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FINAL ACCIDENT PREVENTION PLAN FOR ORION STREET SKEET RANGE SOIL
REMEDATION NAS BRUNSWICK ME
9/1/2013
USA ENVIRONMENTAL INC

FINAL

ACCIDENT PREVENTION PLAN

ORION STREET SKEET RANGE SOIL REMEDIATION

**FORMER NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE**

Submitted to:



**Naval Facilities Engineering Command Mid-Atlantic
9742 Maryland Avenue
Norfolk, Virginia 23511**

Submitted by:

**USA Environmental, Inc.
720 Brooker Creek Boulevard, Suite 204
Oldsmar, Florida 34677**

**Navy Munitions Response Actions (MRA)
Contract No. N62470-11-D-8007
Task Order WE01**

September 2013

Reviewed by:

**Robert Crownover
Director of Safety and Quality**



**FINAL ACCIDENT PREVENTION PLAN - Navy Munitions Response Actions (MRA)
Orion Street Skeet Range Soil Remediation, Former Naval Air Station Brunswick
Brunswick, Maine - September 2013**

**MRA
N62470-11-D-8007
CTO WE01**

FINAL

ACCIDENT PREVENTION PLAN

Orion Street Skeet Range Soil Remediation
Former Naval Air Station Brunswick
Brunswick, Maine

September 2013

Prepared for:

Naval Facilities Engineering Command Mid-Atlantic
9742 Maryland Avenue
Norfolk, Virginia 23511

Prepared by:

USA Environmental, Inc.
720 Brooker Creek Blvd., Suite 204
Oldsmar, FL 34677

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ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
APR	Air Purifying Respirator
at	air temperature
at adj.	adjusted air temperature
bpm	beats per minute
BRAC	Base Realignment and Closure Commission
BRAC	Base Realignment and Closure Commission
CFR	Code of Federal Regulation
CHSM	Corporate Health and Safety Manager
CIRS	Contractor Incident Report System
CP	Competent Person
CPR	Cardiopulmonary Resuscitation
CSP	Certified Safety Professional
dba	Decibel Amperes
EM	Engineer Manual
EMR	Experience Modification Rate
EMS	Emergency Medical Services
EPA	Environmental Protection Agency
ERCP	Emergency Response Plan and Contingency Procedures
ESAMS	Enterprise Safety Applications Management System
EZ	Exclusion Zone
HAZWOPER	Hazardous Waste Operations and Emergency Response
HIV	Human Immunodeficiency Virus
HTRW	Hazardous Toxic or Radioactive Waste
IDLH	Immediately Dangerous to Life and Health
mph	mile per hour
MSDS	Material Safety Data Sheet
NASB	Naval Air Station Brunswick
NIOSH	National Institutes for Occupational Safety and Health
OJT	On-the-job Training
OSHA	Occupational Safety and Health Administration
OT	Oral Temperature
OSSR	Orion Street Skeet Range
PAH	Polycyclic aromatic hydrocarbon (s)
PDT	Project Delivery Team
PEL	Permissible Exposure Limit
POC	Point of Contact
PPE	Personal Protective Equipment
PR	Purse Rate
REL	Recommended Exposure Limit

RPM	Remedial Project Manager
SDZ	Surface Danger Zone
SHSP	Site Health and Safety Plan
SSHO	Site Safety and Health Officer
SOW	Statement of Work
TCRA	Time Critical Removal Action
TLV	Threshold Limit Value
TP	Technical Paper
USA	USA Environmental, Inc.
WBGT	Wet Bulb Globe Temperature

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1.0 SIGNATURE SHEET

ACCIDENT PREVENTION PLAN

ORION STREET SKEET RANGE REMEDIATION FORMER NAS BRUNSWICK BRUNSWICK, MAINE

1.1 PLAN PREPARED BY:



Date: 9/23/13
Cheryl M. Riordan, CSP
Corporate Health and Safety Manager
USA Environmental, Inc.
(757) 689-4737

1.2 PLAN APPROVAL:



Date: September 23, 2013
Jonathan Chionchio
President
USA Environmental, Inc.
(813) 343-6350

1.3 PLAN CONCURRENCE:



Date: 9/23/13
Robert Crowover
Director of Safety and Quality
USA Environmental, Inc.
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2.0 BACKGROUND INFORMATION

This Accident Prevention Plan (APP) has been prepared by USA Environmental, Inc. (USA) for the Skeet Range Remediation at the Former NAS Brunswick in Brunswick, Maine. The purpose of this APP is to establish site-specific safety and health procedures, practices, and equipment to be implemented and used to protect affected personnel from the potential hazards associated with the field activities to be performed at the project site. The APP assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise while operations are being conducted during the Time-Critical Removal Action (TCRA) process. The APP will interface with the USA Corporate Safety and Health Program.

2.1 CONTRACTOR

USA Environmental, Inc.
720 Brooker Creek Boulevard, Suite 204
Oldsmar, FL 34677

2.2 CONTRACT NUMBER

N62470-11-D-8007, CTO WE01

2.3 PROJECT NAME

Orion Street Skeet Range Remediation
Former NAS Brunswick
Brunswick, Maine

2.4 PROJECT DESCRIPTION

The Former NAS Brunswick at one time occupied approximately 3,200 acres in Brunswick, Cumberland County, approximately 25 miles northeast of Portland, Maine. The installation is located south of U.S. Route 1, approximately 2 miles east of Brunswick's main business district, and 5 miles inland from the Atlantic Ocean. The former Orion Street Skeet Range (OSSR) is 78 acres in aerial extent and is located east of the runways of the former Naval Air Station Brunswick (NASB). The former skeet range was used for training military personnel during the 1950s. Navy Programming guidance from the 1950s defined the Surface Danger Zone (SDZ) of a skeet range as a 900-foot radius centered on the firing point. Range maps from 1952 illustrate the range with a firing direction to the north; however, on later maps from 1957 the range is shown with a firing direction to the east. The firing direction was changed from north to east because the area to the east was not developed at the time. The area enveloped by both range fans is the subject of the current remediation.

NASB was closed during the spring of 2011 based on the recommendation of the 2005 Base Realignment and Closure (BRAC) Commission. The skeet ranges primarily involve surface soil cleanup for sporadic high levels of lead and Polycyclic Aromatic Hydrocarbons (PAH)s over the site.

Procedures developed in this APP are also applicable to the fieldwork that may be conducted for removal and replacement of soils with elevated lead from the alleged "Fitch Avenue" skeet range. The Fitch Avenue Skeet Range is located within the former NASB boundaries off of Fitch Avenue, and Captain's Way. The Project Delivery Team (PDT) identified an area with elevated levels of lead in the shallow surface soil that is to be remediated in the fall of 2013.

Table 2-1: Site Description

Site Location	Approximate Size (Acres)
Orion Street Skeet Range – Former NASB	78
Topography	Present Usage
<input checked="" type="checkbox"/> Forested <input type="checkbox"/> Tillage <input type="checkbox"/> River/Creeks <input type="checkbox"/> Grassland <input checked="" type="checkbox"/> Flat land <input type="checkbox"/> Open Terrain <input type="checkbox"/> Wetland <input type="checkbox"/> Arid <input checked="" type="checkbox"/> Other: Gently sloping toward ponds	<input type="checkbox"/> Rural <input type="checkbox"/> Commercial <input type="checkbox"/> Urban <input type="checkbox"/> Government <input type="checkbox"/> Industrial <input type="checkbox"/> Farming <input type="checkbox"/> Ranching <input type="checkbox"/> Residential <input type="checkbox"/> Recreational <input type="checkbox"/> Military <input checked="" type="checkbox"/> Other: Owned by Navy, but not currently in use. Will eventually be transferred under BRAC

2.5 CONTRACTOR ACCIDENT EXPERIENCE

USA’s Experience Modification Rate (EMR) for the last 5 years is shown in Table 2-2. A copy of the latest Occupational Safety and Health Administration (OSHA) Form 300A is provided in Appendix A.

Table 2-2: Experience Modification Rate

Year	Interstate	Intrastate
2013	0.94	N/A
2012	0.90	N/A
2011	0.86	N/A
2010	0.72	N/A
2009	0.72	N/A

2.6 PHASES OF WORK REQUIRING ACTIVITY HAZARD ANALYSIS

The following phases of work on this project require an Activity Hazard Analysis (AHA):

- Location, Survey and Mapping
- Vegetation Removal
- Soil Sampling
- Contaminated Soil Removal
- Backfill with Clean Soil
- Vehicle Operations
- Quality Control.

The AHA forms are located in Appendix B of this APP.

Table 2-3 provides a list of hazards and corresponding Action Levels.

Table 2-3: Hazards Table

HAZARDS*	ACTION LEVELS**
Safety: include falling (rocks, inclines, slippery surfaces, excavations); climbing (uneven terrain); walking (uneven terrain, surface indentations); hand and power tool operations, eye and face hazards (vegetation removal operations);and heavy equipment operations.	None/Awareness/Avoidance
Chemical: Lubricants and fuels for equipment. Lead and PAH contamination in soil.	Per Material Safety Data Sheets (MSDSs) Lead: PEL 50 ug/m3; AL 30 ug/m3 PAH: PEL .2mg/m3
Physical: include temperature extreme injuries, and noise.	Per Monitoring Requirements
Radiological:	Not Applicable
Biological Hazards: may be present; include biting and stinging insects, hazardous plants and wildlife.	None/Awareness/Avoidance
MEC:	Not Applicable

Notes to Hazards Table:

***HAZARDS**

Safety:

Falling: (e.g., Open pits; wells; shafts; rock crevices; steep inclines; slippery surfaces; etc.)

Climbing: (e.g., Falls from structures > 4 feet high; deteriorated ladders or missing rungs; etc.)

Walking or Debris: (e.g., Uneven terrain; animal burrows; surface indentations; exposed nails; broken timbers; sharp protruding objects; broken glass; metal fragments; etc.)

Confined Space (e.g., Excavations > 4 feet deep; surface/underground utility vaults; open surface tanks/cisterns/septic tank; underground/above ground storage tanks; etc.)(DO NOT ENTER)

Water: (e.g., Moving waterways (Flash Floods); drowning/near drowning conditions or environments; etc.)

Eye Hazards: (e.g., Airborne dust/windy conditions; liquid splashes; etc.)

Chemical: Evaluate the chemical hazards that may be encountered during site activities for each task. For activities utilizing this plan, encounters with chemicals above the Permissible Exposure Limit (PEL), or Threshold Limit Value (TLV) are not expected. THIS PLAN WILL NOT BE USED IF OVEREXPOSURES OR IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH) CONDITIONS ARE EXPECTED. (List the chemical TLV/PEL/Recommended Exposure Limit (REL); OSHA/National Institute for Occupational Safety and Health (NIOSH) IDLH; odor threshold/warning levels; warning signs/symptoms of overexposure; concentrations expected on site.)

Physical: Evaluate the potential for injury from physical agents such as noise, electricity, moving parts/machinery, heat and cold stress that may be present (e.g., loud machinery; overhead or underground power lines; evaluation of personal protective clothing, etc.)

Radiological: Evaluate the risk to human health caused by radioactive materials in the area where work is to be performed.

Biological: Evaluate the potential for illness or injury due to biological agents (e.g., poisonous plants, animals, insects, microorganisms, etc.)

****ACTION LEVELS:** Action Levels will typically be defined as requiring site evacuation only, if significant hazards are encountered. Note: The activities for which this SHSP is designed will not typically encounter chemical contaminant or radioactive exposures above background. In the event that chemical or radioactive exposures, which are judged to be significant, are encountered (reasonable potential to exceed permissible exposure limits or encounter IDLH conditions) this plan requires work stoppage of the site, reevaluation, and development of procedures designed by Safety Management that will address the potential exposure. Chemical exposures (releases) requiring evacuation will always be in an upwind direction to a safe distance. Personal Protective Clothing (PPE) per hazard assessment will be worn.

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3.0 STATEMENT OF SAFETY AND HEALTH POLICY

In recognition of the responsibilities of USA, and the need for management to establish a policy with regard to the prevention of on-the-job injuries, this APP has been developed. Through application of these safety policies and procedures, it is USA's primary goal to reduce to a minimum the human suffering of employees resulting from occupational injuries. Not only can injuries have a serious physical and emotional impact on the employees themselves, but can also have a negative effect on family members and co-workers.

In addition, we must recognize the deterrent and eroding effect injuries have on potential profit. Insurance costs, combined with the indirect costs of injuries, are a matter of serious concern, and it is USA's intention that they be minimized. This desired reduction could take place over the long term if the frequency of injuries is kept to a minimum. As it affects USA, the elimination of on-the-job injuries is an important responsibility of management. This responsibility must be assumed and treated in the same manner as our business philosophies relating to services rendered.

For USA's Corporate Safety and Health Program to become effective, it will be necessary for each employee to take a serious interest in the prevention of injuries. Management fully intends to provide, in administration of the program, the leadership and direction to which supervisory personnel and employees will respond. It is USA's earnest request that all concerned devote their serious attention toward making this Safety and Health Program an integral part of day-to-day business operations. Always remember that no job is so important and no service is so urgent that we cannot take the time to perform our work safely.

All site operations will be performed in accordance with applicable federal, state, and local regulations and procedures, OSHA requirements, client requirements, USA's Corporate Safety and Health Program and this APP. All USA employees will comply with the requirements of this plan.

3.1 SAFETY PROGRAM GOALS, OBJECTIVES, AND ACCIDENT EXPERIENCE GOALS

USA's corporate safety program is designed to provide the safety training and tools required to ensure that USA is providing the safest work environment for its employees, other project personnel, and the general population in areas adjacent to our project sites.

The USA Corporate Health and Safety Manager (CHSM) has reviewed the scope of the project and, based on this review, has developed this APP designed to protect health and safety during the project.

As part of the job requirements employees are required to:

- Read and follow the APP and attached SHSP
- Attend health and safety meetings, courses and seminars, when available, to make them more informed and aware of potential hazards that exist at the site.

The goal for USA on this project is zero accidents. All managers and supervisors are responsible for implementing the provisions of this APP and attached SHSP and for answering team member questions about accident prevention. Management is responsible for ensuring that all safety and health policies and procedures are clearly communicated and understood by all team members. Managers and supervisors are expected to enforce the rules fairly and uniformly. This will be accomplished by:

- Informing team members of the provisions of the Safety and Health Program
- Evaluating the safety performance of all team members
- Recognizing team members who perform safe and healthful work practices
- Providing training to team members whose safety performance is deficient
- Disciplining team members for failure to comply with safe and healthful work practices.

All team members are responsible for using safe work practices, for following all directives, policies and procedures, and for assisting in maintaining a healthful and safe work environment. USA recognizes that open, two-way communication between management and all team members on health and safety issues is essential to an injury-free, productive workplace. To facilitate a continuous flow of health and safety information between all team members, the following will be accomplished:

- Training all new team members, during the site-specific training, on the site safety and health policies and procedures, which will include this APP and attached SHSP
- Training all new team members on the hazards associated with the job site
- Conducting daily tailgate safety meetings for all team members
- Conducting quarterly refresher type training
- Posting and, if applicable, distributing safety information
- Encouraging open communications.

3.2 USA'S SAFETY INCENTIVE PROGRAM

USA builds an information database for each project it undertakes, which includes the rate/occurrence of accidents and injuries. Safety data, including injury and accident occurrence, are noted and incentives such as monetary bonuses and additional training courses are provided as rewards for superior employee performance in compliance with the project APP, SHSP, and corporate safety and health policies.

3.3 POLICIES AND PROCEDURES REGARDING NONCOMPLIANCE WITH SAFETY REQUIREMENTS

USA management takes seriously employee noncompliance with safety requirements. Personnel not following procedures are warned and counseled in the proper safety procedures, and, if the problem persists, are again counseled with notations made in their employee record. Continued noncompliance will lead to termination. On USA job sites, visitors are briefed about site safety requirements and are provided with the appropriate level of PPE. If visitors refuse to follow these procedures, they will be escorted from the site.

3.4 USA'S WRITTEN PROCEDURES FOR HOLDING MANAGERS AND SUPERVISORS ACCOUNTABLE FOR SAFETY

USA's commitment to health and safety is documented and required from the time an offer is made to a job applicant. Managers and supervisors are made responsible for enforcing health and safety as part of their job descriptions. They are ultimately responsible for protecting the welfare of the employees, as well as minimizing the potential liability associated with on-the-job accidents.

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4.0 RESPONSIBILITIES AND LINES OF AUTHORITY

All personnel are responsible for continuous adherence to this APP and health and safety procedures during the performance of their work.

4.1 IDENTIFICATION AND ACCOUNTABILITY OF PERSONNEL RESPONSIBLE FOR SAFETY

No person may work in a manner that conflicts with the intent of, or the inherent safety and environmental precautions expressed in, these procedures. After due warnings, USA will dismiss from the site any person who violates safety procedures. USA employees are subject to progressive discipline and may be terminated for continued violations. All on-site personnel will be trained in accordance with this document.

4.1.1 USA Program Manager – Doug Ralston

Responsibilities include:

- Ensuring conformance with USA corporate, and other Regulatory policies and procedures
- Coordinating project with the client Manager
- Ensuring the project has the necessary resources to operate safely
- Ensuring that the project personnel satisfy USA and Regulatory Safety and Health requirements.

4.1.2 USA Project Manager – Robert Hierholzer

Responsibilities include:

- Coordinating with USA Program Manager and client Project Manager
- Providing management of all aspects of project work
- Setting the tone for safety on the job site
- Ensuring personnel have the equipment, training, and resources to perform the job safely
- Ensuring that the project personnel implement the project APP
- Ensuring that the project personnel have the appropriate regard for safe job performance.

4.1.3 USA Corporate Health and Safety Manager – Cheryl M. Riordan, CSP

Responsibilities for the Corporate Health and Safety Manager (CHSM) include:

- Developing, maintaining and implementing the APP/SHSP as required
- Performing Safety Program audits as required
- Providing consultation to Project Managers and Project Engineers
- Making changes to the APP/SHSP if warranted by changed conditions
- Evaluating occupational exposure monitoring/air sampling data and adjusting APP/SHSP requirements as necessary
- Administering and enforcing the General Health and Safety Program
- Determining the level of personnel protection required
- Conducting field health and safety audits, to ensure Health and Safety Plan conformance and USA policy compliance
- Investigating significant accidents and illnesses and implementing corrective action plans
- Certifying that all workers have proper training as per OSHA 29 Code of Federal Regulation (CFR) 1910.120(e)
- Updating equipment or procedures based on information obtained during site operations

- Establishing air monitoring parameters based on expected contaminants
- Establishing employee exposure monitoring notification programs
- Developing site specific employee/community emergency response plans based on expected hazards
- Stopping any operation that threatens the health or safety of the team or surrounding population
- Confirming each USA team member's suitability for work based on physician's recommendation
- Upgrading or downgrading levels of protection based on site observations or monitoring results
- Providing technical, analytical, and report writing support, to ensure the technical quality of deliverables to the customer.

4.1.4 Site Safety and Health Officer (SSHO) – TBD

Site activities will be conducted under the supervision of the USA SSHO for safety. The SSHO will act as safety oversight for normal and emergency work and will perform any emergency notification as the On-Scene Incident Commander. The SSHO is also responsible for:

- Supervising all USA site activities
- Implementing and enforcing all provisions of the field APP/SHSP
- Providing daily inspections of site activities to identify safety and occupational health deficiencies and ensuring corrective action
- Coordinating and implementing changes to the APP/SHSP, as directed by the CHSM
- Conducting project-specific training for site personnel and visitors
- Determining evacuation routes
- Presenting daily safety meetings
- Maintaining safety logs and records in the field
- Enforcing the level of personnel protection required
- Investigating work-related accidents and illnesses and implementing corrective action plans
- Performing/overseeing air-monitoring based on expected contaminants
- Implementing employee exposure monitoring notification programs
- Stopping any operation that threatens the health or safety of the team or surrounding population
- Upgrading levels of protection based on site observations or monitoring results.

4.2 LINES OF AUTHORITY

Figure 4-1 details the project organizational structure and Table 4-1 lists contact information for project personnel.

