency efforts, including evacuation of personnel.
- Notify and interact with emergency response agencies.
- Oversee medical and decontamination procedures.
- Serve as the point of contact for local fire department(s) and/or hazardous material team(s).

ERC responsibilities after the emergency phase is complete includes:

- Supervise cleanup efforts; ensure proper recovery, disposal and accounting of any hazardous material/waste.
- Ensure all emergency equipment and supplies are cleaned and/or made available for future use.
- Document incident, advise management, and initiate debriefing.

The ERC will delegate, as necessary, specific roles and duties outlined above.

### **3.2 ALTERNATE ERC'S ROLE**

- The Site Manager is the primary backup to the ERC.
- Additional personnel may be trained as alternate ERC's based upon site complexity and/or size.

### **3.3 SITE MANAGER ROLE**

- Alternate ERC.
- Initial Media Contact

### **3.4 PROGRAM OR OPERATIONS SAFETY MANAGER ROLE**

- Provide technical assistance and lead post-event investigations.

### **3.5 REGIONAL SAFETY OFFICER ROLE**

- Receive reports from the ERC.
- Provide information to appropriate management and track reports.
- Workers compensation liaison.
- Focal point for medical return to work.
- Incident investigation as necessary.

### **3.6 PROJECT MANAGER ROLE**

- Assure funding as necessary for emergency operations.
- Report and interact with regulatory agencies and client as necessary.
- Media Contact

### **3.7 EMERGENCY RESPONSE TEAMS**

Based upon the size and complexity of the site or task activities, Emergency Response Teams (ERTs) will either be jointly comprised of all personnel on-site, cross-trained to actions necessary (e.g., spills, confined space rescue, high-angle rescue), comprised of named individuals, local response agencies or a combination of the above. Roles and responsibilities of the Emergency Response Teams for the site will be provided in the Final SSHASP.



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**SECTION 4**

**EMERGENCY RECOGNITION, PREVENTION AND TRAINING**

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## **4. EMERGENCY RECOGNITION, PREVENTION AND TRAINING**

All WESTON personnel will be instructed on a daily basis to be constantly alert for potentially hazardous situations or conditions. Immediate recognition with necessary corrective actions of potential hazardous conditions can avert an emergency. Emergency response discussions will be incorporated into regular safety meetings and will include such topics as:

- Tasks to be performed:
- Hazards that may be encountered, along with their effects and how to recognize symptoms.
- Emergency procedures.

### **4.1 FOR HAZWOPER SITES:**

All WESTON site personnel shall have a minimum of the following safety training:

- 40-hour Hazardous Waste Operations (HAZWOPER);
- 8-hour Annual Refresher Course; and
- Site-specific Training.
- At least (1) member of the WESTON team shall have First Aid/CPR training.
- At least (1) member (SHSC) shall have 8-hour Site Health and Safety Coordinator Training.

### **4.2 FOR NON-HAZWOPER SITES:**

All WESTON personnel shall have a minimum of the following safety training:

- Hazard Communication Training
- Site Specific Training.
- At least one person shall have First Aid/CPR training.



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**SECTION 5**

**COMMUNICATION**

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## 5. COMMUNICATION

Daily health and safety briefings will be used to remind personnel of their roles, responsibilities, and emergency procedures. A record of the safety briefings will be completed and maintained on-site. Emergency communications will be voice, audible horn/alarm or 2-way radio. See Appendix B for site-specific requirements. Telephone capability will be a requirement for all sites; the location of either a site telephone or the nearest off-site phone is listed in Appendix E. Emergency telephone numbers will be kept in the WESTON site vehicle and/or site office. Personnel will be instructed to immediately contact the SHSC or Site Manager if an emergency situation arises

A backup emergency notification system will also be used during all site activities (e.g., air horns located at each work location). In the case of an emergency the signal for personnel to evacuate the area will be a series of long blasts. The assembly/gathering point for individual work locations will be provided during the daily safety briefing. After a head count has been taken further evacuation may be required based on wind direction and weather conditions. Five short blasts of the air horn will signal all clear, workers may then return to designated work areas. Each type of communication will be tested to insure that site personnel can identify the signals above background noise, as well as to check for system efficacy and accuracy. In the event of an emergency requiring outside assistance the ERC or designated alternate will contact outside help using the nearest telephone or other pre-established means.





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**SECTION 6**

**SUPPORT AREAS, EVACUATION PROCEDURES AND PERSONNEL  
ACCOUNTING**

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## **6. SUPPORT AREAS, EVACUATION PROCEDURES AND PERSONNEL ACCOUNTING**

The primary support area for all work at the site will be determined before commencement of work at the site. This is currently assumed to be the WESTON Site Office location. Evacuation routes and assembly areas will be determined. Means of accounting for site personnel and visitors will be based upon site size and complexity (typical methods include sign-in logs). In the event of an evacuation these logs will be brought to the assembly area in order to verify safe evacuation by all. Alternate routes and assembly areas will be determined and utilized based upon wind speed and direction as well as emergency requirements. A detailed site map which delineates access roads, will show the support zone area for evacuation procedures.



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**SECTION 7**

**EMERGENCY PROCEDURES**

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## 7. EMERGENCY PROCEDURES

### 7.1 GENERAL

During an emergency, the following actions will be taken, with some actions conducted concurrently. No one will attempt an emergency response/rescue until the situation has been assessed and the appropriate response outlined. It will be determined prior to work initiation, whether any tasks on site are critical operations requiring one or more persons to shut down sensitive equipment in a time-critical manner.

Certain sites (e.g., UXO, CSM) or clients (e.g., DOE, DOD) may have specific criteria and actions to be followed in the event of an emergency situation. If so, these procedures will be outlined in Appendix E of the Final SSHASP.

General guidelines for rescue/response may include the following:

- Assessment: Assess the type and extent of the emergency, then determine and verify existing and potential hazards to site personnel and the off-site population. Determine, based on the type and extent of the emergency, the following:
  - Whether and how to respond.
  - The extent of any injuries and/or damage.
  - The need for evacuation of site personnel and off-site population.
  - The resources needed for evacuation and response.
- Evacuate:
  - Move site personnel to a safe distance upwind of the incident.
  - Monitor the incident for significant changes. The hazards may diminish, permitting personnel to re-enter the site, or hazards may increase and require public evacuation.

Note: Should site personnel or visitors be handicapped to the point of needing assistance during an evacuation, the ERC will ensure that appropriate numbers of site workers are trained to provide any needed assistance.

Note: Work sites with potential hazards which could involve adverse community risk, and require evacuation of the local community must be discussed and coordinated with the client and local fire and police agencies before field work begins.

- Enforcing the buddy system: Allow no one (including rescuers) to enter a contaminated area or hazardous area without a partner or without appropriate communications means and proper PPE. At the time of the incident, one person will be designated to record the names, time of entry, and time of exit for all personnel entering the EZ. At all times, personnel in the EZ should be in line-of-sight or communications contact with the ERC or his designee.
  
- Survey casualties:
  - Locate all victims and assess their condition.
  - Determine resources needed for stabilization and transport.
  
- Request aid: Contact the required off-site/on-site personnel or agencies (such as the ambulance, fire department, police, etc). Ensure that previous communications and understanding or response actions to be conducted by the off-site resources have been accomplished. In certain cases (e.g., confined space rescue) the off-site responder(s) must be brought to the site before work is initiated so that an evaluation of and training on the confined spaces is accomplished.
  
- Allocate resources: Allocate appropriately qualified on-site personnel and equipment to the rescue and initiate incident response operations.
  
- Remove or assist victims from the area, using appropriate equipment and procedures.
  
- Control measures, including containment: Assist in bringing the hazardous situation under complete or temporary controls and use measures to prevent any escalation of the emergency.
  
- Decontaminate: Use established procedures to decontaminate personnel in the decontamination area. If the emergency makes this area unsafe, establish a new decontamination area at an appropriate distance. Decontaminate victims before or after stabilization as their medical condition indicates. Decontamination may be delayed if the injuries suffered by the victim pose an immediate threat to the victim's life or health. Instead, the victim should be placed on a tarp, sheet of plastic or non-absorbent backboard to allow handling of the victim without the threat of contaminating support personnel until the victim is stabilized.
  
- Stabilize: Administer any medical procedures that are necessary before the victim can be moved. Stabilize or permanently remediate the hazardous condition. Address the cause of the emergency and anything that was damaged or endangered by the emergency (e.g., drums, and tanks).



- Transport: No one will be transported without being decontaminated or protected from contaminating others. Measures will be taken to minimize chemical contamination of the transport vehicle, ambulance, and hospital personnel.
- Casualty Logging: Record the names(s) of the victim(s), the time, the destination, and their condition upon transport.
- Casualty tracking: Record the disposition, condition, and location of the casualties.
- Media Reporting: Media contacts should be named (see Appendix A) and utilized whenever contact with reporters is necessary. The Site Manager will be the immediate media contact. The PM is listed as the media contact for most sites.

## **7.2 SECURITY ISSUES**

Both routine and emergency response actions dictate the need for prevention of unauthorized access and for the protection of vital records and equipment. Site size, location, political or social environment, and equipment needs are criteria necessary to evaluate whether security (private or public) is needed.

In the event of unauthorized access, personnel should avoid confrontation (verbal or physical). Attempts must be made to explain site hazards, and Corporate and client expectations for a safe worksite. Continued presence by unauthorized persons will require a team member to notify the local police force. Site activities may need to be halted in the event unauthorized persons create an adverse risk to themselves, to WESTON personnel or to subcontractor personnel.

## **7.3 SEVERE WEATHER/NATURAL DISASTERS**

In the event of adverse weather conditions occurring on-site such as lightning, high winds, tornado, hurricane or extreme heat the SHSC will instruct the workers to discontinue or modify field operations. These natural phenomena complicate work activities and add or increase risk to all site personnel. The following actions should be evaluated or taken in the event of severe weather:

- Stop work

- Secure all loose materials, toolboxes, plywood, trash cans. etc.
- Bring all workers to safe areas indoors when lightning or severe weather is in the immediate area.
- Verify that all buildings and trailer doors are locked and windows closed.
- Shut down and disconnect all non-critical electrical equipment to protect the equipment from electrical surges and abrupt power loss.

#### **7.4 INJURY OR ILLNESS**

In the event of injury or illness, site personnel will take the following action:

- Evaluate the scene for safe entry.
- Notify SHSC and Site Manager.
- Assess the type and extent of injury.
- Provide initial First Aid to injured person.
- Decontaminate the injured personnel, if or as necessary.
- If required and injury or illness not potentially life-threatening, transport to local medical facility.
- If injury or illness potentially life-threatening notify emergency medical services of need for transportation.
- Notify Regional Safety Officer and Project Manager.

#### **7.5 EXTRICATION**

In the event a person becomes trapped and requires extrication site personnel will take the following action:

- Notify SHSC and Site Manager.
- Evaluate the scene for safe entry.
- Contact the local Fire Department or Rescue Service.
- Provide first aid as necessary.
- Notify Regional Safety Officer and Project Manager.

## **7.6 CHEMICAL EXPOSURE**

In the event of chemical exposure site personnel will take the following action:

- Evaluate the scene for safe entry.
- Notify SHSC and Site Manager.
- Provide assistance with emergency shower, eyewash, or other initial First Aid, as required.
- Decontaminate exposed personnel.
- Notify emergency medical services of need for transportation as necessary.
- Notify Regional Safety Officer (RSO) and Project Manager (PM).

## **7.7 SMALL FIRE**

A small fire is defined as a fire that can be extinguished with a 4A:20BC type fire extinguisher or incipient stage fires, which can safely be extinguished with material readily at hand. In the event of a small fire, site personnel will take the following actions:

- Evacuate all unnecessary personal from the area, if possible, to an upwind location.
- Notify SHSC and Site Manager.
- Attempt to extinguish fire using portable fire extinguishers or by smothering from an upwind location.
- Request emergency response assistance as appropriate.
- Notify the RSO and Project Manager.

## **7.8 LARGE FIRE**

In the event of a large fire, or a small fire, which cannot be extinguished, the following actions will be taken:

- Sound alarm.

- Evacuate all unnecessary personal from the area, if possible, to an upwind location.
- Notify local fire department; request other emergency response services (police, ambulance, and hospital) as needed.

Notify Site Manager and RSO and other appropriate personnel or agencies.

## **7.9 EXPLOSION**

In the event of an explosion, all nonessential personnel will evacuate the site. Required support equipment, services, and personnel will be requested. Response will follow steps identified under Section 7.6 (Chemical Exposure). Notification action as indicated in the Section 7.8 (Large Fires) will be followed.

## **7.10 SMALL SPILL**

In the event of a small spill, appropriate actions will be taken to prevent the spill from reaching groundwater, surface water or drains.

Actions Include:

- Verification of spilled material, volume and hazards.
- Determine appropriate response procedures including PPE (see MSDS).
- Assess quantity and size of the spill to determine the level of response to contain and clean it up.
- Confine or contain spill with booms, pads, or berm.
- Neutralize spill with appropriate agents (if safe/possible).
- Notify Regional Safety Officer and Site Manager.
- WESTON will collect spilled material including absorbent material and place in appropriate containers. All hazardous material shall be disposed of in accordance with all applicable hazardous waste regulations and client requirements.

WESTON will keep all records related to the spill of hazardous waste for a period of at least three years after the spill has been cleaned up or such longer period of time as required in any unresolved enforcement action.

Note: MSDSs for materials onsite with potential to spill (e.g., gasoline, diesel, acids, solvents) will be provided in Appendix B of the SSHASP. Procedures and requirements for spill response will follow criteria outlined in the MSDS.

## 7.11 LARGE SPILL

A volume equal to or greater than State or Federal reportable quantity and/or those beyond the capabilities and resources of on-site personnel defines large spills. Appropriate remedial actions will be conducted according to State and Federal Regulations. General Procedures as follows:

- Verification of spilled material, volume and hazards.
- As safe to do so, confine the spill to the smallest area possible using booms, pads, berms or any other effective material.
- Assess type and extent of damages and injuries to personnel; take appropriate first aid steps if necessary.
- Notify Regional Safety Officer and Site Manager.
- In the event the additional emergency clean-up assistance is needed, WESTON will request assistance from off-site response contractors.
- WESTON will collect all hazardous waste including contaminated booms and absorbent material. All hazardous clean-up residues shall be disposed of as hazardous waste in accordance with all applicable hazardous waste regulations.
- All emergency equipment will be decontaminated prior to being put back into service. Expendable or damaged supplies will be immediately replaced.

WESTON will keep all records related to the spill of hazardous waste for a period of at least three years after the spill has been cleaned up or such longer period of time as required in any unresolved enforcement action.

In the event of a spill or a release requiring agency reporting, the Project Manager will notify the client and appropriate regulatory agencies.

## 7.12 CRITIQUES AND CORRECTIVE ACTIONS

Post emergency response activities include documentation, investigation and appropriate corrective actions to avoid future problems. The Program Safety Manager (PSM), operations safety staff, the RSO or the SHSC will lead the post-incident critique to assure worker knowledge of actions taken and proposals for changes as necessary. The SHSC and the RSO are responsible for documenting incident reports and providing communication to management. The PSM and/or

Operations safety staff are responsible for providing direction and assistance. Corrective actions necessary based upon appropriate review and investigation of the incident are required prior to assumption of work. In the event corrective actions cannot be made on an immediate basis, documented plans and schedules will be formulated.

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**APPENDIX A**

**EMERGENCY CONTACTS**

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## Appendix A

### Emergency Contacts

EMERGENCY CONTACTS AND PHONE NUMBERS	
SERVICE	TELEPHONE NUMBER
Emergency Ambulance Service	911
Police – Romulus (Emergency)	911 / (607) 869-0448
Fire – Romulus (Emergency)	911 / (607) 869-1316
Hospital: Geneva General Hospital 196 North Street Geneva, NY 14456	(315) 787-4000 (General Number)
WESTON Medical Emergency (EMR)	(800) 229-3674
WESTON Emergency (MNH)	(603) 656-5400
WESTON Emergency (24 hour) (West Chester)	(610) 692-3000
WESTON Program Safety Manager: T.L. Blackburn, CSP	(603) 656-5400 Pager: 800-206-0364
WESTON Program CIH: G.M. Crawford, CIH	Pager: (800) 206-1507
WESTON Regional Safety Officer: C. Olszewski	(603) 656-5400 Fax: (603) 656-5401
Spill Response Contractor(s) CHEMTREC	(800) 424-9300
EPA Region 2 Emergency Response	(212) 264-0278
State Regulatory Agency's	(800) 457-7362
SHSC/ERC (Steve Whitney)	(603) 656-5400
Site Manager (Miles Gelatt)	(603) 656-5459
Alternate ERC(s) (Mike Wagner)	(603) 656-5400
SEDA BRAC Environmental Coordinator: Mr. Steven Absolom	TBD
CENAE Project Manager: Mr. Randy Battaglia	(607) 869-1523
Seneca Public Works/Water Department	(716) 526-6888
Poison Control Center (New York)	1-800-962-1253



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**APPENDIX B**

**EMERGENCY RESPONSE EQUIPMENT**

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## **Appendix B**

### **Emergency Response Equipment**

WESTON will maintain the following emergency response equipment on-site in the event of an emergency. Unless otherwise noted below, emergency equipment will be stored in the rescue vehicle.

#### **Decontamination Equipment:**

- (2) pair Medical Trauma Scissors
- (2) pair Seat Belt Cutters
- (2) large Sponges
- (2) Short Handle Brushes
- (2) Bottles Eye Wash Solution
- (2) 3-5 gallon Buckets
- (1) Bottle Liquid Soap
- (2) Emergency Blankets
- (1) Carry Bag / Identified as Emergency Decon
- (1) 3 gallon Pressure sprayer

#### **Rescue Equipment: Site Trailer**

- (1) Backboard
- Vehicle, pickup truck or other with sufficient space for litter transport.

In addition, a First Aid kit will be kept in the rescue vehicle. The rescue vehicle shall be kept at a designated parking location, at the site office trailer.

#### **Spill Control: Site Trailer**

- Overpacks (85-gallon)
- Spill pads
- Absorbent Booms
- Shovels
- Absorbent Material
- Squeegees
- Eye Wash/ Shower: minimum (1) 15-minute flow device at active CRZ/DeCon.

**First Aid Kits:** Site Trailer

**Fire Extinguishers:** Minimum Size/Type: 20B:C. Located in support area, and within 50 feet but no closer than 25 feet of activities where there is a potential to produce a fire (e.g. cutting, burning, refueling vehicles, etc.)

**PPE:** Levels B, C, and D will be stored and/or used on site. Reserve PPE equipment and supplies shall be stored in Site Trailer.

- Self contained breathing apparatus (SCBA)
- Air purifying respirator (APR)
- Saranex coveralls or equivalent.
- Boot covers.
- Slush boots.
- Nitrile gloves.
- Neoprene gloves.
- Leather gloves.
- Hard hats..
- Goggles.
- Face shields.

**Instrumentation (as part of routine monitoring resources):**

- CGI/O<sub>2</sub> Meter.
- Photoionization detector.
- PDR or DRAM.

**Communications Equipment and Alarms:**

Hard line telephone in Project office, cell phones, 2-way radio, air horn.

**Equipment Testing:**

It is the responsibility of the Emergency Coordinator to periodically test communications and fire control equipment and to ensure that all spill response/control, personal protective equipment; first aid supplies and rescue equipment is available and usable.

**Maintenance of Equipment:**

Fire extinguishers are to be inspected monthly with annual testing by an outside firm. First aid supplies are to be inspected weekly on construction sites and monthly otherwise. The wearer will inspect personal protective equipment when donning. SCBA for emergency use are to be inspected and documentation provided as indicated in Weston's Respiratory Protection Program.





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**APPENDIX C**

**FORMS**

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## **Appendix C**

Forms (e.g., Incident Report, Investigation Report, Client Report Form)

To be provided in SHSC files.



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**APPENDIX D**

**SITE-SPECIFIC SPILLS/RESPONSE ACTIONS**

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## Appendix D

### ***Site-Specific Spills/Response Actions***

No specific spill concerns this SOW. Follow MSDS instructions as necessary.

#### **Response to Nitric Acid Spill**

The following response procedures will be used for a spill of dilute nitric acid:

- Shut down operation in immediate area.
- Don protective equipment (small quantities and/or well ventilated areas -Level C, large quantity and/or poorly ventilated area - Level B).
- Monitor with pH paper.
- Contain spill with appropriate pillows or dry sorbent (rated for acids).
- Recover contaminated solids and place into clean, dry containers.

#### **Response to Gasoline Spill**

The following response procedures will be used for a spill of gasoline:

- Shut down operation in immediate area, shut off all potential ignition sources (generators, compressors, etc.)
- Don protective equipment (small quantities and/or well ventilated areas -Level C, large quantity and/or poorly ventilated area - Level B).
- Monitor with CGI/O<sub>2</sub> meter and PID (follow established action levels).
- Contain spill with pillows or dry sorbent, prevent from entering storm drains.
- Recover contaminated sorbent material and place into clean, dry containers.

## Response to Hexane or Acetone Spill

The following response procedures will be used for a spill of hexane or acetone:

- Shut down operation in immediate area, shut off all potential ignition sources (generators, compressors, etc.)
- Don protective equipment (small quantities and/or well ventilated areas -Level C, large quantity and/or poorly ventilated area - Level B).
- Monitor with CGI/O<sub>2</sub> meter and PID (follow established action levels).
- Contain spill with pillows or dry sorbent, prevent from entering storm drains.
- Recover contaminated sorbent material and place into clean, dry containers.



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**APPENDIX E**

**SITE PLAN, EVACUATION ROUTES, AND EQUIPMENT LOCATIONS**

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## **Appendix E**

### ***Site Plan, Evacuation Routes, and Equipment Locations***

A map depicting the site, evacuation routes and equipment locations will be posted in the office and work site. Mobile sites will determine location on daily basis. Hospital locations will be determined from each mobile location prior to work initiation.

### **Hospital Route and Directions**

A map (see Figure E-1) showing the route to the hospital will be posted near the site telephone. A copy of the hospital route map is provided as Figure E-1. The hospital routes will be verified prior to work initiation. The following written description of the routes will be attached to the map:

Exit the gate and take a right onto Route 96A. Head north on State Route 96 for approximately 9.5 miles. Bear left on US 20 (Highway 5) and head west for .5 miles. Bear right on Lake Street (west) for 0.1 miles and then turn right on to Exchange Street (Highway 14) for 0.4 miles. Next, turn left on North Street for 0.4 miles to the Geneva General Hospital.



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**APPENDIX F**

**LEAD COMPLIANCE PROGRAM IN ACCORDANCE  
WITH 29 CFR 1926.62**

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## **Health and Safety Plan Operating Procedures**

### **Field Operating Procedures - FLD 46 - Control of Exposure to Lead**

This instruction provides guidelines to management and employees for controlling exposure to lead in the workplace. This instruction applies Corporate wide.

Corporate Health and Safety will provide or arrange for training and materials, assist with developing and review operating practices for controlling exposures. File copies of standards 29 CFR 1910.1025 and 29 CFR 1926.62 will be kept by Regional Safety Officers and Division Safety Managers. Copies of regulations will be made available to employees as necessary. Regional and Division Managers and Safety Officers shall ensure region or division employees are properly trained in the provisions of the standard prior to performing activities involving exposure to lead or lead compounds.

#### **Introduction**

Based upon limited differences in compliance requirements between the General Industry and the Construction Industry Standards it will be WESTON policy to follow compliance requirements as determined in 29 CFR 1926.62, Lead Exposure in Construction for all activities which involve occupational exposure to lead. Any deviations from the operating practice as outlined below requires the prior approval of the Corporate Health and Safety Director.

This practice applies to occupational exposure to lead in any amount. Trigger levels which mandate implementation of certain aspects of the standard have also been applied. While training of workers must be implemented for employees with exposure in any amount, specific requirements for medical monitoring, respiratory protection, hygiene facilities, etc. are not mandated until exposure reaches the action level or the permissible exposure level.

The forms of lead to which the standard applies is defined to include metallic lead, all inorganic lead compounds, and organic lead soaps.

The lead standard includes requirements addressing exposure assessment, methods of compliance, respiratory protection, protective clothing and equipment, hygiene facilities and practices, medical surveillance, medical removal protection, employee information and training, signs, recordkeeping, and observation of monitoring.

Specific tasks have been listed which require conformance with the most restrictive portions of the standard until monitoring indicates otherwise. These tasks include; abrasive blasting, welding, cutting and burning of steel or structures containing or coated with lead or lead products.

#### **Permissible Exposure Level (PEL) and Action Level (AL)**

For both the general industry and the construction industry the PEL for lead exposure is  $50 \mu\text{g}/\text{m}^3$  and the AL is  $30 \mu\text{g}/\text{m}^3$ .

For exposures greater than an 8-hour day the time weighted average for that day must be reduced

according to the formula:

- Allowable employee exposure (in  $\mu\text{g}/\text{m}^3$ )=400 divided by the total hours worked that day.

### **Potential Sources of Exposure**

For WESTON operations potential sources of exposure include, but are not limited to; industrial hygiene surveys, wet-process paint chip sampling, and drilling operations where lead is present as a contaminant. In addition, certain “Trigger Tasks” such as; welding and cutting on lead paint or lead-contaminated structures, dry sanding or scraping, soldering and pipe-fitting operations involving lead-containing materials and dry cleanup of lead contaminated surfaces are potential exposure operations. Specific monitoring and protection requirements follow.

### **Exposure Assessment and Initial Requirements**

Each task conducted by WESTON personnel must be evaluated as to the potential for exposure to lead. In accordance with the standard, exposure is that which would occur regardless of the use of respiratory protection. Therefore, any concentration must be evaluated as to the potential for employee exposure at or above the action level.

#### **Hygiene Surveys and Sampling Tasks:**

Previous data less than 12 months old may be used as the initial exposure assessment in order to determine appropriate levels of protection. This data must have been collected under workplace and environmental conditions closely resembling current task activities.

Defensible data from previous soil sampling efforts may be utilized for determining preliminary levels of protection. By inserting soils concentration data into the HWAC equation (See WESTON Safety Officer Field Manual) for determining action levels (based on total dust in air concentrations) preliminary levels of protection can be assessed. One must remember that personal air sampling must still be performed in order to verify exposure until and/or unless comprehensive background data (reviewed by an industrial hygienist) are available to justify omitting personal sampling.

Other objective data may be utilized in lieu of initial monitoring provided the objective data is documented and appropriate for the materials and work processes/activities conducted.

#### **“Trigger Tasks”:**

Until such time as an exposure assessment (either through personal air sample results or approved and documented historic data) has been conducted which indicates actual exposures the following task-specific guidelines are applicable.

(A) Where lead containing coatings or paint are present: Manual demolition of structures (e.g, dry wall), manual scraping, manual sanding, heat gun applications, and power tool cleaning with dust collection systems; and/or spray painting with lead paint.

- Respiratory Protection Requirements: Any respirator designated in Section VII (G).



(B) Where activities involve using lead containing mortar; lead burning where lead containing coatings or paint are present: rivet busting; power tool cleaning without dust collection systems: cleanup activities where dry expendable abrasive are used; and abrasive blasting enclosure movement and removal.

- Respiratory Protection Requirements: Any respirator designated in Section VII (G). Note: half-face air purifying respirators are not allowed at this level.

(C) Where activities involve; Abrasive blasting, Welding, Cutting, or Torch burning.

- Respiratory Protection Requirements: Any Supplied Air Respirator operated in positive pressure mode.

(D) Any activity where it is reasonably believed that exposure over the PEL will result.

- Respiratory Protection Requirements: Appropriate based upon suspect exposure.

Until the employee exposure assessment (personnel monitoring or approved historic data) has been performed and actual employee exposure has been determined, all employees performing the tasks described in paragraphs (A), (B), (C) and (D) of this section must be supplied with interim protection as follows:

- Appropriate respiratory protection.
- Appropriate personal protective clothing and equipment.
- Change areas.
- Hand washing facilities.
- Biological monitoring, and
- Training.

## Monitoring

### A. “Initial Monitoring Requirements”

In accordance with the exposure assessment, monitoring must be performed to determine whether any employee is being exposed to lead at or above the action level of  $30 \mu\text{g}/\text{m}^3$ .

With the exception of allowances described below, monitoring for worker exposure requires collection of personal air samples which are representative of a full shift for each task involving known or potential exposure and any of the following, relevant considerations:

- Any information, observations, or calculations which would indicate employee exposure to lead;
- Any previous measurements of airborne lead; and
- Any employee complaints of symptoms which may be attributable to exposure to lead.

Note: Monitoring for the initial determination where performed may be limited to a representative sample of the exposed employees who the employer reasonably believes are exposed to the greatest airborne concentrations of lead in the workplace.

**Historical Data:**

Where WESTON has previously monitored for lead exposures, and the data were obtained within the past 12 months during work operations conducted under workplace conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the current operations, such earlier monitoring results may be used to satisfy the requirements of initial monitoring and monitoring frequency if the sampling and analytical methods meet the accuracy and confidence levels as indicated in paragraph (d)(9) of 29 CFR 1926.62.

**Objective Data:**

Where objective data, demonstrating that a particular product or material containing lead or a specific process, operation or activity involving lead cannot result in employee exposure to lead at or above the action level during processing, use, or handling, such data may be relied upon instead of implementing initial monitoring.

An accurate record documenting the nature and relevancy of objective data as specified in section XI, where used in assessing employee exposure in lieu of exposure monitoring, must be maintained.

**Exception:**

Objective data, as described above, is not permitted to be used for exposure assessment in connection with the specific activities outlined in section V, paragraphs; (A), (B), (C), or (D), the "Trigger Tasks".

**B. "Positive initial determination and initial monitoring".**

Where a determination shows the possibility of any employee exposure at or above the action level monitoring which is representative of the exposure for each employee in the workplace who is exposed to lead must be conducted.

**C. "Negative initial determination"**

Where a determination is made that no employee is exposed to airborne concentrations of lead at or above the action level a written record of such determination must be made.

**D. "Frequency"**

1. If the initial determination reveals employee exposure to be below the action level further exposure determination need not be repeated except as otherwise provided in paragraph (4) of this

section.

2. If the initial determination or subsequent determination reveals employee exposure to be at or above the action level but at or below the PEL monitoring must be conducted in accordance with this paragraph at least every 6 months.

3. If the initial determination reveals that employee exposure is above the PEL monitoring must be performed quarterly.

4. Whenever there has been a change of equipment, process, control, personnel or a new task has been initiated that may result in additional employees being exposed to lead at or above the action level or may result in employees already exposed at or above the action level being exposed above the PEL, additional monitoring must be conducted in accordance with this practice.

5. "Employee notification".