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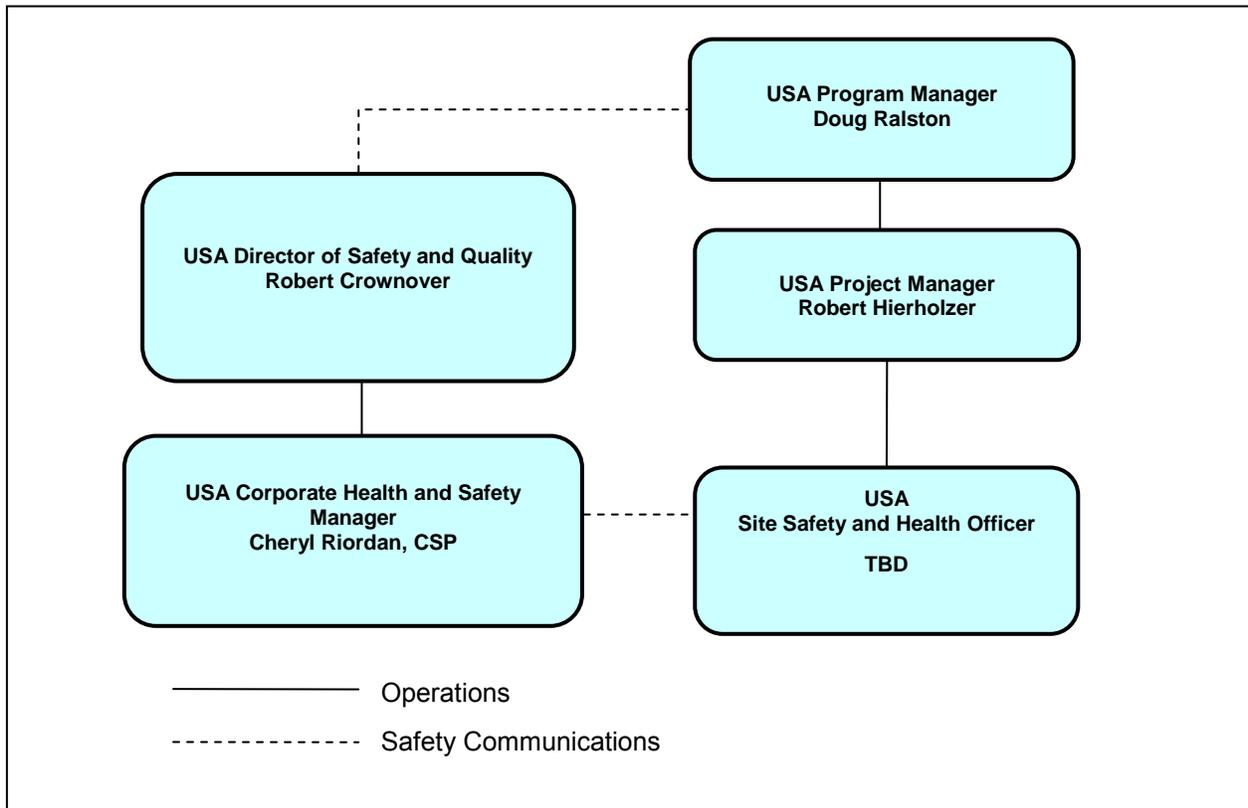


Figure 4-1: Organizational Structure

Table 4-1: Project Contacts

Title	Name	Responsibility	Phone No.
NAVFAC MIDLANT Remedial Project Manager	Todd Bober	Project Management	215-897-4911
Program Manager	Doug Ralston	Program Management	813-343-6368
Corporate Health and Safety Manager	Cheryl M. Riordan, CSP	Plan Preparation	813-426-2112
Project Manager (PM)	Robert Hierholzer	Project Management	813-343-6339
Former NASB Navy Caretaker	Robert LeClerc	Navy Primary Site POC	207-263-6736
Navy Remedial Construction Specialist	Joe Gallant	Navy Secondary Site POC	207-252-7353
Site Safety and Health Officer (SSHO)	TBD	On-site Safety and Occupational Health Authority	
Parsons	TBD	Field Sampling	

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5.0 IDENTIFICATION OF SUBCONTRACTORS AND SUPPLIERS

5.1 IDENTIFICATION OF SUBCONTRACTORS AND SUPPLIERS

USA will be the prime contractor for this work. USA will be using the following subcontractors for work on this project:

- Parsons will be providing the soil sampling services
- Shaw will be providing vegetation removal services
- K&K Excavation, Inc. will be used for removal of contaminated soil and replacing it with clean soil
- Spivey Survey - Maine-Licensed Professional Land Surveyor to survey the Skeet Range area boundaries, if required.

5.2 MEANS FOR CONTROLLING AND COORDINATING SUBCONTRACTORS AND SUPPLIERS

The only subcontractors used on this site will be the suppliers of services. Subcontractors working on this site will be managed by USA field management staff.

5.3 SAFETY RESPONSIBILITIES OF SUBCONTRACTORS AND SUPPLIERS

All personnel working on the site must attend the daily safety briefing, which is held first thing in the morning. This briefing will let them know what operations are taking place, where they will be occurring, and evacuation routes, in case an evacuation is required. The subcontractors will be managed by the USA SSHO while they are on-site. The SSHO will ensure that subcontractor personnel working on-site are briefed on the site hazards and emergency responses, and they will be expected to follow all directions received from the USA field management staff.

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6.0 TRAINING

Prior to commencement of site activities, the CHSM and the SSHO will ensure that all USA employees engaged in hazardous waste operations are informed of the nature and degree of exposure to chemical and physical hazards that are likely to result from participation in site operations. USA will accomplish this by ensuring that all personnel entering the site have received the appropriate OSHA and site-specific training, prior to participation in site activities. OSHA-required training will be conducted prior to site mobilization. Site-specific training will be held at the time of site mobilization and will be reinforced during the daily safety briefings, to which all site workers will be required to attend.

6.1 SUBJECTS TO BE DISCUSSED WITH EMPLOYEES DURING SAFETY INDOCTRINATION

The SSHO will conduct necessary on-the-job training (OJT) for assigned personnel. This training will include classroom-type instruction covering the topics specified for site-specific training, and on-site participation in the following:

- Performance Work Statement
- Details of the APP/SHSP
- Employee rights and responsibilities
- Sequence of work events
- Identification of safety issues for the site
- Identification of Safety staff and lines of authority
- Safe work practices
- Proper lifting techniques
- Nature and extent of anticipated chemical, physical, and biological hazards
- Heat stress/cold stress, including encouraging employees to inform their supervisor of any past heat stress injuries experienced
- Measures and procedures for controlling site hazards
- Emergency Response and Contingency Plan
- Emergency procedures for clean-up of chemical spills
- Location of medical services
- Site communication
- Evacuation routes
- Rules and regulations for vehicle use
- Safe use of field equipment
- Heavy equipment operation safety
- Handling, storage, and transportation of hazardous materials
- Use, care, and limitations of PPE
- Hazard communication per OSHA 29 CFR 1910.1200.

6.2 MANDATORY TRAINING AND CERTIFICATIONS APPLICABLE TO THIS PROJECT

6.2.1 General Training

All USA employees who are involved in hazardous waste site activities receive 40 hours of OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) training in accordance with 29 CFR 1910.120 and 29 CFR 1926.65. If it has been more than a year since any worker has received the 40 Hour OSHA HAZWOPER training, he/she must also have current HAZWOPER 8-Hour Refresher

Training in accordance with 29 CFR 1910.120 and 29 CFR 1926.65 prior to working on the site. All workers will also receive 3 days of site-specific OJT under the direct supervision of a trained/experienced supervisor when they mobilize at the site. Any visitor entering the exclusion zone (EZ) during hazardous waste operations will also be required to have current HAZWOPER training.

All current certifications and training tables for USA personnel will be maintained on-site for the duration of the project. Subcontractor personnel will be required to maintain copies of the current training of all of their personnel working on-site. Individuals without proper training records will not be permitted to work on-site.

6.2.2 Supervisory Training

On-site managers and supervisors, who are responsible for directing others, will receive the same training as the general site workers for whom they are responsible. He/she will also receive an additional 8 hours of OSHA-required HAZWOPER supervisory training in accordance with 29 CFR 1910.120 and 29 CFR 1926.65, to enhance their ability to provide guidance and make informed decisions. This additional training includes the following:

- Review of the USA Corporate Safety and Health Program
- Regulatory requirements
- Management of hazardous waste site cleanup operations
- Management of site work zones
- How to communicate with the media and the public
- PPE selection and limitations
- Spill containment
- Monitoring of site hazards.

The SSHO, with specific responsibilities for safety and health guidance on-site, will receive the training provided to general site workers and their supervisors. He/She also will receive advanced training in safety and health issues, policies and techniques. The SSHO will also receive the 30-hour OSHA Construction Safety class in accordance with Engineer Manual (EM) 385-1-1, 01.A.17.

6.3 REQUIREMENTS FOR EMERGENCY RESPONSE TRAINING

Prior to commencement of the project, all USA site personnel will review and discuss the posted emergency telephone numbers, location of spill kit materials as applicable, directions to the nearest hospital, the location of all site fire extinguishers, proper use of fire extinguishers, the location of first aid kits and blood-borne pathogens kits, and review of the emergency procedures.

6.3.1 Fire Prevention

Smoking and lighters are prohibited in the EZ or work zone. A cigarette butt receptacle will be provided in the support zone. No cigarette butts are to be discarded on the ground. No smoking is allowed except in an approved designated location which has a fire extinguisher. Procedures will be reviewed with all site personnel.

6.3.2 Hazard Communication

All USA employees who will be performing work involving the handling of hazardous materials will receive Hazard Communication training detailing the hazards of the product, appropriate protective measures (including PPE) to prevent exposure to the product, as well as safe procedures for storage and handling of the product, and response to emergencies. Personnel may request an MSDS for any hazardous material on the site at any time. USA personnel will be informed of the location of the MSDSs. The MSDS binder will be kept in the SSHO site vehicle. This training will occur as part of the initial mobilization training at the site. Per the written USA Hazard Communication Program, a Hazardous Materials

Inventory will be maintained on the site; a storage site for hazardous materials will be designated, and all hazardous materials will be properly labeled. Due to lead and PAH contamination in the soil, personnel will receive hazard communication training on these substances as well, and MSDSs for them will be downloaded from the internet.

6.4 REQUIREMENTS FOR SUPERVISORY AND EMPLOYEE SAFETY MEETINGS

6.4.1 Tailgate Safety Briefing

Tailgate Safety Briefings consist of providing short training sessions in various subjects that give the site worker knowledge and confidence in performing duties in a potentially hazardous environment. The Tailgate Safety Briefing will be given prior to commencing work each day and will include such items as:

- Expected weather conditions
- General site hazards
- Biological hazards on site
- PPE required at each site
- Emergency evacuation procedures
- AHAs for site operations
- Heat stress/cold stress precautions, including the importance of workers informing their supervisors of past experience with heat stress injuries so that supervisors can monitor them more closely while working in a hot environment.
- Buddy system procedures
- A review of any safety violations from the previous day
- Any other significant events involving safety.

Additional briefings will be provided, as needed, concerning the use of safety equipment, emergency medical procedures, emergency assistance notification procedures, accident prevention, the work plan, and site orientation, to ensure that accomplishment of the project can be carried out in a safe and effective manner. All site workers are required to attend the tailgate safety briefing daily.

6.4.2 Daily Debriefing

At the conclusion of each workday, a debriefing for all employees will be held, if appropriate, and the day's work will be discussed to determine if changes are warranted before commencing activities the following day.

6.4.3 Periodic Site Training

On the first workday of each work week/period, or more frequently if needed, a pertinent topic will be selected and elaborated upon by the SSHO during the Tailgate Safety Briefing. These safety meetings will help ensure the safety and health of site personnel in the performance of regular work activities and in emergency situations. Safety meetings will be documented in the appropriate log and the Documentation of Training Form will be completed.

The SSHO will conduct a site workers basic safety briefing at the beginning of each week, or when new employees arrive at the job site once the job has commenced. The following is a general list of what will be discussed:

- Names and titles of key personnel responsible for site safety and health
- Specific hazards present at the site
- Components of the APP/SHSP
- General site safety

- Hazards and symptoms of contaminant exposure (chemical) as applicable
- Routes of exposure from on-site contaminants (as applicable)
- Physical hazards (fall protection, noise, heat stress, etc.) to include the importance of workers informing their supervisors of past experience with heat stress injuries
- Biological hazards
- Location and availability of written hazard communication program
- Site and activity PPE (including purpose, donning, doffing and proper use)
- Activity Hazard Analyses for site operations
- Work practices by which employees can minimize risks for hazards
- Safe use of engineering controls and equipment use
- Site control measures
- Reporting requirements for spills and emergencies
- Personnel decontamination procedures (as applicable)
- Contingency plans (communications, phone numbers, emergency exits, assembly points, etc.)
- Worker Right to Know/Hazard Communication
- Emergency equipment locations and use (fire extinguishers, spill kits, first aid kits, etc.)
- Equipment safety.

6.4.4 Visitors

All visitors to the site, even if escorted, must receive, at a minimum, a briefing of on-site conditions, hazards, and emergency response procedures. The SSHO will generally be the one providing the visitor briefing. All visitors to the EZ will be escorted at all times. Visitors will not be permitted in the restricted work areas unless they have the appropriate level of OSHA training, and are medically approved as part of a company-sponsored medical surveillance program. Visitors not complying with the above requirements will not enter the restricted work areas; however, they may observe site conditions from a safe distance in the support zone. All visitors will sign the Visitor's Log prior to entering the site.

6.4.5 Training Documentation

A training record will be kept in each employee's individual file, to confirm that adequate training for assigned tasks is provided and that training is current. In addition, Documentation of Training Forms will be completed and kept on file at the work site for the duration of site activities, and will be made available for inspection upon request.

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7.0 SAFETY AND HEALTH INSPECTIONS

General safety and health inspections are described throughout this APP. USA site personnel will conduct safety inspections on a daily basis, or more frequently if conditions warrant. The SSHO will be responsible for daily safety inspections of the project. In addition to extensive site experience, the SSHO will have also received the OSHA 30-hour Construction Safety training, as well as specific safety training from the USA Corporate Safety office. In the event the SSHO must leave the project site, a qualified person working at Site 12 (under this same contract) may be pulled to fill in at the skeet range. This person will ensure that site personnel follow safety requirements and policies. This person will have also received safety training from the USA Corporate Safety Office.

The Safety Inspection Form will be used to record, track, and provide follow-up, to ensure that safety deficiencies are corrected after they have been identified. A record of the safety inspection checklist will be maintained in the project file. Deficiencies will be identified, posted, and dated when the deficiencies are rectified.

USA Corporate Safety staff, all of whom have advanced training in safety and health responsibilities, may conduct periodic safety program audits at project sites, which would include an inspection of site conditions and operations.

7.1 EXTERNAL INSPECTIONS/CERTIFICATIONS

External inspections are expected for this project. The NAVFAC MIDLANT Remedial Project Manager (RPM) and/or other NAVFAC representatives may choose to conduct external inspections.

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8.0 ACCIDENT REPORTING

This section provides the requirements for implementing the accident reporting provisions of USA. This APP requirement applies to all work performed by USA for each project.

Should an accident or mishap occur on-site, regardless of the severity, it will be fully investigated by USA, and all reports and records will be documented on the USA Accident Report Form and/or the Contractor Incident Report System (CIRS). Copies will be maintained on-site for the duration of site activities. A permanent copy will be maintained in the USA Oldsmar, Florida office. Accidents/incidents will be reported in accordance with EM 385-1-1. All accident/incident reports will be reviewed by the CHSM to ensure all root causes of the accident/incident have been adequately addressed, in order to prevent future recurrences on this or any other project sites.

The USA Project Manager and the USA CHSM will be notified immediately by telephone of any accidents, and will follow up with USA's Accident Report Form. USA's Project Manager will notify the NAVFAC RPM immediately, and will fill out and submit the Accident Report Form, and/or the CIRS, to the NAVFAC Contracting Officer or designated representative for review within one working day after the event. USA will thoroughly investigate all accidents.

Any accident involving a fatality or three or more hospitalizations from the same incident will be reported telephonically to the nearest Federal and state OSHA Area office within 8 hours, by the CHSM. If all information is not known at that time, an initial report will be made and a follow-up report will be submitted after all of the facts are documented.

Person(s) who become ill or injured during work activities must immediately inform the SSHO, regardless of the severity of the illness or injury. The victim(s) will be decontaminated if the injury occurred in a contaminated area. In the event that the medical emergency is severe enough, the SSHO will order a cessation of work and notify off-site emergency personnel.

All personnel at the work site will use the buddy system, staying within sight of their partner. If a partner becomes incapacitated or severely ill, Emergency Medical Services (EMS) will be notified. In the event that a cessation of work is ordered, all personnel should:

- Assist the SSHO, if required, in decontaminating the victim and/or administering first aid
- Leave the contaminated area and undergo decontamination prior to entering the worker rest area
- Assist emergency response personnel when requested.

In the event of an accident that results in a lost workday or \$20,000 or more in property damage, an accident report will be completed and submitted within five workdays, and a copy will be provided to the client contact.

All workers receiving medical treatment, other than first aid, by a medical professional will obtain a medical release on the date of treatment stating one of the following: (1) the employee is not fit for duty; (2) the employee is fit for restricted duty; or (3) the employee is fit for duty. A copy of the release will be attached to the accident report and submitted to the NAVFAC RPM.

8.1 NAVFAC ACCIDENT REPORTING REQUIREMENTS

For all OSHA recordable mishaps, the following steps will be taken.

- USA will make a verbal report to the Navy RPM as soon as possible, or within 2 hours, with as much information as is available at that time.
- The RPM will enter the basic contractor contract data into the CIRS module in the Enterprise Safety Applications Management System (ESAMS) within 8 hours. A hyperlink and password are subsequently sent to the identified USA point of contact (POC) for completing the CIRS via ESAMS.

- The RPM will complete the NAVFAC Mishap Heads-Up and Initial Notification form and email it to the NAVFAC MIDLANT Safety Manager for review.
- The USA POC will enter the ESAMS system using the hyperlink and password provided by the system automatic email. USA will then complete a CIRS within 5 calendar days. The CIRS will be sent via email to the RPM for review. USA will provide updates to the CIRS as information becomes available.
- The RPM will review the CIRS for the Minimum Notification Content and resolve any issues or concerns.
- The NAVFAC MIDLANT Safety Manager will ultimately accept the mishap or send it back to revise or update.

8.2 EXPOSURE DATA

All work-related incidents occurring to USA employees should be reported for statistical purposes. All recordable incidents count against USA's recordable incident experience when they happen to either an employee or a subcontractor working under the direct supervision of USA's SSHO. Personnel man-hours will be defined as hours worked by all persons assigned to the project, including subcontractor employees under direct supervision of USA's SSHO. These man-hours will be annotated on the Daily Operations Summary and will be transmitted to the Project Manager. The USA SSHO will document and review with the CHSM the potential exposure data versus the man-hours worked per day, to evaluate the correlation to site accidents or injury. The most current OSHA 300 form will be posted on-site and is presented in Appendix A of this APP.

8.3 ACCIDENT INVESTIGATIONS, REPORTS, AND LOGS

Investigation and documentation of emergency responses will be initiated by the SSHO. This is important in all cases, but especially so when the incident has resulted in personal injury, property damage, or environmental impact. The documentation will be a written report and will include the following:

- Accurate, concise and objectively recorded information
- Authentic Information: Each person making an entry must sign and date that entry. Nothing is to be removed or erased. If details are changed or revised, the person making the change should strike out the old material with a single line and initial and date the change.
- Titles and names of personnel involved
- Actions taken, decisions made, orders given; to whom, by whom, when, what, where, and how, as appropriate
- Summary of data available
- Possible exposure of personnel
- Copies of the Employer's Report of Occupational Injury or Illness (OSHA 300) or the USA Accident Report or CIRS, as appropriate, will be completed and forwarded to the CHSM.

All accidents will be investigated and immediate steps will be taken to prevent recurrence. The client will be notified of any accidents occurring on this project site. Should an accident occur on the site, all reports and records will be documented. Copies will be maintained on-site for the duration of site activities. A permanent copy will be maintained in the USA Corporate Office.

8.4 IMMEDIATE NOTIFICATION OF MAJOR ACCIDENTS

An accident that has, or appears to have, any of the following consequences will be immediately reported to the NAVFAC Contracting Officer and/or RPM:

- A fatal injury or illness
- Permanent totally disabling injury or illness

- Permanent partial disabling injury or illness
- Three or more persons being hospitalized as inpatients as a result of a single occurrence
- \$20,000 or more in accidental property damage
- Possible adverse publicity to NAVFAC.

Immediate notification will be made to the NAVFAC RPM verbally or by email. The reporting requirement of submitting the Accident Report Form or CIRS within 5 working days still applies. Follow the steps in Section 8.1, "NAVFAC Accident Reporting Requirements," above.

Except for rescue and emergency measures, the accident scene will not be disturbed until it has been released by the investigating official.

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9.0 PLANS, PROGRAMS, AND PROCEDURES

The following subsections describe the plans, programs, and procedures that will be used during site operations.

9.1 LAYOUT PLANS

NA

9.2 EMERGENCY RESPONSE PLANS

The SSHO will perform pre-emergency planning before starting field activities, and during the mobilization and site-specific training phase of the project, and will coordinate emergency response with police/fire/rescue personnel and the nearest hospital. Pre-emergency planning meetings will be used to inform local authorities of the nature of site activities that will be performed under the Statement of Work (SOW), and the potential hazards that activities may pose to site workers, the environment, and the public.

9.2.1 Procedures and Tests

An agreement will be established between USA, emergency response personnel and the hospital regarding responsibilities of each party in responding to a project site emergency. The SSHO will verify all on-site emergency services information, to include procedures for requesting services. It will be the SSHO's responsibility to post these procedures and contact information in accordance with the requirements of this APP/SHSP. Pre-emergency planning tasks include:

- Posting emergency instructions and call numbers at accessible telephone locations
- Inspecting all emergency equipment and supplies, to ensure they are in proper working order
- Providing a site map marked with planned evacuation routes, assembly points, and location of emergency equipment and supplies
- Providing a map with the route to the hospital marked and highlighted, with copies of this map posted in all site vehicles
- Conducting an emergency response drill to test the effectiveness of the Emergency Response Plan and Contingency Procedures (ERCP)
- Reviewing and revising the ERCP in the event of a failure of the plan in an actual or staged emergency, or when changes in site conditions or SOW affect the ERCP.

Before normal activities are resumed, on-site personnel must be prepared and equipped to handle another emergency. The follow-up activities listed below should be completed.

- The CHSM will notify appropriate government agencies as required. (Reminder: OSHA must be notified if there have been any fatalities or three or more hospitalizations from the same event.)
- All equipment and supplies should be restocked, serviced and inspected.
- All aspects of the SHSP should be reviewed and revised as necessary to address and prevent future emergencies of this type.

As part of mobilization training prior to start of project, all personnel will review the POC list and note where it is posted, as well as the location of the nearest hospital. A meeting place off-site will be identified in case of emergency evacuation. Emergency evacuation responsibilities of all persons on-site will be identified. All personnel will review the locations of fire extinguishers and be competent to use one properly. All emergency telephone numbers will be posted next to the directions to the hospital map on-site.

9.2.2 Spill Plans

USA will conduct cleanup operations in the event of a spill of hazardous material (e.g., fuel or oil from field operations). The SSHO will manage the collection of the spilled material with absorbent pads and containerize the pads or materials within Department of Transportation approved drums, for disposal as potential contaminated hazardous waste. A complete spill kit will be maintained on-site when spills are a potential hazard. Chemicals brought to the site will be in small quantity containers, in order to limit the amount of material spilled, should a spill occur. As part of mobilization training, all site personnel will be trained in the procedures for clean-up of small spills.

In the event of a spill or leak of any potentially harmful material (regardless of quantity), on-site personnel will take the following steps.

- Notify the SSHO immediately.
- The SSHO will notify the Project Manager of the spill/leak with relative information (location, time, chemical identity, quantity, hazards listed on the MSDS), and any corrective actions/measures taken.
- Locate the source and stop the leak/spill if it can be done safely (as dictated by the SSHO).
- Begin containment and recovery of spilled material (as directed by the SSHO), using appropriate PPE and spill clean-up equipment and materials.
- Determine if quantities meet or exceed the reporting requirements of federal or State Environmental Protection Agency (EPA) for spills.
- Once notified, the Project Manager will in turn notify the NAVFAC RPM and the Contracting Officer. The NAVFAC RPM may advise USA if any additional actions are necessary.

9.2.3 Firefighting Plans

In the event of a fire or explosion, the SSHO will notify the police, fire department, and ambulance, as required. The SSHO will also contact the NAVFAC site representative and Project Manager, and escort the response personnel to the location of the fire or explosion. The SSHO will determine the extent of the fire, coordinate and manage fire suppression efforts until the fire department arrives, use available on-site fire extinguishers on incipient stage fires only, and provide emergency first aid as needed. The responding fire department personnel will be informed of the nature of the fire and assistance will be provided, if requested.

The decision on whether or not to try to extinguish a fire using available site personnel and equipment will be made by the SSHO and will be based on whether the fire is small, large, or involves hazardous materials.

9.2.3.1 Small Fires

A small fire is defined as a fire that can most likely be extinguished by site personnel using portable extinguishers of 10B:C and 20B:C size. A small fire must also be free and clear of hazardous materials. If a small fire occurs, the SSHO will direct site personnel to perform the following, if safe to do so:

- Evacuate unnecessary personnel to an upwind position
- Attempt to extinguish the fire using portable fire extinguishers, or by smothering
- Remove any essential or flammable items from the path of the fire
- Notify emergency response services (fire, police, ambulance, hospital, etc.) as needed.

If a fire extinguisher is used, this must be immediately reported to the SSHO. The fire extinguisher must be immediately removed from service until it can be recharged. Another fire extinguisher must be made available to the operating area. The area around where the fire occurred must be watched for a minimum of one hour after the fire has been extinguished, to ensure re-ignition does not occur. If personnel are not

working in the area, the SSHO will check the area of the fire periodically to ensure re-ignition does not occur.

9.2.3.2 Large Fires

A large fire is defined as a fire which cannot be extinguished, or which, due to its size, cannot be extinguished using portable fire extinguishers. In the event that a large fire occurs, the SSHO will direct personnel to conduct the following, if safe to do so:

- Evacuate all non-essential personnel from the site to an upwind location
- Notify the Fire Department and other emergency response services (police, ambulance, hospital, etc.) as needed
- Order the appropriate level of protective equipment to be worn by personnel responding to the fire
- Attempt to control the fire to the extent possible
- Remove any essential or flammable items from the path of the fire.

9.2.4 Posting of Emergency Telephone Numbers

Emergency resources are listed in Table 9-1. These emergency contact numbers must be posted with each telephone, and in each site vehicle.

Table 9-1: Emergency Contact Numbers

Contact	Phone Number
Ambulance	911
Fire Department	911
Police	911
Mid Coast Hospital	207-729-0181
Occupational Health Clinic: US Health Works	202-725-2697
Navy Caretaker, Robert LeClerc	207-263-6736
NAVFAC RPM, Todd Bober	215-897-4911
Poison Control Hotline	1-800-222-1222
USEPA National Response Center	1-800-424-8802
CHEMTREC	1-800-424-9300
Federal OSHA Emergency Hotline	1-800-321-OSHA (6742)
USA Program Manager, Doug Ralston	813-343-6368
USA Project Manager, Robert Hierholzer	813-343-6339
USA Corporate Health and Safety Manager, Cheryl M. Riordan, CSP	757-689-4737
USA Director of Safety and Quality Robert Crownover	813-343-6364

In the event of an on-site emergency, the individual team leader or first person aware of the emergency will contact the SSHO. The SSHO will normally be responsible for contacting the first responders, to administer first aid services and the ambulance, to transport the victim to the hospital, should that be needed. If the order is given to evacuate the site of all personnel, each on-site team leader will assemble, account for, and evacuate all team personnel to the pre-designated staging area in the support zone.

The first responders will render emergency first aid treatment and the SSHO will authorize site personnel to assist, where required. The SSHO will call the local Fire Department.

9.2.5 Man Overboard/Abandon Ship Plan

NA

9.2.6 Medical Support

USA will have two persons assigned to the site who are certified in first aid and cardiopulmonary resuscitation (CPR). These individuals, who will be identified to all site personnel during mobilization training, will be the first responders to a site accident. Other site workers may be asked to assist as necessary. If a worker has a potentially serious injury or illness, the SSHO will make the decision to notify EMS. An ambulance will be called in to transport the victim to the nearest hospital. For less serious injuries, a co-worker may take a victim for medical treatment to the nearest hospital emergency room. For serious injuries, the medical treatment facility for use at this project site will be Mid Coast Hospital, 123 Medical Center Drive, Brunswick, ME 04011. The hospital is approximately 3 miles from Former NASB. The SHSP provided as Appendix C of this APP contains a map with directions to the hospital.

The occupational health clinic for this site will be US Health Works Medical Group, 11 Medical Center Drive, Brunswick, ME 04011. A map with directions to the occupational health clinic can be found in Appendix C.

The USA Occupational Physician will be available by phone to provide occupational specific information in case medical treatment is needed. Dr. James Vawter of Tierney-Vawter Medical Group can be reached at telephone number (831) 647-8700.

The SSHO will maintain a first aid kit and blood-borne pathogens kit in the transport vehicle on-site. Personnel with first-aid type injuries will report to the SSHO, who will instruct the first responders to provide first aid treatment of their injuries. The SSHO will be advised of any first aid treatment provided, so that he/she can investigate the root cause of the injury, and take preventive action on-site. All treatment will be recorded and any necessary forms completed for documentation of the injury or illness.

9.2.6.1 Bloodborne Pathogens Program

The strategy of "Universal Precautions" was developed by the Centers for Disease Control to address concerns regarding transmission of Human Immunodeficiency Virus (HIV). This concept stresses that all sources should be assumed to be infectious for HIV, hepatitis B virus, and other blood-borne pathogens. The philosophy of universal precautions will be applied whenever USA employees render first aid involving potential contact with blood, body fluids, or other potentially infectious materials. All blood and body fluids will be treated as if they are infectious. PPE and cleanup procedures will be implemented accordingly.

9.2.6.2 Engineering Controls

Engineering controls will be used whenever possible to eliminate or reduce the potential for employee exposure, and will be periodically examined, maintained or replaced to ensure their effectiveness. USA employees will observe "universal precautions," and treat all body fluids as potentially infectious materials. USA will provide hand-washing facilities, readily accessible to employees. Where the installation of hand washing facilities is not feasible, appropriate antiseptic cleanser and clean paper or cloth towels will be provided. USA employees will wash their hands, and any other potentially exposed skin, with soap and running water as soon as possible:

- After removing gloves or other PPE
- After contact with potentially infectious materials
- Even after washing with antiseptic as described

- USA employees will flush eyes or other mucous membranes with copious amounts of water as soon as possible after contact of these areas with potentially infectious materials.

For emergency first aid situations involving multiple victims, the same equipment will not be used on different victims unless it has been properly decontaminated or if the victim's medical condition would be seriously affected by a delay in treatment.

9.2.6.3 Safe Work Practices

Safe work practices will be implemented whenever possible to eliminate or reduce the potential for employee exposure.

- Employees will wash their hands immediately, or as soon as feasible, after removal of gloves or other PPE.
- Employees will wash hands, and any other exposed skin, with soap and water, or flush mucous membranes with water immediately following contact with blood or potentially infectious materials.
- If potentially contaminated sharps are encountered, the item will immediately be disposed of in an appropriate container for decontamination and disposal.
- Eating, drinking, smoking, applying cosmetics or lip balm, handling of contact lenses, any hand-to-face activities, or storage/handling of food is prohibited in all areas where potentially infectious materials are present.
- Equipment that has become contaminated will be decontaminated prior to servicing or storage, unless decontamination is not feasible, in which case the equipment will be disposed of properly in appropriately labeled and color-coded containers.

9.2.6.4 Personal Protective Equipment

When occupational exposures remain after the implementation of engineering and work practice controls, appropriate PPE will be utilized to control employee exposures. USA will provide appropriate PPE including gloves, face masks, eye protection, mouthpieces, etc., for protection against potentially infectious materials. Personal protective equipment will not allow potentially infectious materials to pass through or reach an employee's clothes, skin, eyes, mouth, or other mucous membranes during normal use for the expected duration of time for which the PPE will be used.

Employees will use the appropriate PPE unless, in unusual circumstances, the employee believes that using the protective equipment will prevent the administering of first aid, or would pose an increased risk. Any incident where the use of protective equipment is declined will be investigated and documented by the SSHO, and must be approved by the CHSM.

Single-use protective equipment, such as surgical gloves, will be disposed of after each use, or as soon as possible after the equipment has become damaged. Multi-use protective equipment, such as coveralls or utility gloves, will be cleaned and decontaminated after each use, or when they become contaminated, in order to maintain effectiveness. Multi-use protective equipment will be removed, and then disposed of or repaired as soon as possible after becoming damaged.

When PPE is removed, it will be placed in an appropriately designated area or container for storage, washing, decontamination or disposal. PPE will be removed and disposed of or decontaminated before it leaves the area.

Gloves will be worn when it can be reasonably anticipated that the employee may have hand contact with potentially infectious materials. Disposable (single use) gloves will not be washed for reuse and will be disposed of after each use, or if their ability to function as a barrier is compromised. Utility gloves may be decontaminated for re-use if the integrity of the glove is not compromised. However, they must be discarded if they exhibit signs of deterioration, or when their ability to function as a barrier is compromised.

Masks, in combination with eye protection devices such as safety glasses, goggles or face shields, will be worn whenever blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated.

9.2.6.5 Decontamination Procedures

All equipment, working surfaces and non-working surfaces will be decontaminated after contact with potentially infectious materials. A solution of ten parts water to one part bleach, or other equally effective material, will be used to clean contaminated areas, in accordance with the following requirements.

- Contaminated sharp objects will be cleaned up using mechanical means, such as a brush and dustpan.
- Sharp objects will not be picked up directly with the hands.
- Two pairs of gloves, inner surgical gloves and outer utility gloves, will be worn for cleaning contaminated surfaces.
- A smock or apron and eye protection will also be worn.
- Only those employees directly involved with the decontamination efforts will be allowed in the work area while cleaning is taking place.
- All cleaning equipment will be disinfected or disposed of in accordance with this program.
- For minor injuries where the employee is able to return to work, the injured employee will clean up his/her own blood, or other potentially infectious materials.

9.2.6.6 Housekeeping and Waste Disposal

The work site will be maintained in a clean and sanitary condition, to prevent the spread of contamination to other areas of the facility. All equipment and working surfaces will be cleaned and decontaminated after contact with blood or other potentially infectious materials. Contaminated work surfaces and equipment will be decontaminated with an appropriate disinfectant immediately after they become contaminated, in accordance with the decontamination section of this program. Regulated waste, other than contaminated sharps, will be placed in containers that are closable, constructed to contain all contents and prevent leakage, properly labeled or color-coded, and closed prior to removal or replacement. Labels or color-coding will be fluorescent orange or orange-red, and will display the biohazard symbol in a contrasting color.

Regulated waste containing contaminated sharps will be placed in containers which are; closable, puncture resistant and leak proof on sides and bottom, properly labeled or color-coded, and closed prior to removal or replacement. Contaminated clothing, equipment and other materials will be handled as little as possible and with minimum agitation. Bags containing contaminated materials will not be carried or handled from the bottom. All regulated waste will be disposed of in accordance with applicable federal, state, and local regulations.

9.3 PLAN FOR PREVENTION OF ALCOHOL AND DRUG ABUSE

The USA program is included as Appendix D. All project personnel will be asked to read and abide by this plan. The policy will be posted at the job site.

9.4 SITE SANITATION PLAN

An adequate supply of potable (drinkable) water will be provided on-site at all times. Adequate sanitation facilities will be provided at each work site to ensure proper personal hygiene. Site sanitation will be established and maintained in accordance with OSHA 29 CFR 1910.120(n) as follows.

- Containers used for potable water will be capable of being tightly closed, equipped with a tap and will be maintained in a clean and sanitary condition.
- A container used for distribution of drinking water will be clearly labeled as to its contents and will not be used for any other purpose.

- Water will not be dipped from the container and use of a common cup will not be allowed.
- Where single service cups are provided, separate sanitary containers will be provided for the storage of the unused cups and for disposal of the used cups.
- Water coolers of drinking water will be placed in the support zone.
- Personnel will be instructed to wash their face and hands prior to drinking.
- Outlets and storage containers for non-potable water, such as water for firefighting or decontamination, will be clearly labeled to indicate that the water is not suitable for drinking with the following: "CAUTION – WATER UNSAFE FOR DRINKING, WASHING, OR COOKING." At no time will there be a cross connection or open potential between a system furnishing potable water and a system furnishing non-potable water.
- Chemical toilets will be available at the work site. The toilet will be equipped with toilet paper, toilet paper holder, light, washing facilities, locking door, and adequate ventilation.
- Hand and face washing facilities will be set up in the support zone of the work area. These will be utilized by all personnel exiting the EZ prior to eating, drinking, tobacco use or other hand to face activities. Washing facilities will consist of potable running water, soap and drying towels. Portable eyewash will be available in site vehicles and with the first aid kits.
- Waste Disposal: A trash receptacle will be present in the support zone for the disposal of hand drying materials, any disposable PPE, paper towels used to dry hands, and other generated site debris.

9.5 ACCESS AND HAUL ROAD PLAN

NA

9.6 RESPIRATORY PROTECTION PLAN

Due to the potential for exposure to lead and PAH in the soil on this site, particularly during the soil excavation operations, the USA Respiratory Protection Program will be implemented on this site. All site personnel with the potential for exposure to lead and PAH will be trained in respiratory protection, as well as the contaminants of concern for this project. The respirator training will include why this respirator was selected, fit testing, proper use, inspection, storage, and maintenance of the equipment. All personnel required to wear a respirator will be medically qualified to do so, and the physician's statement will be maintained on-file at the site for the duration of site operations. Fit testing will be performed on all personnel wearing respirators, to include the make, model and size of the respirator tested. Fit test forms will be signed by the person administering and receiving the fit test, and records will be maintained on-site in the individual's personnel file for the duration of site operations. When operations are completed, these personnel files will be returned to the employer's corporate office for storage.

9.6.1 Type of Respiratory Protection Equipment to be Used

Full or half-face air purifying respirators will be used for the excavation of the contaminated soil, unless it can be documented that they are no longer needed due to exposure being below the action level of 30 ug/m³ for lead and .2 mg/m³ for PAH.

9.6.2 Air Purifying Respirator (APR) Canister Selection and Use

An air purifying respirator (APR) with P-100 filters is the recommended respiratory protection equipment for use on this site, as the source of exposure is contaminated particulates from the soil getting into the breathing zone of the workers. The canisters will be changed out once a day for the duration of time they are required for use. If the air is particularly dusty and/or the canisters show signs of becoming clogged or past their useful service life, the change-out schedule can be revised by the SSHO to include more frequent change-out. Such signs of canisters being past their useful service life could include: light-headedness, difficulty breathing, smelling or tasting contaminant while using the respirator. If any of these signs/symptoms occur, the respirator user will immediately leave the respirator area, will remove

the respirator and inform the SSHO. Others wearing respirators in the area will be informed by the SSHO of any changes made to the canister change-out schedule.

9.6.3 Decontaminating, Sanitizing, Inspecting and Maintaining Respirators

Inspection and Maintenance

All respirators will be inspected prior to and after each use. Inspection will include, as applicable, a check of the function, tightness of connections, and condition of the various parts including, but not limited to, valves, valve covers, facepiece, head straps, straps, and canisters. A check will be made of all elastomeric parts of the respirator for pliability and signs of deterioration. The following points should be considered for respirator inspection and maintenance:

- The wearer of a respirator will inspect it daily whenever it is in use.
- Supervisors or Team Leaders will periodically spot check respirators for fit, usage, and condition.
- Respirators will be cleaned on a daily basis, according to the manufacturer's instructions, by the assigned employee.
- Respirators will be stored in a suitable container away from areas of contamination.
- Whenever feasible, respirators will be marked or stored in such a manner as to ensure that they are worn only by the assigned employee. If use by more than one employee is required, the respirator will be cleaned between uses.
- Each area requiring the regular use of respirators will maintain a logbook. Employees should sign this logbook daily in order to document the inspection and maintenance of their respirators.