(a) Within 5 working days after completion of the exposure assessment each employee shall be notified in writing of the results which represent that employee's exposure.

(b) Whenever the results indicate that the representative employee exposure, without regard to respirators, is at or above the PEL a written notice stating that the employees exposure was at or above that level and a description of the corrective action taken or to be taken to reduce exposure to below that level must be made.

6. Documentation

Exposure monitoring records must be maintained as required in 1926.62(n)(1). Minimum information includes:

- Sampling data and procedures utilized.
- Description of sampling and analytical methods used.
- Type of respiratory protection used.
- Name, social security number, job classification for specific persons monitored and/or representative groups.
- Any environmental variables which could impact measurements.

## **General Methods of Control**

### **A. Engineering Controls**

As in all cases of potential or known exposure to a hazardous environment, engineering controls are to be evaluated as to effectiveness and appropriateness under the site-specific circumstances. Controls must be listed in the site health and safety plan and implemented as appropriate or feasible.

Appropriate engineering controls include dust suppression, use of longer torches in cutting operations, use of mechanical shears in lieu of torches, vacuum blasting methods and local ventilation.

**B. Ventilation**

When mechanical ventilation is used to control lead exposure, the mechanical performance of the system must be evaluated and documented as to its effectiveness in controlling exposure.

**C. Work Practice Controls**

Administrative controls such as worker rotation are not to be used by WESTON as a means of reducing employees TWA exposure to lead unless expressly approved by the Corporate Health and Safety Director.

**D. General Housekeeping**

All surfaces shall be maintained as free as practicable of accumulations of lead.

Clean-up of floors and other surfaces where lead accumulates shall wherever possible, be cleaned by vacuuming or other methods that minimize the likelihood of lead becoming airborne.

Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other equally effective methods have been tried and found not to be effective.

Where vacuuming methods are selected, the vacuums shall be equipped with HEPA filters and used and emptied in a manner which minimizes the reentry of lead into the workplace.

Compressed air shall not be used to remove lead from any surface unless the compressed air is used in conjunction with a ventilation system designed to capture the airborne dust created by the compressed air.

**E. Hygiene Facilities and Practices**

In control zone areas where employees are exposed to lead above the PEL without regard to the use of respirators, food or beverage shall not be present or consumed, tobacco products shall not be present or used, and cosmetics shall not be applied.

Clean change areas shall be provided for employees whose airborne exposure to lead is above the PEL, and as interim protection for employees performing tasks as specified in section V; (A), (B), (C) and (D) without regard to the use of respirators.

Change areas, as needed, shall be equipped with separate storage facilities for protective work clothing and equipment and for street clothes which prevent cross-contamination.

Employees exposed to lead concentrations greater than the action level shall not leave the workplace wearing any protective clothing or equipment that is required to be worn during the work shift.

Shower facilities shall be provided, where feasible, for use by employees whose airborne exposure to lead is above the PEL. Adequate supplies, cleansing agents and towels shall be provided.

Lunchroom facilities or eating areas shall be as free as practicable from lead contamination and readily accessible to employees.

Employees whose airborne exposure to lead is above the PEL, without regard to the use of a respirator, must wash their hands and face prior to eating, drinking, smoking or applying cosmetics.

Employees shall not enter lunchroom facilities or eating areas with protective work clothing or equipment which has been contaminated by surface lead dust in concentrations exceeding the action level.

Adequate handwashing facilities shall be provided for use by employees exposed to lead in concentrations exceeding the action level. These facilities must be designed in accordance with 29 CFR 1926.51(f).

Where showers are not provided, employees must wash their hands and face at the end of the work-shift.

Note: Field activities involving short-term (less than one week) may utilize appropriate personal decontamination sequences such as those allowed under 29 CFR 1910.120 (HAZWOPER) in lieu of contained clean rooms, showers and change facilities.

#### **F. Personal Protective Clothing and Equipment**

Where exposures to lead above the Action Level (without regard to the use of respirators) have been validated by monitoring or where employees are exposed to lead compounds which may cause skin or eye irritation (e.g. lead arsenate, lead azide), and as interim protection for employees performing tasks as specified in Section V of this Operating Practice, affected employees must use appropriate protective work clothing and equipment that prevents contamination of the employee and the employee's garments such as, but not limited to:

- Coveralls or similar full-body work clothing;
- Gloves, hats, and shoes or disposable shoe coverlets; and
- Face shields, vented goggles, or other appropriate protective equipment as necessary.

Site Health and Safety Plans and fixed facility operating procedures must list specific and appropriate PPE that will be utilized for each task involving known or potential exposure to lead or lead compounds.

PPE utilized will be disposable garments. Personnel in maintenance or fixed operations may use re-useable garments only under the direction and approval of the Corporate Health and Safety Director.

Garments will be disposed of at the end of a shift or upon leaving a controlled zone whichever comes first. Under no conditions will contaminated garments be allowed to be taken with the employee to his or her home.

Proper decontamination of re-usable equipment/PPE must be conducted prior to allowing these materials to leave the site.

Contaminated protective clothing which is to be cleaned, laundered, or disposed of, must be placed

in a closed container in the change area which prevents dispersion of lead outside the container.

Containers of contaminated (defined as when exposures are greater than or equal to the PEL) protective clothing and equipment must be labelled as follows:

“Caution: Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead contaminated wash water in accordance with applicable local, state, or federal regulations.”

The removal of lead from protective clothing or equipment by blowing, shaking, or any other means which disperses lead into the air shall be prohibited.

### **G. Respirators**

For WESTON operations respirators shall be used in the following circumstances:

- (1) Whenever an employee's exposure to lead exceeds the AL;
- (2) In work situations in which engineering controls and work practices are not sufficient to reduce exposures to or below the AL;
- (3) Whenever an employee requests a respirator; and
- (4) An interim protection for employees performing “Trigger-tasks” as specified in Section V.

Respirators approved for use are limited to:

- (1) Properly fitted half-face air purifying respirators with high efficiency filters for concentrations not in excess of  $500 \text{ g/m}^3$ .
- (2) Properly fitted full-face air purifying respirators (APRs) with high efficiency filters for concentrations not in excess of  $2,500 \text{ }\mu\text{g/m}^3$ .
- (3) Tight fitting full-facepiece powered air purifying respirators (PAPRs) with high efficiency filters for concentrations not in excess of  $2,500 \text{ }\mu\text{g/m}^3$ .
- (4) Full-facepiece, positive-pressure supplied air respirators (SARs) for concentrations not in excess of  $100,000 \text{ }\mu\text{g/m}^3$ .
- (5) Full-facepiece self-contained breathing apparatus (SCBA) for concentrations greater than  $100,000 \text{ }\mu\text{g/m}^3$  or for unknown concentrations.

Approval of the Corporate Health and Safety Director is required should other respirators designated as approved in Table 1 of 1926.62 be desired.

Respirators specified for higher concentrations can be used at lower concentrations of lead.

A full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.

All users of all types of respirators must be fit tested prior to being assigned a task requiring respirator use. Respirator wearers must be retested every twelve (12) months. Respirator (non-positive pressure) wearers must be Quantitatively Fit Tested for any operations where the

exposure is equal to or greater than the 10 times the PEL.

Fit tests must be conducted in accordance with 29 CFR 1910.134 and WESTON's Respirator Protection program.

#### **H. Signs and Labels**

The following warning signs shall be posted in each work area where exposure to lead is above the PEL.

**WARNING  
LEAD WORK AREA  
POISON  
NO SMOKING OR EATING**

Signs required by this paragraph must be illuminated and cleaned as necessary so that the legend is readily visible from all areas of approach to the work area.

#### **Medical Surveillance**

Initial medical surveillance in the form of blood testing shall be made available to employees occupationally exposed on any day to lead at or above the action level.

Initial medical surveillance consists of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels.

Corporate Health and Safety's Medical Group must be contacted to assist in coordination of medical monitoring or surveillance.

Biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels must additionally be implemented on the following schedule:

- For any employee anticipating work at a site or operation where the known or potential exposure (without regard to the use of respiratory equipment) equals or exceeds the action level, biological monitoring must be conducted prior to the start of that person's work on site. Post site work monitoring must be conducted within one week of that person's completion of site work.
- In long-term (greater than 30 days) site activities for each employee with known or potential exposure to or greater than the Action Level for 30 or more days per year, at least every 2 months for the first 6 months and every 6 months thereafter;

Within five working days after the receipt of biological monitoring results, WESTON shall notify each employee in writing of his or her blood lead level.

The content of and review mechanisms for medical examinations made available shall be pursuant to 29 CFR 1926.62(j).

Any person retained, employed, supervised or controlled by WESTON shall not engage in prophylactic chelation at any time.

### **Medical Removal and Protection**

WESTON will temporarily remove an employee from work having an exposure to lead at or above the action level on each occasion that a periodic and a follow-up blood sampling test conducted pursuant to this section indicate that the employee's blood lead level is at or above 50 ug/dl.

WESTON will remove an employee from work having an exposure to lead at or above the action level on each occasion that a final medical determination results in a medical finding, determination, or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

Note: Medical removal protections shall be strictly as interpreted under 29 CFR 1926.62(k) and other applicable Acts or Standards.

### **Education and Training**

All WESTON personnel with potential occupational exposure to lead will be provided with training, initially and annually thereafter, as to:

1. Content of the standards (29 CFR 1910.1925 and 1926.62).
2. The nature of operations which could result in exposure over the action level.
3. Respirator use, selection and maintenance.
4. Medical surveillance and medical removal requirements and protections.
5. Health effects of lead.
6. Engineering and work practice controls.
7. WESTON's Lead Exposure Compliance Program and associated site specific plans.

### **Recordkeeping**

#### **A. Training:**

Documentation of training records in the form of training materials and attendance sheets will be maintained by Corporate Health and Safety.

#### **B. Exposure Assessments:**

Monitoring and data sheets used to determine employee exposures must be maintained on all sites with lead exposure. Copies of all documentation must be maintained in project files and filed with Corporate Health and Safety whereby maintenance under 29 CFR 1910.20 is required.

Exposure assessment and monitoring records must include:

1. The date(s), number, location and results of samples taken.
2. The determination that the sampling procedures are representative of employee exposure.



3. A description of the sampling and analytical procedures used.
4. The type of respiratory protection used, if any.
5. The name, social security number and job classification of the employee(s) monitored.
6. Environmental conditions encountered.

Objective data which is or will be used for determining exemption from initial monitoring as allowed under 1926.62(d)(3) must be forwarded to, approved by, and maintained by Corporate Health and Safety. Objective data utilized is required to be maintained for a period of at least 30 years.

**C. Medical Surveillance:**

Records of medical surveillance as required by the standard must be maintained by Corporate Health and Safety as indicated in 29 CFR 1910.1025(n) and/or 1026.62(n).

**D. Medical Removal:**

In the event any employee must be removed from work activities due to blood lead levels appropriate records and documents must be maintained by Corporate Health and Safety as indicated in 29 CFR 1910.1025(n) or 1926.62(n).

**Task Specific Methods of Control**

Based upon WESTON policy, each site activity involving potential exposure to lead must be identified and analyzed through a Task/Risk Analysis as a part of the Site Specific Health and Safety Plan (HASP). This Task/Risk Analysis must identify methods, materials and equipment utilized in limiting exposure.

Current HASP forms can be obtained through the Region or Division Safety Officer, Corporate Health and Safety or within the WESTON Safety Officer Field Manual.

**XIII. Hazard Communication and Multi-Employer Sites**

On multi-employer sites where the activities of one contractor/employer will or may have a direct impact with potential exposure to other contractors/employers the Site Manager and/or the Site Health and Safety Coordinator is responsible for contacting a representative of the potentially affected parties and indicating to them the lead exposure potential, control methods utilized, protective procedures to be followed and the limits of lead contamination as known.

**XIV. Inspections and Audits**

The Site Health and Safety Coordinator, in association with the Site and Project Manager, is responsible for providing (at a minimum) weekly documented inspections of the work site. In accordance with the requirements of the lead standard these inspections must encompass all areas of the site where exposure to lead is at or above the PEL. Additionally, any equipment, PPE, signs,

decontamination or disposal operations must be evaluated as to compliance with the standard and WESTON Policy irregardless of the exposure concentration. Any non-compliance must be noted and corrected.

#### **ACTIONS/REQUIREMENTS BASED UPON TASK:**

1. **Exposure Less than AL:**
  - Initial exposure assessment
  - Handwash Facilities
  - Proper Housekeeping
  - Medical Removal Protection
  
2. **Exposure at or over Action Level but less than PEL:**
  - Initial exposure assessment
  - Handwash Facilities
  - Periodic Exposure Monitoring
  - Biological Monitoring and Recordkeeping
  - Annual Training
  - Proper Housekeeping
  - Medical Removal Protection
  
3. **Exposure at or over Action Level but less than the PEL:**
  - As above and
  - Medical Examinations and Recordkeeping
  
4. **Exposure at or greater than the PEL:**
  - Initial exposure assessment
  - Handwash Facilities
  - Periodic Exposure Monitoring
  - Biological Monitoring and Recordkeeping
  - Annual Training
  - Proper Housekeeping
  - Appropriate Respiratory Protection
  - Warning Signs
  - Proper PPE
  - Proper Change Areas
  - Decontamination Facilities/Showers as feasible
  - Separate Eating Areas
  - Medical Examinations and Recordkeeping
  - Medical Removal Protection
  
5. **Exposure to Trigger Tasks (until exposure verified):**
  - See requirements under greater than PEL exposure

## Task/Risk Analysis and Inspection Checklist For Activities With Potential for Lead Exposure

This task involves the known or potential risk of exposure to lead or lead-containing materials. As such, requirements as indicated in 29 CFR 1910.1025 or 29 CFR 1926.62 and WESTON's Written Lead Exposure Compliance Program (FLD\_\_\_) will be followed.

Task Description:


Equipment required/used:


Training Required/used:


Initial Exposure Determination: (Indicate Method(s) Used)

	Personal Sampling
	Objective Data (attach or indicate location of data)
	Historical Data (attach or indicate location of data)

PPE Includes:

		Respiratory Protection (specify)		Shoes or Shoe Covers (specify)
		Coveralls (disposable)		Face Shield, Goggles or Safety Glasses (specify)
		Coveralls (reusable)		Other (specify)
		Gloves (specify)		
		Head Covering (specify)		

Inspection Items:

Y/N	Item/Action	Y/N	Item/Action
	Personnel wearing appropriate PPE.		If exposure is known or suspect to be at or greater than the PEL then:
	PPE in good condition.		No eating, drinking, cosmetic application or tobacco consumption in contaminated areas.
	PPE removed and disposed of in manner to preclude airborne release of lead or lead compounds.		Change areas available.
	Will clothing be laundered		Change areas maintained to prevent cross-contamination of work and street clothing.
	If yes, then ensure notification of vendor as required.		No work clothing which has been known or potentially contaminated is allowed to be worn off-site or in on-site clean areas.
	Will clothing be disposed of:		Showers (where feasible) maintained in clean, sanitary manner.
	If yes, Container of disposable clothing and contaminated materials closed and appropriately labeled;		All personnel shower prior to leaving site at end of shift.
	All surfaces maintained (as practicable) free of lead or lead compounds.		Eating areas provided in clean, sanitary manner.
	Appropriate methods and procedures used for cleanup of surfaces with lead contamination.		Handwashing facilities provided in all cases.
	If vacuum utilized, equipped with appropriate HEPA filter.		Personnel required to wash hands and face upon leaving contaminated area.

Comments:


leadfld.003  
 07/08/94  
 Amended:06/95, 04/99

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**ATTACHMENT 2**

**SITE SPECIFIC HEALTH AND SAFETY PLAN**

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**SITE SPECIFIC HEALTH AND SAFETY PLAN  
SOIL AND SEDIMENT REMEDIATION  
OPEN BURINING GROUNDS  
SENECA ARMY DEPOT ACTIVITY  
ROMULUS, NEW YORK**

**REVISED DRAFT**

Contract No. DACW33-95-D-0004

Delivery Order No. 0013

DCN: SEDA-042399-AACO

Prepared for:

**U.S. ARMY CORPS OF ENGINEERS  
NORTH ATLANTIC DIVISION  
NEW ENGLAND DIVISION**

696 Virginia Road

Concord, MA 01742-2751

Prepared by:

**Roy F. Weston, Inc.**

1 Wall Street

Manchester, NH 03101

April 1999

W.O. Number 03886-118-013-0150-01





**SITE SPECIFIC HEALTH AND SAFETY PLAN (SSHASP)  
SOIL AND SEDIMENT REMEDIATION  
OPEN BURNING GROUNDS  
SENECA ARMY DEPOT ACTIVITY  
ROMULUS, NEW YORK**

**Contract No. DACW33-95-D0004  
RFW W.O. No. 03886-118-013-0150-01**

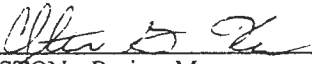
**SITE SPECIFIC HEALTH AND SAFETY PLAN APPROVALS**

By their specific signature, the undersigned certify that this SSHASP is approved for use during soil and sediment remediation activities at the Seneca Army Depot Site, in Romulus, New York.

Signature, Name, Title

  
\_\_\_\_\_  
WESTON - Program Manager  
Roberto Rico

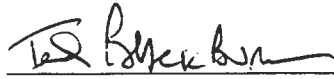
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Date

  
\_\_\_\_\_  
WESTON - Project Manager  
Christopher Kane

4/22/99  
\_\_\_\_\_  
Date

\_\_\_\_\_  
WESTON - Program CIH  
George M. Crawford, CIH

\_\_\_\_\_  
Date

  
\_\_\_\_\_  
WESTON - Program Safety Manager  
Theodore L. Blackburn, CSP, CET

4-22-99  
\_\_\_\_\_  
Date

\_\_\_\_\_  
WESTON - Site Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
WESTON - Site Safety and Health Officer

\_\_\_\_\_  
Date



**SITE SPECIFIC HEALTH AND SAFETY PLAN (SSHASP)  
SOIL AND SEDIMENT REMEDIATION  
OPEN BURNING GROUNDS  
SENECA ARMY DEPOT ACTIVITY  
ROMULUS, NEW YORK**

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WESTON - Program Manager  
Roberto Rico

\_\_\_\_\_  
Date

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7/22/99  
\_\_\_\_\_  
Date

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Date

\_\_\_\_\_  
WESTON - Site Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
WESTON - Site Safety and Health Officer

\_\_\_\_\_  
Date







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**APPENDIX D – UXO PROCEDURES**

**APPENDIX E – HWR-89-4031 NYSDEC FUGITIVE DUST GUIDANCE**

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## LIST OF ACRONYMS

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ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
ANSI	American National Standards Institute
APR	Air-Purifying Respirator
CENAE	Corps of Engineers, North Atlantic Division
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGI	Combustible Gas Indicator
CIH	Certified Industrial Hygienist
COE	U.S. Army Corps of Engineers
CPR	Cardiopulmonary Resuscitation
DRAM	Real-time Aerosol Monitor
EM	Engineering Manual
EODT	Explosive Ordnance Disposal Technician
FID	Flame Ionization Detector
FLD	Field Operating Procedures
GFCI	Ground Fault Circuit Interrupter
IDLH	Immediately Dangerous To Life And Health
HWAC	Hazardous Waste Action Coalition
HWR	Hazardous Waste Remediation
LEL	Lower Explosive Limit
MIE PDR	MIE Personal Data Ram
MINIRAM	Miniature Real-Time Aerosol Monitor
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
NYSDEC	New York State Department of Environmental Conservation
OB	Open Burning
OE	Ordnance and Explosives



---

## LIST OF ACRONYMS

---

OSHA	Occupational Safety and Health Administration
OVA	Organic Vapor Analyzer
OVM	Organic Vapor Meter
PCB	Polychlorinated Biphenyls
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PNOR	Particulates Not Otherwise Regulated
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
RDX	Cyclotrimethylenetrinitramine
ROD	Record of Decision
SCBA	Self-Contained Breathing Apparatus
SEAD	Seneca Army Depot
SEDA	Seneca Army Depot Activity
SO	Safety Officer
SOW	Scope Of Work
SSHASP	Site-Specific Health and Safety Plan
SHSC	Site Health and Safety Coordinator
SSHP	Site Safety and Health Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TLV	Threshold Limit Value
TNT	Trinitrotoluene
TWA	Time Weighted Average
USACE	U.S. Army Corps of Engineers
UXO	Unexploded Ordnance
WESTON®	Roy F. Weston, Inc.





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**SECTION 1**

**INTRODUCTION**

---



# 1. INTRODUCTION

This Site Specific Health and Safety Plan (SSHASP) was prepared by Roy F. Weston, Inc. (WESTON®) for the Soil and Sediment Remediation at the Open Burning (OB) Grounds site at the Seneca Army Depot located in Romulus, N.Y. The SSHASP was prepared for the U.S. Army Corps of Engineers, New England District, under the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

This portion of the Site Specific Health and Safety Plan (SSHASP) covers task specific information that pertains to all WESTON® scoped activities at the Seneca Soil and Sediment Remediation Project. The project will consist of the design and implementation of the remediation of soils and sediments at the OB Grounds.

## 1.1 SITE LOCATION

The Seneca Army Depot Activity (SEDA) is a US Army facility located in the town of Romulus, in Seneca County, New York. A site location map is presented in Figure 1-1. The SEDA site encompasses approximately 10,600 acres and is bordered by State Route 96A to the west and State Route 96 to the east. A total of four cities surround Seneca Army Depot Activity: Geneva and Rochester to the northwest, Syracuse to the northeast, and Ithaca to the south.

## 1.2 SITE DESCRIPTION AND HISTORY

The OB Grounds consists of an area of approximately 30 acres within the northern section of the Seneca Army Depot (SEDA). Access to the site is limited by crushed shale roads. The burning pads within the OB grounds lie within the perimeter access roads within the OB Grounds. A total of 9 separate burning pads are located within the OB Grounds which were previously used as munitions burn areas up to 1987. The open burning procedure involved the placement of ammunition on combustible beds of pallets and wooden boxes within the burning pads. A propellant would typically be used to ignite the munitions, causing the munitions to burn until only ash and casings remained. The burn pads which vary in size from 100 by 100 ft.



The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures that the financial statements are reliable and can be audited without any issues.

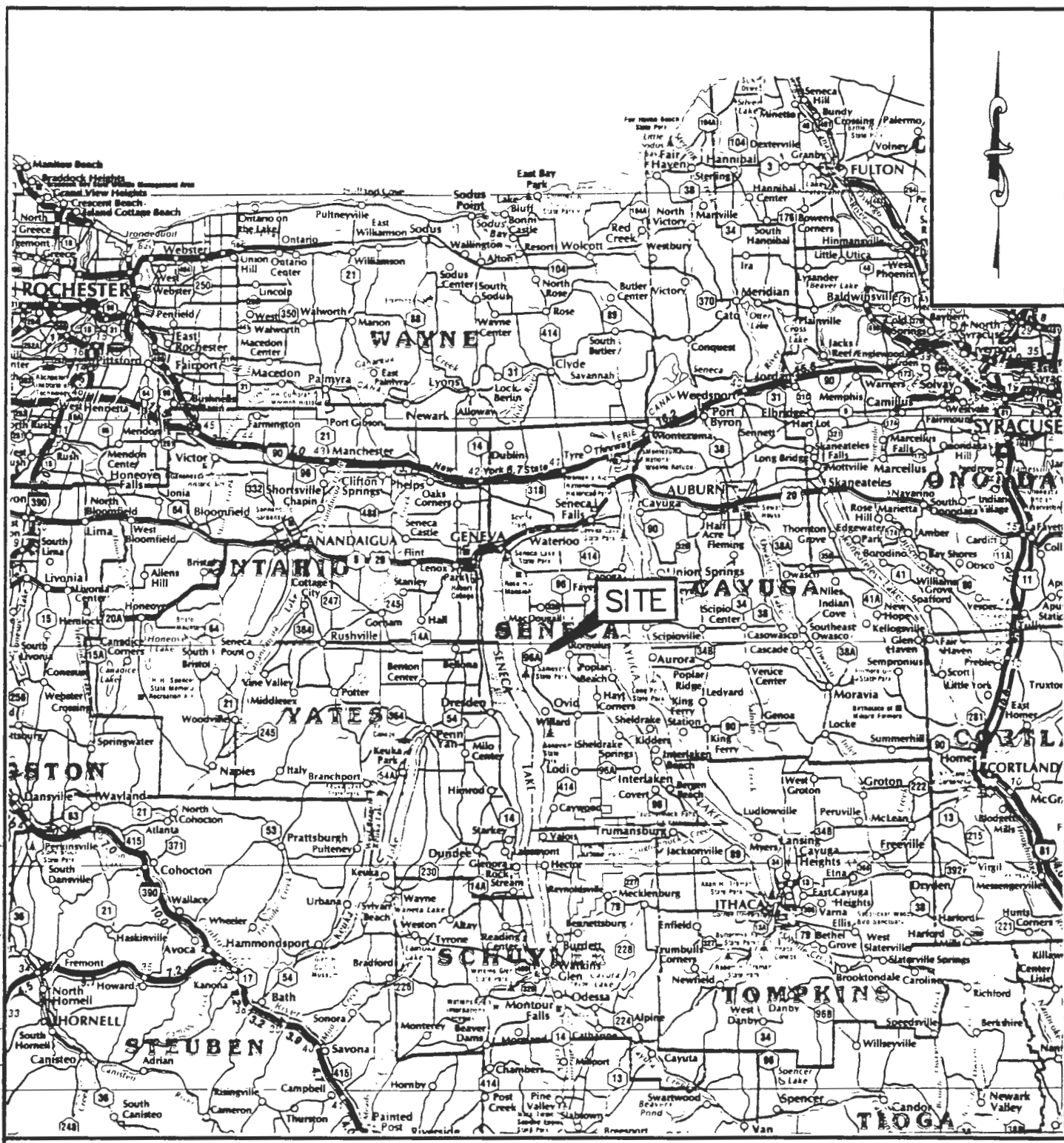
In the second part, the author talks about the need for transparency in financial reporting. It is stated that all stakeholders, including investors and creditors, have the right to know the true financial position of the company. Therefore, it is crucial to disclose all relevant information, even if it might be unfavorable.

The third part of the document focuses on the role of internal controls. It explains that a strong system of internal controls is essential for preventing fraud and errors. This includes implementing segregation of duties, regular reconciliations, and a robust approval process for all significant transactions.

Finally, the document concludes by highlighting the importance of ethical behavior in financial management. It states that honesty and integrity are the foundation of any successful business. Managers should always act in the best interests of the company and its stakeholders, and should never engage in any unethical practices.

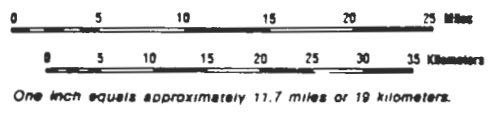
Wed Aug 5 13:19:24 1998

FILE NAME: G:\DESIGN\DWG\ACOE\SENECA\WP\FIG1-1 (PLOT 1=1)



**NOTE**

DRAWING BASED ON MAP OF NEW YORK STATE, BY MAP WORKS, INC., ROCHESTER NEW YORK, DATED 1998.



REMEDIAL ACTION AT THE OPEN BURNING GROUNDS (OB)  
 SENECA ARMY DEPOT ACTIVITY (SEDA)  
 ROMULUS, NEW YORK

DEPARTMENT OF THE ARMY  
 NEW ENGLAND DISTRICT  
 CORPS OF ENGINEERS  
 CONCORD, MASSACHUSETTS



**SITE LOCATION MAP**



DRAWN A.J.M.  
 DATE AUG. 1998  
 FIGURE NO. 1-1



to 300 ft. by 800 ft are bermed up on 3 out of the 4 sides. Access to the pads are limited to one open side and have been built up with crushed shale to allow for drier burning. Burning from 1987 to the present has been performed on an above ground steel tray (which is currently used) to minimize environmental impacts. A detailed description of the site can be found in Section 2.0 of the Draft Record of Decision (ROD-November 1997).





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**SECTION 2**

**CONTAMINANT CHARACTERIZATION**

---



## **2. CONTAMINANT CHARACTERIZATION**

The soil associated with the burning pads, berms, perimeter soils, surface water, sediment from Reeder Creek, and groundwater have been evaluated for contaminants by type and concentration as a result of the munitions burning process as described in Section 4.0 of the Remedial Investigation Report. On-site surface soils associated with the specific burn pad areas and sections of Reeder Creek were found to be the most significantly impacted areas for contaminants.

The soils within the OB grounds have been identified according to contaminant type and concentration as shown in Table 1 of the Final Technical Specifications (August 1998). The areas of remediation have been tentatively classified by Case Number, i.e., Case 1 includes soils which exceed the TCLP limits, Case 2 includes soils greater than 500 mg/kg for Lead and Case 3 includes soils less than 500 mg/kg lead. Confirmatory sampling will be performed to determine final treatment and/or disposal methods. Final quantities of soil to be remediated under this scope of work will be provided in the Final Work Plan.

### **2.1 CHEMICAL HAZARDS-CONTAMINATED SEDIMENTS**

The chemical hazards associated with this project may be separated into four categories:

- Chemical hazards associated with contaminated groundwater
- Chemical hazards associated with surface water of on-site wetlands.
- Chemical hazards associated with contaminated sediment for Reeder Creek.
- Chemical hazards associated with contaminated surface soils

During the Remedial Investigations, soil and sediment samples were collected from the Seneca Army Depot Activity and were analyzed for contaminants. Based on the analytical results of this investigation, the contaminants of concern were identified as presented in Table 2-1. This data

has been evaluated utilizing the Hazardous Waste Action Coalition (HWAC)<sup>1</sup> calculation for contaminants in soil. Utilizing average concentrations the following Total Dust exposure action levels are listed for the primary contaminants of concern.

CONTAMINANT	AVERAGE CONCENTRATION	EXPOSURE VALUE (PEL)	ACTION LEVEL
ALUMINUM	10,105 mg/kg	5 mg/m <sup>3</sup> (respirable dust)	476 mg/m <sup>3</sup>
LEAD	1,888 mg/kg	0.05 mg/m <sup>3</sup>	12.5 mg/m <sup>3</sup>
2,4,6 TNT	607 mg/kg	1.5 mg/m <sup>3</sup>	1,250 mg/m <sup>3</sup>
COAL TAR PITCH VOLATILES	1,188 mg/kg	0.2 mg/m <sup>3</sup>	83 mg/m <sup>3</sup>

Evaluation of this data indicates limited occupational exposure potential based upon 1) Adherence to PNOR action levels of 2.5 mg/m<sup>3</sup> and 2) Adherence to NYSDEC fugitive dust control levels of 150 µg/m<sup>3</sup> (24-hour) and/or 150 µg/m<sup>3</sup> (15-minute integrated average).

Lead is the major contaminant of concern of this site. USACE Em 385-1-1 06 B.05 states that a compliance plan be developed for all lead abatement work. That compliance plan is found in Appendix F and in Attachments FLD-46. As part of the compliance plan all site personnel will receive training as follows in lead hazard awareness.

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<sup>1</sup> HWAC:  $\frac{\text{Exposure value (mg/m}^3\text{)} \times 10^6}{\text{Concentration contaminant (mg/kg)} \times 2}$

### **2.1.1 Education and Training**

All WESTON personnel with potential occupational exposure to lead will be provided with training, initially and annually thereafter, as to:

1. Content of the standards (29 CFR 1910.1925 and 1926.62).
2. The nature of operations which could result in exposure over the action level.
3. Respirator use, selection and maintenance.
4. Medical surveillance and medical removal requirements and protections.
5. Health effects of lead.
6. Engineering and work practice controls.
7. WESTON's Lead Exposure Compliance Program and associated site specific plans.

**Table 2-1**

**Contaminants of Concern**

<b>Location</b>	<b>Compound</b>	<b>Contaminant</b>	<b>Units</b>	<b>Highest Concentrations</b>	<b>Average Concentration</b>	
<b>Groundwater Samples</b>	<i>Volatile Organics</i>	Acetone	ug/L	15	2.9	
		<i>Semivolatiles</i>	Di-n-butylphthalate	ug/L	5.0	4.7
		Di-n-octylphthalate	ug/L	5.0	4.8	
	<i>Explosives</i>	RDX	ug/L	0.1	0.1	
		2,4,6-Trinitrotoluene	ug/L	0.1	0.1	
		2,6-Dinitrotoluene	ug/L	0.1	0.1	
<b>Surface Water Data for On-Site Wetlands</b>	<i>Volatile Organics</i>	1,2-Dichloroethane	ug/L	5.0	3.8	
		Trichloroethene	ug/L	17	4.4	
	<i>Semivolatiles</i>	Bis(2-Ethylhexyl) phthalate	ug/L	71	8.5	
		<i>Explosives</i>	RDX	ug/L	0.1	0.1
	<i>Metals</i>	Tetryl	ug/L	0.1	0.1	
		Aluminum	ug/L	5,220	882	
		Arsenic	ug/L	4.4	1.5	
		Barium	ug/L	523	142	
		Beryllium	ug/L	1.3	0.4	
		Chromium	ug/L	8.6	2.4	
		Copper	ug/L	60	15	
		Lead	ug/L	74	11	
		Manganese	ug/L	1,080	199	
	<b>Sediment Data for Reeder Creek</b>	<i>Semivolatiles</i>	2-Methylnaphthalene	ug/kg	490	315
			Phenanthrene	ug/kg	490	269
Benzo(a)anthracene			ug/kg	490	336	
Benzo(b)fluoranthene			ug/kg	490	336	
Benzo(k)fluoranthene			ug/kg	490	336	
Benzo(a)pyrene			ug/kg	490	336	
Indeno(1,2,3-cd)pyrene			ug/kg	490	336	

Location	Compound	Contaminant	Units	Highest Concentrations	Average Concentration
	<i>Explosives</i>	4-amino-2,6-Dinitrotoluene	ug/kg	60	60
		2-amino-4,6-Dinitrotoluene	ug/kg	60	60
	<i>Metals</i>	Aluminum	mg/kg	15,600	10,105
		Antimony	mg/kg	4.1	3.7
		Arsenic	mg/kg	7.4	5.3
		Barium	mg/kg	95	47
		Beryllium	mg/kg	0.7	0.5
		Cadmium	mg/kg	3.4	1.7
		Chromium	mg/kg	25	18
		Cobalt	mg/kg	11	8.0
		Copper	mg/kg	2,380	263
		Lead	mg/kg	332	94
		Manganese	mg/kg	596	420
		Mercury	mg/kg	0.7	0.2
		Nickel	mg/kg	42	30
		Selenium	mg/kg	1.4	0.6
		Vanadium	mg/kg	20	14
		Zinc	mg/kg	497	148
<b>Surface Soil and Sediment Samples</b>	<i>Semivolatiles</i>	2-Methylnaphthalene	ug/kg	1,300	284
		3-Nitroaniline	ug/kg	2,950	1,188
		2,4-Dinitrotoluene	ug/kg	33,000	849
		Phenanthrene	ug/kg	2,600	292
		Benzo(a)anthracene	ug/kg	3,900	313
		Chrysene	ug/kg	8,900	340
		Benzo(b)fluoranthene	ug/kg	11,000	353
		Benzo(k)fluoranthene	ug/kg	4,500	318
		Benzo(a)pyrene	ug/kg	3,700	314
		Indeno(1,2,3-cd)pyrene	ug/kg	2,300	305
	Dibenz(a,h)anthracene	ug/kg	670	290	
	<i>PCBs/ Pesticides</i>	Benzo(g,h,i) perylene	ug/kg	960	294
		Dieldrin	ug/kg	50	11
		4,4'-DDE	ug/kg	830	17
		4,4'-DDT	ug/kg	2,800	26
<i>Explosives</i>		RDX	ug/kg	4,800	121

Location	Compound	Contaminant	Units	Highest Concentrations	Average Concentration
	<i>Explosives</i>	1,3,5-Trinitrobenzene	ug/kg	7,800	173
		Tetryl	ug/kg	1,000	138
		2,4,6-Trinitrotoluene	ug/kg	80,000	607
		4-amino-2,6-Dinitrotoluene	ug/kg	8,900	182
		2-amino-4,6-Dinitrotoluene	ug/kg	11,000	212
	<i>Metals</i>	Barium	mg/kg	34,400	1,479
		Cadmium	mg/kg	28	3.5
		Chromium	mg/kg	1,430	36
		Copper	mg/kg	38,100	797
		Lead	mg/kg	56,700	1,888
		Thallium	mg/kg	38	0.5
		Zinc	mg/kg	127,000	1,318

## 2.2 CHEMICAL HAZARDS: ON-SITE ACTIVITIES

The remedial activities require the use of concentrated chemicals for proper decontamination and use of equipment. The following chemicals are expected to be used during the activities on-site:

- Alconox/liquinox
- Hydraulic fluid
- Hydrochloric acid
- Gasoline
- Nitric acid
- Oil & Grease
- PVC Cement clear medium
- Phosphoric acid
- Pipe joint lubrication
- Calibration gases (methane, isobutylene, pentane)
- Diesel fuel
- Fluorescent Paint
- pH buffer solution
- Granular Activated Carbon
- Grout
- Bentonite

The Site Safety and Health Officer will establish a Site Specific Hazard Communication Program. An inventory of the chemicals and the MSDSs can be reviewed in the MSDS binder maintained in the site trailer. All subcontractors will be required to submit Material Safety Data Sheets to WESTON for all chemicals used on-site. This SSHASP also contains a listing of the MSDS sheets located in Appendix B.



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**SECTION 3**

**SCOPE OF WORK AND FIELD ACTIVITIES**

---



### 3. SCOPE OF WORK AND FIELD ACTIVITIES

The scope of work for the Remediation of Soil and Sediment at the Seneca Army Depot Project consists of the following field activities: UXO Clearance (to be performed by EODT), mobilization and site preparation, site work, wastewater treatment, sediment remediation, soils solidification, transportation and disposal of soils. Proposed soil cover, monitoring well installation and site restoration.

Table 3-1 shows a complete listing of the major activities:

**Table 3-1**  
**Field Activities**

Activity Number	Activity
1	UXO Clearance
2	Mobilization and Site Preparation
3	Site Work
4	Wastewater Treatment
5	Sediment Remediation
6	Characterization/Transportation/Treatment and Disposal
7	Monitoring Well Installation
8	Site Restoration

The major activities identified for the project can be summarized as follows:

**Activity 1- UXO Clearance:** UXO clearance of soils within the OB Grounds will be performed by EODT prior to any remediation by WESTON.

**Activity 2-Mobilization and Site Preparation:** Mobilizing/demobilizing personnel and equipment, identifying underground utilities, and performing the following activities outside the OB grounds: establishing site office within existing base building, establishing work zones, installing erosion control materials, performing clearing and grubbing, constructing staging areas, installing haul roads, and installing site security access signs. Initial site surveying will be performed within the OB grounds with UXO support to confirm limits of Case 1, 2, & 3 excavations at each pad and berm.

**Activity 3- Site work:** Excavation and sifting of contaminated soils from burn pad/berm locations A through J by EODT to depths between 1 and 9 ft. Excavated soils will be hauled directly to the soil staging area (prepared by WESTON) where confirmatory sampling will be performed. Back filling and compaction will be performed by EODT. WESTON will perform confirmatory post excavation sampling and surveying, with UXO support.

**Activity 4-WasteWater Treatment:** Installation of a temporary water storage/treatment system for dewatering media within the OB grounds including groundwater, surface water, decontamination fluids, and water from Reeder Creek.

**Activity 5-Characterization, Transportation, Soil Stabilization, Treatment, and Disposal:** Characterization of wastes (Case 1, 2, 3), treatment, if applicable, of up to 30,000 tons of soil using phosphate chemicals, and off-site disposal of soils.

**Activity 6-Site Restoration:** Site restoration will include construction of a proposed soil cover, wetlands replication, and other minor site restoration of areas disturbed during construction activities.

**Activity 7-Installation of Monitoring Wells:** Decommissioning of 31 monitoring wells and the installation of 7 new monitoring wells.

**Activity 8-Sediment Remediation:** Sediment remediation will include the clearing of the bank along the limits of excavation at Reeder Creek, installation of hay bales/silt fence at the toe/top of slope (where applicable), construction of a stream diversion system, and dewatering system. Sediment will be excavated to a depth of 1 foot.

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**SECTION 4**

**ACTION LEVELS AND INSTRUMENTATION**

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## **4. ACTION LEVELS AND INSTRUMENTATION**

As shown in Table 2-1, the Soil and Sediment Remediation Site at the Open Burning (OB) Grounds are contaminated with a variety of compounds, however, after clearance by the UXO contractor, the primary contaminant of concern for worker exposure is lead. The action levels presented in Table 4-1 will be implemented, using monitoring procedures as described in this SSHASP. While previous data indicates no concern for volatile compounds, a conservative action level is based on organic vapors detected on an organic vapor monitor/photoionization detector. Dust action levels utilizing the NYSDEC fugitive dust standards will be followed using a MIE PDR, or DRAM or equivalent. WESTON will perform air monitoring for dust around the perimeter of the excavations (1181 ft from the UXO Contractor, per the UXO Contractor SSHP), the perimeter of the staging areas, and during WESTON activities that have potential for creating dust. The UXO Contractor will perform air monitoring for dust at the excavations. Personnel air sampling during excavation activities will be performed by the UXO Contractor. Personnel air sampling for intrusive activities performed by WESTON or WESTON's subcontractors will be performed by WESTON. Data generated from air monitoring and personnel air sampling will be used to confirm the action levels for dust in this SSHASP. Action levels may be modified based on air monitoring, air sampling, and change in site conditions or activity.

### **4.1 ORGANIC VAPORS**

A flame ionization detector (FID) or a photo ionization detector (PID) will be used during all site activities to monitor the concentrations of volatile organics. Monitoring will be performed according to the action levels in Table 4-1.

Compliance with monitoring and rescue provisions of 29 CFR1926.51(g) will be implemented in the event workers are required to enter any excavation greater than four feet deep where inadequate natural ventilation may be a factor (i.e., trench vs. open excavation).

## 4.2 PARTICULATE-BASED CONTAMINANTS

Respiratory protection for particulate-based contaminants will be initiated at 2.5 mg/m<sup>3</sup> based upon previous analytical results and WESTON's action level for PNOR. Engineering controls will be utilized to limit exposure. Action levels may be modified based upon initial sampling results. An amendment to this SSHP will be required to modify action levels.

**Table 4-1  
Action Levels for All Appropriate Tasks Using Direct-Reading  
Air Monitoring Instruments**

Hazard	Instrument	Action Level
Explosive atmosphere	CGI as required	<10% LEL: Continue investigation. >10% and <20% LEL (ambient air): Continue work with caution, continue monitoring. >10% LEL (confined space): Stop work and evacuate site until levels <10% are measured. >20% LEL (ambient air): Stop work and evacuate site until levels <20% are measured.
Oxygen content	O <sub>2</sub> meter (included with CGI instrument) as required	<19.5%: Stop work, and evacuate site until levels are >19.5% and <25% (ambient air) or >19.5% and <23.5% (confined space) are measured. 19.5% to 25% (ambient air) or 19.5% to 23.5% (confined space): Acceptable levels for oxygen >25% (ambient air) or >23.5% (confined space): Fire hazard potential, stop work and consult CIH
Organic vapors	PID/FID	0 to 5 units: Level D, continue monitoring and work activities >5 units: Halt work, notify Program Safety Manager and CIH, re-evaluate conditions
Particulates	MIE PDR or Data Ram	>2.5 mg/m <sup>3</sup> : Upgrade PPE to Level C. (See Section 4.3 for additional information on fugitive emissions).

## 4.3 FUGITIVE DUST EMISSIONS AND SUPPRESSION

In addition to worker protection, which based upon contaminants evaluated to date requires respiratory protection at the PNOR action level of 2.5 mg/m<sup>3</sup>, site activities will comply with the NYSDEC Fugitive Dust Standards as documented in HWR-89-4031 "Fugitive Dust Suppression and Particulate Monitoring Program At Inactive Hazardous Waste Sites". In compliance with



this guidance document. MIE Real-Time Aerosol Monitors (PDR or DRAM) or equivalent monitors will be utilized at the working site.

An action level of  $150 \mu\text{g}/\text{m}^3$  averaged over an integrated period of 15 minutes will be utilized as guidance to increase engineering controls to suppress dust emissions. Air will be monitored downwind of activities as determined on a daily basis. Techniques such as water sprays or misting, limiting vehicle speeds to less than 10 mph, covering spoils piles, or other techniques will be utilized.

Reporting of dust emissions in excess of those allowed will be made in accordance with HWR-89-4031 (a copy of which is attached as an appendix to this SSHASP).

#### **4.4 AIR MONITORING AND INSTRUMENTATION**

Air monitoring will be conducted during site activities to evaluate potential chemical hazards to determine the effectiveness of control measures, and to evaluate the PPE requirements. Real-time air monitoring using direct reading instruments, as well as air sampling will be used to quantify the presence of airborne chemical hazards.

##### **4.4.1 DIRECT READING INSTRUMENTS**

Real-time monitoring using direct reading instruments will be conducted to identify potential exposure levels or immediately dangerous to life or health (IDLH) conditions and will also be used to identify air sampling requirements. Air monitoring at breathing zones and around the perimeter of the exclusion zone will be conducted during the field activities. Areas monitored will be chosen to determine worst-case exposure potential. Background readings will be taken in an area known to be clean.

Continuous real-time monitoring for airborne particulates will be conducted using a PDR or DRAM or equivalent. At the beginning of all intrusive activity, the site will be screened for volatile organics using a PID (10.2 eV) or a FID (Foxboro OVA) or equivalent. When required, a CGI/O<sub>2</sub> meter will be used to monitor explosive or oxygen-deficient or rich atmospheres.

#### 4.4.2 Personnel Air Sampling

Since the potential for exposure to lead in excess of airborne action limits during OBG operation is inconclusive, the following air sampling program will be instituted.

During the first three days of intrusive activities, a personal air sample will be collected for one individual performing each of the following tasks:

1. Soil stockpiling management/sampling
2. Excavation sampling
3. WWTP operation/sampling
4. Monitoring well installation/sampling
5. Creek bed excavation
6. Solidification/stabilization treatment

In addition one field blank sample will be collected for each sampling event and submitted with the other samples for analysis. The samples will be sent to a laboratory accredited by the American Industrial Hygiene Association (AIHA). The sampling and analysis procedure for lead will follow NIOSH Method 7300. Air sampling pumps will be calibrated at the beginning and end of each day. Calibrations will be documented in the log book.

Thereafter, if airborne exposure limits are less than  $\frac{1}{2}$  the PEL as anticipated, sampling will be conducted once per week until a consensus is reached between the PM, Site Manager, Program Safety Manager, SHSC and Health and Safety Manager/CIH that sampling is no longer needed. Sampling will be resumed if air monitoring (as described previously) indicates consistent levels above the Action Level.

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**SECTION 5**

**LEVELS OF PROTECTION**

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## **5. LEVELS OF PROTECTION**

All personnel performing operations on-site shall be required to use the appropriate level of protection. If hazards are identified requiring a lower or a higher level of protection, then this SSHASP will be re-evaluated and upgraded or downgraded prior to re-entry to the site.

### **5.1 LEVEL D PPE**

Level D PPE will be worn during site mobilization/demobilization, constructing staging areas, installing erosion control materials, and other non-intrusive activities, where no known contamination is present. Level D PPE consists of:

- Work clothes, e.g. coveralls (cotton).
- Work gloves - leather or cotton as necessary for physical hazards.
- Boots, certified according to ANSI
- Safety glasses (as necessary).
- Hard hat (as necessary).

### **5.2 MODIFIED LEVEL D PPE**

Modified Level D PPE will be worn when conducting activities with known or potential contact with minimally contaminated materials, such as any work within the OB grounds, activities at the soil staging area, any site restoration or work on sediment remediation. In addition to Level D components, Modified Level D consists of:

- Chemical resistant coveralls (Tyvek if dry matrix, saranex, or equivalent if wet matrix)
- Chemical resistant overboots or chemical boot covers.
- Gloves-nitrile or latex inner, nitrile outer.
- Eye protection-safety glasses or goggles.

### 5.3 LEVEL C PPE

Level C PPE will be worn for stockpile management activities for Case 1 soils until personnel air sampling and air monitoring results indicate that this level of protection is not necessary. Data from personnel air sampling and air monitoring will indicate whether Level C PPE is necessary for this activity or other activities.

Level C PPE consists of:

- Innerboots certified according to ANSI or chemical resistant boots with toe protection certified according to ANSI
- Chemical resistant coveralls (Tyvek if dry matrix, saranex, or equivalent if wet matrix)
- Chemical resistant overboots or chemical boot covers.
- Fullface APR with filter (NIOSH/MSHA approved), GME-H (P100) or equivalent.
- Chemical-resistant gloves-nitrile or latex inner; and chemical resistant outer.

### 5.4 LEVEL B PPE

Level B PPE is not anticipated for this SOW. If necessary for emergency activities, Level B PPE consists of:

- Innerboots certified according to ANSI or chemical resistant boots with toe protection certified according to ANSI
- Chemical resistant coveralls (Tyvek if dry matrix, saranex, or equivalent if wet matrix)
- Self-contained breathing apparatus (SCBA) or air-line system (NIOSH/MSHA approved).
- Coveralls-cotton.
- Chemical resistant overboots.
- Chemical resistant gloves-nitrile or latex inner; and nitrile outer.

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**SECTION 6**

**DECONTAMINATION**

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## **6. DECONTAMINATION**

### **6.1 PERSONNEL HYGIENE AND DECONTAMINATION**

Decontamination procedures will follow those as outlined in the SSHP, Section 11.1.

### **6.2 ROUTINE EQUIPMENT DECONTAMINATION**

Any vehicle taken into the OB grounds must be assumed to be potentially contaminated, and be treated accordingly. Vehicles passing from OB ground to soil staging areas and back may pass freely void of decontamination procedures. Prior to leaving the site all vehicles must be decontaminated and inspected for general cleanliness. Decontamination procedures for vehicles will follow those outlined in the SSHP, Sections 11.2/11.3. Wastewater from vehicle decontamination will be pumped out of wash pad into a frac tank and disposed of accordingly.

At the conclusion, of this site work, the haul roads connecting parts of the OB grounds to the soil staging area will be sampled to determine if concentrations of lead from within exclusion zone haul roads exists on the hall roads outside the exclusion zone. These soils may be removed if concentrations exceed 60 mg/kg.

Any equipment taken into the OB ground or that has come in contact with potentially contaminated media must be assumed contaminated. The level of decontamination for each piece of equipment will be based on use and decontaminated accordingly via wash pad or decontamination line (scrubbing, nitric acid, hexane, isopropyl alcohol) for sampling equipment.

### **6.3 PPE AND DECONTAMINATION PROCEDURES**

Decontamination procedures will follow those as outlined in the SSHP, Section 11.3.



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**SECTION 7**

**SITE SPECIFIC MEDICAL SURVEILLANCE**

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## **7. SITE SPECIFIC MEDICAL SURVEILLANCE**

### **7.1 MEDICAL TESTING**

Based upon the potential exposure to lead in soil, and in compliance with 29CFR 1926.62, medical surveillance for those personnel potentially exposed to lead will be initiated. Compliance will be in accordance with 29CFR 1926.62 (j)(i). Medical surveillance and blood testing will be conducted for WESTON on-site employees and WESTON on-site subcontractors unless personnel air sampling and air monitoring indicates that these tests are unnecessary.

### **7.2 DRUG TESTING**

Drug testing is not required for this Activity-based SSHASP.



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**SECTION 8**

**ACTIVITY HAZARD ANALYSIS**

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## **8. ACTIVITY HAZARD ANALYSIS**

The activity hazard analysis is an ongoing process from the initiation of the SSHP preparation through the implementation and completion of the project. Therefore, the activity hazard analyses shall be completed for each task associated with the project. Site-specific activity hazard analyses are presented in this Section. WESTON Field Operating Procedures (FLDs) are contained in the WESTON Safety Officer Field Manual. The manual will be maintained on-site. The hazards associated with each activity and the control measures are provided in Table 8-1.

Inspection and training requirements for the FLDs referenced in the Activity Hazard Analysis tables in this section are described in the WESTON Safety and Health program. Health and safety equipment to be used, such as monitoring instruments and PPE, is specified in sections of this SSHP. Additional field equipment is specified in the Work Plan and Sampling and Analysis Plan for this project.

### **8.1 PHYSICAL HAZARDS**

In addition to the physical hazards outlined in the Activity Hazard Analysis Sheets (see Table 8-1), special physical hazards that have the potential to affect worker and public safety are addressed below.

#### **8.1.1 Excavations**

Compliance with OSHA, 29CFR1926 Subpart P, and COE EM 385-1-1, Section 25, will be maintained. Prior to excavations, underground utilities will be identified and avoidance or support procedures will be used to protect the utilities. WESTON's designated competent person will inspect soils prior to and during WESTON scoped excavation at Reeder Creek to determine the appropriate protective measures to be used for workers in or near the excavation. It is WESTON's intent to minimize need for persons to enter or work near excavations however if this is necessary the most likely protection to be used will be sloping or benching or use of trench boxes with the assumption that soils are Class C. Personnel will not be permitted to work in excavations where water is present unless the water is being controlled by diversion or pumping.

For trenches over 4 feet in depth, ladders or ramps will be placed so no one is more than 25 feet away. Ladders will extend at least 3 feet above the landing point and will be secured. The Competent person will inspect excavations which personnel must enter or work near at a minimum of once each day and more frequently if weather conditions, vibration, water accumulation, etc change.

Sloping and shoring will be properly utilized and excavations will be barricaded or marked (barricade tape and/or traffic cones or equivalent) during active excavation activities. In the event excavations must remain open prior to backfill, those excavations will be fenced or barricaded.

Excavations left open at night will be appropriately illuminated.

The SSHO will implement appropriate air monitoring when personnel must work in excavations.

Contaminated source area soil will be removed and placed in a staging location where it will be covered. Persons involved in handling the soil should handle it carefully to avoid spreading the contamination. Equipment used to remove the soil, and handle materials will be inspected daily, maintained according to the manufacturer's directions, and will be operated by qualified operators. Operators of haul vehicles will not be permitted to remain in the cabs of the vehicles during loading unless overhang protection of the cab is provided or there is sufficient distance between the cab and bed of the vehicle. Personnel shall not walk underneath the loads being removed and shall stay clear of the turning radius of the machinery. A two-way radio communication system will be used for the excavation and transportation to avoid traffic hazards.

### **8.1.2 Confined Space**

Confined spaces are not expected to be encountered at the Seneca Soil and Sediment Remediation at the Open Burning (OB) Grounds with the exception of the potential to enter fractational tanks for cleaning. Should a confined space be verified by a competent person and entry is necessary, the following will be implemented. Task(s) involving Confined Spaces Entry may not begin until an evaluation of the hazards associated with the space and an appropriate Confined Space Entry Permit is issued. Compliance with the conditions of this operating practice

and any additional, more restrictive requirements issued by state or local governments or clients constitute the minimum acceptable actions in WESTON's Confined Space Program. The Site Health and Safety Coordinator or authorized Confined Space Entry Supervisor is responsible for recognizing confined spaces and issuing these permits. Possible confined spaces include but are not limited to manholes, sewer lines, and elevator shafts. Confined Space procedures will follow those as stated in the WESTON Safety Officer Field Manual, FLD-08 in conjunction with OSHA regulation 29 CFR 1910.146.

### **8.1.3 Fall Protection**

If working at an elevation of more than six (6) feet above grade is necessary, provisions for fall prevention devices are required. Prior to the usage of fall protection equipment, personnel must be trained in use and inspection of the PPE. General safety training will be supplemented with site-specific training. WESTON FLD 25, Working at Elevation will be followed.

### **8.1.4 Lockout/Tagout**

Lockout/tagout is a means of insuring equipment is de-energized and isolated from energy sources before beginning maintenance or service activities. Lockout/Tagout procedures will be followed when performing maintenance or service activities on machines and equipment in which the unexpected energizing or start up of the machines or equipment, or release of stored energy could cause injury to employees. WESTON FLD 42 and 29 CFR 1910.147 will be followed.

### **8.1.5 Hot Work**

No task(s) that produce heat, sparks, or energy sufficient to serve as an ignition source may begin in any location that could potentially have ignitable atmospheres, until a Hot Work Protection Procedure has been instituted and a Hot Work Permit has been issued. Examples of hot work include welding, cutting, burning, soldering, grinding, use of power tools, and internal combustion engines. Hot Work procedures will follow those as stated in the WESTON Safety Officer Field Manual, Hot Work Subsection 2.4.9.

### **8.1.6 Heavy Equipment Operation**

Before any machinery or mechanized equipment is placed in use, it will be inspected by a competent mechanic and certified to be in safe operating condition. WESTON will designate a competent person to be responsible for the inspection of all machinery and equipment daily and during use to make sure it is in safe operating condition. Tests will be made at the beginning of each shift during which the equipment is to be used to determine that the brakes and operating systems are in proper working condition. Any machinery or equipment found to be unsafe will be deadlined and its use prohibited until unsafe conditions have been corrected. Only designated personnel will operate machinery and mechanized equipment. Equipment deficiencies observed at any item that affect their safe operation will be corrected before continuing operation. Refer to Subsection 2.4.22. Heavy Equipment Operation - FLD 22, of the WESTON Safety Officer Field Manual for proper heavy equipment operation.

### **8.1.7 Logging and Clearing Procedures**

Procedures for logging or clearing and grubbing operations can be found in Appendix C of this report.

### **8.1.8 UXO Identification**

Personnel not subcontracted specifically as UXO remediation consultants are not authorized to move or contact any suspect UXO. The UXO's/Explosive Safety Plan is being submitted under separate cover by the UXO Contractor (EODT).

**Table 8-1  
Activity Hazard Analysis**

**Activity 1—UXO Clearance**

Task	Hazards	Hazard Control
<p>UXO work will be conducted according to the UXO SSHP. WESTON non-UXO qualified personnel will remain at designated distances from UXO related work.</p>	<p><b>Chemical Hazards:</b> The likelihood of exposure is present while conducting these activities because the soils may contain lead and nuggets of UXO, TNT or other explosive elements. The risk level associated with these activities is expected to be from low to high based upon specific task(s).</p>	<p>Appropriate PPE will be utilized during excavation activities. Air monitoring will be conducted as defined in Section 4 of the SSHASP. See FLD 28. Engineering Controls / Dust Suppression (e.g. wetting) will be utilized as necessary. Qualified UXO personnel will examine excavated soil as it is excavated.</p>
	<p><b>Physical Hazards:</b> Slip, trips, falls from construction debris, equipment, materials, tools, terrain; uneven walking surfaces or deep excavation limits. Weather hazards, such as severe weather and lightning; poor visibility.</p> <p>Strains and sprains from manually lifting and moving objects.</p> <p>Inclement weather, heat/cold stress.</p> <p>Hands or fingers caught between objects; abrasions and lacerations.</p> <p>Noise during the operation of heavy equipment.</p> <p>Soil excavating.</p>	<p>The work area will be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained to ensure a safe working environment and weather conditions to be continuously monitored. See FLD 11, 12, and 39.</p> <p>Use proper lifting techniques such as keeping straight back, lifting with legs, avoid twisting back, use mechanical equipment or get help from others. The work area will be visually inspected. See FLD 10.</p> <p>Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids will be available to workers. See FLD 05 and 06. Work rest periods will be established according to ACGIH and NIOSH guidelines.</p> <p>Personnel shall be made aware of the hazard and asked to coordinate carefully the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects. See FLD 10.</p> <p>Personnel shall wear hearing protection as necessary. See FLD 01.</p> <p>Personnel working near or around an open excavation shall avoid walking or standing near the edge of the excavation. Sheet piling will be used to prevent cave-ins and undermining. Excavation equipment and stockpiled soil will not be closer than two feet from the edge of excavation. No personnel are allowed in excavations greater than 4.0 ft unless the required piling and monitoring is performed. Excavation edge flagged and barricaded. Visually inspect sheet piling daily for signs of stress. See FLD 28, 29 CFR 1926, Subpart P and EM 385-1-1 Section 25.</p>

Task	Hazards	Hazard Control
	Striking and being struck by operating equipment, loads, falling objects, and pinch points. 1181' clearance distance required during all excavation sifting operations.	Workers shall stay out of the swing range of all equipment and from under loads. Placement of sheet piling requires workers to be near the raised piling for positioning. The number of workers performing positioning will be minimized. The lines will be used as much as possible to facilitate matters. No personnel shall ride on the equipment. Remain within view of operator. All heavy equipment should be equipped with back-up alarms. See FLD 20, 22, and 23. Workers exposed to traffic hazards will wear traffic/reflectorized vests.
	<b>Biological:</b> Poisonous plants, insects, and snakes.	Review recognition of poisonous plants, insects, or snakes typical of this area. Use appropriate measures as required. Adhere to WESTON Bloodborne Pathogens Exposure Control Plan - First Aid Procedures FLD.
	<b>Radiation:</b> There are no radiological hazards expected because past uses do not indicate the use of radioactive material. Potential sun burn/sun poisoning hazard on bright, sunny days.	Use sunblock as appropriate. Avoid direct exposure to sun for long periods of time.