The inspection and maintenance procedure for air purifying respirators is as follows:

- Air purifying respirators will be inspected prior to each use.
- All connections will be thoroughly checked for the presence of appropriate gaskets and "O" rings, and for proper sealing.
- Valves, gaskets and "O" rings will be inspected for any signs of dirt, soap residue, wear, or cracking
- Check the condition of the facepiece and all of its parts. Again, look for signs of dirt, soap residue, wear, or cracking. The facepiece should also be checked to ensure it is not distorted.
- Check to make sure the correct filters, cartridges, or canisters are being used to protect against the specific airborne hazards of the site. Ensure the filters, cartridges, or canisters are produced by the same manufacturer as the respirator. Although they may fit on the respirator in use, the filters, cartridges, and canisters of another manufacturer cannot be guaranteed to provide the same level of protection against airborne contaminants.
- Check head bands for elasticity and wear.
- Any parts noted as being worn or otherwise in disrepair will be repaired or replaced before the equipment is used. USA does not have anyone qualified to make repairs to respirators. If defects are observed, the respirators in question will be sent back to the manufacturer for repairs, or replacements will be ordered.
- Cartridges, filters, and canisters will be labeled and color coded with the NIOSH approved label at all times. The SSHO will ensure that only filters, cartridges, and canisters appropriate for the specific site hazards are available for employee use. No cartridges, filters, or canisters may be used on any project site without the specific approval of the Program Safety and Health Manager. Filters and sorbent materials may be changed out on-site.

Any equipment noted with dirt, soap residue, or other contamination should be thoroughly cleaned and rinsed before use.

Decontamination and Sanitizing

Respirators will be clean, sanitary, and in good working order at the time they are assigned to employees for use. All respiratory protection equipment used, both occasionally or daily, will be cleaned and sanitized after each use. The respirator will then be placed in a clean/sanitary container to protect it from contact with dirt and chemical contamination. The SSHO will ensure that respiratory protection equipment which is not individually assigned will be cleaned and disinfected before being used by another employee. The use of alcohol-based cleaners is discouraged as they may cause premature deterioration of the respirator's rubber components.

All respiratory protection equipment will be given a thorough cleaning after each field use according to the manufacturer's instructions. Disinfectant wet wipes may be used for light cleaning. These should be used to thoroughly wipe down the inside of the respirator between each use during the day, such as for breaks, lunch, or when assigned to other duties not requiring a respirator that day. If an employee does not thoroughly wipe the respirator after each use, germs and bacteria could easily grow inside the respirator and the employee could become infected by using the respirator.

Respiratory protection equipment will be disassembled, per manufacturer's instructions, for cleaning and disinfecting. This cleaning will be performed in a clean bucket or container. All parts will be thoroughly rinsed twice and allowed to air dry, ensuring that no distortion will take place

9.6.4 Upgrading/Downgrading Respiratory Protection

If direct reading dust monitoring is performed, it will be set to ring off at 30 ug/m³, the Action Level for lead, as it has a lower Action Level than PAH. Personnel may work in modified Level D PPE with respirator slung until a ring-off occurs. At this point, respirator masks will be donned, essentially upgrading to Level C PPE.

If K&K is performing personal sampling for lead and PAH, personnel will begin the operation in Level C PPE until they have received at least one week's worth of sampling results demonstrating that the exposure level is below the action level. At that point, the SSHO, in consultation with the CHSM, may reduce the PPE level to Level D. However, if the area becomes observably more dusty, the SSHO may change the PPE level back to Level C as a precautionary measure, and additional sampling may be initiated.

9.7 HEALTH HAZARD CONTROL PROGRAM

The chemicals of concern for this project are lead and PAH, which can be found in the soil. Lead has an Action Level of 30 ug/m³ and a PEL of 50 ug/m³. PAH has a PEL of .2 mg/m³. These chemicals can enter the system through inhalation, ingestion, or absorption. Personnel will receive lead awareness training, as well as hazard communication training in the hazards of both lead and PAH.

Although levels of these contaminants in the soil are higher than the PEL, it does not necessarily imply that the exposure levels to personnel are above the Action Level or PEL. Both chemicals are denser than air, and higher levels would be expected to be closer to the ground, as opposed to the breathing zone. Personnel will be wearing tyvek suits for skin protection and will have APR respirators.

Air monitoring and sampling will be used to determine the actual exposure level to employees. If a direct-reading dust monitor is used, it will be set at 30 ug/m³, which is the action level of lead. Employees may work in modified Level D PPE, with respirators slung until there is a ring-off of this equipment. A ring-off would require workers to don respirators, and PPE would be upgraded to Level C. If personal air sampling for lead and PAH is implemented, personnel will work in Level C PPE until at least a week's worth of the personal sampling results can demonstrate that the exposure levels are below the action level. At that point, the SSHO, in consultation with the CHSM, can determine if the PPE can be lowered to Level D. Should conditions at the site change and become visibly dustier, the SSHO can upgrade the PPE back to Level C at his/her discretion as a precautionary measure, and additional sampling may be initiated.

9.8 HAZARD COMMUNICATION PROGRAM

The program establishes procedures for USA employees who handle and store chemical products at USA sites. It ensures that hazards of all chemicals purchased are evaluated and the information concerning their hazards is transmitted to employees. The delivery of information is to be accomplished by employee training, container labeling, and other forms of warning and MSDSs. All MSDSs are requested from the suppliers at the time of order. If not available then a recent MSDS will be downloaded from the Internet.

- A current inventory will be maintained of all hazardous materials brought to the site. This inventory will be inspected at least weekly to ensure it remains current.
- All chemical products used on the site will be properly labeled, to include products that have been taken from a large container and placed in a smaller container for use.
- As part of the written USA Hazard Communication Program, an MSDS binder will be maintained on-site, which includes copies of MSDSs for all hazardous materials brought onto the site by USA. It will be kept in the SSHO site vehicle during operations, and all USA personnel will be made aware of that fact. This MSDS binder will be available upon request to all site personnel during all working hours of the site. If site workers have further questions about any of the hazardous materials with which they come into contact, the USA CHSM will locate the required information and pass it on to the employee.
- All USA employees performing work involving the handling of hazardous materials will receive Hazard Communication training detailing the hazards of the product, appropriate protective measures to prevent exposure to the product, as well as safe procedures for storage and handling of the product, and response to emergencies. Personnel may request an MSDS for any hazardous material on the site at any time. This training will occur as part of the initial mobilization training at the site and will be documented on the USA Documentation of Training Form.
- As there are chemical contaminants in the soil (lead and PAH), MSDSs for these contaminants will be obtained online and kept in the MSDS binder on site. All site personnel with potential for exposure to these contaminants will be trained in their hazards as well as in protective measures and emergency procedures for incidents involving exposure.

The SSHO must ensure that project personnel can immediately obtain the required information about chemicals of concern during an emergency.

9.9 PROCESS SAFETY MANAGEMENT PLAN

NA

9.10 LEAD ABATEMENT PLAN

There are no lead-based paint operations on this site.

9.11 ASBESTOS ABATEMENT PLAN

NA

9.12 RADIATION SAFETY PROGRAM

NA

9.13 ABRASIVE BLASTING

NA

9.14 HEAT STRESS/COLD STRESS MONITORING PLAN

9.14.1 Heat Stress

Heat stress is one of the most common (and potentially serious) illnesses that affect hazardous waste site workers. When site personnel are engaged in operations involving hot environments and/or the use of semi- or impermeable clothing, a number of physiological responses can occur that may seriously affect the health and safety of the workers. These effects can be eliminated or controlled through the use of a comprehensive heat stress prevention and monitoring program. Therefore, it is the objective of this program to outline the methods and procedures to be used by USA personnel for the prevention, control and/or treatment of heat-related illnesses.

Causes of Heat Stress – The most common cause of heat stress during site activities is the effect that PPE has on the body's natural cooling mechanism. Impermeable PPE interferes with the evaporation of perspiration and causes the body to retain metabolic and environmentally induced heat. Individuals will vary in their susceptibility and degree of response to the stress induced by increased body heat. Heat stress can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress is caused by a number of interacting factors including environmental condition, clothing, workload, and the individual characteristics of the worker. Because heat stress is probably one of the most common (and potentially serious) illnesses at hazardous waste sites, regular monitoring and other preventive precautions are vital.

Factors that may predispose a worker to heat stress include:

- Lack of physical fitness
- Lack of acclimatization to hot environments
- Degree of hydration
- Level of obesity
- Current health status (e.g., having an infection, chronic disease, diarrhea, etc.)
- Alcohol or drug use
- The worker's age and sex
- Sunburn.

Reduced work tolerance and the increased risk of excessive heat stress are directly influenced by the amount and type of PPE worn. PPE adds weight and bulk, severely reduces the body's access to normal heat exchange mechanisms (evaporation, convection, and radiation), and increases energy expenditure. Therefore, when selecting PPE, the benefit of each item should be carefully evaluated in relation to its potential for increasing the risk of heat stress. Once PPE is selected, the safe duration of work/rest periods should be determined based on the:

- Anticipated work rate
- Ambient temperature and other environmental factors
- Type of protective ensemble
- Individual worker characteristics and fitness.

Prior to initiating site activities each day, and periodically throughout the day, the SSHO will inspect the site personnel for evidence of the previously mentioned factors, to determine those personnel who are at increased risk for heat stress-related disorders. Evidence of extreme dehydration, illness or drug or alcohol use may require the SSHO to restrict the worker's activities until such time as the worker is fit for duty. Personnel identified as being at high risk for heat stress, and who are allowed to participate in site operations, will be monitored frequently by the SSHO throughout the day.

Heat Stress Disorders – This section outlines the major heat-related illnesses that may result from exposure to high heat environments and/or the use of semi-permeable or impermeable clothing. For the

purpose of this Program, reference to "liquids" will indicate the use of water or an electrolyte replacement solution, and not tea or coffee (unless it is decaffeinated) or carbonated soft drinks.

– Heat Rash

Heat rash is caused by continuous exposure to heat and humid air and is aggravated by wet, chafing clothes. This condition can decrease a worker's ability to tolerate hot environments.

Symptoms: Mild red rash, especially in areas of the body that sweat heavily.

Treatment: Decrease amount of time in protective gear and provide powder such as corn starch or baby powder to help absorb moisture and decrease chafing. Maintain good personal hygiene standards and change into dry clothes if needed.

– Heat Cramps

Heat cramps are caused by a profuse rate of perspiration that is not balanced by adequate fluid and electrolyte intake. The occurrence of heat-related cramps is often an indication that excessive water and electrolyte loss has occurred, which can further develop into heat exhaustion or heat stroke.

Symptoms: Acute, painful spasms of voluntary muscles such as the back, abdomen and extremities.

Treatment: Remove victim to a cool area and loosen restrictive clothing. Stretch and massage affected muscles to increase blood flow to the area. Have patient drink 1 to 2 cups of liquids immediately, and every 20 minutes thereafter. Consult with a physician if condition does not improve. If available, an electrolyte replacement solution should be taken along with water.

– Heat Exhaustion

Heat exhaustion is a state of very definite weakness or exhaustion caused by increased stress on various organs to meet increased demands to cool the body due to excessive loss of fluids from the body. This condition leads to inadequate blood supply and cardiac insufficiency. Heat exhaustion is less dangerous than heat stroke, but nonetheless must be treated. If allowed to go untreated, heat exhaustion can quickly develop into heat stroke.

Symptoms: Pale or flushed, clammy, moist skin, profuse perspiration, and extreme weakness. Body temperature is basically normal or slightly elevated, the pulse is weak and rapid, and breathing is shallow. The individual may have a headache or be dizzy or nauseated.

Treatment: Use passive and active cooling. Orally administer cool water and/or electrolyte replacement liquids immediately, to hydrate the victim, starting with small sips and continuing with larger amounts as the victim is able to hold it down. Total liquid consumption should be about 1 to 1.6 gallons per day. Transfer the victim to a medical facility if symptoms do not subside, or become more severe.

– Heat Stroke

Heat stroke is an acute and dangerous reaction to heat stress caused by a failure of the heat regulating mechanisms of the body. The failure of the individual's temperature control system causes the perspiration system to stop working correctly. When this occurs, the body core temperature rises very rapidly to a point [105 + degrees Fahrenheit (°F)] where brain damage and death will result if the person is not cooled quickly.

Symptoms: The victim's skin is hot and may or may not be red and dry (due to the fact that the individual may still be wet from having sweat while wearing protective clothing earlier); nausea; dizziness; confusion; extremely high body temperatures; rapid respiratory and pulse rate; delirium; convulsions; unconsciousness or coma.

Treatment: Cool the victim immediately. If the body temperature is not brought down quickly, permanent brain damage or death may result. The victim should be moved to a shady area and laid down with the head kept elevated. Passive and active cooling should be used. If conscious, orally administer cool water and/or electrolyte replacement liquids immediately to hydrate the victim, starting with small sips and increasing amounts as the victim is able to hold it down. Rapidly transfer the victim to an emergency

medical facility for immersion in cool water. Do not give the victim caffeinated or alcoholic beverages. Heat stroke is considered a medical emergency.

Preventive Measures

– Required Preventive Measures

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because, once someone suffers from heat exhaustion, that person may become predisposed to additional heat injuries. In order to avoid heat-related illnesses, proper preventive measures will be implemented whenever environmental conditions dictate the need. These preventive measures represent the minimal steps to be taken, and will include the following procedures.

- The SSHO will examine each site worker prior to start of daily operations to determine the individuals susceptible to heat induced stress. Workers exhibiting factors that make them susceptible to heat stress will be closely monitored by the SSHO.
- Site workers will be trained to recognize and treat heat-related illnesses. This training will include the signs, symptoms and treatment of heat stress disorders as outlined in this Program.
- In order to maintain workers' body fluids at normal levels, workers will be encouraged to drink, as a minimum, approximately 16 ounces of liquids prior to start of work in the morning, after lunch and prior to leaving the site at the conclusion of the day's activities. Disposable 4- to 12-ounce cups and liquids or bottles of water will be provided on-site. Acceptable liquids will include water and an electrolyte replacement solution. It is recommended that the water to balanced electrolyte liquids be taken at a 2:1 ratio with the intake of water being twice the intake of the balanced electrolyte liquids. Liquids containing caffeine are to be avoided.
- When ambient conditions and site workload requirements dictate, as determined by the SSHO, workers will be required to drink a minimum of 16 to 32 ounces of liquids during each rest cycle. The normal thirst mechanism is not sensitive enough to ensure that enough water will be ingested to replace lost sweat. When heavy sweating occurs, workers should be encouraged to drink even though they may not be thirsty. The following strategies may be useful in encouraging fluid intake:
 - Maintain water temperature at 50 °F to 60 °F (10 °C to 15.6 °C).
 - Provide small disposable cups that hold about 4 ounces (0.1 liter).
 - Have workers drink 16 ounces (0.5 liter) of fluids (preferably water or diluted drinks) before beginning work.
 - Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
 - A shelter or shaded area will be provided where workers may be protected from direct sunlight during rest periods.
- Monitoring of ambient or physiological heat stress indices will be conducted to allow prevention and/or early detection of heat-induced stress. Monitoring will be conducted in accordance with applicable paragraphs of this Program.
- Site workers will be given time to acclimatize to site work conditions, temperature, protective clothing, and workload. Acclimatization usually takes about a week to 10 days of continued work in hot environments, and allows the worker's body to become adjusted to this level and type of work. This process involves a gradual increase in the workload over the required period, the length of which depends upon the nature of the work performed, ambient temperatures, the level of PPE required for the job, and the individual's susceptibility to heat stress.
- Work schedules will be adjusted as follows:
 - Modify work/rest schedules according to monitoring requirements

- Mandate work slowdowns as needed
 - Rotate personnel: alternate job functions to minimize overstress or overexertion at one task
 - Add additional personnel to work teams
 - Perform work during cooler hours of the day if possible.
- Supplemental Preventive Measures

When possible and/or feasible, the following measures will also be implemented to aid in prevention or reduction of the effects of heat induced stress:

- Designated rest areas will be air-conditioned and the temperature maintained between 72 °F and 76 F.
- Cooling devices will be provided to aid in body heat exchange. Cooling devices may include cooling jackets, vests or suits and field showers or hose-down areas. Depending on the severity of the heat exposure, some form of artificial cooling may be required to ensure protection of the workers.
- Workers will be encouraged to achieve and maintain an optimum level of physical fitness. Increased physical fitness will allow workers to better tolerate and respond to hot environments and heavy workloads. In comparison to an unfit person, a fit person will have: less physiological strain, a lower heart rate and body temperature, and a more efficient sweating mechanism.

Heat Stress Monitoring

Because the incidence of heat stress depends on a variety of factors, all workers, even those not wearing protective equipment, should be monitored. USA uses portable heat stress monitoring instrumentation to determine level of workload and rest periods. Physiological monitoring methods are used as an alternate means of monitoring. The frequency of physiological monitoring depends on the air temperature, adjusted for solar radiation and the level of physical work (see Table 9-2). The length of the work cycle will be governed by the frequency of the required physiological monitoring.

For workers wearing permeable clothing (e.g., standard cotton or synthetic work clothes), follow recommendations for monitoring requirements and suggested work/rest schedules in the current ACGIH TLVs for Heat Stress. If the actual clothing worn differs from the ACGIH standard ensemble in insulation value and/or wind and vapor permeability, change the monitoring requirements and work/rest schedules accordingly.

When site personnel are engaged in site activities involving the use of semi-permeable or impermeable clothing in ambient temperatures greater than 70 °F, heat stress monitoring will be conducted. When site personnel are in typical Level D PPE, heat stress monitoring will begin when the temperature reaches 75 °F or above. The goal of all heat stress monitoring is to ensure that the worker's body temperature does not exceed 100.4 °F. The physiological monitoring method listed below is to be implemented based upon the severity of the heat and workload. The SSHO will monitor the worker's heart rate as an indication of potential heat stress and acclimatization. The frequency of physiological monitoring will be determined using the information presented in Table 9-2.

For monitoring the body's recuperative ability toward excess heat, both of the following techniques should be used as a screening mechanism. Monitoring of personnel wearing impervious clothing should commence when the ambient temperature is 70 °F or above. Frequency of monitoring should increase as the ambient temperature increases or as slow recovery rates to baseline (pre-work) levels are indicated.

Table 9-2: Suggested Frequency of Physiological Monitoring^a

Adjusted Temperature^b	Normal Work Ensemble^c	Impermeable Ensemble
90 °F (32.2 °C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5 - 90 °F (30.8 - 32.2 °C)	After each 60 minutes of work	After each 30 minutes of work
82.5 - 87.5 °F (28.1 - 30.8 °C)	After each 90 minutes of work	After each 60 minutes of work
77.5 - 82.5 °F (25.3 - 28.1 °C)	After each 120 minutes of work	After each 90 minutes of work
72.5 - 77.5 °F (22.5 - 25.3 °C)	After each 150 minutes of work	After each 120 minutes of work

^a For work levels of 250 kilocalories/hour.

^b Calculate the adjusted air temperature (at adj) by using this equation: at adj °F = at °F + (13 x % sunshine). Measure air temperature (at) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

^c A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

– Wet Bulb, Dry Globe Temperature Monitoring

For site conditions where personnel are working in Level D PPE, and the ambient temperature is greater than 75 °F, the SSHO will conduct wet bulb, dry globe temperature (WBGT) monitoring to assist in controlling the potential for site workers experiencing heat related adverse health effects. The SSHO will use a real-time direct reading WBGT monitor, and after estimating the workload, use the values expressed in Table 9-3 to determine the work/rest schedule to be implemented. The values outlined in this table are designed such that nearly all acclimatized, fully clothed workers with adequate salt and water intake will be able to function without the body temperature exceeding 100.4 °F.

Acclimatization is the adaptive process that results in a decrease of the physiological response produced by the application of a constant environmental stress. On initial exposure to a hot environment, there is an impaired ability to work and evidence of physiological strain. If the exposure is repeated on several successive days, there is a gradual return of the ability to work and a decrease in physiological strain. Within 4 to 7 days following initiation of the acclimatization process, a dramatic improvement in the ability to perform work is noticed: subjective discomfort practically disappears; body temperature and heart rate are lower; there is more stable blood pressure; and sweat is more profuse and dilute.

Alcohol should not be consumed in a hot environment because the loss of body fluids increases the risk of heat stress.

– Heart Rate Monitoring

The worker's baseline heart rate should be recorded prior to initiation of site activities, by measuring the radial pulse rate (PR) for thirty seconds. After each work cycle, the heart rate should be measured by taking the PR for 30 seconds as early as possible into the resting period. Taking the radial (wrist) PR is the preferred method; however, the carotid (neck) PR may be taken if a worker has difficulty finding the radial pulse. The PR at the beginning of the rest period should not exceed one hundred and ten (110) beats per minute (bpm). If the PR is higher than 110 bpm, the next work period should be shortened by thirty-three percent, while the length of the rest period stays the same. If the PR exceeds 110 bpm at the

beginning of the next rest period, the work cycle should be further shortened by thirty-three percent. This procedure will be continued until the worker's PR at the beginning of the rest cycle is maintained below 110 bpm.