**Table 8-1**  
**Activity Hazard Analysis**

**Activity 2—Mobilization, Site Preparation, Demobilization**

Task	Hazards	Hazard Control
<p>Mobilization, demobilization, identify underground utilities, establish work zones, site survey, maintain haul roads, installation erosion control, construction of decon pad, construction of soil stockpile area, construction wastewater treatment collection area and site clearing and grubbing</p>	<p><i>Chemical Hazards</i>—Non-intrusive activities and therefore, the risk level of exposure to site contaminants during this activity is low.</p>	<p>No intrusive activities allowed during this activity. Wear appropriate PPE to prevent dermal contact. Avoid liquid pools and stained areas if possible. A background survey will be conducted to ensure the levels of protection are correct. Action levels established in the Table 4-1 will be used.</p>
	<p><i>Physical Hazards</i>—Slip, trips, falls, tools, terrain or vegetation; uneven walking surfaces. Weather hazards, such as snow and ice, lightning; and poor visibility.</p>	<p>The work area shall be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Site personnel shall conduct walkover in groups of two as a minimum. Site personnel shall refer to and follow WESTON FLDs 02-Incident weather and 39-Illumination. Also, see FLD 11 and 12.</p>
	<p>Housekeeping</p>	<p>Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized and ice, snow and mud will be cleared from steps to reduce slip hazards. See FLD12</p>
	<p>Strains and sprains from manually lifting and moving.</p> <p>Fire</p> <p>Hands or fingers caught between objects; abrasions and lacerations.</p>	<p>Use proper lifting techniques such as keeping straight back, lifting with legs; avoid twisting back; use mechanical equipment or get help from others. See FLD 10.</p> <p>Flammable liquids will be stored in safety containers and flammable storage cabinets. Propane cylinders will be stored outside in secured areas. Fuel storage tanks will be placed in impermeable dikes. Properly rated fire-extinguishers will be placed within 50 ft of the fuel storage area, in construction equipment, and strategically in the construction area.</p> <p>Personnel shall be made aware of the hazard and asked to coordinate carefully the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects.</p>

Task	Hazards	Hazard Control
	<p>Electric Hazards</p> <p>Moving mechanical parts from heavy equipment operations.</p> <p>Hand tools, manual and power.</p> <p>Grubbing and vegetation removal. Chain saws and chippers.</p>	<p>Generators will be grounded unless self-grounded. GFCIs will be used as necessary. Extension cords will be properly rated for intended use. Prior to any intrusive activity, authorities will be contacted for permits. Elevated parts of machinery, ladders, and antennas will be kept at least 10' from overhead electric lines. Qualified electricians will make electrical installations. A lockout/tagout program consistent with FLD42 will be used for equipment maintenance.</p> <p>Personnel shall be made aware of the hazard and will coordinate carefully during handling equipment operations. Guards will be kept in place during operation. Maintain safe distance from moving mechanical parts. Always use appropriate PPE. See FLD 22.</p> <p>Tools shall be inspected prior to use. Damaged tools will be tagged out of service until a qualified person can perform repair. Use tools properly and for their intended purpose. A ground fault circuit interrupter (GFCI) will protect all power circuits used for hand tools. See FLD 38.</p> <p>Qualified persons will operate chain saws and chippers. Chain saw operators will wear chaps. Chippers will be inspected before use, operators will be refreshed in operation by the vendor, all guards will be in place per EM 385-1-1. Persons cutting trees will be appropriately trained and experienced. Trees to be cut will be checked by experienced persons prior to cutting to identify increased hazard situations. Experienced persons, if required, will do tree climbing. Climbing gear will be inspected and will conform to EM 385-1-131.B.1. Retreat routes from trees to be cut will be planned before cutting begins, and no one will be permitted within 2 tree lengths of trees being cut.</p>



Task	Hazards	Hazard Control
	Traffic	Work areas will be clearly barricaded and appropriate signs displayed. Traffic will be rerouted as necessary. Persons working near roadways or directing traffic will wear high visibility vests. See FLD 20.
	Inclement weather, Heat/Cold stress	Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids will be available to workers. See FLD 05 and 06. Work rest periods will be established according to ACGIH and NIOSH guidelines.
	Striking and being struck by operating equipment, loads, falling objects, and pinch points.	Workers shall stay out of the swing area of all equipment and from under loads. No personnel shall ride on the equipment unless seats are provided. See FLD 20, 22, 23, and 24. Workers exposed to traffic hazards will wear traffic/reflectorized vests. Vehicles will be checked during maintenance and cribbed if wheels need to be changed.
	Confined Space	Workers will follow the requirements of FLD08 if entry into frac tanks is necessary. Monitoring will follow criteria outlined in Table 4-1.
	<b>Biological</b> —Poisonous plants, insects, snakes.	Review recognition of poisonous plants, insects, or snakes typical of this area. Use appropriate measures as required. Adhere to WESTON Bloodborne Pathogens Exposure Control Plan—First Aid Procedures FLD43.
<b>Radiation</b> —Potential sun burn/sun poisoning hazard on bright, sunny days. Based on-site history, no sources of ionizing radiation exists on-site.	Use sunblock as appropriate. Avoid direct exposure to sun for long periods of time. There is no known source of radioactive material at this site. If Nuclear Density Gauges are used, they will be properly licensed and will be operated by qualified technicians.	

Table 8-1

Activity Hazard Analysis

Activity 3—Site Work

Task	Hazards	Hazard Control
<p>Excavation and sifting in conjunction with ongoing UXO screening. (Performed by EODT) Confirmatory and perimeter sampling.</p>	<p><b>Chemical Hazards:</b> The likelihood of exposure is present while conducting these activities because the soils may contain lead and nuggets of UXO, TNT or other explosive elements. The risk level associated with these activities is expected to be from low to high based upon specific task(s).</p>	<p>Appropriate PPE will be utilized during excavation activities. Air monitoring will be conducted as defined in Section 4 of the SSHASP. See FLD 28. Engineering Controls / Dust Suppression (e.g. wetting) will be utilized as necessary. Qualified UXO personnel will examine excavated soil as it is excavated.</p>
	<p><b>Physical Hazards:</b> Slip, trips, falls from construction debris, equipment, materials, tools, terrain; uneven walking surfaces or deep excavation limits. Weather hazards, such as severe weather and lightning; poor visibility. UXO escort required.</p> <p>Strains and sprains from manually lifting and moving objects.</p> <p>Inclement weather, including rain, lightning, and heat stress.</p> <p>Hands or fingers caught between objects; abrasions and lacerations.</p> <p>Noise during the operation of heavy equipment.</p> <p>Soil excavating.</p>	<p>The work area will be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained to ensure a safe working environment and weather conditions to be continuously monitored. See FLD 11, 12, and 39.</p> <p>Use proper lifting techniques such as keeping straight back, lifting with legs, avoid twisting back, use mechanical equipment or get help from others. The work area will be visually inspected. See FLD 10.</p> <p>Personnel shall be dressed according to weather conditions; personnel working in rain and direct sunlight shall follow FLD 05.</p> <p>Personnel shall be made aware of the hazard and asked to coordinate carefully the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects. See FLD 10.</p> <p>Personnel shall wear hearing protection as necessary. See FLD 01.</p> <p>Personnel working near or around an open excavation shall avoid walking or standing near the edge of the excavation. Sheet piling will be used to prevent cave-ins and undermining. Excavation equipment and stockpiled soil will not be closer than two feet from the edge of excavation. No personnel are allowed in excavations greater than 4.0 ft unless the required piling and monitoring is performed. Excavation edge flagged and barricaded. Visually inspect sheet piling daily for signs of stress. See FLD 28, 29 CFR 1926, Subpart P and EM 385-1-1 Section 25.</p>

Task	Hazards	Hazard Control
	Inclement weather, heat/cold stress.	Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids will be available to workers. See FLD 05 and 06. Work rest periods will be established according to ACGIH and NIOSH guidelines.
	<b>Biological:</b> Poisonous plants, insects, and snakes.	Review recognition of poisonous plants, insects, or snakes typical of this area. Use appropriate measures as required. Adhere to WESTON Bloodborne Pathogens Exposure Control Plan - First Aid Procedures FLD.
	<b>Radiation:</b> There are no radiological hazards expected because past uses do not indicate the use of radioactive material. Potential sun burn/sun poisoning hazard on bright, sunny days.	Use sunblock as appropriate. Avoid direct exposure to sun for long periods of time.

**Table 8-1**  
**Activity Hazard Analysis**

**Activity 4—Waste Water Treatment**

Task	Hazards	Hazard Control
<p>Installation, collection and treatment of groundwater, surface water, decon fluids, and water from Reeder creek.</p>	<p><b>Chemical Hazards</b>—The potential for exposure is present while conducting these activities. The risk level associated with these activities is low.</p>	<p>Engineering controls will be utilized as necessary. Appropriate PPE will be utilized during these activities.</p>
	<p><b>Physical Hazards</b>—Slip, trips, falls, equipment, materials, tools, terrain, and uneven walking surfaces. Weather hazards, such as severe weather and lightning; poor visibility.</p> <p>Strains and sprains from manually lifting and moving objects.</p> <p>Housekeeping</p> <p>Inclement weather, including rain/snow, lightning, and heat/cold stress.</p> <p>Moving mechanical parts from heavy equipment operations.</p> <p>Hands or fingers caught between objects; abrasions and lacerations.</p> <p>Noise during the operation of heavy equipment and water treatment equipment.</p>	<p>The work area will be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained to ensure a safe working environment and weather conditions to be continuously monitored. See FLD 11, 12, and 39.</p> <p>Use proper lifting techniques such as keeping straight back, lifting with legs; avoid twisting back, use mechanical equipment or get help from others. The work area will be visually inspected. See FLD 10.</p> <p>Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized and ice, snow and mud will be cleared from steps to reduce slip hazards. See FLD12</p> <p>Personnel shall be dressed according to weather conditions; personnel working in high temperatures or direct sunlight shall follow FLD 05. Personnel working in cold temperatures or rain shall follow FLD 06. Work will cease during lightning.</p> <p>Personnel shall be made aware of the hazard and will coordinate carefully during handling equipment operations. Guards will be kept in place during operation. Maintain safe distance from moving mechanical parts. Always use appropriate PPE. See FLD 22.</p> <p>Personnel shall be made aware of the hazard and will coordinate carefully the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects. See FLD 10.</p> <p>A hearing conservation program consistent with FLD01 will be established. High noise areas will be identified and protection will be provided as appropriate. The latest ACGIH TLVs will be used.</p>

Task	Hazards	Hazard Control
	<b>Biological</b> —Poisonous plants, insects, snakes.	Review recognition of poisonous plants, insects, or snakes typical of this area. Use appropriate measures as required. Adhere to WESTON Bloodborne Pathogens Exposure Control Plan—First Aid Procedures FLD 43.
	<b>Radiation</b> —There are no radiological hazards expected because past uses do not indicate the use of radioactive material. Potential sun burn/sun poisoning hazard on bright, sunny days.	Use sunblock as appropriate. Avoid direct exposure to sun for long periods of time. There is no known source of radioactive material at this site. If Nuclear Density Gauges are used, they will be properly licensed and will be operated by qualified technicians.



**Table 8-1  
Activity Hazard Analysis**

**Activity 5—Characterization/Transportation/Soil Stabilization/Treatment and Disposal**

Task	Hazards	Hazard Control
<p>Storage, application, mixing, of stabilization chemicals with soil failing TCLP. Includes loading soils into hopper, process monitoring and stockpile management.</p>	<p><i>Chemical Hazards</i>—The likelihood of exposure is low while conducting this task. Low level risks may be associated with the storage of phosphoric acid.</p>	<p>Use engineering controls as necessary. Appropriate PPE will be used during the activities to minimize the exposure of contaminants. Air monitoring will be conducted to evaluate the potential exposure levels of contaminants.</p>
	<p><i>Physical Hazards</i>—Slip, trips, falls from construction debris, materials, tools, terrain or vegetation; uneven walking surfaces; weather hazards, such as severe weather and lightning; poor visibility.</p>	<p>The work area shall be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Site personnel shall conduct walkover in-groups of two as a minimum. Site personnel shall refer to and follow WESTON FLDs 02-Inclement weather and 39-Illumination. Also, see FLD 11, 12, and 39.</p>
	<p>Housekeeping</p>	<p>Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized and ice, snow and mud will be cleared from steps to reduce slip hazards. See FLD12</p>
	<p>Strains and sprains from manually lifting and moving.</p>	<p>Use proper lifting techniques such as keeping straight back, lifting with legs; avoid twisting back; use mechanical equipment or get help from others. See FLD 10.</p>
	<p>Moving mechanical parts from heavy equipment operations.</p>	<p>Personnel shall be made aware of the hazard and will coordinate carefully during handling equipment operations. Guards will be kept in place during operation. Maintain safe distance from moving mechanical parts. Always use appropriate PPE. See FLD 22 and 42.</p>
	<p>Hands, fingers, or feet caught between objects; abrasions and lacerations.</p>	<p>Personnel shall be made aware of the hazard and will coordinate carefully the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects. See FLD 10.</p>
	<p>Hand tools, manual and power.</p>	<p>Tools shall be inspected prior to use. Damaged tools will be tagged out of service until a qualified person can perform repair. Use tools properly and for their intended purpose. A ground fault circuit interrupter (GFCI) will protect all power circuits used for hand tools. See FLD 38.</p>
<p>Inclement weather, heat/cold stress.</p>	<p>Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids will be available to workers. See FLD 05 and 06. Work rest periods will be established according to ACGIH and NIOSH guidelines.</p>	

Task	Hazards	Hazard Control
	Traffic	Work areas will be clearly barricaded and appropriate signs displayed. Traffic will be rerouted as necessary. Persons working near roadways or directing traffic will wear high visibility vests. See FLD20.
	Striking and being struck by operating equipment, loads, falling objects, and pinch points.	Workers shall stay out of the swing area of all equipment and from under loads. No personnel shall ride on the equipment unless seats are provided. See FLD 20, 22, 23, and 24. Workers exposed to traffic hazards will wear traffic/reflectorized vests. Vehicles will be chocked during maintenance and cribbed if wheels need to be changed.
	<i>Biological</i> —Poisonous plants, insects, snakes.	Review recognition of poisonous plants, insects, or snakes typical of this area. Use appropriate measures as required. Adhere to WESTON Bloodborne Pathogens Exposure Control Plan—First Aid Procedures FLD43.
	<i>Radiation</i> —Potential sun burn/sun poisoning hazard on bright, sunny days.	Use sunblock as appropriate. Avoid direct exposure to sun for long periods of time.



**Table 8-1**  
**Activity Hazard Analysis**

**Activity 6—Site Restoration**

Task	Hazards	Hazard Control
<p>Areas will be restored to similar conditions prior to completion of the job.</p>	<p><b>Chemical Hazards</b>—The likelihood of exposure is low while conducting. Therefore, the risk level associated with these activities is low.</p>	<p>Use engineering controls as necessary. Appropriate PPE will be used during the activities to minimize the exposure of contaminants. Air monitoring will be conducted to evaluate the potential exposure levels of contaminants.</p>
	<p><b>Physical Hazards</b>—Slip, trips, falls, tools, terrain or vegetation; uneven walking surfaces. Weather hazards, such as snow and ice, lightning; and poor visibility.</p>	<p>The work area shall be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Site personnel shall conduct walkover in-groups of two as a minimum. Site personnel shall refer to and follow WESTON FLDs 02-Inclement weather and 39-Illumination. Also, see FLD 11 and 12.</p>
	<p>Housekeeping</p>	<p>Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized and ice, snow and mud will be cleared from steps to reduce slip hazards. See FLD12</p>
	<p>Strains and sprains from manually lifting and moving.</p>	<p>Use proper lifting techniques such as keeping straight back, lifting with legs; avoid twisting back; use mechanical equipment or get help from others. See FLD 10.</p>
	<p>Hands or fingers caught between objects; abrasions and lacerations.</p>	<p>Personnel shall be made aware of the hazard and asked to coordinate carefully the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects.</p>
<p>Moving mechanical parts from heavy equipment operations.</p>	<p>Personnel shall be made aware of the hazard and will coordinate carefully during handling equipment operations. Guards will be kept in place during operation. Maintain safe distance from moving mechanical parts. Always use appropriate PPE. See FLD 22.</p>	
<p>Hand tools, manual and power.</p>	<p>Tools shall be inspected prior to use. Damaged tools will be tagged out of service until a qualified person can perform repair. Use tools properly and for their intended purpose. A ground fault circuit interrupter (GFCI) will protect all power circuits used for hand tools. See FLD 38.</p>	

Task	Hazards	Hazard Control
	<p>Inclement weather, Heat/Cold stress</p> <p>Striking and being struck by operating equipment, loads, falling objects, and pinch points.</p>	<p>Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids will be available to workers. See FLD 05 and 06. Work rest periods will be established according to ACGIH and NIOSH guidelines.</p> <p>Workers shall stay out of the swing area of all equipment and from under loads. No personnel shall ride on the equipment unless seats are provided. See FLD 20, 22A, 23, and 24. Workers exposed to traffic hazards will wear traffic/reflectorized vests. Vehicles will be checked during maintenance and cribbed if wheels need to be changed.</p>
	<p><b>Biological</b>—Poisonous plants, insects, snakes.</p>	<p>Review recognition of poisonous plants, insects, or snakes typical of this area. Use appropriate measures as required. Adhere to WESTON Bloodborne Pathogens Exposure Control Plan—First Aid Procedures FLD43.</p>
	<p><b>Radiation</b>—Potential sun burn/sun poisoning hazard on bright, sunny days. Based on-site history, no sources of ionizing radiation exists on-site.</p>	<p>Use sunblock as appropriate. Avoid direct exposure to sun for long periods of time. There is no known source of radioactive material at this site. If Nuclear Density Gauges are used, they will be properly licensed and will be operated by qualified technicians.</p>

Table 8-1

Activity Hazard Analysis

Activity 7—Monitoring Well Installation

Task	Hazards	Hazard Control
Decommissioning and installation of monitoring wells.	<p><b>Chemical Hazards</b>—The likelihood of exposure is low while conducting. Therefore, the risk level associated with these activities is low.</p>	<p>Use engineering controls as necessary. Appropriate PPE will be used during the activities to minimize the exposure of contaminants. Air monitoring will be conducted to evaluate the potential exposure levels of contaminants.</p>
	<p><b>Physical Hazards</b>—Slip, trips, falls, tools, terrain or vegetation; uneven walking surfaces. Weather hazards, such as snow and ice, lightning; and poor visibility.</p>	<p>The work area shall be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained. Site personnel shall conduct walkover in-groups of two as a minimum. Site personnel shall refer to and follow WESTON FLDs 02-Inclement weather and 39-Illumination. Also, see FLD 11 and 12.</p>
	<p>Housekeeping</p>	<p>Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized and ice, snow and mud will be cleared from steps to reduce slip hazards. See FLD12</p>
	<p>Strains and sprains from manually lifting and moving. Hands or fingers caught between objects; abrasions and lacerations.</p>	<p>Use proper lifting techniques such as keeping straight back, lifting with legs; avoid twisting back; use mechanical equipment or get help from others. See FLD 10. Personnel shall be made aware of the hazard and asked to coordinate carefully the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects.</p>
	<p>Moving mechanical parts from heavy equipment operations and drill rig.</p>	<p>Personnel shall be made aware of the hazard and will coordinate carefully during handling equipment operations. Workers will stay clear of moving parts of the drill rig. Guards will be kept in place during operation. Maintain safe distance from moving mechanical parts. Always use appropriate PPE. See FLD 22.</p>
<p>Hand tools, manual and power.</p>	<p>Tools shall be inspected prior to use. Damaged tools will be tagged out of service until a qualified person can perform repair. Use tools properly and for their intended purpose. A ground fault circuit interrupter (GFCI) will protect all power circuits used for hand tools. See FLD 38.</p>	

Task	Hazards	Hazard Control
	Inclement weather, Heat/Cold stress	Workers shall be briefed and cognizant of heat and cold stress symptoms. Fluids will be available to workers. See FLD 05 and 06. Work rest periods will be established according to ACGIH and NIOSH guidelines.
	Noise of drill rig	Wear hearing protection as necessary.
	Striking and being struck by operating equipment, loads, falling objects, and pinch points.	Workers shall stay out of the swing area of all equipment and from under loads. No personnel shall ride on the equipment unless seats are provided. See FLD 20, 22A, 23, and 24. Workers exposed to traffic hazards will wear traffic/reflectorized vests. Vehicles will be checked during maintenance and cribbed if wheels need to be changed. See also Drilling Safety Guide, WESTON Safety Officer Manual.
	<b>Biological</b> —Poisonous plants, insects, snakes.	Review recognition of poisonous plants, insects, or snakes typical of this area. Use appropriate measures as required. Adhere to WESTON Bloodborne Pathogens Exposure Control Plan—First Aid Procedures FLD43.
<b>Radiation</b> —Potential sun burn/sun poisoning hazard on bright, sunny days. Based on-site history, no sources of ionizing radiation exists on-site.	Use sunblock as appropriate. Avoid direct exposure to sun for long periods of time. There is no known source of radioactive material at this site. If Nuclear Density Gauges are used, they will be properly licensed and will be operated by qualified technicians.	

**Table 8-1  
Activity Hazard Analysis**

**Activity 8—Sediment Remediation**

Task	Hazards	Hazard Control
<p>Install stream diversion system, dewatering system and excavation of Reeder Creek sediments.</p>	<p><i>Chemical Hazards</i>—The likelihood of exposure is present while conducting these activities. The risk level associated with these activities is low.</p>	<p>Engineering controls will be utilized as necessary to control dust problems. Appropriate PPE will be utilized. Air monitoring will be conducted to monitor the exposure levels of contaminants.</p>
	<p><i>Physical Hazards</i>—Slip, trips, falls from construction debris, equipment, materials, tools, terrain; uneven walking surfaces or deep excavation limits. Weather hazards, such as severe weather and lightning; poor visibility.</p>	<p>The work area will be visually inspected. Slip, trip, and fall hazards shall be either removed or marked and barricaded. Sufficient illumination shall be maintained to ensure a safe working environment and weather conditions to be continuously monitored. See FLD 11, 12, and 39.</p>
	<p>Moving mechanical parts from heavy equipment operations.</p>	<p>Personnel shall be made aware of the hazard and will coordinate carefully during handling equipment operations. Guards will be kept in place during operation. Maintain safe distance from moving mechanical parts. Always use appropriate PPE. See FLD 22 and 42.</p>
	<p>Strains and sprains from manually lifting and moving objects.</p>	<p>Use proper lifting techniques such as keeping straight back, lifting with legs, avoid twisting back, use mechanical equipment or get help from others. The work area will be visually inspected. See FLD 10.</p>
	<p>Housekeeping</p>	<p>Materials will be stored to prevent intrusion into the work areas. Work areas will be kept organized and ice, snow and mud will be cleared from steps to reduce slip hazards. See FLD12</p>
	<p>Water Hazards, Inclement weather, including rain, lightning, and cold stress.</p>	<p>Personnel shall have appropriate PPE; personnel working in water, rain or cold shall follow FLDs 02, 06 and 19.</p>
	<p>Hands or fingers caught between objects; abrasions and lacerations.</p>	<p>Personnel shall be made aware of the hazard and will coordinate carefully the handling and placement of heavy objects. Materials and objects being handled will be inspected for rough or sharp edges, and appropriate precautions shall be taken to avoid contact. Personnel shall wear work gloves and avoid placing hands between objects. See FLD 10.</p>
<p>Striking or being struck by operating equipment, loads, falling objects, and pinch points.</p>	<p>Workers shall stay out of the swing range of all equipment and from under loads. No personnel shall ride on the equipment. Remain within view of operator. All heavy equipment should be equipped with back-up alarms. See FLD 20, 22, 23, and 24. Workers exposed to traffic hazards will wear traffic/reflectorized vests. A traffic control system for positioning and moving haul vehicles will be established. Heavy vehicle operators may remain in their vehicles only if they have cab over protection. If operators must check loads, loading will cease until the operator is back in the cabin or</p>	

Task	Hazards	Hazard Control
	<p>Noise during the operation of heavy equipment.</p> <p>Inclement weather, Heat and Cold stress</p> <p>Underground and aboveground utilities.</p>	<p>away from the vehicles in a safe location.</p> <p>A hearing conservation program consistent with FLD01 will be established. High noise areas will be identified. Hearing protection will be provided as appropriate. The latest ACGIH TLVs will be used.</p> <p>Personnel will be informed of the heat/cold stress symptoms. Appropriate PPE and fluids will be supplied to workers. See FLD 05 and 06. Work rest periods will be established according to ACGIH and NIOSH guidelines.</p> <p>Utility companies will be contacted prior to any excavation. All known utilities will be marked prior to digging. Proper clearances from above ground wires will be maintained during all activities. SSHO to be notified upon detection of any buried utilities. See FLD 34.</p>
	<p><b>Biological</b>—Poisonous plants, insects, snakes.</p>	<p>Review recognition of poisonous plants, insects, or snakes typical of this area. Use appropriate measures as required. Adhere to WESTON Bloodborne Pathogens Exposure Control Plan—First Aid Procedures FLD43.</p>
	<p><b>Radiation</b>—Potential sun burn/sun poisoning hazard on bright, sunny days. The historical use of the site does not indicate the potential for radiation hazards.</p>	<p>Use sunblock as appropriate. Avoid direct exposure to sun for long periods of time. There is no known source of radioactive material at this site. If Nuclear Density Gauges are used, they will be properly licensed and will be operated by qualified.</p>

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**SECTION 9**

**REFERENCES**

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## 9. REFERENCES

Parsons Engineering Science, Inc. 1998. *Draft Record of Decision (ROD) for the Former Open Burning Grounds Site, Seneca Army Depot Activity, Romulus, New York*

Parsons Engineering Science, Inc. 1998. *Plans and Specifications for the Remediation Project at SEAD 23 – Open Burning Grounds, Seneca Army Depot Activity, Romulus, New York*

USACE (U.S. Army Corps of Engineers). 1996. *Engineering and Design, Chemical Data Quality Management for Hazardous Waste Remedial Activities*, ER-1110-1-263.



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**APPENDIX A**

**SITE-SPECIFIC HAZARD COMMUNICATIONS PLAN**

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## Location Specific Hazard Communications Program/Checklist

In order to ensure an understanding of and compliance with the Hazard Communication Standard, WESTON will utilize this checklist/document (or similar document) in conjunction with the WESTON Written Hazard Communications Program as a means of meeting site or location specific requirements.

While responsibility for activities within this document reference the WESTON Safety Officer, it is the responsibility of all personnel to effect compliance. Responsibilities under various conditions can be found within the WESTON Written Hazard Communication Program.

To ensure that information about the dangers of all hazardous chemicals used by WESTON are known by all affected employees, the following hazardous information program has been established. All affected personnel will participate in the hazard communication program. This written program as well as WESTON's Corporate Hazard Communication Program will be available for review by any employee, employee representative, representative of OSHA, NIOSH or any affected employer/employee on a multi-employer site.

- \_\_\_ Site or other location name/address:  
Seneca Army Depot Activity, Romulus, New York
- \_\_\_ Site/Project/Location Manager: \_\_\_\_\_
- \_\_\_ Site/Location Safety Officer: \_\_\_\_\_
- \_\_\_ List of chemicals complied, format: HASP: X Other: \_\_\_\_\_
- \_\_\_ Location of MSDS Files: \_\_\_\_\_
- \_\_\_ Training Conducted by (name and date): \_\_\_\_\_
- \_\_\_ Indicate format of training documentation: Field Log: \_\_\_\_\_ Other: \_\_\_\_\_
- \_\_\_ Client briefing conducted regarding hazard communication: \_\_\_\_\_
- \_\_\_ If multi-employer site, indicate name of affected companies:  
\_\_\_\_\_
- \_\_\_ Other employer(s) notified of chemicals, labeling and MSDS information: \_\_\_\_\_
- \_\_\_ WESTON notified of other employer's or clients hazard communication program as necessary.

### List of Hazardous Chemicals

A list of known hazardous chemicals used by WESTON personnel must be prepared and attached to this document or in a centrally identified location with the MSDS's. Further information on each chemical may be obtained by reviewing the appropriate MSDSs. The list will be arranged to enable cross reference with the MSDS file and the label on the container. The SO or location manager is responsible for ensuring the chemical listing remains up-to-date.

### Container Labeling

The WESTON Safety Officer (SO) will verify that all containers received from the chemical manufacturer, importer or distributor for use on site will be clearly labeled.

The SO is responsible for assuring labels are placed where required and for comparing MSDS's and other information with label information to ensure correctness.



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**APPENDIX B**

**MATERIAL SAFETY DATA SHEETS**

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Please reduce your browser font size for better viewing and printing.

# MSDS *Material Safety Data Sheet*

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. and Canada  
Chemtree: 202-483-7616

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## ALCONOX(tm)

MSDS Number: A2052 --- Effective Date: 12/08/96

### 1. Product Identification

**Synonyms:** Alkyl Aryl Sulfonates  
**CAS No.:** Not applicable.  
**Molecular Weight:** Not applicable.  
**Chemical Formula:** Not applicable.  
**Product Codes:** A461

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Alconox (tm)	N/A	90 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! CAUSES IRRITATION.**

J.T. Baker SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight  
Flammability Rating: 0 - None  
Reactivity Rating: 1 - Slight  
Contact Rating: 2 - Moderate  
Lab Protective Equip: GOGGLES; LAB COAT  
Storage Color Code: Orange (General Storage)

#### Potential Health Effects

**Inhalation:**

None identified.

**Ingestion:**

May be harmful.

**Skin Contact:**

Irritation.

**Eye Contact:**

Irritation.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

No information found.

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## 4. First Aid Measures

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Prompt action is essential.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes.

**Eye Contact:**

In case of eye contact, immediately flush with plenty of water for at least 15 minutes.

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## 5. Fire Fighting Measures

**Fire:**

Not expected to be a fire hazard.

**Explosion:**

None identified.

**Fire Extinguishing Media:**

Use extinguishing media appropriate for surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Wear self-contained breathing apparatus and full protective clothing. With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

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## 7. Handling and Storage

Keep container tightly closed. Suitable for any general chemical storage area. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

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

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to the substance is apparent, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

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

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

**Appearance:**

White Powder.

**Odor:**

No information found.

**Solubility:**

Appreciable (>10%)

**Specific Gravity:**

0.00

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

N/A

**Boiling Point:**

No information found.

**Melting Point:**

No information found.

**Vapor Density (Air=1):**

Not applicable.

**Vapor Pressure (mm Hg):**

Not applicable.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

No information found.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

No information found.

**Conditions to Avoid:**

No information found.