Table 9-3: Permissible WBGT Heat Exposure Threshold Limit Values

Work – Rest Regimen	WORKLOAD		
	Light*	Moderate	Heavy
Continuous work	86 (30.0)	80 (26.7)	77 (25.0)
75% Work - 25% Rest, each hour	87 (30.6)	82 (28.0)	78 (25.9)
50% Work - 50% Rest, each hour	89 (31.4)	85 (29.4)	82 (27.9)
25% Work - 75% Rest, each hour	90 (32.2)	88 (31.1)	86 (30.0)

* Consult the ACGIH TLV booklet for definitions of Light, Moderate and Heavy workloads.

Heat Stress Documentation

The SSHO will be responsible for recording all heat stress related information. This will include training sessions and monitoring data. Training sessions will be documented using the Documentation of Training form. Pulse rate monitoring data will be recorded on the Heat Stress Monitoring Log (Table 9-4), with the WBGT.

Values are given in °F and (°C) WBGT, and are intended for workers wearing single layer summer type clothing. Use of semi-permeable or totally impermeable clothing requires monitoring in accordance with the USA Heat Stress Prevention Program. As workload increases, the heat stress impact on an unacclimatized worker is exacerbated. For unacclimatized workers performing a moderate level of work, the permissible heat exposure TLV should be reduced by approximately 2.5 °C.

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9.14.2 Cold Stress

The effects experienced by site personnel when working in cold environments depend upon many environmental and personal factors, such as ambient air temperature, wind speed, duration of exposure, type of protective clothing and equipment worn, type of work being conducted, level of physical effort, and health status of the worker. In cold environments, overexposure can cause significant stress on the body, which can lead to very serious and permanent injury. Cold may affect just the exposed body surfaces and extremities, or may affect the deeper body tissues and the body core. Hypothermia, immersion, and frostbite result from extremes in cold exposure. Hypothermia conditions can affect judgment and reasoning ability. Protective clothing such as gloves and Saranex clothing should minimize cold conditions by reducing evaporation. Similarly, movement and activity will reduce cold stress by increasing metabolism.

Cold temperature extremes can be made more dangerous by water and wind speed. At temperatures below 32 °F, the effects of wind speed become pronounced. The use of a tarp or other barrier should be considered as a contingency to reduce the effects of wind speed. 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 soaked with perspiration. In cold extremes, if feet become soaked they should be dried at the earliest possible time. In cold extremes, after decontamination procedures, site employees will proceed to a protected area.

Cold Stress Disorders

- Immersion Foot or Trench Foot

These two cold injuries occur as a result of exposure to cool or cold weather and persistent dampness or immersion in water. Immersion foot usually results from prolonged exposure when air temperatures are above freezing, whereas trench foot normally occurs from shorter exposure at temperatures near freezing. The symptoms for each disorder are similar and include tingling, itching, swelling, pain in some cases or numbness in others, lack of sweating, and blisters.

- Hypothermia

Hypothermia results when the body loses heat faster than it can produce it. When this occurs, the blood vessels in the skin and extremities constrict, reducing the flow of warm blood to those areas, thereby reducing the rate of heat loss. This reduction in blood flow usually affects the peripheral extremities first. Ears, fingers and toes begin to experience chilling, pain, and then numbness due to loss of both blood flow and heat. Shivering begins as the body's core temperature begins to drop, and the body uses the shivering to compensate and create metabolic heat. Shivering is often the first sign of hypothermia. The pain and numbness in the extremities is an indication that the heat loss is increasing, and when shivering becomes uncontrollable, the heat loss in the body core has become extreme. Energy reserves are exhausted. Once the cold reaches the brain, the person will be deprived of judgment and reasoning power. They will not realize this is happening and will also lose control of their hands. The internal temperature will continue to drop downward, and without treatment, this will lead to stupor, collapse, and death. The victim should be brought to a warm location, and if conscious, should be made to drink warm fluids.

- Frostbite

Frostbite occurs when there is actual freezing of the water contained in the body tissues. This usually occurs when temperatures are below freezing, but excessive wind can result in frostbite even at ambient temperatures that are above freezing. Frostbite can occur from several types of cold exposure, such as: exposure of bare skin to cold and wind; exposure to extremely cold ambient temperatures; or from skin contact with objects whose temperatures are below freezing. The extremities are usually affected first since they experience reduced blood flow and heat loss. The tissue damage caused by frostbite can be superficial, near the surface of the skin, or extend to deeper body tissues, which can cause severe tissue damage. The skin may first have a prickly or tingling sensation and later become numb with cold, and the appearance may range from superficial redness of the skin to white, hard, frozen-looking tissues.

Frost nip or incipient frostbite is the condition characterized by sudden blanching or whitening of the skin. Superficial frostbite is when the skin has a waxy or white appearance and is firm to the touch, but the tissue beneath is resilient. Deep frostbite is when the tissues are cold, pale, and solid. Deep frostbite is an extremely serious injury. Where deep frostbite exists, it is essential to get the patient to the hospital as quickly as possible.

Treatment of Cold Stress Disorders

The intent of all cold stress treatment is to bring the deep body core temperature back to its normal temperature of about 98.6 °F. Work performed in cold environments should be discontinued for any worker who exhibits the signs or symptoms associated with hypothermia or frostbite. Workers exhibiting those symptoms should be brought to a warm area and allowed to rest and warm-up. If a worker's clothing becomes wet, which reduces its insulation effect; it should be removed and replaced by dry clothing, or allowed to dry before resuming work. A warm, non-alcohol, decaffeinated drink (not coffee) or soup may be given. Re-warming should be gradual.

For frostbite, the victim should be sheltered from the wind and cold and given warm drinks. If the frostbite is superficial, the frozen part should be covered with extra clothing or blankets or warmed against the body. **Do not use direct heat, and do not pour hot water over or rub the affected area.** Warming should be gentle and gradual. Failure to do this could lead to bleeding in the tissues and increase the possibility of infection. If the frostbite is deep, i.e., the affected area is frozen and hard to the touch, immediate medical attention should be obtained. The safe thawing of deep frostbite is beyond the expertise and facilities found on-site.

Prevention of Cold Stress Disorders

During work in cold environments, the SSHO will use the tailgate safety briefing to inform site personnel of the measures to be utilized in the prevention and control of cold stress. The SSHO will also use meteorological data and Table 9-5 to inform site personnel of the combined temperature/wind chill effect to be expected during the day's activities. Prevention methods that site personnel will utilize are:

- Wear adequate, appropriately layered clothing, including a water repellant outer layer if precipitation is forecasted.
- Layered clothing should include an innermost layer, such as cotton or silk to trap heat and absorb perspiration, an insulating layer (when working with static sensitive materials 100% cotton is recommended), a layer of work weight clothing, and an outer protective layer designed to be wind/water proof. (When working with static sensitive materials, 100% cotton is recommended.)
- Wear a hat, gloves and socks that are synthetic or wool insulated, to help retain body heat. (When working with static sensitive materials, 100% cotton is recommended.)
- Remove outer layers of clothing during breaks in heated shelters, to prevent excessive sweating.
- In windy, cold conditions, cover all exposed skin.
- Eat well-balanced meals, and maintain adequate intake of non-alcoholic, decaffeinated fluids.
- Seek shelter in a warm protected area when signs and symptoms of cold stress become evident.
- Protect clothing from getting wet; this includes keeping clothing from getting wet with sweat, so remove outer layers if work activities cause excessive sweating.

USA will assist in the prevention of cold stress by providing sheltered, warm areas where site personnel can rest and regain body heat during breaks. USA will also provide the following to assist site personnel in abating cold stress:

- Warm fluids, such as soup or decaffeinated tea and cocoa, will be provided as needed
- A minimum of one 15-minute break in a heated shelter every 2 hours
- If approved, a heated shelter may be provided inside the exclusion zone (EZ), upwind from the work area, where site personnel can rest and warm-up [after having processed through a limited personnel decontamination station (PDS) consisting of glove wash and removal, respirator wash and removal, and hand washing where chemical contamination is anticipated].

NOTE - To date, there are no federally mandated regulations related to work/rest schedules. The 15 minute break every 2 hours is a recommended routine, but may not be adequate for all cold environments. The American Conference of Governmental Industrial Hygienists (ACGIH) has published a work/rest schedule, which is provided in Table 9-6. However, this table only applies to, and should be implemented for, temperatures below 0 °F. Therefore, for temperatures above 0 °F, workers will be encouraged to seek shelter and rest in a warm area whenever they exhibit signs or symptoms of cold stress, as discussed previously.

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Table 9-5: Cooling Power of Wind on Exposed Flesh Expressed as Equivalent Temperature

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
Wind speeds greater than 40 mph have little additional effect	LITTLE DANGER In < hr with dry skin. Maximum danger of false sense of security				INCREASING DANGER Danger from freezing of exposed flesh within one minute				GREAT DANGER Flesh may freeze within 30 seconds			
	Trench foot and immersion foot may occur at any point on this chart.											

Table 9-6: TLV Work/Rest Schedule for 4-Hour Work Shift*

Air Temp. °F Approx.	No Wind		5 MPH Wind		10 MPH Wind		15 MPH Wind		20 MPH Wind	
	Max. Work Period	No. of Breaks								
-4° to -8°	Normal	1								
-9° to -13°	Normal	1	Normal	1	Normal	1	Normal	1	75 min.	2
-14° to -18°	Normal	1	Normal	1	Normal	1	75 min.	2	55 min.	3
-15° to -19°	Normal	1	Normal	1	75 min.	2	55 min.	3	40 min.	4
-20° to -24°	Normal	1	75 min.	2	55 min.	3	40 min.	4	30 min.	5
-25° to -29°	75 min.	2	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease	
-30° to -34°	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease			
-35° to -39°	40 min.	4	30 min.	5	Non-emergency work should cease					
-40° to -44°	30 min.	5	Non-emergency work should cease							
-45° & Below	Non-emergency work should cease									

1. Schedule applies to any 4-hour work period with moderate to heavy work activity, with warm-up cycle in a warm location and with an extended break in a warm location (e.g., lunch) at the end of the 4 hours. For light-to-moderate work: apply the schedule one step lower.
2. The following is suggested as a guide for estimating wind velocity if other, more accurate means are not available:
 5 mph - light flag moves; 10 mph - light flag fully extended; 15 mph - raises newspaper sheet; 20 mph - blowing and drifting snow.
3. This table applies only to acclimatized workers with appropriate dry clothing for winter work.

* Adapted from the "Threshold Limit Values and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, Cincinnati, OH.

9.15 CRYSTALLINE SILICA MONITORING PLAN

NA

9.16 NIGHT OPERATIONS LIGHTING PLAN

NA

9.17 FIRE PREVENTION PLAN

In order to prevent fire from occurring, every step will be taken to keep the site neat and clean. All equipment and materials not in use will be put away in designated locations. Trash receptacles or bags will be available at the site; these will be emptied on a daily basis to keep trash from accumulating. All flammable liquids will be stored in approved flammable liquid cans, in order to prevent spillage and ignition of the material. Bonding and grounding procedures will be in place when transferring flammable liquids from their designated containers and into equipment. Equipment will never be fueled in the back of a pick-up truck containing a bed liner. Personnel handling explosive and/or flammable materials will wear cotton under and outer garments to prevent build-up and transfer of static electricity.

9.17.1 Fire Protection

Through appropriate use and storage of flammable products, USA intends to prevent fires as much as feasible during operations on this site. Should a fire occur, all site teams will have at least one ABC fire extinguisher with them during the course of operations. Fire extinguishers are the first line of defense should a fire start in this location. USA personnel will be trained in the use of fire extinguishers and they will be instructed to try to fight a fire only in the incipient stages. If the fire is too large to fight, personnel will evacuate the site and the SSHO will call in the Fire Department. If it is possible to safely do so, USA will remove any flammable and/or combustible materials from the path of the fire.

Portable fire extinguishers are rated and classified with NUMERAL and LETTER designations, based on fire tests conducted by the Underwriters Laboratories, Inc. or other nationally recognized testing laboratories. The numeral rating indicates the relative extinguishing effectiveness of extinguishers classified for Class A and B fires only. The letter classification coincides with the Class of Fire. Extinguishers found to be effective on more than one Class of fire have multiple-letter classifications (Example: A:B:C:D).

The rating of hand-portable fire extinguishers is based on the following definitions.

- Class A fire extinguisher is used for ordinary combustible materials.
- Class B fire extinguisher is for flammable liquids.
- Class C fire extinguisher is for electrical fires.
- Class D fire extinguisher is for combustible metal fires.

Many fires are small at origin and may be extinguished by the use of proper hand-portable fire extinguishers. It is strongly recommended that the fire department be notified as soon as a fire is discovered. This alarm should not be delayed awaiting result of application of portable fire extinguishers.

Fire extinguishers can represent an important segment of any overall fire protection program. However, their successful functioning depends upon meeting the following conditions.

- The extinguisher is properly located and in working order.
- The extinguisher is of proper type for a fire that may occur.
- The fire is discovered while still small enough for the extinguisher to be effective.
- The fire is discovered by a person ready, willing, and able to use the extinguisher.

Class A fires can be readily extinguished by quenching/cooling with water or a water-mixture agent.

Class B fires are more effectively extinguished by an agent that blankets/smothers the fire through exclusion of oxygen surrounding the fire area. Those extinguishers containing bromochlorodifluoromethane, monobromotrifluoromethane, carbon dioxide, or dry chemical are generally best suited for extinguishing Class B fires.

For Class C fires, the primary consideration in extinguishing this type of fire is the selection of a non-conductive extinguishing agent, to prevent dangerous electrical shock and possible death to user. Water or water-mixture type extinguishing agent must not be used under any circumstances on energized electrical equipment (Class C) fires. When possible, electrical equipment and circuits should be de-energized before attacking a Class C fire. Due to its corrosive nature, dry chemical is not recommended for use on computerized, electronic, or other equipment with extensive circuitry.

9.18 WILD LAND FIRE MANAGEMENT PLAN

In order to prevent grass fires from starting in the area, USA will control employee smoking. Smoking will be permitted only in designated areas. These areas will be equipped with a fire extinguisher, as well as a can containing sand where cigarette butts can be safely discarded without concern for the spread of fire. All lighters and matches will remain in the designated smoking area and will not be permitted onto the site. All flammable liquids brought to the site for the purpose of fueling equipment will be stored in approved flammable liquid containers in a designated flammable liquid storage area. No smoking will be permitted within 50 feet of the storage or use of flammable materials.

In the event that a grass fire does start in the area, all personnel will be trained in the use of fire extinguishers, and fire extinguishers will be available to all site operations. Fire extinguishers are designed for the incipient stages of a fire, which is when they are most effective. If a large fire starts, employees will be instructed to evacuate the area to an upwind location, and to contact the Fire Department via telephone at 911. The Fire Department will implement applicable procedures to extinguish and prevent the fire from spreading.

9.19 HAZARDOUS ENERGY CONTROL PLAN

NA

9.20 CRITICAL LIFT PLAN

NA

9.21 CONTINGENCY PLAN FOR SEVERE WEATHER

Rain and severe wind conditions can constitute a safety hazard to field operations at this site. The SSHO will monitor the weather closely. If the area becomes wet, muddy, slippery, or windy such that an unacceptable level of risk exists for personnel who are working at the site, then operations will cease until the SSHO determines it to be safe to continue.

No operations will take place if an electrical storm is within 10 miles of the site. An electrical storm monitor will be used to determine if an electrical storm is approaching. Operations will cease when an electrical storm is within 10 miles of the site, and will not resume again until the SSHO determines that the electrical storm is at least 10 miles past the site.

Daily weather conditions will be a part of the daily briefing. Many people incur injuries or are killed due to misinformation and inappropriate behavior during severe weather. During severe weather, project personnel will seek shelter in an appropriate location (e.g., building or vehicle).

The individual is ultimately responsible for his/her personal safety and has the right to take appropriate action when threatened by severe weather.

9.21.1 Safe Locations during Severe Weather, and Locations to Avoid

No place is absolutely safe from severe weather; however, some places are safer than others.

- Large enclosed structures (substantially constructed buildings) tend to be much safer than smaller or open structures.
- The risk for lightning injury depends on whether the structure incorporates lightning protection, construction materials used, and the size of the structure.
- In general, fully enclosed metal vehicles such as cars, trucks, buses, or vans with the windows rolled up, provide good shelter from many weather conditions.

AVOID being in or near high places and open fields, light poles, metal fences, and water (lakes, streams, rivers, or wet surfaces).

When inside a building and lightning is a factor, AVOID use of the telephone, washing your hands, or any contact with conductive surfaces with exposure to the outside such as metal door or window frames, electrical wiring, telephone wiring, cable TV wiring, or plumbing.

9.21.2 Safety Guidelines for Individuals

Generally speaking, identify and seek shelter that is appropriate for the type of severe weather you are encountering. Proper shelter will always include a sound structure and will remove you from the elements.

When available, pay attention to weather warning devices such as National Oceanic and Atmospheric Administration weather radio and/or credible weather detection systems. However, do not let this information override good common sense.

9.22 FLOAT PLAN

NA

9.23 FALL PROTECTION AND PREVENTION PLAN

NA

9.24 DEMOLITION PLAN (ENGINEERING AND ASBESTOS SURVEYS)

NA

9.25 EXCAVATION/TRENCHING PLAN

Excavation work using excavation equipment will occur as part of this SOW, for the purpose of removing contaminated soil to depths of 4 inches, and possibly as much as 12 inches. Personnel will be advised to be aware of foot placement, especially in areas where soil excavation work is taking place. Barricades, tape, or signage will be used around the edges of the excavation to prevent personnel from falling into them. As excavation depths will be minimal, sloping and shoring will not be required.

9.26 EMERGENCY RESCUE (TUNNELING)

NA

9.27 UNDERGROUND CONSTRUCTION FIRE PREVENTION AND PROTECTION PLAN

NA

9.28 COMPRESSED AIR PLAN

NA

9.29 FORMWORK AND SHORING ERECTION AND REMOVAL PLANS

NA

9.30 PRECAST CONCRETE PLAN

NA

9.31 LIFT SLAB PLANS

NA

9.32 STEEL ERECTION PLAN

NA

9.33 SITE SAFETY AND HEALTH PLAN FOR HTRW WORK

See Appendix D to this APP.

9.34 BLASTING SAFETY PLAN

NA

9.35 DIVING PLAN

NA

9.36 CONFINED SPACE PROGRAM

NA

9.37 MACHINERY AND MECHANIZED EQUIPMENT

Heavy equipment to be used on this site consists of dozers, excavators and dump trucks for earth work. Before any machinery or mechanized equipment is placed into use, it will be inspected and tested by a competent mechanic and certified to be in safe operating condition. Records of tests and inspections will be maintained at the site and will be reported in the Daily QC Report. The following safety procedures will be adhered to on sites using heavy machinery and equipment.

- A competent person (CP) will 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 day during which the equipment is to be used to ensure that the brakes and operating systems are in proper working condition. Another visual inspection will be made at the end of the day in order to determine conditions that may need to be corrected prior to operations the following day.
- Preventive maintenance procedures recommended by the manufacturer will be followed.
- Any machinery or equipment found to be unsafe will be immediately removed from service and its use prohibited until unsafe conditions have been corrected. A tag indicating that the equipment should not be operated will be placed in a conspicuous location on the equipment. The Tag will remain in place until it is demonstrated to the individual tagging out the equipment that it is safe to operate. Where possible, lockout procedures will be used.
- Inspections or determinations of road conditions and structures (i.e., bridges, etc.) will be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment.
- Only Licensed/Qualified personnel will operate machinery and mechanized equipment. Equipment deficiencies observed at any time that affect safe operation will be corrected before continuing operation.
- Seats and seat belts will be installed and used by operators and passengers of heavy equipment. The only exception to this requirement will be for heavy equipment designed for stand-up operation.