## 11. Toxicological Information

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Alconox (tm)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                TSCA  EC   Japan  Australia
-----
Alconox(tm)              Yes   No    No     No

```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                Korea  --Canada--  DSL  NDSL  Phil.
-----
Alconox(tm)              No     No          Yes  No

```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                -SARA 302-  -SARA 313-
                        RQ   TPQ      List  Chemical Catg.
-----
Alconox(tm)              No    No       No     No

```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                CERCLA  -RCRA-  -TSCA-
                        -----  261.33  8(d)
-----
Alconox(tm)              No     No       No

```

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
Reactivity: No      (Pure / Solid)

**Australian Hazchem Code:** No information found.

**Poison Schedule:** No information found.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**Label Hazard Warning:**

WARNING! CAUSES IRRITATION.

**Label Precautions:**

Keep in tightly closed container. Wash thoroughly after handling.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse.

**Product Use:**

Laboratory Reagent. Research and Development Use Only.

**Revision Information:**

Pure. New 16 section MSDS format, all sections have been revised.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its**

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\*\*\*\*\*

**Prepared by:** Strategic Services Division  
Phone Number: (314) 539-1600 (U.S.A.)

AMERICAN OIL & SUPPLY -- 25303 MIL-H-5606E - HYDRAULIC FLUID, PETROLEUM BASE  
MATERIAL SAFETY DATA SHEET  
NSN: 9150002659408  
Manufacturer's CAGE: 92895  
Part No. Indicator: A  
Part Number/Trade Name: 25303 MIL-H-5606E

=====  
General Information  
=====

Item Name: HYDRAULIC FLUID, PETROLEUM BASE  
Company's Name: AMERICAN OIL AND SUPPLY CO  
Company's Street: 239 WILSON AVE  
Company's City: NEWARK  
Company's State: NJ  
Company's Country: US  
Company's Zip Code: 07105-3824  
Company's Emerg Ph #: 201-589-0250  
Record No. For Safety Entry: 017  
Tot Safety Entries This Stk#: 017  
Status: SE  
Date MSDS Prepared: 01AUG90  
Safety Data Review Date: 21MAR91  
Supply Item Manager: CX  
MSDS Preparer's Name: LAB MANAGER  
MSDS Serial Number: BDRFM  
Specification Number: MIL-H-5606  
Spec Type, Grade, Class: NONE  
Hazard Characteristic Code: N1  
Unit Of Issue: DR  
Unit Of Issue Container Qty: 55 GALLONS  
Type Of Container: DRUM  
Net Unit Weight: 399.4 LBS

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: MINERAL OIL  
Ingredient Sequence Number: 01  
Percent: UNKNOWN  
NIOSH (RTECS) Number: PY8036000  
CAS Number: 64742-53-6  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED  
Other Recommended Limit: NONE SPECIFIED

-----  
Proprietary: NO  
Ingredient: PETROLEUM DISTILLATE - STREIGHT RUN MIDDLE  
Ingredient Sequence Number: 02  
Percent: UNKNOWN  
NIOSH (RTECS) Number: LX3296000  
CAS Number: 64741-44-2  
OSHA PEL: 5 MG/M3  
ACGIH TLV: 5 MG/M3  
Other Recommended Limit: NONE SPECIFIED

-----  
Proprietary: NO  
Ingredient: ADDITIVES (INCLUDES ANTI-OXIDANTS, ANTI-WEAR, ANTI-FOAM, AND  
CORROSION INHIBITORS)  
Ingredient Sequence Number: 03  
Percent: UNKNOWN  
NIOSH (RTECS) Number: 1000144AD  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED  
Other Recommended Limit: NONE SPECIFIED

-----  
Proprietary: NO  
Ingredient: TRIORTHOCRESYL PHOSPHATE  
Ingredient Sequence Number: 04  
Percent: UNKNOWN  
NIOSH (RTECS) Number: TD0350000

CAS Number: 78-30-8  
OSHA PEL: S, 0.1 MG/M3  
ACGIH TLV: S, 0.1 MG/M3; 9192  
Other Recommended Limit: NONE SPECIFIED

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: CLEAR RED LIQUID, SLIGHT ODOR  
Boiling Point: UNKNOWN  
Melting Point: UNKNOWN  
Vapor Pressure (MM Hg/70 F): 0.07 MM  
Vapor Density (Air=1): UNKNOWN  
Specific Gravity: 0.872  
Decomposition Temperature: UNKNOWN  
Evaporation Rate And Ref: ,0.01 (NO REFERENCE)  
Solubility In Water: NEGLIGIBLE  
Percent Volatiles By Volume: NIL  
Viscosity: UNKNOWN  
Corrosion Rate (IPY): UNKNOWN

=====  
Fire and Explosion Hazard Data  
=====

Flash Point: 200F,93C  
Flash Point Method: PMCC  
Lower Explosive Limit: UNKNOWN  
Upper Explosive Limit: UNKNOWN  
Extinguishing Media: USE CARBON DIOXIDE, FOAM, DRY CHEMICAL, OR WATER FOG.  
WATER, ESPECIALLY STREAM, MAY CAUSE FROTHING.  
Special Fire Fighting Proc: WEAR FIRE FIGHTING PROTECTIVE EQUIPMENT AND A  
FULL FACED SELF CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS  
WITH WATER SPRAY. CONTAIN RUNOFF.  
Unusual Fire And Expl Hazrds: PRODUCT WILL FLOAT ON WATER AND MAY RE-  
IGNITE!

=====  
Reactivity Data  
=====

Stability: YES  
Cond To Avoid (Stability): FLAME, SPARKS, OTHER IGNITION SOURCES.  
Materials To Avoid: STRONG OXIDIZING AGENTS, STRONG ACIDS AND ALKALIS  
Hazardous Decomp Products: CARBON DIOXIDE, CARBON MONOXIDE  
Hazardous Poly Occur: NO  
Conditions To Avoid (Poly): NOT RELEVANT

=====  
Health Hazard Data  
=====

LD50-LC50 Mixture: ORAL RAT LD50 IS UNKNOWN  
Route Of Entry - Inhalation: YES  
Route Of Entry - Skin: NO  
Route Of Entry - Ingestion: YES  
Health Haz Acute And Chronic: PRODUCT IS VERY MILDLY IRRITATING TO BODY  
TISSUES. MOST LIKELY HAZARD IS THAT OF BREATHING THE MIST OR VAPORS SHOULD  
THE PRODUCT BE HEATED OR MISTED. PRODUCT MAY CONTAIN TRICRESYL PHOSPHATE  
WHICH CAN CAUSE PARALYSIS IF TAKEN INTERNALLY.  
Explanation Carcinogenicity: MANUFACTURER MADE NO COMMENTS ON  
CARCINOGENICITY AND THE FORMULATION WAS TOO VAGUELY DESCRIBER TO DETERMINE.  
Signs/Symptoms Of Overexp: EYE:MILD IRRITATION. SKIN:POSSIBLE MILD  
IRRITATION. INHALED:RESPIRATORY IRRITATION,POSSIBLE PULMONARY EDEMA IF MIST  
IS INHALED. INGESTED:G/I IRRITATION,NAUSEA VOMITING,DIARRHEA  
Med Cond Aggravated By Exp: NONE REPORTED  
Emergency/First Aid Proc: EYE:FLUSH W/WATER 15 MIN, HOLD LIDS OPEN.  
SKIN:WASH WITH SOAP & WATER. REMOVE CONTAMINATED CLOTHING AND LAUNDER  
BEFORE REUSE. INHALED:REMOVE TO FRESH AIR. RESTORE BREATHING IF NECESSARY.  
INGESTED:DO NOT INDUCE VOMITING. GIVE 2 LARGE GLASSES OF MILK OR WATER AND  
GET IMMEDIATE MEDICAL CARE. GIVE NOTHING BY MOUTH IF UNCONSCIOUS. IF  
IRRITATION PERSISTS OR IS SEVERE,SEE A DOCTOR.

=====  
Precautions for Safe Handling and Use  
=====

Steps If Matl Released/Spill: ELIMINATE IGNITION SOURCES. RECOVER AS  
LIQUID IF POSSIBLE. ADSORB REMAINDER ON EARTH,SAND,SAWDUST,ETC. KEEP OUT OF  
DRAINS, SEWERS, AND WATERWAYS. STORE IN CLOSED CONTAINERS PENDING DISPOSAL.



Neutralizing Agent: NONE  
Waste Disposal Method: DISPOSE I/A/W FEDERAL, STATE, LOCAL REGULATIONS. MFR MAKES NO SUGGESTIONS ABOUT DISPOSAL. DGSC-SSH SUGGESTS INCINERATE IF UNABLE TO RECYCLE.  
Precautions-Handling/Storing: STORE IN COOL, DRY, WELL VENTILATED AREA.  
Other Precautions: 'EMPTY' CONTAINERS MAY CONTAIN RESIDUE OR VAPOR. TREAT THEM WITH THE RESPECT DUE FULL ONES. DO NOT CUT, WELD, ETC. ON THEM.

=====  
Control Measures  
=====

Respiratory Protection: RESPIRATOR WILL NOT NORMALLY BE NECESSARY. USE NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR OR RESPIRATOR FOR OIL MIST IF EXPOSURE IS ABOVE THE TLV/PEL. SEE 29 CFR 1910.134 FOR REGULATIONS PERTAINING TO RESPIRATOR USE.  
Ventilation: NORMAL ROOM VENTILATION SHOULD BE SUFFICIENT. SUPPLEMENT WITH LOCAL EXHAUST IF NEEDED (OIL MIST).  
Protective Gloves: OIL RESISTANT  
Eye Protection: SAFETY GLASSES  
Other Protective Equipment: IMPERVIOUS CLOTHING AS NEEDED TO PREVENT PROLONGED/REPEATED CONTACT.  
Work Hygienic Practices: USE GOOD INDUSTRIAL HYGIENE PRACTICE. MINIMIZE PERSONAL CONTACT.  
Suppl. Safety & Health Data: NONE

=====  
Transportation Data  
=====

Trans Data Review Date: 91080  
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: MSDS RECEIVED FROM NAVY. LABEL APPEARS TO BE GENERATED BY OTHER THAN MANUFACTURER.

=====  
Disposal Data  
=====

=====  
Label Data  
=====

Label Required: YES  
Technical Review Date: 21MAR91  
MFR Label Number: NONE  
Label Status: G  
Common Name: 25303 MIL-H-5606E  
Chronic Hazard: NO  
Signal Word: CAUTION!  
Acute Health Hazard-Slight: X  
Contact Hazard-Slight: X  
Fire Hazard-Slight: X  
Reactivity Hazard-None: X  
Special Hazard Precautions: \*NOTE\* MSDS RECEIVED FROM NAVY. LABEL APPEARS TO BE GENERATED BY OTHER THAN MANUFACTURER.  
Protect Eye: Y  
Protect Skin: Y  
Protect Respiratory: Y  
Label Name: AMERICAN OIL AND SUPPLY CO  
Label Street: 239 WILSON AVE  
Label City: NEWARK  
Label State: NJ  
Label Zip Code: 07105-3824  
Label Country: US  
Label Emergency Number: 201-589-0250  
Year Procured: 1987

Please reduce your browser font size for better viewing and printing.

24 Hour Emergency Telephone: 908-858-2151  
CHEMTREC: 1-800-424-9300

**MSDS**

**Material Safety Data Sheet**

National Response in Canada  
CANUTEC: 613-996-6668

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865

**MALLINCKRODT**



Outside U.S. and Canada  
Chemtrec: 202-483-7616

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## HYDROCHLORIC ACID (10%-33%)

MSDS Number: H3886 --- Effective Date: 12/08/96

### 1. Product Identification

**Synonyms:** This MSDS applies to the concentrated standard used to make laboratory solutions and any solution that contains more than 10% but less than 33% Hydrochloric acid. For diluted product, see MSDS for Hydrochloric Acid (less than 10%). For saturated solution

**CAS No.:** 7647-01-0

**Molecular Weight:** 36.46

**Chemical Formula:** HCl in H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 4654, 4657, 4658, 5618, 5619

Mallinckrodt: 2608, 2609, 2625, H151, H168, V024, V035, V328

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Hydrogen Chloride	7647-01-0	10 - 33%	Yes
Water	7732-18-5	67 - 90%	No

### 3. Hazards Identification

#### Emergency Overview

**POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED.**

**J.T. Baker SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)**

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 2 - Moderate

Contact Rating: 3 - Severe (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White (Corrosive)

---

## Potential Health Effects

---

### **Inhalation:**

Corrosive! Inhalation of vapors can cause coughing, choking, inflammation of the nose, throat, and upper respiratory tract. and in severe cases. pulmonary edema, circulatory failure, and death.

### **Ingestion:**

Corrosive! Swallowing hydrochloric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract. May cause nausea, vomiting, and diarrhea, and in severe cases, death.

### **Skin Contact:**

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and discolor skin.

### **Eye Contact:**

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

### **Chronic Exposure:**

Long-term exposure to concentrated vapors may cause erosion of teeth. Long term exposures seldom occur due to the corrosive properties of the acid.

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

Persons with pre-existing skin disorders or eye disease may be more susceptible to the effects of this substance.

---

## 4. First Aid Measures

### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

### **Ingestion:**

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

### **Skin Contact:**

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

### **Eye Contact:**

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

---

## 5. Fire Fighting Measures

### **Fire:**

Not considered to be a fire hazard. May react with metals or heat to release flammable hydrogen gas.

### **Explosion:**

Not considered to be an explosion hazard.

### **Fire Extinguishing Media:**

Water or water spray. Neutralize with soda ash or slaked lime.

### **Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Structural firefighter's protective clothing is ineffective for fires involving hydrochloric acid. Stay away from ends of tanks. Cool tanks with water spray until well after fire is out.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRASORB(tm) or TEAM(tm) 'Low Na+' acid neutralizers are recommended for spills of this product.

---

## 7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

For Hydrochloric acid:

- OSHA Permissible Exposure Limit (PEL):  
5 ppm (Ceiling)
- ACGIH Threshold Limit Value (TLV):  
5 ppm (STEL/Ceiling)

### **Ventilation System:**

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

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

If the exposure limit is exceeded, a full facepiece respirator with an acid gas cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Clear, colorless liquid.

**Odor:**

Pungent odor.

**Solubility:**

Infinitely soluble.

**Density:**

1.05 @ 15C (59F)

**pH:**

For HCL solutions: 0.1 (1.0 N), 1.1 (0.1 N), 2.02 (0.01 N)

**% Volatiles by volume @ 21C (70F):**

100

**Boiling Point:**

101 - 103C (214 - 217F)

**Melting Point:**

No information found.

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

When heated to decomposition, emits toxic hydrogen chloride fumes and will react with water or steam to produce heat and toxic and corrosive fumes. Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

A strong mineral acid, concentrated hydrochloric acid is highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites, and formaldehyde.

**Conditions to Avoid:**

Heat, direct sunlight.

## 11. Toxicological Information

Hydrochloric acid: Inhalation rat LC50: 3124 ppm/1H; Oral rabbit LD50: 900 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Hydrogen Chloride (7647-01-0)	No	No	3
Water (7732-18-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material is not expected to biodegrade. When released into the soil, this material may leach into groundwater.

**Environmental Toxicity:**

This material is expected to be toxic to aquatic life.

### 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

### 14. Transport Information

**Domestic (Land, D.O.T.)**

**Proper Shipping Name:** HYDROCHLORIC ACID

**Hazard Class:** 8

**UN/NA:** UN1789

**Packing Group:** II

**Information reported for product/size:** 137LB

**International (Water, I.M.O.)**

**Proper Shipping Name:** HYDROCHLORIC ACID

**Hazard Class:** 8

**UN/NA:** UN1789

**Packing Group:** II

**Information reported for product/size:** 137LB

### 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Hydrogen Chloride (7647-01-0)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Hydrogen Chloride (7647-01-0)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Hydrogen Chloride (7647-01-0)	5000	500*	Yes	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Hydrogen Chloride (7647-01-0)	5000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: Yes  
 SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
 Reactivity: No      (Mixture / Liquid)

**Australian Hazchem Code:** 2R  
**Poison Schedule:** No information found.  
**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

## 16. Other Information

**NFPA Ratings:** Health: 3 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED.

**Label Precautions:**

Do not get in eyes, on skin, or on clothing.  
Avoid breathing vapor or mist.  
Keep container closed.  
Use with adequate ventilation.  
Wash thoroughly after handling.

**Label First Aid:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

New 16 section MSDS format, all sections have been revised.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Strategic Services Division  
Phone Number: (314) 539-1600 (U.S.A.)

AMOCO OIL -- AMOCO SILVER MID-GRADE LEAD-FREE GASOLINE ( - GASOLINE,AUTOMOTIVE,PRE  
MATERIAL SAFETY DATA SHEET  
NSN: 9130012822844  
Manufacturer's CAGE: 15958  
Part No. Indicator: A  
Part Number/Trade Name: AMOCO SILVER MID-GRADE LEAD-FREE GASOLINE (

=====  
General Information  
=====

Item Name: GASOLINE,AUTOMOTIVE,PREMIUM MOGAS UNLEADED  
Company's Name: AMOCO OIL CO.  
Company's Street: 200 E. RANDOLPH DRIVE  
Company's City: CHICAGO  
Company's State: IL  
Company's Country: US  
Company's Zip Code: 60601  
Company's Emerg Ph #: 800-447-8735  
Company's Info Ph #: 312-856-3907  
Record No. For Safety Entry: 036  
Tot Safety Entries This Stk#: 080  
Status: SM  
Date MSDS Prepared: 06JUN89  
Safety Data Review Date: 29SEP91  
Supply Item Manager: KY  
MSDS Preparer's Name: GERALD I. BRESNICK  
MSDS Serial Number: BKSYL  
Specification Number: VV-G-001690  
Spec Type, Grade, Class: GR PREMIUM,ALL CLAS  
Hazard Characteristic Code: F2  
Unit Of Issue: DR  
Unit Of Issue Container Qty: 55 GALLONS  
Type Of Container: DRUM  
Net Unit Weight: 343.5 LBS

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: BUTANE  
Ingredient Sequence Number: 01  
NIOSH (RTECS) Number: EJ4200000  
CAS Number: 106-97-8  
OSHA PEL: 800 PPM  
ACGIH TLV: 800 PPM; 9192

-----  
Proprietary: NO  
Ingredient: ETHYL ALCOHOL (ETHANOL)  
Ingredient Sequence Number: 02  
NIOSH (RTECS) Number: KQ6300000  
CAS Number: 64-17-5  
OSHA PEL: 1000 PPM  
ACGIH TLV: 1000 PPM; 9192  
Other Recommended Limit: NONE SPECIFIED

-----  
Proprietary: NO  
Ingredient: N-HEPTANE  
Ingredient Sequence Number: 03  
NIOSH (RTECS) Number: MI7700000  
CAS Number: 142-82-5  
OSHA PEL: 500 PPM/500 STEL  
ACGIH TLV: 400 PPM/500STEL;9293

-----  
Proprietary: NO  
Ingredient: METAL DEACTIVATOR (1-3 LBS/1000 BBLs)  
Ingredient Sequence Number: 04  
Percent: ABOVE  
NIOSH (RTECS) Number: 1003780MD  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED  
Other Recommended Limit: NONE SPECIFIED  
-----



Proprietary: NO  
Ingredient: PENTANE  
Ingredient Sequence Number: 05  
NIOSH (RTECS) Number: RZ9450000  
CAS Number: 109-66-0  
OSHA PEL: 1000 PPM/750 STEL  
ACGIH TLV: 600 PPM/750STEL;9293

-----  
Proprietary: NO  
Ingredient: TOLUENE (SARA III)  
Ingredient Sequence Number: 06  
NIOSH (RTECS) Number: XS5250000  
CAS Number: 108-88-3  
OSHA PEL: 200 PPM/150 STEL  
ACGIH TLV: 50 PPM; 9293

-----  
Proprietary: NO  
Ingredient: TRIMETHYL BENZENE (SARA III)  
Ingredient Sequence Number: 07  
NIOSH (RTECS) Number: DC3220000  
CAS Number: 25551-13-7  
OSHA PEL: 25 PPM  
ACGIH TLV: 25 PPM; 9192

-----  
Proprietary: NO  
Ingredient: XYLENES (O-,M-,P- ISOMERS) (SARA III)  
Ingredient Sequence Number: 08  
NIOSH (RTECS) Number: ZE2100000  
CAS Number: 1330-20-7  
OSHA PEL: 100 PPM/150 STEL  
ACGIH TLV: 100 PPM/150STEL;9192

-----  
Proprietary: NO  
Ingredient: BENZENE (SARA III)  
Ingredient Sequence Number: 09  
NIOSH (RTECS) Number: CY1400000  
CAS Number: 71-43-2  
OSHA PEL: 1PPM/5STEL;1910.1028  
ACGIH TLV: 10 PPM; A2; 9192

-----  
Proprietary: NO  
Ingredient: ETHYL BENZENE (SARA III)  
Ingredient Sequence Number: 10  
NIOSH (RTECS) Number: DA0700000  
CAS Number: 100-41-4  
OSHA PEL: 100 PPM/125 STEL  
ACGIH TLV: 100 PPM/125STEL 9192

-----  
Proprietary: NO  
Ingredient: METHYL TERT-BUTYL ETHER (SARA III)  
Ingredient Sequence Number: 11  
NIOSH (RTECS) Number: KN5250000  
CAS Number: 1634-04-4  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED  
Other Recommended Limit: NONE SPECIFIED

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: CLEAR,COLORLESS TO STRAW YELLOW LIQUID;GASOLINE ODOR.  
Boiling Point: 80.0F,26.7C  
Vapor Density (Air=1): 3.5 (AIR)  
Specific Gravity: 0.72-0.76  
Solubility In Water: NEGLIGIBLE  
Percent Volatiles By Volume: 100  
Viscosity: UNKNOWN

=====  
Fire and Explosion Hazard Data  
=====

Flash Point: -45F,-43C  
Lower Explosive Limit: 1.3

Upper Explosive Limit: 7.6

Extinguishing Media: DRY CHEMICAL, CARBON DIOXIDE, FOAM, WATER FOG. WATER MAY BE INEFFECTIVE, AS PRODUCT WILL FLOAT AND MAY SPREAD FIRE.

Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS IN ENCLOSED AREAS. WATER SPRAY MAY BE USED TO COOL FIRE EXPOSED CONTAINERS. Unusual Fire And Expl Hazrds: VAPORS ARE HEAVIER THAN AIR, ACCUMULATING LOW AREAS, TRAVELING ALONG GROUND AND MAY FLASH BACK FROM DISTANT IGNITION SOURCE.

=====  
Reactivity Data  
=====

Stability: YES

Cond To Avoid (Stability): HEAT, SPARKS AND OTHER IGNITION SOURCES, VAPOR ACCUMULATIONS.

Materials To Avoid: STRONG OXIDIZERS.

Hazardous Decomp Products: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER HARMFUL PRODUCTS.

Hazardous Poly Occur: NO  
=====

Health Hazard Data  
=====

LD50-LC50 Mixture: ORAL LD50 = 18,800 MG/KG (RAT)

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: NO

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: PRODUCT IS IRRITATING TO EYES, SKIN, RESPIRATORY TRACT AND DEPRESSES THE CENTRAL NERVOUS SYSTEM. CHRONIC OVER EXPOSURE MAY CAUSE LIVER, KIDNEY, OR CENTRAL NERVOUS SYSTEM DAMAGE.

Carcinogenicity - NTP: YES

Carcinogenicity - IARC: YES

Carcinogenicity - OSHA: YES

Explanation Carcinogenicity: CONTAINS BENZENE; LISTED BY ALL THREE. ALSO, AN A STUDY FOUND LIVER CANCER IN MICE EXPOSED TO GASOLINE VAPORS.

Signs/Symptoms Of Overexp: EYE/SKIN CONTACT: TRANSITORY IRRITATION.

INHALED: RESPIRATORY IRRITATION, CENTRAL NERVOUS SYSTEM DEPRESSION INCLUDING EUPHORIA, HEADACHE, DIZZINESS, DROWSINESS, FATIGUE, TREMORS, CONVULSIONS, NAUSEA, VOMITING, DIARRHEA, LOSS OF CONSCIOUSNESS AND FINALLY DEATH. INGESTED: G/I IRRITATION, PLUS SYMPTOMS SIMILAR TO THOSE UNDER "INHALED".

Med Cond Aggravated By Exp: PRE-EXISTING EYE, SKIN CONDITIONS O

Emergency/First Aid Proc: EYE: FLUSH WITH WATER 15 MIN. SKIN: WASH WI SOAP & WATER. REMOVE CONTAMINATED CLOTHING; LAUNDRY BEFORE REUSE. INHALED: REMOVE TO FRESH AIR. RESUSCITATE OR GIVE OXYGEN AS NEEDED. GET MEDICAL CARE.

INGESTED: GET IMMEDIATE MEDICAL ATTENTION. DO NOT INDUCE VOMITING. IF VOMITING OCCURS, MINIMIZE ASPIRATION HAZARD.  
=====

Precautions for Safe Handling and Use  
=====

Steps If Matl Released/Spill: ELIMINATE IGNITION SOURCES. ISOLATE AREA. USE PROTECTIVE EQUIPMENT AS NECESSARY. STOP LEAK AND CONTAIN SPILL. DIKE AS NEEDED TO KEEP SPILL FROM DRAINS, WATERWAYS ETC. WATER FOR MAY BE USED TO REDUCE VAPORS & PERSONAL HAZARD. REPORT SPILL PER LAW.

Neutralizing Agent: NONE

Waste Disposal Method: DISPOSE I/A/W FEDERAL, STATE, LOCAL REGULATIONS. PRODUCT QUALIFY'S AS IGNITABLE WASTE AND CANNOT BE LANDFILLED. IF RECOVERY OR RECYCLE ARE UNACCEPTABLE, INCINERATION MAY BE ACCEPTABLE DISPOSAL METHOD.

Precautions-Handling/Storing: STORE IN A COOL, DRY, ISOLATED WELL VENTILATED AREA. KEEP IGNITION SOURCES AWAY. GROUND CONTAINERS TO PREVENT STATIC DISCHARGE DURING TRANSFERS.

Other Precautions: FIRE AND EXPLOSION ARE THE ACUTE HAZARDS OF THIS PRODUCT. TAKE EXTRAORDINARY STEPS TO PREVENT THEM.  
=====

Control Measures  
=====

Respiratory Protection: IF NEEDED, USE NIOSH/MSHA RESPIRATOR WITH ORGANIC VAPO CARTRIDGE OR PREFERABLY, A POSITIVE PRESSURE AIR SUPPLIED RESPIRATOR OR SELF CONTAINED BREATHING APPARATUS.

Ventilation: USE EXPLOSION PROOF VENTILATION EQUIPMENT TO MAINTAIN EXPOSURE BELOW PEL/TLV.

Protective Gloves: IMPERVIOUS RUBBER OR POLYMER.

Eye Protection: SAFETY GLASSES, OR SPLASH GOGGLES.

Other Protective Equipment: SAFETY SHOWER/EYE WASH. WORK CLOTHING AS  
NEEDED T PROTECT FROM PROLONGED/REPEATED CONTACT.  
Work Hygienic Practices: USE GOOD CHEMICAL HYGIENE PRACTICE. AVOID  
UNNECESSAR CONTACT. MINIMIZE ALL CONTACT.

=====  
Transportation Data  
=====

Trans Data Review Date: 91272  
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 Basic Pac Ref: 7-7  
Additional Trans Data: BENZENE REPORTABLE QUANTITY IS 10 POUNDS. BENZENE  
CONTENT IN PRODUCT IS UNKNOWN

=====  
Disposal Data  
=====

=====  
Label Data  
=====

Label Required: YES  
Technical Review Date: 29SEP91  
Label Date: 09JUN89  
MFR Label Number: NONE  
Label Status: G  
Common Name: AMOCO SILVER MID-GRADE LEAD-FREE GASOLINE (AKI 89  
MIN.)  
Chronic Hazard: NO  
Signal Word: DANGER!  
Acute Health Hazard-Slight: X  
Contact Hazard-Slight: X  
Fire Hazard-Severe: X  
Reactivity Hazard-Slight: X  
Special Hazard Precautions: EXTREMELY FLAMMABLE. HIGH VAPOR CONCENTRATIONS  
CAN CAUSE HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA. HARMFUL IF SWALLOWED  
AND/OR ASPIRATED INTO LUNGS. CAN PRODUCE SKIN IRRITATION ON PROLONGED OR  
REPEATED CONTACT. USE AS MOTOR FUEL ONLY. LONG-TERM EXPOSURE TO VAPORS HAS  
CAUSED CANCER IN LABORATORY ANIMALS.  
Protect Eye: Y  
Protect Skin: Y  
Protect Respiratory: Y  
Label Name: AMOCO OIL CO  
Label Street: 200 E RANDOLPH DR MC 1408  
Label City: CHICAGO  
Label State: IL  
Label Zip Code: 60601-6401  
Label Country: US  
Label Emergency Number: 800-447-8735/800-424-9300 (CHEMTREC)

Please reduce your browser font size for better viewing and printing.

24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

**MSDS**

**Material Safety Data Sheet**

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. and Canada  
Chemtrec: 202-483-7616

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865

**MALLINCKRODT**



NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## NITRIC ACID FUMING

MSDS Number: N3662 --- Effective Date: 12/08/96

### 1. Product Identification

**Synonyms:** Aqua Fortis; Azotic Acid; Nitric Acid 90%; Red fuming nitric acid  
**CAS No.:** 7697-37-2  
**Molecular Weight:** 63  
**Chemical Formula:** HNO<sub>3</sub>  
**Product Codes:** J.T. Baker: 9624 Mallinckrodt: 2713

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Nitric Acid	7697-37-2	90 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**POISON! DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.**

J.T. Baker SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 4 - Extreme (Poison)  
Flammability Rating: 0 - None  
Reactivity Rating: 3 - Severe (Oxidizer)  
Contact Rating: 4 - Extreme (Corrosive)  
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
Storage Color Code: Yellow (Reactive)

## Potential Health Effects

---

Nitric acid is extremely hazardous: it is corrosive, reactive, an oxidizer, and a poison.

### **Inhalation:**

Corrosive! Inhalation of vapors can cause breathing difficulties and lead to pneumonia and pulmonary edema, which may be fatal. Other symptoms may include coughing, choking, and irritation of the nose, throat, and respiratory tract. Symptoms may disappear only to return in a few hours and more severely. Onset of symptoms may be delayed for 4-30 hours.

### **Ingestion:**

Corrosive! Swallowing nitric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract.

### **Skin Contact:**

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and stain skin a yellow or yellow-brown color.

### **Eye Contact:**

Corrosive! Vapors are irritating and may cause severe damage to the eyes. Splashes may cause severe burns and permanent eye damage.

### **Chronic Exposure:**

Long-term exposure to concentrated vapors may cause erosion of teeth and lung damage. Long-term exposures seldom occur due to the corrosive properties of the acid.

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

Persons with pre-existing skin disorders, eye disease, or cardiopulmonary diseases may be more susceptible to the effects of this substance.

---

## 4. First Aid Measures

Immediate first aid treatment reduces the health effects of this substance.

### **Inhalation:**

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

### **Ingestion:**

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

### **Skin Contact:**

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

### **Eye Contact:**

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

---

## 5. Fire Fighting Measures

### **Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Can react with metals to release flammable hydrogen gas.

**Explosion:**

Reacts explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc. Reacts with most metals to release hydrogen gas which can form explosive mixtures with air.

**Fire Extinguishing Media:**

Water spray may be used to keep fire exposed containers cool. Do not get water inside container.

**Special Information:**

Increases the flammability of combustible, organic and readily oxidizable materials. In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL): 2 ppm (TWA), 4 ppm (STEL) -ACGIH Threshold Limit Value (TLV): 2 ppm (TWA); 4 ppm (STEL)

**Ventilation System:**

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

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Nitric acid is an oxidizer and should not come in contact with cartridges and canisters that contain oxidizable

materials, such as activated charcoal. Canister-type respirators using sorbents are ineffective.

**Skin Protection:**

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

**Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Yellow to brownish-red fuming liquid.

**Odor:**

Suffocating, acrid.

**Solubility:**

Infinitely soluble.

**Density:**

1.5

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

100 (as water and acid)

**Boiling Point:**

85C (185F)

**Melting Point:**

ca. -50C (ca. -58F)

**Vapor Density (Air=1):**

2-3

**Vapor Pressure (mm Hg):**

48 @ 20C (68F)

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Containers may burst when heated.

**Hazardous Decomposition Products:**

When heated to decomposition, emits toxic nitrogen oxides fumes and hydrogen nitrate. Will react with water or steam to produce heat and toxic and corrosive fumes.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

A dangerously powerful oxidizing agent, fuming nitric acid is incompatible with most

substances, especially strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics.

**Conditions to Avoid:**

Heat, light, moisture.

---

## 11. Toxicological Information

For Nitric Acid: Oral (human) LDLo: 430 mg/kg; Inhalation.rat. LC50: 67 ppm (NO2)/4H.; Investigated as a mutagen and reproductive effector.

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Nitric Acid (7697-37-2)	No	No	None

---

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

---

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

---

## 14. Transport Information

**Domestic (Land, D.O.T.)**

-----  
Proper Shipping Name: NITRIC ACID, RED FUMING, TOXIC-INHALATION  
HAZARD ZONE B