- Getting off or on any equipment while it is in motion is prohibited.
- Machinery or equipment requiring an operator will not be permitted to run unattended.
- Machinery or equipment will not be operated in a manner that will endanger individuals or property, nor will the safe operating speeds or loads be exceeded.
- All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
- All repairs on machinery or equipment will be made by the owner of the equipment.
- Equipment buckets will be fully lowered when not in use.
- Equipment operated on the highway will be equipped with turn signals visible from the front and rear.
- No heavy equipment operations will take place during hours of darkness.
- Mobile type equipment, operating within an off-highway job site not open to public traffic, will have a service brake system and a parking brake system capable of stopping and holding the equipment fully loaded on the grade of operation.
- Mechanized equipment will be shut down prior to and during fueling operations. Closed systems, with automatic shut-off, which will prevent spillage if connections are broken, may be used to fuel diesel powered equipment left running.
- All towing devices used on any combination of equipment will be structurally adequate for the weight drawn, and will be securely mounted.
- Persons will not be permitted to get between a towed and towing piece of equipment except to connect the equipment.
- All equipment with windshields will be equipped with powered wipers. Vehicles that operate under conditions that cause fogging or frosting of windshields will be equipped with operable defogging or defrosting devices.
- Whenever the equipment is parked, the parking brake will be set. Equipment parked on inclines will have the wheels chocked or track mechanism blocked and the parking brake set.
- Personnel will not work or pass underneath the loads of digging equipment.
- Personnel will approach the bucket only if it is on the ground, to prevent being struck by objects falling out of the bucket, especially rocks.
- Each piece of heavy equipment on-site will be equipped with at least one dry chemical or carbon-dioxide fire extinguisher, having a minimum UL rating of 5-B:C.
- A warning device and signal person will be provided where there is danger to nearby workers from moving equipment, swinging loads, buckets, booms, etc.
- Personnel will be prohibited from entering the swing zone of the equipment while it is in operation.
- Where manual (hand) signals are used, only one person will be designated to give signals to the operator. The signal person will be located within sight of the load and be clearly visible to the operator.
- Employees will be required to stay clear from any vehicle being loaded or unloaded, to avoid being struck by any spillage or falling materials.
- Motor vehicles will not be located in the EZ during operation of heavy equipment.
- No smoking or open flames will be permitted around heavy equipment utilized on-site.
- A site safety meeting will be conducted and documented as to the safety concerns pertaining to that day's use of heavy equipment.
- The local traffic authority will be contacted for proper procedures to follow in the event local traffic needs to be interrupted during site operations.

- To protect the public from the site's hazards, the Project Manager or SSHO will determine a safe distance around the work area and place barricades, construction fencing, barrier tape, etc., around the work site to prevent entry.
- Loose, ill-fitting clothing can get caught in heavy equipment; therefore, proper fitting clothing will be worn during field activities, which involve heavy equipment.
- Long hair that extends below the hard hat will be tied in a manner to prevent contact with moving equipment parts.
- Due to the fact that chemical hazards (lead and PAH) are expected to be present at various levels in the soil on this site, a Site Specific Decontamination Plan is required. Equipment operated in the EZ will comply with the equipment decontamination plant at Section 10.3 in the SHSP.

All self-propelled construction equipment, whether moving alone or in combination, will be equipped with a reverse signal alarm. The alarm will be audible and sufficiently distinct to be heard under prevailing conditions. The alarm will operate automatically upon commencement of backward motion. The alarm may be continuous or intermittent (not to exceed 3-sec intervals) and will operate during the entire backward movement. Electrical alarms will meet SAE J 994b. Equipment designed and operated so that the operator is always facing the direction of motion does not require reverse signal alarms. The reverse signal alarms will be in addition to requirements for signal persons. The following additional safety guarding and/or devices are required.

- All belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating or moving parts of equipment will be guarded when exposed to contact by individuals or otherwise create a hazard. Guarding will meet the requirements of ANSI 815.1, Safety Standards for Mechanical Power Transmission Apparatus.
- All hot surfaces of equipment, including exhaust pipes or other lines, will be guarded or insulated to prevent injury and fire. Fuel tanks will be located in a manner that will not allow spills or overflows to run onto engine, exhaust, or electrical equipment.
- Exhaust or discharges from equipment will be so directed that they do not endanger persons or obstruct the view of the operator.
- No guard, safety appliance, or device will be removed from machinery or equipment, or made ineffective except for making immediate repairs, lubrications, or adjustments, and then, only after the power has been shut off. All guards and devices will be replaced immediately after completion of repairs and adjustments and before power is turned on.
- Suitable protection against the elements, falling or flying objects, equipment roll-over, swinging loads and similar hazards will be provided for operators of all machinery or equipment. Broken or cracked glass will be replaced as soon as possible.

9.37.1 PPE around Heavy Equipment Operations

The following personal protective equipment will be required of all persons working with or near heavy equipment operations:

- Hard hats and safety-toe boots will be worn at all times when working around heavy equipment.
- Safety glasses will be worn at all times when working around heavy equipment.
- Hearing protection will be worn within 25 ft when heavy equipment is in operation unless the SSHO has measured and determined the noise levels to be less than 85-decibel Amperes (dBA) on a time weighted average basis.
- Employees exposed to public vehicular traffic will be provided with, and will wear warning vests or other suitable garments marked with or made of reflective or high-visibility material.

APPENDIX A. OSHA FORM 300

This appendix to the APP contains a copy of the OSHA Form 300 related to this project.

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APPENDIX B. ACTIVITY HAZARD ANALYSIS

This Appendix contains the following Activity Hazard Analyses applicable to work on this project:

- Location, Survey and Mapping
- Vegetation Removal
- Vehicle Operations
- Soil Sampling
- Contaminated Soil Removal
- Backfill with Clean Soil
- Quality Control.

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ACTIVITY HAZARDS ANALYSIS

Overall Risk Assessment Code (RAC)
(Use highest code)

L

Date: 19 August 2013 Project: Skeet Range Remediation

Activity: Location, Survey and Mapping

Activity Location: Orion Street Skeet Range, Brunswick, ME

Prepared By: Cheryl M. Riordan, CSP

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

		Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
S e v e r i t y	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Add Identified Hazards

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	<ul style="list-style-type: none"> USA personnel will escort survey team onto site. Professional Land Surveyor will perform survey of skeet range area. Stakes will be driven, as required. Location data will be prepared and submitted upon completion of work. 	<ul style="list-style-type: none"> Uneven working surfaces – slip, trip, fall hazards Muscle strain carrying instruments Heat stress/cold stress Biological hazards - insects, spiders, rodents and hazardous plants Sunburn 	<ul style="list-style-type: none"> Use and enforce the buddy system Be observant while walking. Use sturdy leather work boots with ankle support and non-slip soles. Follow appropriate lifting/carrying procedures Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed Training in biological hazards avoidance Use insect repellent and barrier creams as necessary Wear cap for head protection and use sunscreen PPE IAW this AHA Wear long or short sleeved shirts and long pants Ensure First Aid Kits and Fire Extinguishers are in place No smoking, except in designated areas 	L
X				
X				

Add Items

EQUIPMENT	TRAINING	INSPECTION
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ACTIVITY HAZARDS ANALYSIS

	EQUIPMENT	TRAINING	INSPECTION
X	<ul style="list-style-type: none"> • Footwear with ankle support and non-slip soles • Back braces (optional) • Appropriate clothing and PPE (to include leather or canvas work gloves, safety glasses or goggles, long or short sleeved shirts and long pants, and caps) 	<ul style="list-style-type: none"> • PPE Training 	<ul style="list-style-type: none"> • PPE inspected daily prior to use
X	<ul style="list-style-type: none"> • Appropriate survey equipment • Stakes 	<ul style="list-style-type: none"> • Equipment familiarity training • Site-specific training, slip/fall hazards • Site-specific training/lifting techniques • Training in emergency procedures 	<ul style="list-style-type: none"> • SSHO will ensure that all controls are being followed; all equipment is being utilized correctly and that all personnel have received appropriate training. • Equipment inspected daily prior to use
X	<ul style="list-style-type: none"> • Communications equipment • First aid kit • Fire extinguishers • WBGT monitor 	<ul style="list-style-type: none"> • Heat stress/cold stress symptoms/first aid • Site-specific flora/fauna to include first aid • All site personnel will have current HAZWOPER training • Equipment familiarity training 	<ul style="list-style-type: none"> • Communications equipment checked daily prior to use • First Aid kits checked daily and inspected weekly • Fire Extinguishers checked daily and inspected weekly • Equipment inspected daily prior to use

Involved Personnel:

Acceptance Authority (digital signature):



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Date/Time: _____

Employee Name(s):

Date/Time: _____

ACTIVITY HAZARDS ANALYSIS

Overall Risk Assessment Code (RAC)
(Use highest code)

M

Date: 19 August 2013 Project: Skeet Range Remediation

Activity: Vegetation Removal

Activity Location: Orion Street Skeet Range Area, Brunswick, ME

Prepared By: Cheryl M. Riordan, CSP

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

		Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
s e v e r i t y	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Add Identified Hazards

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC

ACTIVITY HAZARDS ANALYSIS

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	<ul style="list-style-type: none"> • Vegetation clearing will be performed using gasoline-powered weed eaters, chain saws, etc. 	<ul style="list-style-type: none"> • Uneven walking surfaces – slip, trip, fall hazards • Muscle strain carrying and using equipment • Lacerations and cuts from vegetation clearing equipment • Eye/face injuries due to use of vegetation clearing equipment • Noise • Fire hazards • Heat stress/cold stress • Biological hazards - insects, spiders, rodents and hazardous plants • Sunburn 	<ul style="list-style-type: none"> • Establish Exclusion Zone • Keep personnel to a minimum during operations • Use and enforce the buddy system • Be observant while walking. Use sturdy safety toe leather work boots with ankle support and non-slip soles • Follow appropriate lifting/carrying procedures • Tools and equipment will be used in the manner for which designed • Vegetation removal crew will maintain distance of at least 20 feet from each other • Chainsaw engines will be started and stopped when all co-workers are clear of the saw • Chainsaws will be properly supported when in use • Operator will shut off saw when carrying chainsaw over slippery surfaces, through heavy brush, and when adjacent to personnel • Never use chainsaw above shoulder height • Chopping tools with loose or cracked heads, or splintered handles will not be used • PPE IAW this AHA • Never fuel equipment in back of a truck with a bed liner. Do it on the ground. • No smoking within 50 feet of fueling operations • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • Training in biological hazards avoidance • Use insect repellent and barrier cream as necessary • Wear long sleeved shirts and long pants • Use sunscreen • Ensure First Aid Kits and Fire Extinguishers are in place • No smoking, except in designated areas 	M
X				

Add Items

	EQUIPMENT	TRAINING	INSPECTION
X	<ul style="list-style-type: none"> • Sturdy safety toe leather footwear with ankle support and non-slip soles • Back braces, optional • Appropriate clothing and PPE to include safety glasses or goggles, leather or canvas work gloves, hard hat, face shield, hearing protection, leg chaps, long sleeved shirt and long pants. 	<ul style="list-style-type: none"> • PPE Training • Noise prevention training 	<ul style="list-style-type: none"> • PPE inspected daily prior to use

ACTIVITY HAZARDS ANALYSIS

	EQUIPMENT	TRAINING	INSPECTION
X	<ul style="list-style-type: none"> Vegetation removal equipment: weed eaters, chain saws, axes etc. 	<ul style="list-style-type: none"> Equipment familiarity training Site-specific training, slip/fall hazards Site-specific training/lifting techniques 	<ul style="list-style-type: none"> SSHO will ensure that all controls are being followed; all equipment is being utilized correctly and that all personnel have received appropriate training Equipment inspected daily prior to use
X	<ul style="list-style-type: none"> Communications equipment First Aid kit Fire Extinguishers WBGT monitor 	<ul style="list-style-type: none"> Training in emergency procedures Heat stress/cold stress symptoms/First Aid Site-specific flora/fauna to include First Aid All site personnel will have current HAZWOPER training Equipment familiarity training 	<ul style="list-style-type: none"> Communications equipment checked daily prior to use First Aid kits checked daily and inspected weekly Fire Extinguishers checked daily and inspected weekly Equipment inspected daily prior to use

Involved Personnel:

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UXOSO Name:

Date/Time: _____

Employee Name(s):

Date/Time: _____

ACTIVITY HAZARDS ANALYSIS

Overall Risk Assessment Code (RAC)
(Use highest code)

L

Date: 19 August 2013 Project: Skeet Range Remediation

Activity: Vehicle Operations

Activity Location: Orion Street Skeet Range Area, Brunswick, ME

Prepared By: Cheryl M. Riordan, CSP

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

		Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
S e v e r i t y	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Add Identified Hazards

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	<ul style="list-style-type: none"> • Identify the hazards associated with vehicle operations • Inspect vehicle 	<ul style="list-style-type: none"> • Fire hazards • Vehicle hazards 	<ul style="list-style-type: none"> • Never leave the vehicle running unattended • Daily vehicle inspections will be performed to ensure a safe operating vehicle • Must have a valid driver's license • Fire Extinguisher and First Aid kit must be with vehicle • No smoking is permitted in vehicles 	L
X	<ul style="list-style-type: none"> • Load cargo into vehicle 	<ul style="list-style-type: none"> • Fire hazards • Vehicle Accidents 	<ul style="list-style-type: none"> • Use the parking brake if parked on inclines and/or as necessary • Never leave the vehicle running unattended • Load and unload vehicles in designated areas only • Ensure vehicle is chocked while loading/unloading cargo • Block, brace, and secure cargo from movement during transportation • Must have a valid driver's license • Proper use of the vehicle during field operations. • Fire Extinguisher and First Aid kit must be with vehicle. 	L

ACTIVITY HAZARDS ANALYSIS

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	• Drive to destination	<ul style="list-style-type: none"> • Potential for vehicle accidents during field operations • Fire hazards • Vehicle hazards 	<ul style="list-style-type: none"> • Always wear a seat belt • Use a ground guide when reversing and/or as needed • Obey the speed limit • Obey all traffic signs • Use established roads • Use the parking brake if parked on inclines and/or as necessary • Never leave the vehicle running unattended • Must have a valid driver's license • Fire Extinguisher and First Aid kit must be with vehicle • No passengers will be transported in back of a pick-up truck. All passengers will be in a seat with a seat-belt in use during vehicle operation. • Operator of vehicle will not use electronic wireless devices while operating a vehicle (cell phone, ipad, use of internet, check or send email, check or send text messages, etc.) • If use of electronic wireless devices is required, operator will pull vehicle off to the side of the road or other safe parking place, park the vehicle and then proceed to use the device • No smoking is permitted in vehicles 	L
X				

Add Items

	EQUIPMENT	TRAINING	INSPECTION
X	<ul style="list-style-type: none"> • Vehicles • Blocking/bracing materials 	<ul style="list-style-type: none"> • Valid Driver's license • Vehicle familiarity training 	<ul style="list-style-type: none"> • SSHO will ensure that all controls are being followed; all equipment is being utilized correctly and that all personnel have received appropriate training. • Vehicle inspected daily prior to use
X	<ul style="list-style-type: none"> • First Aid Kit • Fire Extinguishers • Communication equipment 	<ul style="list-style-type: none"> • Fire extinguisher training • Emergency procedures training • Equipment familiarity training 	<ul style="list-style-type: none"> • Communications equipment checked daily prior to use • First Aid kits checked daily and inspected weekly • Fire Extinguishers checked daily and inspected weekly
X			

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Date/Time: _____

Employee Name(s):

Date/Time: _____

ACTIVITY HAZARDS ANALYSIS

Overall Risk Assessment Code (RAC)
(Use highest code)

L

Date: 19 August 2013 Project: Skeet Range Soil Remediation

Activity: Soil Sampling

Activity Location: Orion Street Brunswick Skeet Range, Former NAS Brunswick, MF +

Prepared By: Cheryl M. Riordan, CSP

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

		Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
Severity	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Add Identified Hazards

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	<ul style="list-style-type: none"> • Field sampling team will choose locations to conduct soil sampling activities. • In accordance with EPA requirements, soil samples will be collected with clean, stainless steel implements, labeled as to sample number, location, date, time and person taking sample, and the samples will be sent to a certified laboratory for analysis. 	<ul style="list-style-type: none"> • Uneven working surfaces – slip, trip, fall hazards • Heat stress/cold stress • Biological hazards - insects, spiders, rodents and hazardous plants • Sunburn • Lead and PAH in soil 	<ul style="list-style-type: none"> • Be observant while walking. Use sturdy leather work boots with ankle support and non-slip soles • Wear PPE IAW this AHA • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • Training in biological hazards avoidance • Use barrier creams/insect repellents as necessary • Wear cotton shirts and long pants. • Wear cap and use sunscreen. • Wear chemical resistant gloves while taking samples. 	L
X				

Add Items

	EQUIPMENT	TRAINING	INSPECTION
X	<ul style="list-style-type: none"> • Footwear with ankle support and non-slip soles • Appropriate clothing and PPE (to include chemical resistant gloves, safety glasses or goggles and cap) 	<ul style="list-style-type: none"> • PPE training 	<ul style="list-style-type: none"> • PPE inspected daily prior to use
X	<ul style="list-style-type: none"> • Sampling Equipment • Labels 	<ul style="list-style-type: none"> • Site-specific training, slip/fall hazards • Hazard communication training on chemical hazards 	<ul style="list-style-type: none"> • SSHO will ensure that all controls are being followed; all equipment is being utilized correctly and that all personnel have received appropriate training. • Equipment inspected daily prior to use.

ACTIVITY HAZARDS ANALYSIS

	EQUIPMENT	TRAINING	INSPECTION
X	<ul style="list-style-type: none"> • Communications equipment • First aid kit • Fire extinguishers • WBGT monitor 	<ul style="list-style-type: none"> • Emergency Procedures • Heat Stress/Cold Stress symptoms/first aid • Site-specific flora/fauna to include first aid. • Current HAZWOPER Training 	<ul style="list-style-type: none"> • Communications equipment checked daily prior to use • First aid kits checked daily and inspected weekly • Fire extinguishers checked daily and inspected weekly • Equipment inspected daily prior to use

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Date/Time: _____

Employee Name(s):

Date/Time: _____

ACTIVITY HAZARDS ANALYSIS

Overall Risk Assessment Code (RAC)
(Use highest code)

L

Date: 19 August 2013 Project: Skeet Range Remediation

Activity: Contaminated Soil Removal

Activity Location: Orion Street Skeet Range, Brunswick, ME

Prepared By: Cheryl M. Riordan, CSP

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

		Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
S e v e r i t y	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Add Identified Hazards

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC

ACTIVITY HAZARDS ANALYSIS

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	<ul style="list-style-type: none"> • Using heavy equipment, the soil removal subcontractor will excavate the contaminated soil down to 4" level and place it into dump truck for transportation to approved disposal facility. 	<ul style="list-style-type: none"> • Uneven working surfaces – slip, trip, fall hazards • Heat stress/cold stress • Biological hazards - insects, spiders, rodents and hazardous plants • Heavy equipment hazards • Fuel and oil spills/contamination • Chemical hazards • Noise • Sunburn 	<ul style="list-style-type: none"> • Establish 100 foot Exclusion Zone around project site and implement site control measures • Be observant while walking. Use sturdy leather safety toe work boots with ankle support and non-slip soles • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • Training in biological hazards avoidance • Wear long sleeved shirts and long pants • Use insect repellents and barrier creams/ointments as necessary • Post barriers or barricades as necessary prior to commencing operations (signage and orange security fencing) • Cease operations if unsafe conditions arise • Keep personnel to a minimum during operations • Only heavy equipment qualified personnel will operate equipment • Ensure personnel remain clear during placement of heavy equipment • Properly position heavy equipment and establish safety area prior to commencing operations • Do not place any part of the body beneath a raised load • Do not leave equipment running unattended • When not in use, bucket will be lowered to ground level • Check area prior to movement of equipment, ensure backup signal is operational and be aware of overhead and underground utilities • Never exceed the lifting capacity of the equipment • Ensure spill containment materials for heavy equipment are available • Use and enforce the buddy system • Wear PPE IAW this AHA • Wear rubber overboots and chemical resistant gloves should hand or foot contact with contaminated soil be likely • Tyvek suits, respirators and air monitoring until contamination levels are established • Decontaminate persons and equipment as necessary • Use hearing protection in vicinity of heavy equipment operations • Use sunscreen • Ensure First Aid Kits and Fire Extinguishers are in place • No smoking, except in designated areas 	M

ACTIVITY HAZARDS ANALYSIS

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
<div style="background-color: red; width: 20px; height: 100%; position: absolute; left: -20px; top: 0;"></div> <p>X • If soil testing shows elevated levels of lead and PAH at this level, some areas may be excavated to as much as 12 inches.</p>	<ul style="list-style-type: none"> • Uneven working surfaces – slip, trip, fall hazards • Heat stress/cold stress • Biological hazards - insects, spiders, rodents and hazardous plants • Heavy equipment hazards • Fuel and oil spills/contamination • Chemical hazards • Noise • Sunburn 	<ul style="list-style-type: none"> • Establish 100 foot Exclusion Zone around project site and implement site control measures • Be observant while walking. Use sturdy leather safety toe work boots with ankle support and non-slip soles • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • Training in biological hazards avoidance • Wear long sleeved shirts and long pants • Use insect repellents and barrier creams/ointments as necessary • Cease operations if unsafe conditions arise • Keep personnel to a minimum during operations • Only heavy equipment qualified personnel will operate equipment • Ensure personnel remain clear during placement of heavy equipment • Properly position heavy equipment and establish safety area prior to commencing operations • Post barriers or barricades as necessary prior to commencing operations • Do not place any part of the body beneath a raised load • Do not leave equipment running unattended • When not in use, bucket will be lowered to ground level • Check area prior to movement of equipment, ensure backup signal is operational and be aware of overhead and underground utilities • Never exceed the lifting capacity of the equipment • Ensure spill containment materials for heavy equipment are available • Use and enforce the buddy system • Wear PPE IAW this AHA • Wear rubber overboots and chemical resistant gloves should hand or foot contact with contaminated soil be likely • Tyvek suits, respirators and air monitoring until contamination levels are established • Decontaminate persons and equipment as necessary • Use hearing protection in vicinity of heavy equipment operations • Use sunscreen • Ensure First Aid Kits and Fire Extinguishers are in place • No smoking, except in designated areas 	L

Add Items

EQUIPMENT	TRAINING	INSPECTION
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ACTIVITY HAZARDS ANALYSIS

	EQUIPMENT	TRAINING	INSPECTION
X	<ul style="list-style-type: none"> • Safety toe footwear with ankle support and non-slip soles • Appropriate clothing and PPE to include hard hat, leather gloves (or chemical resistant gloves if there is a potential for hand exposure to contaminated soil), safety glasses or goggles, hearing protection, reflective vests (if working in or near traffic), rubber overboots (if there is a potential foot exposure to contaminated soil), tyvek coveralls (if there is a potential for skin exposure to contaminated soil), and air purifying respirator with P100 canisters. 	<ul style="list-style-type: none"> • PPE training • Respiratory Protection Program training 	<ul style="list-style-type: none"> • PPE inspected daily prior to use • Respirators inspected daily prior to use
X	<ul style="list-style-type: none"> • Heavy Equipment: excavator, dump truck • Dust monitor • Personal air monitoring equipment 	<ul style="list-style-type: none"> • Valid driver's license • Heavy equipment operator's training for each piece of equipment used • CDL to transport contaminated soil on public roads • Heavy Equipment operations familiarity training for all personnel working in the vicinity of heavy equipment operations • Site-specific training, slip/fall hazards • Excavation safety training • Sampling and monitoring equipment familiarity training for SSHO 	<ul style="list-style-type: none"> • SSHO will ensure that all controls are being followed; all equipment is being utilized correctly and that all personnel have received appropriate training. • Daily PMCS for heavy equipment • Load limit checked on data plate • Equipment inspected daily prior to use
X	<ul style="list-style-type: none"> • Communications equipment • First Aid kit • Fire Extinguishers • WBGT monitor 	<ul style="list-style-type: none"> • Emergency procedures • Heat Stress/Cold Stress symptoms/First Aid • Site-specific flora/fauna to include First Aid • Current HAZWOPER Training • Equipment familiarity training 	<ul style="list-style-type: none"> • Communications equipment checked daily prior to use • First Aid kits checked daily and inspected weekly • Fire Extinguishers checked daily and inspected weekly • Equipment inspected daily prior to use

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Date/Time: _____

Employee Name(s):

Date/Time: _____

ACTIVITY HAZARDS ANALYSIS

Overall Risk Assessment Code (RAC)
(Use highest code)

L

Date: 19 August 2013 Project: Skeet Range Remediation

Activity: Backfill with Clean Soil

Activity Location: Orion Street Skeet Range, Brunswick, ME

Prepared By: Cheryl M. Riordan, CSP

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

		Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
S e v e r i t y	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Add Identified Hazards

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
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ACTIVITY HAZARDS ANALYSIS

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	<ul style="list-style-type: none"> • Dump truck will pick up load of clean soil, drive it to site of excavation, and dump clean soil into excavation 	<ul style="list-style-type: none"> • Uneven working surfaces – slip, trip, fall hazards • Heat stress/cold stress • Biological hazards - insects, spiders, rodents and hazardous plants • Heavy equipment hazards • Fuel and oil spills/contamination • Noise • Sunburn 	<ul style="list-style-type: none"> • Establish 100 foot Exclusion Zone around project site and implement site control measures • Be observant while walking. Use sturdy leather safety toe work boots with ankle support and non-slip soles • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • Training in biological hazards avoidance • Wear long sleeved shirts and long pants • Use insect repellents and barrier creams/ointments as necessary • Site control measures will be implemented (fencing, barricades, signage) • Cease operations if unsafe conditions arise • Keep personnel to a minimum during operations • Only heavy equipment qualified personnel will operate equipment • Ensure personnel remain clear during placement of heavy equipment • Properly position heavy equipment and establish safety area prior to commencing operations • Post barriers or barricades as necessary prior to commencing operations (signage and orange security fencing) • Maintain safe distance from dump truck during soil-dumping operation • Do not leave equipment running unattended • Check area prior to movement of equipment, ensure backup signal is operational and be aware of overhead and underground utilities • Ensure spill containment materials for heavy equipment are available • Use and enforce the buddy system • Wear PPE IAW this AHA • Use hearing protection in vicinity of heavy equipment operations • Use sunscreen • Ensure First Aid Kits and Fire Extinguishers are in place • No smoking, except in designated areas 	L

ACTIVITY HAZARDS ANALYSIS

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	<ul style="list-style-type: none"> • Clean soil will be spread around excavation • Bulldozer will be used to tamp down soil 	<ul style="list-style-type: none"> • Uneven working surfaces – slip, trip, fall hazards • Heat stress/cold stress • Biological hazards - insects, spiders, rodents and hazardous plants • Heavy equipment hazards • Fuel and oil spills/contamination • Noise • Sunburn 	<ul style="list-style-type: none"> • Establish 100 foot Exclusion Zone around project site and implement site control measures • Be observant while walking. Use sturdy leather safety toe work boots with ankle support and non-slip soles • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • Training in biological hazards avoidance • Wear long sleeved shirts and long pants • Use insect repellents and barrier creams/ointments as necessary • Site control measures will be implemented (fencing, barricades, signage) • Cease operations if unsafe conditions arise • Keep personnel to a minimum during operations • Only heavy equipment qualified personnel will operate equipment • Ensure personnel remain clear during placement of heavy equipment • Properly position heavy equipment and establish safety area prior to commencing operations • Post barriers or barricades as necessary prior to commencing operations (signage and orange security fencing) • Maintain safe distance from bulldozer during soil-tamping operation • Do not leave equipment running unattended • Check area prior to movement of equipment, ensure backup signal is operational and be aware of overhead and underground utilities • Ensure spill containment materials for heavy equipment are available • Use and enforce the buddy system • Wear PPE IAW this AHA • Use hearing protection in vicinity of heavy equipment operations • Use sunscreen • Ensure First Aid Kits and Fire Extinguishers are in place • No smoking, except in designated areas 	L

ACTIVITY HAZARDS ANALYSIS

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	• Plant trees in area	<ul style="list-style-type: none"> • Uneven working surfaces – slip, trip, fall hazards • Heat stress/cold stress • Biological hazards - insects, spiders, rodents and hazardous plants • Sunburn 	<ul style="list-style-type: none"> • Establish 100 foot exclusion zone around project site • Be observant while walking. Use sturdy leather safety toe work boots with ankle support and non-slip soles • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • Training in biological hazards avoidance • Wear long sleeved shirts and long pants • Use insect repellents and barrier creams/ointments as necessary • Site control measures will be implemented (fencing, barricades, signage) • Cease operations if unsafe conditions arise • Keep personnel to a minimum during operations • Use and enforce the buddy system • Wear PPE IAW this AHA • Use sunscreen • Ensure First Aid Kits and Fire Extinguishers are in place • No smoking, except in designated areas 	L

Add Items

	EQUIPMENT	TRAINING	INSPECTION
X	<ul style="list-style-type: none"> • Safety toe footwear with ankle support and non-slip soles • Appropriate clothing and PPE to include hard hat, leather gloves, safety glasses or goggles, hearing protection, reflective vests (if working in or near traffic). 	<ul style="list-style-type: none"> • PPE training 	<ul style="list-style-type: none"> • PPE inspected daily prior to use
X	<ul style="list-style-type: none"> • Heavy Equipment: dump truck, dozer 	<ul style="list-style-type: none"> • Valid driver's license • Heavy equipment operator's training for each piece of equipment used • CDL to transport soil on public roads • Heavy Equipment operations familiarity training for all personnel working in the vicinity of heavy equipment operations • Site-specific training, slip/fall hazards 	<ul style="list-style-type: none"> • SSHO will ensure that all controls are being followed; all equipment is being utilized correctly and that all personnel have received appropriate training. • Daily PMCS for heavy equipment • Equipment inspected daily prior to use.
X	<ul style="list-style-type: none"> • Communications equipment • First Aid kit • Fire Extinguishers • WBGT monitor 	<ul style="list-style-type: none"> • Emergency procedures • Heat Stress/Cold Stress symptoms/First Aid • Site-specific flora/fauna to include First Aid • Current HAZWOPER Training 	<ul style="list-style-type: none"> • Communications equipment checked daily prior to use • First Aid kits checked daily and inspected weekly • Fire Extinguishers checked daily and inspected weekly • Equipment inspected daily prior to use

ACTIVITY HAZARDS ANALYSIS

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UXOSO Name:

Date/Time: _____

Employee Name(s):

Date/Time: _____

ACTIVITY HAZARDS ANALYSIS

Overall Risk Assessment Code (RAC)
(Use highest code)

L

Date: 19 August 2013 Project: Skeet Range Remediation

Activity: Quality Control

Activity Location: Orion Street Skeet Range Area, Brunswick, ME

Prepared By: Cheryl M. Riordan, CSP

Risk Assessment Code Matrix

E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

		Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
S e v e r i t y	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Add Identified Hazards

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
-----------	---------	--	-----

ACTIVITY HAZARDS ANALYSIS

	JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC
X	<ul style="list-style-type: none"> • Inspection of Site Conditions, Work Performance and Operations. 	<ul style="list-style-type: none"> • Uneven working surfaces – slip, trip, fall hazards • Muscle strain carrying instruments • Heat stress/cold stress • Cuts, lacerations, eye and face hazards due to vegetation removal operations • Biological hazards - insects, spiders, rodents and hazardous plants • Sunburn • Noise • Chemical hazards • Heavy equipment hazards 	<ul style="list-style-type: none"> • Establish Exclusion Zone around operation • Post barriers and barricades as necessary prior to commencing operations and maintain positive site control (signage and orange security fencing) • Be alert. Cease operations if unsafe conditions arise • Keep personnel to a minimum during operations • Use and enforce the buddy system • Be observant while walking. Use sturdy leather safety toe work boots with ankle support and non-slip soles. • Follow appropriate lifting/carrying procedures • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • PPE IAW this AHA • Training in biological hazards avoidance • Use insect repellent and barrier creams as necessary • Wear long or short sleeved shirts and long pants • Use sunscreen • Hearing protection around noise hazard operations • Wear rubber overboots and chemical resistant gloves should hand or foot contact with contaminated soil be likely • Tyvek suits, respirators and air monitoring until contamination levels are established • Decontaminate persons and equipment as necessary • Only heavy equipment qualified personnel will operate equipment • Ensure personnel remain clear during placement of heavy equipment • Properly position heavy equipment and establish safety area prior to commencing operations • Post barriers or barricades as necessary prior to commencing operations • Do not place any part of the body beneath a raised load • Do not leave equipment running unattended • When not in use, bucket will be lowered to ground level • Check area prior to movement of equipment, ensure backup signal is operational and be aware of overhead and underground utilities • Never exceed the lifting capacity of the equipment • Ensure spill containment materials for heavy equipment are available • Ensure First Aid Kits and Fire Extinguishers are in place. • No smoking, except in designated areas. 	L

ACTIVITY HAZARDS ANALYSIS

JOB STEPS	HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS	RAC	
X	<ul style="list-style-type: none"> • Inspection of Material and Packaging of Containers. 	<ul style="list-style-type: none"> • Uneven working surfaces – slip, trip, fall hazards • Heat stress/cold stress • Biological hazards - insects, spiders, rodent and hazardous plants • Sunburn 	<ul style="list-style-type: none"> • Establish Exclusion Zone around operation • Post barriers and barricades as necessary prior to commencing operations and maintain positive site control (signage and orange security fencing) • Be alert. Cease operations if unsafe conditions arise • Keep personnel to a minimum during operations • Use and enforce the buddy system • Be observant while walking. Use sturdy leather safety toe work boots with ankle support and non-slip soles. • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • Training in biological hazards avoidance • Use insect repellent and barrier creams as necessary • PPE IAW this AHA • Wear long or short sleeved shirts and long pants • Use sunscreen • Ensure First Aid Kits and Fire Extinguishers are in place • No smoking, except in designated areas 	L
X	<ul style="list-style-type: none"> • Inspection of Completed Project Documentation. 	<ul style="list-style-type: none"> • Uneven working surfaces – slip, trip, fall hazards • Heat stress/cold stress • Biological hazards - insects, spiders and hazardous plants • Sunburn 	<ul style="list-style-type: none"> • Ensure required site documentation is on hand • Ensure logs, briefings, reports and forms are completed in a timely and accurate manner • Review or inspect all site generated documents for accuracy and deliverability • Ensure concerned parties receive copies of documents pertaining to their activities • Ensure contract deliverables have been met • Be observant while walking. Use sturdy leather safety toe work boots with ankle support and non-slip soles • Heat stress monitoring, drinking water, work-rest schedule, and cool shelter for breaks • Cold stress monitoring, drinking water, drinking warm decaffeinated liquids, work-rest schedule, warm shelter for breaks, keep feet dry and change socks as needed • Training in biological hazards avoidance • Use insect repellent and barrier creams as necessary • PPE IAW this AHA • Wear long or short sleeved shirts and long pants • Use sunscreen • Ensure First Aid Kits and Fire Extinguishers are in place • No smoking, except in designated areas 	L
X				

ACTIVITY HAZARDS ANALYSIS

EQUIPMENT	TRAINING	INSPECTION
Add Items		

EQUIPMENT	TRAINING	INSPECTION	
X	<ul style="list-style-type: none"> • Safety toe leather footwear with ankle support and non-slip soles • Appropriate clothing and PPE to include leather or canvas work gloves (chemical resistant gloves if potential for hand exposure to contaminated soil), chemical resistant overboots (if potential for foot exposure to contaminated soil), safety glasses or goggles, long or short sleeved shirt and long pants (chemical resistant coveralls if potential for skin exposure to contaminated soil), hard hat (around heavy equipment operations) or cap, hearing protection (around heavy equipment operations), . • For vegetation removal operations: Hard hats, face shields, hearing protection, leg chaps, leather or canvas work gloves, safety glasses or goggles, long sleeved shirt and long pants. 	<ul style="list-style-type: none"> • PPE Training 	<ul style="list-style-type: none"> • PPE inspected daily prior to use
X	<ul style="list-style-type: none"> • Barricades and signage 	<ul style="list-style-type: none"> • Equipment familiarity • Heavy equipment operations familiarity training • Site-specific training, slip/fall hazards • Site-specific training/lifting techniques 	<ul style="list-style-type: none"> • SSHO will ensure that all controls are being followed; all equipment is being utilized correctly and that all personnel have received appropriate training • Equipment inspected daily prior to use
X	<ul style="list-style-type: none"> • Communications equipment • First Aid kit • Fire Extinguishers • WBGT monitor 	<ul style="list-style-type: none"> • Training in emergency procedures • Heat stress/cold stress symptoms/First Aid • Site-specific flora/fauna to include First Aid • All site personnel will have current HAZWOPER training • Equipment familiarity training 	<ul style="list-style-type: none"> • Communications equipment checked daily prior to use • First Aid kits checked daily and inspected weekly • Fire Extinguishers checked daily and inspected weekly • Equipment inspected daily prior to use

Involved Personnel:

Acceptance Authority (digital signature):



Digitally signed by Robert D. Crownover
 DN: cn=Robert D. Crownover, o=USA Environmental, Inc., ou=Safety and Quality, email=rcrownover@usatampa.com, c=US
 Date: 2013.08.26 12:02:05 -04'00'

PRINT

SIGNATURE

SUXOS Name:

Date/Time: _____

UXOSO Name:

Date/Time: _____

Employee Name(s):

Date/Time: _____

APPENDIX C. SITE HEALTH AND SAFETY PLAN

This Appendix contains the Site Health & Safety Plan applicable to work on this project:

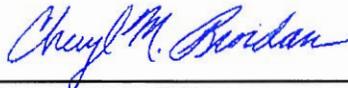
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SITE HEALTH AND SAFETY PLAN (SHSP)

**Orion Street Skeet Range Remediation
Former NAS Brunswick
Brunswick, Maine**

Plan Approval:



Cheryl M. Riordan, CSP
Corporate Health and Safety Manager
USA Environmental, Inc.
(757) 689-4737

Date: 9/23/13

Plan Concurrence:



Robert Crownover
Director of Safety and Quality
USA Environmental, Inc.
(813) 343-6364

Date: 9/23/13

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ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
APR	Air-Purifying Respirator
CDC	Centers for Disease Control
CFR	Code of Federal Regulations
CHSM	Corporate Health and Safety Manager
COTR	Contracting Officer's Technical Representative
CPR	Cardiopulmonary Resuscitation
CRZ	Contamination Reduction Zone
CWM	Chemical Warfare Materiel
°F	Degrees Fahrenheit
DCN	Document Change Notice
DoD	Department of Defense
EDS	Equipment Decontamination Station
EMS	Emergency Medical Services
EPDS	Emergency Personnel Decontamination Station
ERCPC	Emergency Response and Contingency Procedures
ERT	Emergency Response Team
EZ	Exclusion Zone
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High-Efficiency Particulate Air
HPS	Hantavirus Pulmonary Syndrome
MSDS	Material Safety Data Sheet
OSHA	Occupational Safety and Health Administration
PDS	Personnel Decontamination Station
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
RMSF	Rocky Mountain Spotted Fever
RPM	Remedial Project Manager
SHSP	Site Health and Safety Plan
SI	Site Inspection
SOW	Statement of Work
SSHO	Site Safety and Health Officer
SZ	Support Zone
TLV	Threshold Limit Value
TWA	Time-Weighted Average
USA	USA Environmental, Inc.
WBGT	Wet Bulb Globe Temperature

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INTRODUCTION

This Site Health and Safety Plan (SHSP) establishes the responsibilities, requirements and procedures for protecting the project personnel and the surrounding community from the hazards associated with the Orion Street Skeet Range Remediation, Former NAS Brunswick, Brunswick, Maine.

1.0 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

1.1 SITE DESCRIPTION

See Section 2.4 of the APP.

1.2 CONTAMINANT CHARACTERISTICS

As this area was used as a skeet range, it is expected that lead and polycyclic aromatic hydrocarbons (PAHs) will be found at various levels in the soil.

Chemical Warfare Materiel (CWM): The site is not suspected to contain chemical warfare materiel (CWM). However, if suspect CWM is encountered during any phase of site activities, USA personnel will immediately withdraw upwind from the work area, secure the site and contact the NAVFAC Remedial Project Manager (RPM). USA will maintain security at the site until written direction, via a Document Change Notice (DCN), is provided by NAVFAC MIDLANT regarding the procedure to be followed.

2.0 HAZARD RISK ANALYSIS

An Activity Hazard Analysis (AHA) has been conducted and documented for each activity warranted by the hazards associated with the activity (see Appendix B of the APP for the site-specific AHAs). For the Quarry site, the following AHAs have been prepared for all anticipated field operations:

- Location, Survey and Mapping
- Soil Sampling
- Contaminated Soil Removal
- Backfill with Clean Soil
- Vegetation Removal
- Vehicle Operations
- Quality Control.