Hazard Class: 8, 5, 6.1

UN/NA: UN2032

Packing Group: I

Information reported for product/size: 2.5L

**International (Water, I.M.O.)**

-----  
Proper Shipping Name: NITRIC ACID, RED FUMING

Hazard Class: 8, 5.1, 6.1

UN/NA: UN2032

Packing Group: I

Information reported for product/size: 2.5L

---



## 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Nitric Acid (7697-37-2)                       Yes   Yes   Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--
                                     DSL    NDSL   Phil.
-----
Nitric Acid (7697-37-2)                       Yes   Yes   No     Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
                                     RQ   TPQ   List  Chemical Catg.
-----
Nitric Acid (7697-37-2)                       1000  1000   Yes   No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     -RCRA-  -TSCA-
                                     CERCLA  261.33  8(d)
-----
Nitric Acid (7697-37-2)                       1000   No     No
```

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: Yes      Pressure: No  
Reactivity: Yes      (Pure / Liquid)

**Australian Hazchem Code:** 2PE  
**Poison Schedule:** S6

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

## 16. Other Information

**NFPA Ratings:** Health: 4 Flammability: 0 Reactivity: 1 Other: Oxidizer

### Label Hazard Warning:

POISON! DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

### Label Precautions:

Do not get in eyes, on skin, or on clothing. Do not breathe vapor or mist. Use only with adequate ventilation. Wash thoroughly after handling. Keep from contact with clothing and other combustible materials. Do not store near combustible materials. Store in a tightly closed container. Remove and wash contaminated clothing promptly.

### Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases

call a physician.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

Pure. New 16 section MSDS format, all sections have been revised.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Strategic Services Division  
Phone Number: (314) 539-1600 (U.S.A.)

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

REVISION DATE: 05/30/1997  
UN NUMBER- N/A

PRIMARY APPLICATION- LUBRICATING OIL

MANUFACTURER- SUN COMPANY, INC.  
TEN PENN CENTER  
1801 MARKET STREET  
PHILADELPHIA PA 19103-1699

SYNONYMS.....: LUBRICATING OIL  
CAS REGISTRY NO: SEE SEC. 2  
CAS NAME.....: NO CLASSIFICATION - MIXTURE  
CHEMICAL FAMILY: BLEND  
INFORMATION  
SUPPLIER... MARIA DAYRIT  
PHONE.....: (610) 859-1120

EMERGENCY PHONE NUMBERS (AFTER NORMAL BUSINESS HOURS)  
SUN CO.. 1-800-964-8861  
CHEMTREC. 1-800-424-9300

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT/CAS NO.	LO%	HI%	OSHA		ACGIH		SUN/MFR		UNIT
			TWA	STEL	TWA	STEL	TWA	STEL	
LIMITS FOR THE PRODUCT:									
			5		5				MG/M3
SEVERELY SOLVENT REFINED HEAVY PARAFFINIC PETROLEUM OIL									
64741-88-4	.00	100.0	5		5				MG/M3
ZINC DIALKYL DITHIOPHOSPHATE									
68649-42-3	.00	1.00							NO SPECIFIC LIMIT
BUTYLATED PHENOL									
128-39-2	.00	1.00							NO SPECIFIC LIMIT
ACRYLIC COPOLYMER									
68171-46-0	.00	1.00							NO SPECIFIC LIMIT
HYDROTREATED HEAVY PARAFFINIC PETROLEUM OIL									
64742-54-7	.00	100.0	5						MG/M3
CALCIUM ALKYLPHENATE									
68784-26-9	.00	1.00							NO SPECIFIC LIMIT

ADDITIONAL EXPOSURE LIMITS ----- GOVERNMENT REGULATION  
OTHER LIMIT- OIL MIST: 5 MG/M3 (OSHA PEL/ACGIH TLV)

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW -----

SEE SECTION 16 FOR MORE INFORMATION.

APPEARANCE-- CLEAR FLUID            ODOR-- LITTLE ODOR.

POTENTIAL HEALTH EFFECTS -----

PRIMARY ROUTES OF ENTRY- INHALATION( ) SKIN( X ) EYE( ) INGESTION( )

INHALATION -----

NO EFFECTS EXPECTED.

SKIN -----

PRACTICALLY NON-TOXIC IF ABSORBED (LD50 GREATER THAN 2000 MG/KG). MAY CAUSE MILD IRRITATION WITH PROLONGED OR REPEATED CONTACT.

EYE -----

CONTACT WITH THE EYE MAY CAUSE MINIMAL IRRITATION.

INGESTION -----

PRACTICALLY NON-TOXIC (LD50 > 15G/KG).

CARCINOGEN LISTED BY-IARC(NO) NTP(NO) OSHA(NO) ACGIH(NO) OTHER(NO)

PRE-EXISTING MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE-  
SKIN DISORDERS

---

#### 4. FIRST AID MEASURES

INHALATION -----

MOVE PERSON TO FRESH AIR.

SKIN -----

WASH WITH SOAP AND WATER UNTIL NO ODOR REMAINS. WASH CLOTHING BEFORE REUSE.

EYE -----

FLUSH WITH WATER.

INGESTION -----

PRACTICALLY NON-TOXIC -- INDUCTION OF VOMITING NOT REQUIRED. OBTAIN EMERGENCY MEDICAL ATTENTION. SMALL AMOUNTS WHICH ACCIDENTALLY ENTER MOUTH SHOULD BE RINSED OUT UNTIL TASTE OF IT IS GONE.

---

#### 5. FIRE FIGHTING MEASURES

FLASH POINT: 380 MINIMUM COC (DEG. F); 192 MINIMUM COC (DEG. C)  
AUTOIGNITION TEMP.: 670 ESTIMATED (DEG. F); 354 ESTIMATED (DEG. C)

---FLAMMABLE LIMITS IN AIR---

LOWER EXPLOSIVE LIMIT (LEL): NOT DETERMINED % VOLUME

UPPER EXPLOSIVE LIMIT (UEL): NOT DETERMINED % VOLUME

FIRE AND EXPLOSION HAZARDS -----

CAN BE MADE TO BURN (FLASH POINT GREATER THAN 200F).

SUNVIS 832

CODE R00000372100

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EXTINGUISHING-MEDIA -----

WATER SPRAY. REGULAR FOAM. DRY CHEMICAL. CARBON DIOXIDE.

SPECIAL FIRE FIGHTING INSTRUCTIONS -----

WEAR SELF-CONTAINED BREATHING APPARATUS. WEAR STRUCTURAL FIREFIGHTERS PROTECTIVE CLOTHING.

NFPA/HMIS CLASSIFICATION

HEALTH - 0 / 0

FIRE - 1 / 1

REACTIVITY - 0 / 0

PERSONAL PROTECTION INDEX - X

HAZARD RATING

0=LEAST 1=SLIGHT

2=MODERATE 3=HIGH

4=EXTREME

SPECIFIC HAZARD: NONE KNOWN

---

#### 6. ACCIDENTAL RELEASE MEASURES

CONTAIN SPILL. USE PERSONAL PROTECTIVE EQUIPMENT STATED IN SECTION 8. ADVISE EPA; STATE AGENCY IF REQUIRED. ABSORB ON INERT MATERIAL. SHOVEL, SWEEP OR VACUUM SPILL.

---

#### 7. HANDLING AND STORAGE

NFPA CLASS IIIB STORAGE. WASH THOROUGHLY AFTER HANDLING.

=====

8. EXPOSURE CONTROL / PERSONAL PROTECTION

CONSULT WITH A HEALTH/SAFETY PROFESSIONAL FOR SPECIFIC SELECTION.

VENTILATION -----

VENTILATE AS NEEDED TO COMPLY WITH EXPOSURE LIMIT. MECHANICAL VENTILATION RECOMMENDED.

PERSONAL PROTECTIVE EQUIPMENT -----

EYE -----

SPLASH PROOF CHEMICAL GOGGLES RECOMMENDED TO PROTECT AGAINST SPLASH OF PRODUCT.

GLOVES -----

PROTECTIVE GLOVES RECOMMENDED WHEN PROLONGED SKIN CONTACT CANNOT BE AVOIDED. THE FOLLOWING GLOVE MATERIALS ARE ACCEPTABLE: POLYETHYLENE; NEOPRENE; NITRILE; VITON;

RESPIRATOR -----

CONCENTRATION-IN-AIR DETERMINES PROTECTION NEEDED. USE ONLY NIOSH CERTIFIED RESPIRATORY PROTECTION. RESPIRATORY PROTECTION USUALLY NOT NEEDED UNLESS PRODUCT IS HEATED OR MISTED.

OTHER -----

IF CONTACT IS UNAVOIDABLE, WEAR CHEMICAL RESISTANT CLOTHING. THE FOLLOWING MATERIALS ARE ACCEPTABLE AS PROTECTIVE CLOTHING MATERIALS: POLYETHYLENE; NEOPRENE; NITRILE; VITON; POLYURETHANE; LAUNDER SOILED CLOTHES.

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=====

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT.....: HIGH WITH (DEG. F) \_\_\_\_\_ WIDE RANGE (DEG. C)  
MELTING POINT.....: N/A (DEG. F) \_\_\_\_\_ N/A (DEG. C)  
SPECIFIC GRAVITY.....: 0.86 (WATER=1)  
PACKING DENSITY.....: N/A (KG/M3)  
VAPOR PRESSURE.....: < 0.0001 (MM HG @ 20 DEG C)  
VAPOR DENSITY.....: 10+ (AIR=1)  
SOLUBILITY IN WATER.: NIL (% BY VOLUME)  
PH INFORMATION.....: N/A. AT CONC. N/A G/L H2O  
% VOLATILES BY VOL.: NIL  
EVAPORATION RATE....: 1000X SLOWER (ETHYL ETHER=1)  
OCTANOL/WATER COEFF.: N.D.  
APPEARANCE.....: CLEAR FLUID  
ODOR.....: LITTLE ODOR.  
ODOR THRESHOLD.....: N.D. (PPM)  
VISCOSITY.....: 165 SUS @ 100 DEG F ... 32.0 CST @ 40 DEG C  
MOLECULAR WEIGHT....: N/A (G/MOLE)

=====

10. STABILITY AND REACTIVITY

STABILITY -----

STABLE.

INCOMPATIBLE MATERIALS -----

STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION -----

COMBUSTION WILL PRODUCE CARBON MONOXIDE, OXIDES OF SULFUR AND ASPHYXIANTS

POLYMERIZATION -----

WILL NOT OCCUR.

=====

11. TOXICOLOGICAL INFORMATION

FOR THE PRODUCT -----

INHALATION: LOW ACUTE TOXICITY. SKIN: PRACTICALLY NON-TOXIC IF ABSORBED. MILD IRRITATION WITH PROLONGED OR REPEATED CONTACT. EYE: MINIMALLY IRRITATING ON CONTACT. ORAL: PRACTICALLY NON-TOXIC.

SEVERELY SOLVENT REFINED HEAVY PARAFFINIC PETROLEUM OIL (COMPONENT)  
INHALATION: LOW ACUTE TOXICITY. SKIN: PRACTICALLY NON-TOXIC BY  
ABSORPTION. MAY CAUSE MODERATE IRRITATION WITH PROLONGED AND REPEATED  
CONTACT. EYE: MINIMALLY IRRITATING ON CONTACT. INGESTION: PRACTICALLY  
NON-TOXIC IF SWALLOWED.

ZINC DIALKYL DITHIOPHOSPHATE (COMPONENT)  
INHALATION: DECOMPOSITION MAY OCCUR AT TEMPERATURES IN EXCESS OF 200F  
RESULTING IN EVOLUTION OF TOXIC HYDROGEN SULFIDE GAS. H2S MAY CAUSE  
CENTRAL NERVOUS SYSTEM (BRAIN) EFFECTS, NAUSEA, DIZZINESS, CONFUSION,  
LOSS OF SENSE OF SMELL, MUSCLE CRAMPS, INCOORDINATION, UNCONSCIOUSNESS  
COMA, RESPIRATORY FAILURE AND DEATH. SKIN: PROLONGED OR REPEATED  
CONTACT MAY CAUSE MODERATE IRRITATION, REDNESS, DRYING, CRACKING,  
DERMATITIS. EYE: IRRITANT. ORAL: HARMFUL IF SWALLOWED.

BUTYLATED PHENOL (COMPONENT)  
SUNVIS 832

CODE R00000372100

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NO DATA AVAILABLE FOR ALL ROUTES OF EXPOSURE.

ACRYLIC COPOLYMER (COMPONENT)  
NO DATA AVAILABLE FOR ANY ROUTE OF EXPOSURE. NO ACUTE TOXIC EFFECTS  
EXPECTED.

HYDROTREATED HEAVY PARAFFINIC PETROLEUM OIL (COMPONENT)  
INHALATION: OVEREXPOSURE TO MISTS OR VAPORS MAY CAUSE EYE, NOSE,  
THROAT AND RESPIRATORY TRACT IRRITATION. SKIN: PROLONGED OR REPEATED  
CONTACT MAY CAUSE IRRITATION. EYE: IRRITANT. ORAL: PRACTICALLY NON-  
TOXIC IF SWALLOWED.

CALCIUM ALKYLPHENATE (COMPONENT)  
NO STATEMENT AVAILABLE

---

12. ECOLOGICAL INFORMATION

AQUATIC TOXICITY -----  
NO DATA AVAILABLE.

---

13. DISPOSAL CONSIDERATIONS

FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS. NOT A RCRA HAZARDOUS WASTE  
IF UNCONTAMINATED. IF "USED", RCRA CRITERIA (IGNITABILITY, REACTIVITY,  
CORROSIVITY, TOXICITY CHARACTERISTICS) MUST BE DETERMINED. DO NOT FLUSH  
TO DRAIN/ STORM SEWER. CONTRACT TO AUTHORIZED DISPOSAL SERVICE.

---

14. TRANSPORTATION INFORMATION

DOT-  
PROPER SHIPPING NAME- PETROLEUM LUBRICATING OIL  
HAZARD CLASS- NOT REGULATED  
IDENTIFICATION NUMBER- NOT REGULATED  
LABEL REQUIRED- NOT REGULATED

IMDG- PROPER SHIPPING NAME- NO DATA AVAILABLE

IATA- PROPER SHIPPING NAME- NO DATA AVAILABLE

---

15. REGULATORY INFORMATION

SARA 302 THRESHOLD PLANNING QUANTITY. N/A

SARA 304 REPORTABLE QUANTITY ..... N/A

SARA 311 CATEGORIES- IMMEDIATE (ACUTE) HEALTH EFFECTS.. N

DELAYED (CHRONIC) HEALTH EFFECTS.. N  
FIRE HAZARD ..... N  
SUDDEN RELEASE OF PRESSURE HAZARD. N  
REACTIVITY HAZARD ..... N

SUNVIS 832

CODE R00000372100

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WHEN A PRODUCT AND/OR COMPONENT IS LISTED BELOW, THE REGULATORY LIST ON WHICH IT APPEARS IS INDICATED.

ZINC DIALKYL DITHIOPHOSPHATE - NJ 01

01=SARA 313	02=SARA 302/304	03=IARC CARCINOGEN
04=OSHA CARCINOGEN	05=ACGIH CARCINOGEN	06=NTP CARCINOGEN
07=CERCLA 302.4	08=WHMIS CONTROLLED PROD.	
10=OTHER CARCINOGEN		
PA=PENNSYLVANIA RTK	NJ=NEW JERSEY RTK	CA=CALIFORNIA PROP 65
MA=MASSACHUSETTS RTK	MI=MICHIGAN 406	MN=MINNESOTA RTK
FL=FLORIDA	RI=RHODE ISLAND	IL=ILLINOIS
NY=NEW YORK	WV=WEST VIRGINIA	CT=CONNECTICUT
LA=LOUISIANA	ME=MAINE	OH=OHIO

THIS PRODUCT OR ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE U.S. TSCA INVENTORY.

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16. OTHER INFORMATION

WARNING! HIGH PRESSURE INJECTION OF OIL THROUGH THE SKIN IS A MEDICAL EMERGENCY. THERE MAY BE NO SIGN OF INJURY AND NO INITIAL PAIN. THIS OIL MUST BE REMOVED COMPLETELY BY A PHYSICIAN. FAILURE TO OBTAIN IMMEDIATE TREATMENT HAS RESULTED IN LOSS OF A FINGER, HAND OR ARM. WHMIS CLASSIFICATION: NOT CONTROLLED

\* \* \* \* \* END OF MSDS \* \* \* \* \*

AMERICAN CHEMICAL -- AMCOE WHITE LIGHTNING - GREASE, GENERAL PURPOSE  
MATERIAL SAFETY DATA SHEET  
NSN: 9150011810254  
Manufacturer's CAGE: 59949  
Part No. Indicator: A  
Part Number/Trade Name: AMCOE WHITE LIGHTNING

=====  
General Information  
=====

Item Name: GREASE, GENERAL PURPOSE  
Company's Name: AMERICAN CHEMICAL CO  
Company's Street: 1009 22ND ST  
Company's City: SACRAMENTO  
Company's State: CA  
Company's Country: US  
Company's Zip Code: 95816  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 001  
Status: SM  
Date MSDS Prepared: 14NOV88  
Safety Data Review Date: 14FEB94  
Supply Item Manager: CX  
MSDS Serial Number: BGPXK  
Hazard Characteristic Code: F1  
Unit Of Issue: CN  
Unit Of Issue Container Qty: 14.0 OZ  
Type Of Container: AEROSOL CAN  
Net Unit Weight: 14 OZ

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE) (SARA III)  
Ingredient Sequence Number: 01  
NIOSH (RTECS) Number: KJ2975000  
CAS Number: 71-55-6  
OSHA PEL: 350 PPM  
ACGIH TLV: 350 PPM/450STEL; 9394  
Other Recommended Limit: NONE RECOMMENDED

-----  
Proprietary: NO  
Ingredient: LITHIUM GREASE  
Ingredient Sequence Number: 02  
NIOSH (RTECS) Number: 1000374LG  
OSHA PEL: NOT ESTABLISHED.  
ACGIH TLV: NOT ESTABLISHED.  
Other Recommended Limit: NONE RECOMMENDED

-----  
Proprietary: NO  
Ingredient: PROPANE  
Ingredient Sequence Number: 03  
NIOSH (RTECS) Number: TX2275000  
CAS Number: 74-98-6  
OSHA PEL: 1000 PPM  
ACGIH TLV: ASPHYXIAN; 9394  
Other Recommended Limit: NONE RECOMMENDED

-----  
Proprietary: NO  
Ingredient: BUTANE  
Ingredient Sequence Number: 04  
NIOSH (RTECS) Number: EJ4200000  
CAS Number: 106-97-8  
OSHA PEL: 800 PPM  
ACGIH TLV: 800 PPM; 9394  
Other Recommended Limit: NONE RECOMMENDED

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: TAN, OPAQUE, VISCOUS LIQUID, MILD SWEETISH ODOR.  
Boiling Point: 160F, 71C



Vapor Pressure (MM Hg/70 F): 45 PSIG  
Specific Gravity: 1.210  
Solubility In Water: NEGLIGIBLE

=====  
Fire and Explosion Hazard Data  
=====

Flash Point: FLAMMABLE  
Extinguishing Media: FOAM, DRY CHEMICAL, CARBON DIOXIDE.  
Special Fire Fighting Proc: KEEP CONTAINERS COOL, USE EQUIPMENT OR SHIELDING REQUIRED TO PROTECT PERSONNEL AGAINST BURSTING, RUPTURING OR VENTING CONTAINERS.  
Unusual Fire And Expl Hazrds: AT ELEVATED TEMPERATURES (ABOVE 120F) CONTAINERS MAY VENT RUPTURE OR BURST.

=====  
Reactivity Data  
=====

Stability: YES  
Cond To Avoid (Stability): DO NOT EXPOSE TO TEMPERATURES ABOVE 120F.  
Materials To Avoid: STRONG OXIDIZING AGENTS, STRONG ACIDS OR BASES, SELECTED AMINES.  
Hazardous Decomp Products: CARBON MONOXIDE AND/OR CARBON DIOXIDE.  
Hazardous Poly Occur: NO  
Conditions To Avoid (Poly): NONE

=====  
Health Hazard Data  
=====

LD50-LC50 Mixture: UNKNOWN  
Route Of Entry - Inhalation: YES  
Route Of Entry - Skin: YES  
Route Of Entry - Ingestion: NO  
Health Haz Acute And Chronic: INHALATION- RESPIRATORY DISTRESS, UNCONSCIOUSNESS AND POSSIBLE DEATH. CHRONIC OVER EXPOSURE CAN CAUSE LIVER, KIDNEY OR LUNG DISEASE, ANEMIA, CORONARY DISEASE OR RHYTHM DISTURBANCES OF THE HEART. SKIN- PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION. EYES- CAN CAUSE SEVERE IRRITATION.  
Carcinogenicity - NTP: NO  
Carcinogenicity - IARC: NO  
Carcinogenicity - OSHA: NO  
Explanation Carcinogenicity: NOT APPLICABLE  
Signs/Symptoms Of Overexp: INHALATION- DIZZINESS, NAUSEA, HEDACHES. SKIN- DEFATTING AND DERMATITIS. INGESTION- CAN CAUSE SEVERE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING AND DIARRHEA. ASPIRATION OF MATERIAL INTO LUNGS CAN CAUSE CHEMICAL PNEUMONTIS. EYES- REDNESS, TEARING AND BLURRED VISION.  
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.  
Emergency/First Aid Proc: EYES- FLUSH WITH WATER, LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION. SKIN- WASH EXPOSED AREAS WITH SOAP AND WATER. INHALATION- REMOVE TO FRESH AIR. ASSIST WITH BREATHING SUPPORT MEASURES AS NEEDED. GET MEDICAL ATTENTION. INGESTION- DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PHEUMONITIS.

=====  
Precautions for Safe Handling and Use  
=====

Steps If Matl Released/Spill: CLEAN UP AREA BY MOPPING OR WITH ABSORBENT MATERIALS AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL. CONTACT FEDERAL, STATE OR LOCAL AUTHORITIES FOR APPROVED DISPOSAL PROCEDURES.  
Neutralizing Agent: N/A  
Waste Disposal Method: WHEN USED PROPERLY AEROSOL PRODUCTS DO NOT GENERATE HAZARDOUS WASTE. EMPTY DE-PRESSUREIZED CONTAINERS CAN NOT BE REUSED AND SHOULD BE WRAPPED AND PUT IN A PERMITTED WASTE MANAGEMENT FACILITY. CONSULT FEDERAL, STATE AND LOCAL DISPOSAL AUTHORITIES.  
Precautions-Handling/Storing: DO NOT STORE AT TEMPERATURES ABOVE 120F.  
Other Precautions: PLEASE READ AND FOLLOW THE DIRECTIONS ON THE PRODUCT LABEL.

=====  
Control Measures  
=====

Respiratory Protection: WHERE VAPOR CONCENTRATION IS 100-1000 PPM, ORGANIC VAPOR RESPIRATOR. IF CONCENTRATION EXCEEDS 1000 PPM, SELF-CONTAINED BREATHING APPARATUS.



Ventilation: PROVIDE SUFFICIENT MECHANICAL (GENERAL) AND/OR LOCAL EXHAUST VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

Protective Gloves: VITON OR POLYVINYL CHLORIDE GLOVES.

Eye Protection: SAFETY GLASSES/ CHEMICAL SPLASH GOGGLES.

Other Protective Equipment: NONE

Work Hygienic Practices: DON'T EAT, DRINK OR SMOKE IN WORK AREA. WASH HANDS BEFORE EATING.

Suppl. Safety & Health Data: NONE

=====  
Transportation Data  
=====

Trans Data Review Date: 89234  
DOT PSN Code: AGC  
DOT Proper Shipping Name: AEROSOLS, FLAMMABLE,  
DOT Class: 2.1  
DOT ID Number: UN1950  
DOT Label: FLAMMABLE GAS  
IMO PSN Code: AIY  
IMO Proper Shipping Name: AEROSOL DISPENSERS  
IMO Regulations Page Number: 9022  
IMO UN Number: 1950  
IMO UN Class: 9  
IMO Subsidiary Risk Label: -  
IATA PSN Code: ALS  
IATA UN ID Number: 1950  
IATA Proper Shipping Name: AEROSOLS, 30, \*  
IATA UN Class: 2.1  
IATA Label: FLAMMABLE GAS  
AFI PSN Code: ALS  
AFI Prop. Shipping Name: AEROSOLS, NONFLAMMABLE, N.O.S.  
AFI Class: FORB  
AFI Basic Pac Ref: FORBIDDEN  
N.O.S. Shipping Name: METHYL CHLOROFORM, PROPANE

=====  
Disposal Data  
=====

=====  
Label Data  
=====

Label Required: YES  
Label Status: F  
Special Hazard Precautions: VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION.  
CONTACT WILL CAUSE SEVERE FROSTBITE. FIRE MAY PRODUCE IRRITATING OR  
POISONOUS GASES.  
Label Name: AMERICAN CHEMICAL CO  
Label Street: 1009 22ND ST  
Label City: SACRAMENTO  
Label State: CA  
Label Zip Code: 95816  
Label Country: US

HERCULES CHEMICAL COMPANY -- HERCULES PVC CEMENT CLEAR MEDIUM  
MATERIAL SAFETY DATA SHEET  
NSN: 804000F015785  
Manufacturer's CAGE: 84794  
Part No. Indicator: A  
Part Number/Trade Name: HERCULES PVC CEMENT CLEAR MEDIUM

=====  
General Information  
=====

Company's Name: HERCULES CHEMICAL COMPANY, INC.  
Company's Street: 29 WEST 38 STREET  
Company's City: NEW YORK  
Company's State: NY  
Company's Zip Code: 10018-5595  
Company's Emerg Ph #: (212) 869-4330 EXT. 226  
Company's Info Ph #: (212) 869-4330 EXT. 226  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 001  
Date MSDS Prepared: 17OCT89  
Safety Data Review Date: 20MAY91  
Preparer's Company: HERCULES CHEMICAL COMPANY, INC.  
Preparer's St Or P. O. Box: 29 WEST 38 STREET  
Preparer's City: NEW YORK  
Preparer's State: NY  
Preparer's Zip Code: 10018-5595  
MSDS Serial Number: BKDZX

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: TETRAHYDROFURAN (SARA III)  
Ingredient Sequence Number: 01  
NIOSH (RTECS) Number: LU5950000  
CAS Number: 109-99-9  
OSHA PEL: 200 PPM/250 STEL  
ACGIH TLV: 200 PPM/250STEL;9192  
Other Recommended Limit: 200 PPM

Proprietary: NO  
Ingredient: METHYL ETHYL KETONE (2-BUTANONE) (MEK) (SARA III)  
Ingredient Sequence Number: 02  
NIOSH (RTECS) Number: EL6475000  
CAS Number: 78-93-3  
OSHA PEL: 200 PPM/300 STEL  
ACGIH TLV: 200 PPM/300STEL 9192  
Other Recommended Limit: 590 MG/CUM

Proprietary: NO  
Ingredient: CYCLOHEXANONE (SARA III)  
Ingredient Sequence Number: 03  
NIOSH (RTECS) Number: GW1050000  
CAS Number: 108-94-1  
OSHA PEL: S, 50 PPM  
ACGIH TLV: S, 25 PPM; 9293  
Other Recommended Limit: 100PPM (SKIN) STEL

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: CLEAR VISCOUS LIQUID W/AN ETHERAL & ACETONE LIKE  
ODOR.  
Boiling Point: 151F  
Vapor Pressure (MM Hg/70 F): 20  
Vapor Density (Air=1): 3.5  
Specific Gravity: 0.910  
Evaporation Rate And Ref: (BU AC = 1): 7  
Solubility In Water: 65%

=====  
Fire and Explosion Hazard Data  
=====

Flash Point: 6F

Flash Point Method: TCC  
Lower Explosive Limit: 2%  
Upper Explosive Limit: 11.8%  
Extinguishing Media: FOAM, DRY CHEMICAL, & CO2.  
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS. WATER  
MAYBE INEFFECTIVE, BUT SHOULD BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL.  
Unusual Fire And Expl Hazrds: FLAMMABLE LIQUID. VAPOR IS >AIR/TRAVEL TO  
IGNITION SOURCE/FLASHBACK. ON LONG STANDING MAY FORM PEROXIDES/CAUSE A  
VIOLENT REACTION UPON EVAPORATION TO DRYNESS.

=====  
Reactivity Data  
=====

Stability: YES  
Cond To Avoid (Stability): SPARKS, OPEN FLAME, & SOURCES OF IGNITION.  
Materials To Avoid: STRONG OXIDIZING MATERIALS, LITHIUM ALUMINUM HYDRIDE,  
SODIUM ALUMINUM HYDROXIDE, SODIUM, & POTASSIUM HYDROXIDES.  
Hazardous Decomp Products: CO2, CO, & PEROXIDE FUMES.  
Hazardous Poly Occur: YES  
Conditions To Avoid (Poly): AIR & CATONIC INITIATORS LIKE LEWIS ACIDS.

=====  
Health Hazard Data  
=====

Route Of Entry - Inhalation: YES  
Route Of Entry - Skin: YES  
Route Of Entry - Ingestion: YES  
Health Haz Acute And Chronic: SKIN: CORROSIVE, DERMATOSIS, DERMATITIS, &  
DEFATTING. EYE: CORROSIVE, IRRITATION, PAINFUL BURNING, STINGING, WATERY, &  
INFLAMMATION OF CONJUNCTIVA. INHALATION: HEADACHE, DIZZINESS, NARCOSIS,  
MUCOUS MEMBRANE/NOSE/THROAT IRRITATION, COUGHING, DIFFICULTY BREATHING, &  
NAUSEA. INGESTION: IRRITATION.  
Carcinogenicity - NTP: NO  
Carcinogenicity - IARC: NO  
Carcinogenicity - OSHA: NO  
Explanation Carcinogenicity: NONE  
Signs/Symptoms Of Overexp: SKIN: CORROSIVE, DERMATOSIS, DERMATITIS, &  
DEFATTING. EYE: CORROSIVE, IRRITATION, PAINFUL BURNING, STINGING, WATERY, &  
INFLAMMATION OF CONJUNCTIVA. INHALATION: HEADACHE, DIZZINESS, NARCOSIS,  
MUCOUS MEMBRANE/NOSE/THROAT IRRITATION, COUGHING, DIFFICULTY BREATHING, &  
NAUSEA. INGESTION: IRRITATION.  
Emergency/First Aid Proc: EYES: FLUSH W/PLENTY OF WATER FOR AT LEAST 15  
MINS. SKIN: WASH W/SOAP & WATER. INHALATION: REMOVE TO FRESH AIR. GIVE CPR  
PREFERABLY MOUTH TO MOUTH OR OXYGEN. INGESTION: DON'T INDUCE VOMITING.  
DILUTE BY GIVING 2 GLASSES OF WATER. OBTAIN MEDICAL ATTENTION IN ALL CASES.

=====  
Precautions for Safe Handling and Use  
=====

Steps If Matl Released/Spill: ELIMINATE SOURCES OF IGNITION. ABSORB W/SAND  
OR INERT ABSORBING MATERIAL. FLUSH SPILL AREA W/WATER, AVOID FLUSHING INTO  
CONFINED AREAS.  
Waste Disposal Method: DISPOSE OF SOLID WASTE & INCINERATE IN ACCORDANCE  
W/LOCAL, STATE, & FEDERAL REGULATIONS. FLAMMABLE LIQUID.  
Precautions-Handling/Storing: STORE IN COOL PLACE, WELL-VENTILATED AREA.  
KEEP CLOSED CONTAINERS AWAY FROM SPARKS, OPEN FLAME & SOURCES OF IGNITION.  
Other Precautions: AVOID EXCESSIVE EXPOSURE TO AIR & CATONIC INITIATORS  
LIKE LEWIS ACIDS.

=====  
Control Measures  
=====

Respiratory Protection: USE NIOSH-APPROVED RESPIRATOR, POSITIVE PRESSURE  
AIR-LINE MASK, OR SELF-CONTAINED BREATHING APPARATUS IN CONFINED SPACES OR  
OTHER CIRCUMSTANCES WHERE ADEQUATE VENTILATION CANNOT BE ASSURED.  
Ventilation: LOCAL EXHAUST: AS REQUIRED  
Protective Gloves: PVA  
Eye Protection: CHEMICAL SAFETY GOGGLES  
Other Protective Equipment: APRON, BOOTS, EYE BATH, & SAFETY SHOWER.  
Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE  
REUSE. WASH THOROUGHLY AFTER HANDLING. USE NORMAL GOOD PERSONAL HYGIENE.

=====  
Transportation Data  
=====

Disposal Data

Label Data

Label Required: YES

Label Status: G

Common Name: HERCULES PVC CEMENT CLEAR MEDIUM

Special Hazard Precautions: SKIN: CORROSIVE, DERMATOSIS, DERMATITIS, & DEFATTING. EYE: CORROSIVE, IRRITATION, PAINFUL BURNING, STINGING, WATERY, & INFLAMMATION OF CONJUNCTIVA. INHALATION: HEADACHE, DIZZINESS, NARCOSIS, MUCOUS MEMBRANE/NOSE/THROAT IRRITATION, COUGHING, DIFFICULTY BREATHING, & NAUSEA. INGESTION: IRRITATION. SKIN: CORROSIVE, DERMATOSIS, DERMATITIS, & DEFATTING. EYE: CORROSIVE, IRRITATION, PAINFUL BURNING, STINGING, WATERY, & INFLAMMATION OF CONJUNCTIVA. INHALATION: HEADACHE, DIZZINESS, NARCOSIS, MUCOUS MEMBRANE/NOSE/THROAT IRRITATION, COUGHING, DIFFICULTY BREATHING, & NAUSEA. INGESTION: IRRITATION.

Label Name: HERCULES CHEMICAL COMPANY, INC.

Label Street: 29 WEST 38 STREET

Label City: NEW YORK

Label State: NY

Label Zip Code: 10018-5595

Label Emergency Number: (212) 869-4330 EXT. 226

SEACORD -- EASE-ON PIPE LUBRICANT  
MATERIAL SAFETY DATA SHEET  
NSN: 803000N044516  
Manufacturer's CAGE: SEACO  
Part No. Indicator: A  
Part Number/Trade Name: EASE-ON PIPE LUBRICANT

=====  
General Information  
=====

Company's Name: SEACORD CORP  
Company's Street: 17TH AND MICKEL STREETS  
Company's City: CAMDEN  
Company's State: NJ  
Company's Country: US  
Company's Zip Code: 08105  
Company's Emerg Ph #: 609-966-0440  
Company's Info Ph #: 609-966-0440  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 001  
Status: SMJ  
Date MSDS Prepared: 01NOV92  
Safety Data Review Date: 26OCT93  
MSDS Serial Number: BSCBN  
Hazard Characteristic Code: NK

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: NONHAZARDOUS INGREDIENTS  
Ingredient Sequence Number: 01  
NIOSH (RTECS) Number: 1000314NH  
OSHA PEL: N/K (FP N)  
ACGIH TLV: N/K (FP N)

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: TAN COLORED PASTE, MILD 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: 1.06(H\*20=1)  
Evaporation Rate And Ref: NOT APPLICABLE  
Solubility In Water: APPRECIABLE

=====  
Fire and Explosion Hazard Data  
=====

Flash Point: NONE  
Lower Explosive Limit: N/A  
Upper Explosive Limit: N/A  
Extinguishing Media: 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 Hazrds: NONE.

=====  
Reactivity Data  
=====

Stability: YES  
Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.  
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: NO  
Route Of Entry - Skin: NO  
Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: NONE.  
Carcinogenicity - NTP: NO  
Carcinogenicity - IARC: NO  
Carcinogenicity - OSHA: NO  
Explanation Carcinogenicity: NOT RELEVANT  
Signs/Symptoms Of Overexp: NONE.  
Med Cond Aggravated By Exp: NONE.  
Emergency/First Aid Proc: EYE: FLUSH WITH WATER FOR AT LEAST 15 MINUTES.  
IF DISCOMFORT PERSISTS, GET MED ATTN. SKIN: FLUSH WITH COPIOUS AMOUNTS OF  
WATER. CALL MD (FP N). INHAL: REMOVE TO FRESH AIR. SUPPORT BRTHG (GIVE  
O\*2/ARTF RESP) (FP N). INGEST: CALL MD IMMED (FP N).

=====  
Precautions for Safe Handling and Use  
=====

Steps If Matl Released/Spill: FLUSH WITH WATER/WIPE UP WITH PAPER TOWELS  
OR CLOTH.  
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.  
Waste Disposal Method: FLUSH TO SEWER OR DISPOSE IN LANDFILL. DISPOSE OF  
I/A/W FEDERAL, STATE AND LOCAL REGULATIONS (FP N).  
Precautions-Handling/Storing: NONE.  
Other Precautions: NONE.

=====  
Control Measures  
=====

Respiratory Protection: NONE REQUIRED. USE NIOSH/MSHA APPROVED RESPIRATOR  
APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).  
Ventilation: NONE REQUIRED.  
Protective Gloves: RUBBER/PLASTIC COATED.  
Eye Protection: ANSI APPROVED SAFETY GLASSES (FP N).  
Other Protective Equipment: NONE REQUIRED.  
Work Hygienic Practices: STANDARD.  
Suppl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

=====  
Transportation Data  
=====

=====  
Disposal Data  
=====

=====  
Label Data  
=====

Label Required: YES  
Technical Review Date: 12OCT93  
Label Date: 12OCT93  
Label Status: G  
Common Name: EASE-ON PIPE LUBRICANT  
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: ACUTE: NONE SPECIFIED BY MANUFACTURER.  
CHRONIC: NONE SPECIFIED BY MANUFACTURER.  
Protect Eye: Y  
Protect Skin: Y  
Protect Respiratory: Y  
Label Name: SEACORD CORP  
Label Street: 17TH AND MICKEL STREETS  
Label City: CAMDEN  
Label State: NJ  
Label Zip Code: 08105  
Label Country: US  
Label Emergency Number: 609-966-0440



AGA GAS -- METHANE - ALIPHATIC HYDROCARBON  
MATERIAL SAFETY DATA SHEET  
NSN: 683000F049387  
Manufacturer's CAGE: 09785  
Part No. Indicator: A  
Part Number/Trade Name: METHANE

=====  
General Information  
=====

Item Name: ALIPHATIC HYDROCARBON  
Company's Name: AGA GAS INC  
Company's Street: 6225 OAKTREE BLVD  
Company's City: CLEVELAND  
Company's State: OH  
Company's Country: US  
Company's Zip Code: 44131-5000  
Company's Emerg Ph #: 216642-6600  
Company's Info Ph #: 216-642-6600  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 001  
Status: SE  
Date MSDS Prepared: 01MAR91  
Safety Data Review Date: 29JUL96  
Preparer's Company: AGA GAS INC  
Preparer's St Or P. O. Box: 6225 OAKTREE BLVD  
Preparer's City: CLEVELAND  
Preparer's State: OH  
Preparer's Zip Code: 44131-5000  
MSDS Serial Number: BZVTX

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: METHANE  
Ingredient Sequence Number: 01  
NIOSH (RTECS) Number: PA1490000  
CAS Number: 74-82-8  
ACGIH TLV: SIMPLE ASPHYXIAN

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: COLORLESS, ODORLESS GAS  
Boiling Point: -258.6F  
Melting Point: -296.5F  
Specific Gravity: 0.56  
Solubility In Water: NEGLIGIBLE

=====  
Fire and Explosion Hazard Data  
=====

Flash Point: -306F  
Flash Point Method: CC  
Lower Explosive Limit: 5  
Upper Explosive Limit: 15  
Extinguishing Media: WATER, CO2, DRY CHEMICAL  
Special Fire Fighting Proc: IF POSSIBLE, STOP FLOW OF METHANE. USE WATER  
SPRAY TO COOL SURROUNDING CONTAINERS. AFTER EXTINGUISHING, IF FLOW OF GAS  
CONTINUES, INCREASE VENTILATION.  
Unusual Fire And Expl Hazrds: FORMS EXPLOSIVE/FLAMMABLE MIXTURES W/MOST  
OXIDIZERS (OXYGEN, CHLORINE, FLUORINE). IS FLAMMABLE OVER A WIDE RANGE IN  
AIR. AUTOIGNITION TEMP: 1076F.

=====  
Reactivity Data  
=====

Stability: YES  
Cond To Avoid (Stability): STORAGE WHERE TEMP EXCEED 125F.  
Materials To Avoid: OXIDIZERS, OXYGEN, CHLORINE, FLUORINE  
Hazardous Decomp Products: NONE  
Hazardous Poly Occur: NO

=====  
Health Hazard Data  
=====

=====  
Route Of Entry - Inhalation: YES  
Route Of Entry - Skin: NO  
Route Of Entry - Ingestion: NO  
Health Haz Acute And Chronic: INHALATION: ASPHYXIAN, HIGH CONCENTRATIONS  
OF METHANE EXCLUDES AN ADEQUATE SUPPLY OF OXYGEN TO THE LUNGS.  
Carcinogenicity - NTP: NO  
Carcinogenicity - IARC: NO  
Carcinogenicity - OSHA: NO  
Explanation Carcinogenicity: NONE  
Signs/Symptoms Of Overexp: ASPHYXIAN. HIGH CONCENTRATIONS OF METHAN  
EXCLUDES AN ADEQUATE SUPPLY OF OXYGEN TO THE LUNGS.  
Emergency/First Aid Proc: INHALATION: IF CONSCIOUS, ASSIST TO AN  
UNCONTAMINATED AREA & INHALE FRESH AIR. IF UNCONSCIOUS, MOVE TO AN  
UNCONTAMINATED AREA, GIVEN ASSISTED RESPIRATION & SUPPLEMENTAL OXYGEN.  
TREAT SYMPTOMATICALLY & SUPPORTIVELY. OBTAIN MEDICAL ATTENTION IN ALL  
CASES.  
=====

=====  
Precautions for Safe Handling and Use  
=====

Steps If Matl Released/Spill: EVACUATE ALL PERSONNEL FROM AREA. USE  
PROTECTIVE EQUIPMENT. PURGE PIPING W/INERT GAS PRIOR TO ATTEMPTING REPAIRS.  
Waste Disposal Method: DON'T DISPOSE OF WASTE/UNUSED QUANTITIES. RETURN IN  
THE SHIPPING CONTAINER PROPERLY LABELED, W/ANY VALVE OUTLET PLUGS/CAPS  
SECURED & VALVE PROTECTION CAP IN PLACE TO SUPPLIER. DISPOSE OF IAW/LOCAL,  
STATE & FEDERAL REGULATIONS. FLAMMABLE GAS UN1971.  
Precautions-Handling/Storing: STORE IN A COOL, DRY, WELL VENTILATED AREA  
OF NONCOMBUSTIBLE CONSTRUCTION AWAY FROM HEAVILY TRAFFICKED AREAS & EXITS.  
DON'T STORE >TEMPS OF 125F.  
Other Precautions: PROTECT CYLINDERS FROM PHYSICAL DAMAGE. CYLINDERS  
SHOULD BE STORED UPRIGHT & FIRMLY SECURED TO PREVENT FALLING/BEING KNOCKED  
OVER. FULL/EMPTY CYLINDERS SHOULD BE SEGREGATED. DON'T DRAG, SLIDE/ROLL  
CYLINDERS. AVOID IGNITION SOURCES.  
=====

=====  
Control Measures  
=====

Respiratory Protection: USE POSITIVE PRESSURE AIRLINE W/MASK/SELF  
CONTAINED BREATHING APPARATUS.  
Ventilation: HOOD W/FORCED VENTILATION; LOCAL EXHAUST: TO PREVENT  
ACCUMULATION >LEL. MECHANICAL (GENERAL): IAW/ELECTRICAL CODES.  
Protective Gloves: PLASTIC/RUBBER  
Eye Protection: SAFETY GOGGLES/GLASSES  
Other Protective Equipment: SAFETY SHOES, SAFETY SHOWER, EYEWASH FOUNTAIN.  
Suppl. Safety & Health Data: HANDLING/STORAGE CONT'D: EARTH-GROUND & BOND  
ALL LINES & EQUIPMENT ASSOCIATED W/THE METHANE SYSTEM. ELECTRIC EQUIPMENT  
SHOULD BE NON-SPARKING/EXPLOSION PROOF. VALVE PROTECTION CAPS MUST REMAIN  
IN PLACE UNLESS CONTAINER IS SECURED W/VALVE OUTLET PIPED TO USE POINT. USE  
A SUITABLE HAND TRUCK FOR CYLINDER MOVEMENT.  
=====

=====  
Transportation Data  
=====

=====  
Disposal Data  
=====

=====  
Label Data  
=====

Label Required: YES  
Label Status: G  
Common Name: METHANE  
Special Hazard Precautions: INHALATION: ASPHYXIAN, HIGH CONCENTRATIONS OF  
METHANE EXCLUDES AN ADEQUATE SUPPLY OF OXYGEN TO THE LUNGS. ASPHYXIAN.  
HIGH CONCENTRATIONS OF METHAN EXCLUDES AN ADEQUATE SUPPLY OF OXYGEN TO THE  
LUNGS.  
Label Name: AGA GAS INC  
Label Street: 6225 OAKTREE BLVD  
Label City: CLEVELAND  
Label State: OH  
Label Zip Code: 44131-5000  
Label Country: US  
Label Emergency Number: 216642-6600

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 Hazrds: 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:ASPHYXIAN. 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  
Explanation Carcinogenicity: NOT RELEVANT  
Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.  
Med Cond Aggravated By Exp: NONE  
Emergency/First Aid Proc: INGEST:CALL MD IMMED (FP N). INHAL:IMMED REMOVE VICTIM TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. SKIN:IMMED FLUSH W/ COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAM CLTHG. IF FROSTBITE OCCURS, WARM AFFECTED AREA W/WATER OR TOWEL. EYE:IMMED FLUSH W/COPIOUS 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 CYLS 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 (SUPDAT)

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:ASPHYXIAN. 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

Please reduce your browser font size for better viewing and printing.

24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

**MSDS**

**Material Safety Data Sheet**

National Response in Canada  
CANUTEC: 613-996-8666

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865

**M**ALLINCKRODT



Outside U.S. and Canada  
Chemtrec: 202-483-7616

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## PENTANE

MSDS Number: P0737 --- Effective Date: 12/08/96

### 1. Product Identification

**Synonyms:** Normal Pentane; n-Pentane; Amyl hydride

**CAS No.:** 109-66-0

**Molecular Weight:** 72.15

**Chemical Formula:** CH<sub>3</sub>(CH<sub>2</sub>)<sub>3</sub>CH<sub>3</sub>

**Product Codes:** J.T. Baker: 9331, 9333, T007 Mallinckrodt: 1916, 6145, 6170, 6172, V557

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Pentane	109-66-0	98 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

J.T. Baker SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 4 - Extreme (Flammable)

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES;  
CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable)

## Potential Health Effects

---

### **Inhalation:**

Vapors have a mild narcotic effect. Symptoms of overexposure may include drowsiness and irritation of the respiratory passages. Greater exposure may cause unconsciousness and death.

### **Ingestion:**

Tends to vaporize when swallowed causing aspiration into the lungs. The result can be a rapid fall in oxygen content with asphyxia and consequent brain damage or cardiac arrest.

### **Skin Contact:**

Causes skin irritation, cracking or flaking due to dehydration and defatting action.

### **Eye Contact:**

Very high vapor concentrations and liquid may cause irritation, redness, and pain.

### **Chronic Exposure:**

Prolonged skin contact may cause drying, cracking, and dermatitis.

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

Persons with pre-existing skin conditions or impaired respiratory function may be more susceptible to the effects of this substance.

---

## 4. First Aid Measures

### **Inhalation:**

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

### **Ingestion:**

DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately.

### **Skin Contact:**

Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Wash clothes before reuse. Get medical attention if irritation develops or persists.

### **Eye Contact:**

Wash thoroughly with running water. Get medical advice if irritation develops.

---

## 5. Fire Fighting Measures

### **Fire:**

Flash point: -49C (-56F) CC Autoignition temperature: 260C (500F) Flammable limits in air % by volume: lel: 1.5; uel: 7.8 Extremely Flammable Liquid and Vapor! Vapor may cause flash fire.

### **Explosion:**

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.

**Fire Extinguishing Media:**

Dry chemical, foam or carbon dioxide. Water may be ineffective. Water spray may be used to keep fire exposed containers cool.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. This highly flammable liquid must be kept from sparks, open flame, hot surfaces, and all sources of heat and ignition. Vapor explosion hazard exists indoors, outdoors, or in sewers.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. J. T. Baker SOLUSORB(tm) solvent adsorbent is recommended for spills of this product.

---

## 7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. DANGER! DO NOT OPEN Unless Contents Are At Room temperature (72F) or Below. Allow at least 24 hours for material to cool to room temperature before opening container. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL): 1000 ppm (TWA) -ACGIH Threshold Limit Value (TLV) 600 ppm (TWA), 750 ppm (STEL) NIOSH (REL) TWA 350 mg/m<sup>3</sup>, 1800 mg/m<sup>3</sup> Ceiling

**Ventilation System:**

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

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. This substance has questionable warning properties.



**Skin Protection:**

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Clear, colorless solution.

**Odor:**

Mild, gasoline-like.

**Solubility:**

Insoluble in water.

**Specific Gravity:**

0.63 20C/4C

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

100

**Boiling Point:**

36C (97F)

**Melting Point:**

-130C (-202F)

**Vapor Density (Air=1):**

2.5

**Vapor Pressure (mm Hg):**

426 @ 20C (68F)

**Evaporation Rate (BuAc=1):**

28.6

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## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

---

## 11. Toxicological Information

Inhalation, rat, LC50: 364 g/m<sup>3</sup>/4H

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Pentane (109-66-0)	No	No	None

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## 12. Ecological Information

### Environmental Fate:

When released into the soil, this material may biodegrade to a moderate extent. When released into the soil, this material is not expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material may biodegrade to a moderate extent. When released to water, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life of less than 1 day. This material has an estimated bioconcentration factor (BCF) of less than 100. This material has a log octanol-water partition coefficient of greater than 3.0. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.

### Environmental Toxicity:

No information found.

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## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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## 14. Transport Information

### Domestic (Land, D.O.T.)

-----  
Proper Shipping Name: PENTANES  
Hazard Class: 3  
UN/NA: UN1265  
Packing Group: I  
Information reported for product/size: 20L

### International (Water, I.M.O.)

-----  
Proper Shipping Name: PENTANES  
Hazard Class: 3.1  
UN/NA: UN1265  
Packing Group: II  
Information reported for product/size: 20L

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia  
-----  
Pentane (109-66-0) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea --Canada-- DSL NDSL Phil.  
-----  
Pentane (109-66-0) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----  
Ingredient -SARA 302- --SARA 313-----  
RQ TPQ List Chemical Catg.  
-----  
Pentane (109-66-0) No No No No

-----\Federal, State & International Regulations - Part 2\-----  
Ingredient CERCLA -RCRA- -TSCA-  
261.33 8(d)  
-----  
Pentane (109-66-0) No No Yes

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: Yes  
Reactivity: No (Pure / Liquid)

**Australian Hazchem Code:** 3[Y]E  
**Poison Schedule:** No information found.

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings: Health: 1 Flammability: 4 Reactivity: 0**

### Label Hazard Warning:

DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

### Label Precautions:

Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. DO NOT OPEN Unless Contents Are At Room Temperature (72F) or Below For At Least 24 Hours.

### Label First Aid:

Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is

difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

Pure. New 16 section MSDS format, all sections have been revised.

**Disclaimer:**

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\*\*\*\*\*

**Prepared by:** Strategic Services Division  
Phone Number: (314) 539-1600 (U.S.A.)

AMOCO INTERNATIONAL OILCO -- AMOFUEL NO. 2 DIESEL - DIESEL FUEL  
MATERIAL SAFETY DATA SHEET  
NSN: 9140002865294  
Manufacturer's CAGE: 6G027  
Part No. Indicator: A  
Part Number/Trade Name: AMOFUEL NO. 2 DIESEL

=====  
General Information  
=====

Item Name: DIESEL FUEL  
Company's Name: AMOCO INTERNATIONAL OILCO  
Company's Street: 200 E RANDOLPH DR  
Company's P. O. Box: 5910-A  
Company's City: CHICAGO  
Company's State: IL  
Company's Country: US  
Company's Zip Code: 60680  
Company's Emerg Ph #: 800-447-8735  
Company's Info Ph #: 312-856-3907  
Distributor/Vendor # 1: AMOCO INTERNATIONAL OILCO  
Distributor/Vendor # 1 Cage: 6G027  
Record No. For Safety Entry: 082  
Tot Safety Entries This Stk#: 112  
Status: SE  
Date MSDS Prepared: 25JUL89  
Safety Data Review Date: 07MAR91  
Supply Item Manager: KY  
MSDS Preparer's Name: R. G. FARMER  
MSDS Serial Number: BGWFD  
Specification Number: VV-F-800  
Spec Type, Grade, Class: DF-2  
Hazard Characteristic Code: F4  
Unit Of Issue: GL  
Unit Of Issue Container Qty: BULK  
Type Of Container: BULK

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: ALIPHATIC PETROLEUM DISTILLATES  
Ingredient Sequence Number: 01  
NIOSH (RTECS) Number: 1003049AP  
CAS Number: 68476-30-2  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED  
Other Recommended Limit: NONE SPECIFIED

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: CLEAR, BRIGHT LIQUID  
Boiling Point: 340F,171C  
Specific Gravity: 0.88  
Decomposition Temperature: UNKNOWN  
Solubility In Water: NEGLIGIBLE  
Viscosity: 1.8 CS @100F  
Corrosion Rate (IPY): UNKNOWN

=====  
Fire and Explosion Hazard Data  
=====

Flash Point: 120F,49C  
Flash Point Method: TCC  
Lower Explosive Limit: 0.6  
Upper Explosive Limit: 7.5  
Extinguishing Media: USE WATER FOG, CARBON DIOXIDE, FOAM, OR DRY CHEMICAL.  
(EXTINGUISHING AGENTS APPROVED FOR CLASS B HAZARDS)  
Special Fire Fighting Proc: FIRE FIGHTERS SHOULD USE NIOSH APPROVED SCBA &  
FULL PROTECTIVE EQUIPMENT WHEN FIGHTING CHEMICAL FIRE. USE WATER SPRAY TO  
COOL NEARBY CONTAINERS EXPOSED TO FIRE.  
Unusual Fire And Expl Hazrds: FIRE OR EXCESSIVE HEAT MAY CAUSE PRODUCTION  
OF HAZARDOUS DECOMPOSITION PRODUCTS.

Reactivity Data

Stability: YES

Cond To Avoid (Stability): HIGH TEMPERATURES, SPARKS, AND OPEN FLAMES

Materials To Avoid: STRONG OXIDIZING AGENTS

Hazardous Decomp Products: BY FIRE: CARBON MONOXIDE, CARBON DIOXIDE

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT APPLICABLE

Health Hazard Data

LD50-LC50 Mixture: LD50 (ORAL RAT) IS EXPECTED > 5G/KG

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: EYE:IRRITATION. SKIN:MILDLY IRRITATING. RESPIRATORY SYSTEM IRRITATION AND LIGHT HEADEDNESS. MAY CAUSE NAUSEA, HEADACHE, DROWSINESS, VOMITING. INGESTION:SOLVENT ASPIRATION INTO LUNGS AS A RESULT OF VOMITING MAY CAUSE LUNG AND DIGESTIVE SYSTEM DAMAGE

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NONE OF THE COMPOUNDS IN THIS PRODUCT IS LISTED BY IARC, NTP, OR OSHA AS A CARCINOGEN. (DIESEL EXHAUST IS POTENTIAL)

Signs/Symptoms Of Overexp: VAPORS IN HIGH CONCENTRATION ARE ANESTHETIC.

OVEREXPOSURE MAY RESULT IN FATIGUE, WEAKNESS, CONFUSION EUPHORIA, DIZZINESS, HEADACHE, DILATED PUPILS, LACRIMATION, NERVOUSNESS, MUSCLE FATIGUE, INSOMNIA, PARESTHESIA, DERMATITIS, AND PHOTOPHOBIA. CAN CAUSE TEARING, REDNESS OF EYES AND BLURRED VISION. IRRITATION OF SKIN.

Med Cond Aggravated By Exp: PERSONS WITH A HISTORY OF AILMENTS OR WITH A PRE-EXISTING DISEASE INVOLVING THE EYES, SKIN, RESPIRATORY TRACT OR NERVOUS SYSTEM MAY BE AT INCREASED RISK FROM EXPOSURE. DRYING/CRACKING OF SKIN.

Emergency/First Aid Proc: EYES: FLUSH WITH RUNNING WATER FOR 15 MINUTES WHILE HOLDING EYELID. GET MEDICAL ATTENTION IMMEDIATELY. SKIN: WASH WITH REMOVE TO FRESH AIR. GIVE MOUTH-TO-MOUTH RESUSCITATION IF NOT BREATHING. GET MEDICAL ATTENTION. INGESTION: DO NOT INDUCE VOMITING. GIVE NOTHING BY MOUTH IF UNCONSCIOUS. GET MEDICAL ATTENTION IMMEDIATELY.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: REMOVE ALL SOURCES OF IGNITION. VENTILATE AND REMOVE WITH INERT ABSORBENT. USE NON-SPARKING TOOLS.

Neutralizing Agent: NOT APPLICABLE

Waste Disposal Method: WASTE MATERIAL MAY BE A HAZARDOUS WASTE (CODE D001) WHICH MUST BE DISPOSED OF ACCORDINGLY. DO NOT INCINERATE CLOSED CONTAINER. DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

Precautions-Handling/Storing: CONTENTS ARE FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME. DURING USE AND UNTIL ALL VAPORS ARE GONE: KEEP AREA VENTILATED-DO NOT SMOKE.

Other Precautions: AVOID BREATHING OF VAPORS. LABORATORY TESTS ON ANIMALS HAVE SHOWN THAT EXPOSURE CAN CAUSE SKIN TUMORS. ALWAYS PROMPTLY WASH OFF ANY EXPOSED SKIN.

Control Measures

Respiratory Protection: WEAR A NIOSH/MSHA APPROVED RESPIRATOR IF VENTILATION DOES NOT MAINTAIN INHALATION EXPOSURES BELOW PEL/TLV. WEAR SELF-CONTAINED BREATHING APPARATUS IF REQUIRED FOR HIGH LEVELS OF CONTAMINATES.

Ventilation: LOCAL EXHAUST PREFERABLE. GENERAL EXHAUST ACCEPTABLE IF THE EXPOSURE IS MAINTAINED BELOW APPLICABLE EXPOSURE LIMITS.

Protective Gloves: NEOPRENE OR NATURAL RUBBER GLOVES

Eye Protection: PAINT GOGGLES/SAFETY GLASSES AS REQUIRED

Other Protective Equipment: INDUSTRIAL-TYPE WORK CLOTHING, HAT AND APRON AS REQUIRED. AN EYE WASH AND DRENCH SHOWER FACILITY SHOULD BE AVAILABLE.

Work Hygienic Practices: USE WITH ADEQUATE VENTILATION. AVOID BREATHING VAPOR/SPRAY MIST. AVOID CONTACT WITH SKIN/EYES. WASH HANDS/SKIN AFTER USE

Suppl. Safety & Health Data: KEEP CONTAINER CLOSED WHEN NOT IN USE.

TRANSFER ONLY TO APPROVED CONTAINERS WITH COMPLETE AND APPROPRIATE LABELING. DO NOT TAKE INTERNALLY.

=====  
Transportation Data  
=====

Trans Data Review Date: 91066  
DOT PSN Code: LKZ  
DOT Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S. OR PETROLEUM PRODUCTS, N.O.S.  
DOT Class: 3  
DOT ID Number: UN1268  
DOT Pack Group: III  
DOT Label: FLAMMABLE LIQUID  
IMO PSN Code: LMH  
IMO Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S. o  
IMO Regulations Page Number: 3375  
IMO UN Number: 1268  
IMO UN Class: 3.3  
IMO Subsidiary Risk Label: -  
IATA PSN Code: TJB  
IATA UN ID Number: 1268  
IATA Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.  
IATA UN Class: 3  
IATA Label: FLAMMABLE LIQUID  
AFI PSN Code: TJB  
AFI Prop. Shipping Name: PETROLEUM DISTILLATES, N.O.S.  
AFI Class: 3  
AFI ID Number: UN1268  
AFI Pack Group: III  
AFI Basic Pac Ref: 7-7  
N.O.S. Shipping Name: CONTAINS PETROLEUM DISTILLATE.  
Additional Trans Data: MSDS GIVES FLASH POINT RANGE 120F-180F, BOILING POINT RANGE 340F-675F.

=====  
Disposal Data  
=====

=====  
Label Data  
=====

Label Required: YES  
Technical Review Date: 07MAR91  
Label Status: F  
Common Name: AMOFUEL NO. 2 DIESEL  
Chronic Hazard: NO  
Signal Word: WARNING!  
Acute Health Hazard-Slight: X  
Contact Hazard-Slight: X  
Fire Hazard-Moderate: X  
Reactivity Hazard-None: X  
Special Hazard Precautions: EYE:IRRITATION. SKIN:MILDLY IRRITATING. RESPIRATORY SYSTEM IRRITATION AND LIGHT HEADEDNESS. MAY CAUSE NAUSEA, HEADACHE, DROWSINESS, VOMITING. INGESTION:SOLVENT ASPIRATION INTO LUNGS AS A RESULT OF VOMITING MAY CAUSE LUNG AND DIGESTIVE SYSTEM DAMAGE REMOVE ALL SOURCES OF IGNITION. VENTILATE AND REMOVE WITH INERT ABSORBENT. USE NON-SPARKING TOOLS. CONTENTS ARE FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME. DURING USE AND UNTIL ALL VAPORS ARE GONE: KEEP AREA VENTILATED-DO NOT SMOKE.  
Protect Eye: Y  
Protect Skin: Y  
Protect Respiratory: Y  
Label Name: AMOCO INTERNATIONAL OILCO  
Label Street: 200 E RANDOLPH DR  
Label P.O. Box: 5910-A  
Label City: CHICAGO  
Label State: IL  
Label Zip Code: 60680  
Label Country: US

AERVOE-PACIFIC -- (17A) MARKING PAINT-ALL COLORS, 270 FLUORESCENT  
MATERIAL SAFETY DATA SHEET  
NSN: 801000N080018  
Manufacturer's CAGE: 0UPL1  
Part No. Indicator: A  
Part Number/Trade Name: (17A) MARKING PAINT-ALL COLORS, 270 FLUORESCENT  
(SUP DAT)

=====  
General Information  
=====

Company's Name: AERVOE-PACIFIC CO INC  
Company's Street: 1198 SAWMILL RD  
Company's City: GARDNERVILLE  
Company's State: NV  
Company's Country: US  
Company's Zip Code: 89410  
Company's Emerg Ph #: 800-424-9300 (CHEMTREC)  
Company's Info Ph #: 702-782-0100  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 001  
Status: SMJ  
Date MSDS Prepared: 30JUL92  
Safety Data Review Date: 23OCT97  
MSDS Preparer's Name: MIKE A TRAQUINA  
Preparer's Company: SAME  
MSDS Serial Number: CFMNV

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: XYLENE (SARA 313) (CERCLA)  
Ingredient Sequence Number: 01  
Percent: 14  
NIOSH (RTECS) Number: ZE2100000  
CAS Number: 1330-20-7  
OSHA PEL: 100 PPM  
ACGIH TLV: 100 PPM/150 STEL

Proprietary: NO  
Ingredient: VM & P NAPHTHA; (SS 9 PETROLEUM NAPHTHA)  
Ingredient Sequence Number: 02  
Percent: 20  
NIOSH (RTECS) Number: 1003161VN  
CAS Number: 64742-89-8  
OSHA PEL: 400 PPM (MFR)  
ACGIH TLV: 400 PPM (MFR)

Proprietary: NO  
Ingredient: STODDARD SOLVENT; (SS 01 MINERAL SPIRITS)  
Ingredient Sequence Number: 03  
Percent:



ALDRICH CHEMICAL -- BUFFER SOLUTION PH 7 CONCENTRATE, 22358-1  
MATERIAL SAFETY DATA SHEET  
NSN: 681000N084484  
Manufacturer's CAGE: 60928  
Part No. Indicator: A  
Part Number/Trade Name: BUFFER SOLUTION PH 7 CONCENTRATE, 22358-1

=====  
General Information  
=====

Company's Name: ALDRICH CHEMICAL CO INC  
Company's P. O. Box: 355  
Company's City: MILWAUKEE  
Company's State: WI  
Company's Country: US  
Company's Zip Code: 53201  
Company's Emerg Ph #: 414-273-3850  
Company's Info Ph #: 414-273-3850  
Safety Data Action Code: A  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 001  
Status: SMJ  
Date MSDS Prepared: 14AUG97  
Safety Data Review Date: 31MAR98  
MSDS Serial Number: CGTGQ

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: BUFFER SOLUTION PH 7.00  
Ingredient Sequence Number: 01  
Ingredient Action Code: A  
NIOSH (RTECS) Number: 1005817BS  
OSHA PEL: N/K (FP N)  
ACGIH TLV: N/K (FP N)

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: COLORLESS LIQUID  
Specific Gravity: 1.004

=====  
Fire and Explosion Hazard Data  
=====

Extinguishing Media: WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.  
Special Fire Fighting Proc: WEAR NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).  
Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MANUFACTURER.

=====  
Reactivity Data  
=====

Stability: YES  
Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.  
Materials To Avoid: STRONG OXIDIZING AGENTS, CARBON DIOXIDE.  
Hazardous Decomp Products: TOXIC FUMES OF 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: YES  
Route Of Entry - Ingestion: YES  
Health Haz Acute And Chronic: ACUTE: MAY CAUSE EYE AND SKIN IRRITATION. TO THE BEST OF MANUFACTURER KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.  
Carcinogenicity - NTP: NO  
Carcinogenicity - IARC: NO  
Carcinogenicity - OSHA: NO  
Explanation Carcinogenicity: NOT RELEVANT.

Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.  
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.  
Emergency/First Aid Proc: EYES: IMMEDIATELY FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. SKIN: IMMEDIATELY WASH WITH SOAP AND COPIOUS AMOUNTS OF WATER. INHALATION: REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL MD. WASH CONTAMINATED CLOTHING BEFORE REUSE.

=====  
Precautions for Safe Handling and Use  
=====

Steps If Matl Released/Spill: WEAR NIOSH APPROVED RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS AND HEAVY RUBBER GLOVES. ABSORB ON SAND OR VERMICULITE AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL. VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.  
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.  
Waste Disposal Method: DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.  
Precautions-Handling/Storing: AVOID INHALATION. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. AVOID PROLONGED OR REPEATED EXPOSURE. KEEP TIGHTLY CLOSED. STORE IN A COOL DRY PLACE.  
Other Precautions: NONE SPECIFIED BY MANUFACTURER.

=====  
Control Measures  
=====

Respiratory Protection: WEAR APPROPRIATE NIOSH APPROVED RESPIRATOR.  
Ventilation: MECHANICAL EXHAUST REQUIRED.  
Protective Gloves: CHEMICAL-RESISTANT GLOVES.  
Eye Protection: ANSI APPRVD CHEM WORKERS GOGGLES (FP N).  
Other Protective Equipment: EMERGENCY EYEWASH AND DELUGE SHOWER MEETING ANSI DESIGN CRITERIA (FP N). WEAR PROTECTIVE CLOTHING.  
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.  
Suppl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

=====  
Transportation Data  
=====

=====  
Disposal Data  
=====

=====  
Label Data  
=====

Label Required: YES  
Technical Review Date: 31MAR98  
Label Date: 31MAR98  
Label Status: M  
Common Name: BUFFER SOLUTION PH 7 CONCENTRATE, 22358-1  
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: ACUTE: MAY CAUSE EYE AND SKIN IRRITATION.  
CHRONIC: NONE SPECIFIED BY MANUFACTURER.  
Protect Eye: Y  
Protect Skin: Y  
Protect Respiratory: Y  
Label Name: ALDRICH CHEMICAL CO INC  
Label P.O. Box: 355  
Label City: MILWAUKEE  
Label State: WI  
Label Zip Code: 53201  
Label Country: US  
Label Emergency Number: 414-273-3850

CARBON ACTIVATED -- ACTIVATED CARBON  
MATERIAL SAFETY DATA SHEET  
NSN: 681000F038685  
Manufacturer's CAGE: CARBO  
Part No. Indicator: A  
Part Number/Trade Name: ACTIVATED CARBON

=====  
General Information  
=====

Company's Name: CARBON ACTIVATED  
Company's Street: 1442 W 135TH ST  
Company's City: GARDENA  
Company's State: CA  
Company's Country: US  
Company's Zip Code: 90249-5000  
Company's Emerg Ph #: 310-323-8132  
Company's Info Ph #: 310-323-8132  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 001  
Status: SE  
Date MSDS Prepared: 23DEC94  
Safety Data Review Date: 08MAR95  
MSDS Preparer's Name: LIONEL M PERERA  
Preparer's Company: CARBON ACTIVATED  
Preparer's St Or P. O. Box: 1442 W 135TH ST  
Preparer's City: GARDENA  
Preparer's State: CA  
Preparer's Zip Code: 90249-5000  
MSDS Serial Number: BWVNM

=====  
Ingredients/Identity Information  
=====

Proprietary: NO  
Ingredient: CARBON, ACTIVATED CARBON, GRAPHITE  
Ingredient Sequence Number: 01  
NIOSH (RTECS) Number: FF5250100  
CAS Number: 7440-44-0  
OSHA PEL: 10 MG/CUM  
ACGIH TLV: 10 MG/CUM

=====  
Physical/Chemical Characteristics  
=====

Appearance And Odor: ODORLESS BLACK GRANULAR, MAY BE IN PALLETS  
Boiling Point: 7592F  
Melting Point: 6656F  
Solubility In Water: INSOLUBLE

=====  
Fire and Explosion Hazard Data  
=====

Extinguishing Media: WATER, FOAM, CO2/DRY CHEMICAL  
Special Fire Fighting Proc: NONE  
Unusual Fire And Expl Hazrds: CONTACT W/STRONG OXIDIZERS MAY RESULT IN  
FIRE.

=====  
Reactivity Data  
=====

Stability: YES  
Cond To Avoid (Stability): NONE  
Materials To Avoid: STRONG OXIDIZERS  
Hazardous Decomp Products: CO  
Hazardous Poly Occur: NO

=====  
Health Hazard Data  
=====

LD50-LC50 Mixture: ORAL LD50(RAT): >10 G/KG  
Route Of Entry - Inhalation: YES  
Route Of Entry - Skin: NO  
Route Of Entry - Ingestion: NO  
Health Haz Acute And Chronic: INHALATION: IRRITATION TO THE RESPIRATORY  
SYSTEM. EYES: IRRITATION.

Carcinogenicity - NTP: NO  
Carcinogenicity - IARC: NO  
Carcinogenicity - OSHA: NO  
Explanation Carcinogenicity: NONE  
Signs/Symptoms Of Overexp: IRRITATION  
Emergency/First Aid Proc: EYES: FLUSH W/WATER FOR 15 MINS. OBTAIN MEDICAL ATTENTION IN ALL CASES.

=====  
Precautions for Safe Handling and Use  
=====

Steps If Matl Released/Spill: UNUSED PRODUCT SHOULD BE SWEEPED UP & DISCARD/REPACKAGED.

Waste Disposal Method: UNUSED CARBON MAY BE DISPOSED OF BY ANY APPROPRIATE MEANS. USED PRODUCTS MAY CONTAIN HAZARDOUS CHEMICALS/EXHIBIT HAZARDOUS PROPERTIES THAT MAY HAVE TO BE EXAMINED TO DETERMINE APPROPRIATE DISPOSAL METHOD. (SEE SUPP)

Precautions-Handling/Storing: WET ACTIVATED CARBON REMOVES OXYGEN FROM THE AIR CAUSING A SEVERE HAZARD TO WORKERS IN REQUIRED SPACE.

Other Precautions: SAMPLING & WORK PROCEDURES FOR LOW OXYGEN LEVELS SHOULD BE TAKEN WHENEVER WORKERS MAY BE ENTERING CARBON VESSELS ENCLOSED/CONFINED SPACE. SAFE HANDLING ON A LONG TERM BASIS SHOULD EMPHASIZE PROTECTION AGAINST EXPOSURE TO CARBON DUST.

=====  
Control Measures  
=====

Respiratory Protection: A HIGH EFFICIENCY PARTICULATE FILTER IS RECOMMENDED WHENEVER EXCESSIVE DUST MAY BE GENERATED.

Ventilation: LOCAL EXHAUST IS RECOMMENDED SUFFICIENT TO CONTROL DUST.

Protective Gloves: RECOMMENDED

Eye Protection: SAFETY GLASSES/GOGGLES

Other Protective Equipment: NONE REQUIRED

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.

Suppl. Safety & Health Data: WASTE DISPOSAL METHOD CONT'D: DISPOSE OF IAW/LOCAL, STATE & FEDERAL REGULATIONS.

=====  
Transportation Data  
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=====  
Disposal Data  
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=====  
Label Data  
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Label Required: YES

Label Status: G

Common Name: ACTIVATED CARBON

Special Hazard Precautions: INHALATION: IRRITATION TO THE RESPIRATORY SYSTEM. EYES: IRRITATION. IRRITATION

Label Name: CARBON ACTIVATED

Label Street: 1442 W 135TH ST

Label City: GARDENA

Label State: CA

Label Zip Code: 90249-5000

Label Country: US

Label Emergency Number: 310-323-8132

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**APPENDIX C**

**LOGGING/CLEARANCE AND GRUBBING PROCEDURES**

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## Logging and Clearing Procedures

The following procedures will be followed for logging or clearing and grubbing operations:

### 1.1 PERSONAL PROTECTIVE EQUIPMENT

- Hand Protection: Adequate for protection from puncture wounds, cuts, lacerations.
- Leg Protection: Chain saw operators must wear cut-resistant (e.g., ballistic nylon) leg protection which covers full length from thigh to the top of the boot for each leg.
- Foot Protection: Water-proof or water repellent cover and support the ankle. If operate chain saw, material must be cut-resistant.
- Head Protection: Hard hats required.
- Hearing Protection: Hearing protection capable of reducing the noise level to less than 85 dBA will be required.
- Eye Protection: Safety glasses required.
- Face Protection: Face Shield required when operating chipper. Face shield required when operating chain saw, unless determined that use of face shield creates greater hazard.

### 1.2 SAFETY PRECAUTIONS

- First Aid Kits: Minimum (2) at each work site. One maintained on-site at all times, one maintained in transport vehicle at all times. On-site kit must be First Responder or equivalent.
- Seat Belts: Required and used in any vehicle.
- Fire Extinguishers: Required for any vehicle or near equipment.
- Environmental Conditions: Work stoppage required if adverse weather conditions.
- Work Areas: Established to maintain safe work conditions for each employee.
- Signaling Equipment: Hand or audible, discernable above background. Air horn suggested.
- Hand and Power Tools Inspection Requirements:
  - Handles/Guards proper and in place.
  - Controls operational.

- Chain-saw chains. proper adjustment.
- Chain-saw mufflers operational.
- Chain-saw chain brakes functional.
- Impact and driving tools in proper condition.
- Cutting edges sharp and properly shaped.
- All safety devices in place.
- Chain-saw with continuous pressure throttle control system.

### **1.3 LOGGING OPERATIONS INSPECTION REQUIREMENTS**

- Only authorized personnel will operate chain-saws.
- Chain-saw fueled minimum 10 feet from open flame or other ignition source.
- Chain-saw started minimum 10 feet from fueling area.
- Chain-saw started only on the ground or other firm support.
- Chain-saw shut down or chain brake engaged if saw carried further than 50 feet.
- Operation and Maintenance manuals available on-site for machines such as chain-saws/chippers.
- All chippers equipped with appropriate guards.
- Chipper access covers or doors are not to be opened until drum or disc is at complete stop.
- Inlet and discharge ports on chippers shall be guarded to prevent contact with the disc, knives, or blower blades.
- Chipper shall be shut down and locked out prior to servicing or maintenance in accordance with manufacture and 29 CFR 1910.147.
- Chippers shall be chocked to prevent rolling or sliding as necessary.
- For USACE field operations, compliance with EM 385-1-1, Section 31 is required.
- No person shall approach tree feller closer than (2) tree lengths of tree(s) being felled.
- Feller to plan and clear retreat path prior to felling.
- Under cuts and back cuts required unless tree size/operation allows for greater safety. Back cuts must be higher than under cut (face cut).



- Employees trained in accordance with standard (20 CFR 1910.266).
- Employees current in CPR and First Aid.
- Safety Meetings conducted daily.



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**APPENDIX D**

**UXO PROCEDURES**

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During the performance of remediation activities at the SEDA Open Burning Grounds the following procedures will be followed during UXO activities.

### **General**

There is no “safe” procedure for working with UXO, merely procedures that are considered less dangerous. However, maximum safety in any UXO operation can be achieved through adherence to applicable safety precautions and a preplanned approach. Under WESTON’s Scope of Work, no UXO identification, removal, and/or clearance is included. however, a separate contractor under contract with the CENAE (EOD Technology) is currently scoped with all OE identification, removal, and/or clearance. The following procedures shall be used while UXO is on site performing OE removal activities.

### **Personnel**

All WESTON personnel and WESTON subcontractors shall receive site-specific training performed by the UXO subcontractors SSHO and SUXOS prior to start-up of remediation activities. The purpose of this training is to ensure that all WESTON personnel and WESTON subcontractors understand the procedures and methods EODT will use to perform operations at the SEDA site. This includes a summary of EODT’s Work Plan, Site Safety and Health Plan and Site Specific Environmental Protection Plan.

### **Specific UXO Safety Precautions**

WESTON personnel will not occupy or perform any remediation activities within 1181 ft. of the UXO subcontractor unless prior approval is issued by the CENAE Construction Representative and the EODT SSHO/SUXOS or if accompanied by EODT personnel in the 1181 ft. exclusion zone. The CENAE construction representative will be consulted on a weekly basis to establish/redefine current EODT exclusion zone limits applicable to the 1181 ft. area. All areas to be occupied or disturbed by WESTON, i.e., stockpile staging areas, water collection areas, temporary road locations, etc. shall be screened for UXO prior to mobilization of equipment, materials, and unauthorized personnel.

**UXO Response**

If suspect EO is encountered outside this 1181 ft. area by WESTON, the CENAE Construction Representative and EODT shall be notified immediately to determine its features and condition without movement of the suspect UXO or risk to employees. WESTON personnel are not authorized to move UXO under any circumstances prior to clearance by appropriate EODT personnel.

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**APPENDIX E**

**HWR-89-4031 NYSDEC FUGITIVE DUST GUIDANCE**

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New York State Department of Environmental Conservation

MEMORANDUM

TO: Regional Hazardous Waste Remediation Engrs., Bur. Directors & Section Chiefs  
FROM: Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation  
SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM--FUGITIVE DUST  
DATE: SUPPRESSION AND PARTICULATE MONITORING PROGRAM AT INACTIVE HAZARDOUS WASTE SITES

OCT 27 1989

1. Introduction

Fugitive dust suppression, particulate monitoring, and subsequent action levels for such must be used and applied consistently during remedial activities at hazardous waste sites. This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2. Background

Fugitive dust is particulate matter--a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles, liquid droplets or solids, over a wide range of sizes--which becomes airborne and contributes to air quality as a nuisance and threat to human health and the environment.

On July 1, 1987, the United States Environmental Protection Agency (USEPA) revised the ambient air quality standard for particulates so as to reflect direct impact on human health by setting the standard for particulate matter less than ten microns in diameter ( $PM_{10}$ ); this involves fugitive dust whether contaminated or not. Based upon an examination of air quality composition, respiratory tract deposition, and health effects,  $PM_{10}$  is considered conservative for the primary standard--that requisite to protect public health with an adequate margin of safety. The primary standards are  $150 \mu g/m^3$  over a 24-hour averaging time and  $50 \mu g/m^3$  over an annual averaging time. Both of these standards are to be averaged arithmetically.

There exists real-time monitoring equipment available to measure  $PM_{10}$  and capable of integrating over a period of six seconds to ten hours. Combined with an adequate fugitive dust suppression program, such equipment will aid in preventing the off-site migration of contaminated soil. It will also protect both on-site personnel from exposure to high levels of dust and the public around the site from any exposure to any dust. While specifically intended for the protection of on-site personnel as well as the public, this program is not meant to replace long-term monitoring which may be required given the contaminants inherent to the site and its air quality.

### 3. Guidance

A program for suppressing fugitive dust and monitoring particulate matter at hazardous waste sites can be developed without placing an undue burden on remedial activities while still being protective of health and environment. Since the responsibility for implementing this program ultimately will fall on the party performing the work, these procedures must be incorporated into appropriate work plans. The following fugitive dust suppression and particulate monitoring program will be employed at hazardous waste sites during construction and other activities which warrant its use:

- (1) Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
- (2) Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Such activities shall also include the excavation, grading, or placement of clean fill, and control measures therefore should be considered.
- (3) Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns ( $PM_{10}$ ) with the following minimum performance standards:

Object to be measured: Dusts, Mists, Aerosols

Size range: <0.1 to 10 microns

Sensitivity:  $0.001 \text{ mg/m}^3$

Range:  $0.001$  to  $10 \text{ mg/m}^3$

Overall Accuracy: +10% as compared to gravimetric analysis of stearic acid or reference dust

Operating Conditions:

Temperature:  $0$  to  $40^\circ\text{C}$

Humidity:  $10$  to  $99\%$  Relative Humidity

Power: Battery operated with a minimum capacity of eight hours continuous operation

Automatic alarms are suggested.

Particulate levels will be monitored immediately downwind at the working site and integrated over a period not to exceed 15 minutes. Consequently, instrumentation shall require necessary averaging hardware to accomplish this task; the P-5 Digital Dust Indicator as manufactured by MDA Scientific, Inc. or similar is appropriate.

- (4) In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the entity operating the equipment to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

- (5) The action level will be established at  $150 \text{ ug/m}^3$  over the integrated period not to exceed 15 minutes. While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of  $150 \text{ ug/m}^3$ , the upwind background level must be measured immediately using the same portable monitor. If the working site particulate measurement is greater than  $100 \text{ ug/m}^3$  above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see Paragraph 7). Should the action level of  $150 \text{ ug/m}^3$  be exceeded, the Division of Air Resources must be notified in writing within five working days; the notification shall include a description of the control measures implemented to prevent further exceedences.
- (6) It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure  $\text{PM}_{10}$  at or above the action level. Since this situation has the potential to migrate contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.
- (7) The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:
1. Applying water on haul roads.
  2. Wetting equipment and excavation faces.
  3. Spraying water on buckets during excavation and dumping.
  4. Hauling materials in properly tarped or watertight containers.
  5. Restricting vehicle speeds to 10 mph.
  6. Covering excavated areas and material after excavation activity ceases.
  7. Reducing the excavation size and/or number of excavations.

Experience has shown that utilizing the above-mentioned dust suppression techniques, within reason as not to create excess water which would result in unacceptable wet conditions, the chance of exceeding the  $150 \text{ ug/m}^3$  action level at hazardous waste site remediations is remote. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

- (8). If the dust suppression techniques being utilized at the site do not lower particulates to an acceptable level (that is, below 150 ug/m<sup>3</sup> and no visible dust), work must be suspended until appropriate corrective measures are approved to remedy the situation. Also, the evaluation of weather conditions will be necessary for proper fugitive dust control--when extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended.

There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require appropriate toxics monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

cc: E. Sullivan  
D. Markell  
A. DeBarbieri  
C. Goddard  
R. Tramontano  
E. McCandless  
A. Fossa  
J. Kelleher  
J. Colquhoun  
M. Keenan  
D. Ritter  
Regional Directors  
Regional Engineers  
RSHWE  
Reg. Citizen Participation Specs.

Responsiveness Summary  
TAGM: Fugitive Dust Suppression and Particulate Monitoring  
at Inactive Hazardous Waste Sites

The following comments (1. through 12.) have been incorporated into the TAGM:

1. Comment: TAGM covers only dust from hazardous waste; however, dust from non-hazardous construction activity at a site can cause a very troublesome nuisance dust condition that can lead to a considerable public concern and annoyance.

2. Comment: Since solidification and treatment at sites can involve using materials such as kiln dust, lime, etc. that have a high dusting potential, a statement stating the need for special measures for these materials should be considered.

3. Comment: TAGM does not state that when extreme wind conditions make dust control ineffective, as a last resort remedial actions may have to be suspended. In general, evaluation of weather conditions will be necessary for proper dust control.

4. Comment: Piles of excavated material should be covered as well as excluded areas.

5. Comment: A technique for dust suppression should be added for reducing the excavation size and/or the number of excavations.

6. Comment: To insure the validity of the dust measurements performed in accordance with this TAGM, there must be an appropriate QA/QC program.

7. Comment: The TAGM should provide for notification should the action level be exceeded.

8. Comment: For explanatory purposes, it may be useful to explain the significance of the ten micron standard in relation to health effects.

9. Comment: Since the responsibility for implementing this will ultimately fall to the PRP or contractor, the TAGM should state that these procedures must be incorporated into appropriate work plans.

10. Comment: The phrase "increasing the level of protection" should read "increasing the level of personal protection for on-site personnel" for clarity.

11. Comment: Suppression techniques should include atomizing sprays as an effective fugitive dust control method.

12. Comment: Define "fugitive dust."

The following comments (13. through 24.) as noted have been modified for use in the TAGM or rejected as being inappropriate or beyond the scope of the TAGM:

13. Comment: It would be helpful to add a section labeled "Purpose" to outline the specific reasons for monitoring and dust suppression.

Response: The third paragraph of "Background" has been revised to describe the purpose.

14. Comment: The use of calcium chloride as a dust suppressant has been specifically prohibited for this use in the Construction Grants program due to possible adverse environmental effects, and recommendation for its use should be evaluated further.

Response: Calcium chloride has been replaced with water.

15. Comment: The reference to a specific monitoring instrument should be deleted and minimum performance standards be substituted.

16. Comment: The real-time monitors used for monitoring particulates should be equipped with automatic alarms and the necessary averaging hardware.

Response (to 15. and 16.): Minimum performance standards have been adopted. A specific instrument has been kept since it is used by the Division of Air Resources, not as an endorsement but as an example and qualified as such by including "or similar." Automatic alarms are suggested, but not required since they are not minimum standards for performance.

17. Comment: The need for the use of watertight containers is unclear. Although watertight roll-offs may prohibit fine particles from passing through the seals, properly tarped standard dump trucks and roll-offs should provide adequate dust control.

Response: Properly tarping has been added.

18. Comment: In the final paragraph it is suggested that it may be appropriate to modify the particulate standard in consideration of the toxicity of the dust generating material. The  $PM_{10}$  standard was developed without regard to the chemical characteristics of the particulate material and it should be used accordingly by the Division.

Response: While particulate monitoring and standards should be virtually independent of the toxicity levels, there may be situations involving toxic dusts that warrant more stringent monitoring and action levels than those conservative levels provided for in this TAGM. If toxic air emissions are a concern, appropriate toxics monitoring and action levels should be in place and this suggestion in the TAGM should remain. However, the details of such are beyond the scope of this TAGM.

19. Comment: TAGM does not address what level of protection should be used for varying concentrations or toxicity of fugitive dust in the work zone.

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19. Comment: TAGM does not address what level of protection should be used for varying concentrations or toxicity of fugitive dust in the work zone.



Response: While increasing the level of personnel protection is addressed as a corrective action to be taken if action level are exceeded, the issue of specific levels of personnel protection is not appropriate for this TAGM.

20. Comment: Since semi-volatiles in vapor phase may not register during the dust or volatile organics monitoring, it is essential that these monitorings by themselves are not construed as providing complete safeguards.

Response: The issue addressed by the TAGM is the possible need for more stringent action levels for dust and particulates--vapors are a whole different issue beyond the scope of the TAGM.

21. Comment: It is not clear if TAGM specifies the long-term collection and analysis of fugitive dust to ascertain whether toxic chemicals are present in any significant level.

Response: Collection and analysis of fugitive dust are not within the scope of this TAGM.

22. Comment: TAGM does not specify what actions should be taken when the concentration and/or toxicity of fugitive dust may require lower action levels (i.e. health risk assessment).

Response: The intent of the TAGM is to provide a real-time measure of air quality due to fugitive dust during remedial activities at inactive hazardous waste sites, and health risk assessment from the toxicity of the dust is beyond the scope of this TAGM.

23. Comment: The particulate monitoring could also be utilized to evaluate the exposure of the general public to dusts created by the remedial activities. Sampling should be conducted downwind at an off-site receptor such as a residence or school.

Response: By monitoring on-site both down- and upwind with discrete and conservative action levels along with employing a feasible dust suppression program, the public will be protected from any potential impact of the dust.

24. Comment: The TAGM could also address a screening analysis to determine if a particular contaminant is a possible concern in dust fallout.

Response: While there may be instances where screening analysis is necessary, methodologies for such are more appropriately outlined in the Division of Air Resources Air Guide-1, Guidelines for the Control of Hazardous Air Contaminants.