Should conditions, equipment, or types of operations change during the course of the project work, the Corporate Health and Safety Manager (CHSM) will update an existing AHA for continuing work, or prepare a new AHA for new operations. The site exclusion zone (EZ) will be 100 ft., which is for the protection of the general public.

Risk management is and will continue to be integrated into the planning, preparation, and execution of all operations at the Skeet Range site. Risk management is a dynamic process, and is continuously improved upon as personnel become more familiar with the site operations, equipment, and environment. Site personnel are trained to continuously identify hazards and assess accident risks. Once identified, these hazards will be brought to the attention of the Site Manager (SM) or Site Safety and Health Officer (SSHO). Control measures will be developed and coordinated by USA safety personnel. All site personnel are responsible for continuous assessment of variable hazards and the implementation of risk controls.

2.1 CLASSIC SAFETY

Due to the nature of planned site operations, the potential risk for exposure to safety hazards is high. Anticipated safety hazards that may be encountered during site activities, and precautions to be followed, are listed below and in individual AHAs.

2.1.1 Slip, Trip, and Fall Hazards

Site slip, trip, and fall hazards include uneven walking/working surfaces, rocks and vegetation. Holes from excavation work may also present fall hazards. Site personnel will be instructed to make themselves aware of foot placement at all times to avoid slips, trips, and falls. The use of sturdy leather work boots with ankle support and non-slip soles will reduce the risk of slips, trips, and falls. Barricades, warning tape, or signage may be used to prevent falls into holes.

2.1.2 Cuts/Laceration Hazards

Cuts and lacerations can be caused by a number of issues on the site, to include handling rocks and vegetation, as well as the use of tools and equipment. Personnel will be instructed to wear canvas or leather work gloves during site operations to prevent injury to hands.

2.1.3 Hand Tool Operation

Use of improper or defective tools can contribute significantly to the occurrence of accidents on site. Therefore, the safe work practices listed below will be observed when using hand tools.

- Hand tools will be inspected for defects prior to each use.
- Defective hand tools will be removed from service and repaired or discarded.
- Tools will be selected and used in the manner for which they were designed.
- Be sure of footing and grip before using any tool.
- Do not use tools that have split handles, mushroom heads, worn jaws, or other defects.
- Gloves will be worn whenever they increase gripping ability or if cut, laceration, or puncture hazards may exist during the use of hand tools.
- Safety glasses with side shields, goggles, or a face shield will be used if tool use presents an eye/face hazard.
- Do not use makeshift tools or other improper tools.
- Use non-sparking tools where there are explosive vapors, gases, or residue.
- Do not remove or modify any guard or safety device on any power hand tool.

2.1.4 Excavation Operations

Excavation operations using excavation equipment will be taking place on this site at depths of up to 4 in., and possibly up to 12 in. No sloping or shoring will be required.

2.1.5 Chemical Hazards

Chemical hazards expected during site activities include those fuels and oils brought on site for equipment use and maintenance, as well as soil contaminated with lead and polycyclic aromatic hydrocarbons (PAH). All site personnel will follow the procedures and precautions outlined in the appropriate material safety data sheet (MSDS) for the safe use and storage of chemicals brought to the site. Site personnel will be trained in the hazards of lead and PAH found in the soil and minimize contact with the contaminated soil. Recommended personal protective equipment (PPE) will also be worn and used by those individuals required to handle chemicals or contaminated soil. Chemical monitoring will also be conducted during the excavation of contaminated soil, where there is a potential for exposure to lead and PAH. The MSDS binder will be kept in the SSHO site vehicle and will be available to all employees on request. Chemical warfare material is not expected to be found on this site. Should CWM

be found on the site, USA will secure the site and withdraw to an upwind safe position at least 450 ft away, and contact the NAVFAC Remedial Project Manager (RPM).

2.1.6 Physical Hazards

2.1.6.1 Noise Hazards

Protection against the effects of noise exposure will be provided when the sound levels exceed those shown in Table 2-1, as measured on the A scale of a standard sound level meter at slow response. When employees are subjected to sound levels exceeding those listed in Table 2-1 feasible administrative or engineering controls will be utilized. If such controls fail to reduce sound to a safe level, PPE will be provided and used to reduce sound exceeding protective levels. If the variations in noise level involve maximal intervals of 1 second or less, it is to be considered continuous.

Table 2-1: Permissible Noise Exposures

Duration per Day (Hours)	Sound Level dBA (Slow Response)
8.00	90
6.00	92
4.00	95
3.00	97
2.00	100
1.50	102
1.00	105
0.50	110
0.25	115

NOTE: When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: $C1./T1. + C2./T2. + \dots + C(n)/T(n)$ exceeds unity, then, the mixed exposure should be considered to exceed the limit value. C(n) indicates the total time of exposure at a specified noise level, and T(n) indicates the total time of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

USA will make hearing protection available to all employees exposed to an 8-hour time-weighted average (TWA) of 85 dBA or greater. Hearing protection will be replaced as necessary. Hearing protection will be required for all personnel working in and around any operations likely to produce high noise levels, such as during the use of chain saws, weed-eaters and other equipment used for vegetation clearance operations as well as for heavy equipment operations. When required, sound pressure level measurements will be made by the SSHO or other qualified personnel using calibrated instruments. Personnel required to use a sound level meter will be trained in its use and calibration requirements prior to use on site.

2.1.6.2 Heat Stress

See Section 9.14.1 of the APP.

2.1.6.3 Cold Stress

See Section 9.14.2 of the APP.

2.1.6.4 Vibration

Vibration can become a problem when using power tools. The use of chainsaws and other equipment in vegetation clearance operations can expose workers to vibration in the hands, which can lead to White Finger, which develops over time, and once developed cannot be cured. It is important to reduce exposure as much as possible in order to prevent White Finger or other vibration-related conditions from developing. At USA, the following precautions are taken when workers are required to use vibrating hand tools.

- Purchase sound, ergonomically designed equipment that reduces vibration transference to the hands.
- Use vibration-absorbing gloves.
- Encourage workers to hold equipment loosely.
- Work in short durations, with frequent breaks. Workers are encouraged to take at least one 10-minute break every hour.
- Keep hands warm in order to keep blood flowing.
- Avoid smoking, which inhibits blood flow.
- Avoid drugs that can inhibit blood flow.

Symptoms of vibration-related disorders include:

- Tingling and slight loss of feeling or numbness in the fingers
- Blanching or whitening of the fingers
- Blue skin that feels cold and numb
- Numb, prickly feeling or stinging pain, sometimes with redness upon warming or relief of stress
- Sequence of color changes in the skin from white to blue to red.

If workers begin to develop symptoms related to vibration exposure, report immediately to the SSHO, who will ensure worker is examined/treated by a physician.

2.1.6.5 Excavations

See APP Section 9.25.

2.2 FLAMMABLE/EXPLOSIVE HAZARDS FROM FUELING EQUIPMENT AND SITE VEHICLES

The chance of fire and/or explosion during vehicle and equipment refueling and maintenance is high when improper procedures are used. All site vehicles and heavy equipment will be equipped with a portable fire extinguisher readily available to fight a fire. Other site equipment will never be refueled on the back of a pick-up truck with a bed liner. Cellular phones will not be used around Flammable Liquids in accordance with Ordnance and Explosives Safety Group Safety Advisory 03-2003. Grounding and bonding procedures will be used during all fueling operations. No smoking will be permitted within 50 ft of fueling operations, and flammable and combustible materials will be removed from the vicinity of fueling operations.

2.3 IONIZING RADIATION

Ionizing radiation is not expected to be an issue on this project site.

2.4 BIOLOGICAL HAZARDS

Biological hazards that are usually found on site include hazardous plants, bees, spiders, ticks, and mosquitoes. Employee awareness and the safe work practices outlined in the following paragraphs should reduce the risk associated with these hazards.

2.4.1 Bees, Hornets and Wasps

Contact with stinging insects such as bees, hornets, and wasps may result in site personnel experiencing adverse health effects that range from being mildly uncomfortable to being life threatening. Therefore, stinging insects present a serious hazard to site personnel, and extreme caution must be exercised whenever site and weather conditions increase the risk of encountering stinging insects. Some of the factors related to stinging insects that increase the degree of risk associated with accidental contact are as follows.

- The nests for these insects are frequently found in remote wooded or grassy areas.
- The nests can be situated in trees, rocks, and bushes or in the ground, and are usually difficult to see.
- Accidental contact with these insects is highly probable, especially during warm weather conditions when the insects are most active.
- If a site worker accidentally disturbs a nest, the worker may be inflicted with multiple stings, causing extreme pain and swelling which can leave the worker incapacitated and in need of medical attention.
- Some people are hypersensitive to the toxins injected by a sting, and when stung, experience a violent and immediate allergic reaction resulting in a life-threatening condition known as anaphylactic shock.
- Anaphylactic shock manifests itself very rapidly and is characterized by extreme swelling of the body, eyes, face, mouth and respiratory passages.
- The hypersensitivity needed to cause anaphylactic shock can, in some people, accumulate over time and exposure; therefore, even if someone has been stung previously and has not experienced an allergic reaction, there is no guarantee that they will not have an allergic reaction if they are stung again.

With these things in mind, and with the high probability of contact with stinging insects, all site personnel will comply with the following safe work practices.

- If a worker knows that he is hypersensitive to bee, wasp, or hornet stings, he must inform the SSHO of this condition prior to participation in site activities.
- All site personnel will be watchful for the presence of stinging insects and their nests, and will advise the SSHO if a stinging insect nest is located or suspected in the area.
- Any nests located on site will be flagged off and site personnel will be notified of its presence.
- If stung, site personnel will immediately report to the SSHO to obtain first aid treatment and to allow the SSHO to observe them for signs of allergic reaction. If a breathing emergency (anaphylactic shock) occurs as a result of the sting, immediately call 911.
- Site personnel with a known hypersensitivity to stinging insects will keep required emergency medication on or near their person at all times, and will let the SSHO and co-workers know where it is kept and how to administer it.

2.4.2 Mosquitoes

Mosquitoes (see photo shown in Figure 2-1) are responsible for transmitting diseases such as malaria and West Nile Virus through bites to the skin. While malaria is much more contagious, it is not normally found in North America. West Nile virus is commonly found in Africa, West Asia and the Middle East.



Figure 2-1: Mosquito

In recent years, West Nile virus has been increasingly found in the continental United States. It is believed to have first appeared in the United States in 1999. It is most common in late summer or early fall, which is the active season for mosquitoes, but in warmer southern climates where the temperatures are milder, West Nile virus can be transmitted year round.

2.4.2.1 Transmission Cycle

Mosquitoes become infected with the virus when they feed on infected birds, which may circulate the virus in their blood for a few days. Infected mosquitoes can then transmit the virus to humans and animals while biting to take blood. The virus is located in the mosquito's salivary glands, and may be injected into the animal or human, where it can multiply, possibly causing illness. Even in areas where the virus is circulating, few mosquitoes are infected with the West Nile virus. Even if the mosquito is infected, less than 1% of people who get bitten and become infected will get seriously ill. The majority of cases of West Nile virus have been identified in birds; it has also been found in horses, cats, bats, chipmunks, skunks, squirrels, and domestic rabbits. Once West Nile virus has been contracted, the survivor of this illness is believed to carry a lifelong immunity to it. At this time there is no vaccine against West Nile virus.

2.4.2.2 Symptoms

West Nile virus is an encephalitis, which causes an inflammation of the brain. Following transmission by an infected mosquito, West Nile virus multiplies in the person's blood system and crosses the blood-brain barrier to reach the brain. The virus interferes with normal central nervous system functioning and causes inflammation of the brain tissue. Fatality rates range from 3% to 15% of persons who develop severe illness, and rates are highest among persons over 50 years of age and those with weakened immune systems. This disease is not transmitted from person to person, so touching or working in the vicinity of someone with the disease will not increase the risk.

The incubation period for West Nile virus is normally 3 to 15 days. Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death. If symptoms develop, seek medical attention immediately.

2.4.2.3 Protective Measures

Prevention and control of West Nile virus is most effectively accomplished through vector management programs. Be alert for dead animals on the site, particularly birds. If a dead bird or other animal is found on site, bare-handed contact should be avoided. Using gloves or double plastic bags, wrap animal and call the Health Department. If the Health Department wants to test the bird, they will come and pick it up. If they are not testing the bird, it should remain wrapped in the plastic and disposed of in accordance with established procedures.

Other ways of reducing risk of becoming infected with West Nile virus include:

- Implementing mosquito control measures on the site
- Making sure that there are no open containers of standing water on the site in which mosquitoes can breed
- Wearing long-sleeved shirts and long pants while outdoors
- Staying indoors at dawn, dusk, and in the early evening when mosquitoes are most active
- Spraying clothing with repellents containing permethrin or DEET
- Applying insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET. Higher concentrations of DEET provide no additional protection. Always read the manufacturer's directions on the repellent prior to applying it to the skin.
- Vitamin B and "ultrasonic" devices are NOT considered to be an effective deterrent to mosquito bites.

2.4.3 Spiders

A large variety of spiders may be encountered during site activities. While most spider bites merely cause localized pain, swelling, reddening and in some cases, tissue damage, there are a few spiders that, due to the severity of the physiological effects caused by their venom, are dangerous. These species include the black widow and the brown or violin spiders (as shown in Figure 2-2 and Figure 2-3).



Figure 2-2: Black Widow Spider



Figure 2-3: Recluse Spider

The black widow is a coal-black bulbous spider about $\frac{3}{4}$ -in. in length, with a bright red hourglass on the underside of the abdomen (see Figure 2-2). The black widow is usually found in dark moist locations, especially under rocks and rotting logs, and may even be found in outdoor toilets where they inhabit the underside of the seat. Victims of a black widow bite may exhibit the following signs or symptoms:

- Sensation of pinprick or minor burning at the time of the bite
- Appearance of small punctures (but sometimes none are visible)
- After 15 to 60 minutes, intense pain is felt at the site of the bite, which spreads quickly, and is followed by profuse sweating, rigid abdominal muscles, muscle spasms, breathing difficulty, slurred speech, poor coordination, dilated pupils, and generalized swelling of face and extremities.

The brown or violin spider is brownish to tan in color, rather flat, about $\frac{5}{8}$ -in. long with a dark brown "violin" shape on the top (see Figure 2-3). Of the brown spider, there are three varieties found in the United States, which present a problem to site personnel. These are the brown recluse, the desert violin and the Arizona violin. These spiders may be found in a variety of locations including trees, rocks or in dark locations. Victims of a brown or violin spider bite may exhibit the following signs or symptoms:

- Blistering at the site of the bite, followed by a local burning at the site 30 to 60 minutes after the bite

- Formation of a large, red, swollen, pustulating lesion with a bull's-eye appearance
- Systemic effects may include a generalized rash, joint pain, chills, fever, nausea and vomiting
- Pain may become severe after 8 hours, with the onset of tissue necrosis.

There is no effective first aid treatment for either of these bites. Except for very young, very old or weak victims, these spider bites are not considered to be life threatening; however, medical treatment must be sought to reduce the extent of damage caused by the injected toxins. If either of these spiders are suspected or known to be on site, the SSHO will brief site personnel as to the identification and avoidance of the spiders. As with stinging insects, site personnel will report to the SSHO if they locate either of these spiders on site or notice any type of bite while involved in site activities.

2.4.4 Ticks

2.4.4.1 General Information

The Centers for Disease Control (CDC) have noted the increase of Lyme disease and Rocky Mountain Spotted Fever (RMSF), which are caused by bites from infected ticks (see Figure 2-4) 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. When embedded in the skin, they may look like a freckle.



Figure 2-4: Tick

Lyme disease has occurred in 43 states, with the heaviest concentrations in the Northeast (Connecticut, Massachusetts, New Jersey, New York, Pennsylvania), the upper Midwest (Minnesota and Wisconsin), and along the northern California coast. It is caused by deer ticks and the lone star ticks which have become infected with spirochetes. Female deer ticks are about $\frac{1}{4}$ in. in size, and are black and brick red in color. Male deer ticks are smaller, and completely black. Lone star ticks are larger and chestnut brown in color.

Rocky Mountain Spotted Fever has occurred in 36 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. Both are black in color.

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 you believe you have been bitten by a tick, or if any of the signs and symptoms noted above appear, contact the SSHO, who will authorize you to visit a physician for an examination and possible treatment.

2.4.4.2 Protective Measures

Standard field gear (work boots, socks, and light-colored coveralls) provide good protection against tick bites, particularly if the joints are taped. However, even when wearing field gear, the following precautions will 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.
- Spray outer clothing, particularly your pant legs and socks, **BUT NOT YOUR SKIN**, with an insect repellent that contains permethrin or permethrin.
- When walking in wooded areas, wear a hard hat, and avoid contact with bushes, tall grass, or brush as much as possible.
- If you find a tick, remove it by pulling on it gently with tweezers.

- If the tick resists, cover the tick with salad oil for about 15 minutes to asphyxiate it, then remove it with tweezers.
- **DO NOT** use matches, a lit cigarette, nail polish or any other type of chemical to "coax" the tick out.
- Be sure to remove all parts of the tick's body, and disinfect the area with alcohol or a similar antiseptic after removal.
- For several days to several weeks after removal of the tick, look for the signs of the onset of Lyme disease, such as a rash that looks like a bulls-eye or an expanding red circle surrounding a light area, frequently seen with a small welt in the center.
- Also look for the signs of the onset of RMSF, such as an inflammation which is visible in the form of a rash comprising many red spots under the skin, which appears 3 to 10 days after the tick bite.

2.4.5 Hantavirus Pulmonary Syndrome (HPS)

Some rodents are infected with a type of hantavirus that causes HPS. Common house mice do not carry hantavirus. In the United States, deer mice (plus cotton rats, shown in Figure 2-5, and rice rats in the southeastern states and the white-footed mouse in the Northeast) are the rodents carrying hantaviruses that cause hantavirus pulmonary syndrome (HPS).



Figure 2-5: Cotton Rat

These rodents shed the virus in their urine, droppings and saliva. The virus is mainly transmitted to people when they breathe in air contaminated with the virus. This happens when fresh rodent urine, droppings or nesting materials are stirred up. When tiny droplets containing the virus get into the air, this process is known as aerosolization. There are several other ways rodents may spread hantavirus to people.

- If a rodent with the virus bites them, the virus may be spread this way – but this is very rare.
- Researchers believe that you may be able to get the virus if you touched something that had been contaminated with rodent urine, droppings, or saliva, and then touched your nose or mouth.
- Researchers also suspect that if virus-infected rodent urine, droppings or saliva contaminates food that you eat, you could also become sick.

2.4.5.2 Symptoms of HPS

Early symptoms include fatigue, fever, and muscle aches, especially the large muscle groups – thighs, hips, back, sometimes shoulders. These symptoms are universal. There may also be headaches, dizziness, chills and/or abdominal problems, such as nausea, vomiting, diarrhea and abdominal pain. About half of all HPS patients experience these symptoms.

Because there have been so few cases of HPS, it is not quite clear what this "incubation time" is. However, it appears right now that it may be between 1 and 5 weeks after you are exposed to potentially infected rodents and the rodent's droppings before you will show any symptoms.

Late symptoms (4 to 10 days later) include coughing and shortness of breath, with the sensation of tightness in the chest as lungs fill with fluid. **MINIMIZE RISK** – do not disturb rodents, burrows, or dens.

2.4.5.3 Preventive Measures

If there are signs of a rodent nest or rodent droppings, make it known to the SSHO. To clean and disinfect the area, spray a disinfectant on the area and leave a waiting time of 20 minutes. Then clean it up using rubber or plastic gloves, coveralls, rubber boots or disposable shoe covers, protective goggles,

and a half-face mask air-purifying respirator with a high-efficiency particulate air (HEPA) filter. Bag the cleaning materials and dispose of it. Then, re-clean the area with disinfectant.

2.4.6 Mites (Chiggers)

As shown in Figure 2-6, chiggers are small mites that are usually a yellowish to bright red color. Chiggers may live year-round but are especially active during spring and summer. The larval chigger is the active stage that bites animals and humans, attaching themselves tightly. After secreting digestive enzymes that break down the skin cells, the mite feeds on the liquefied cells. The rash and intense itching associated with chiggers is an allergic reaction to the mite's salivary secretions. Preventive measures used against mosquitoes are



Figure 2-6: Magnified View of a Mite

effective against chiggers. Treatments to ease itching include ointments such as calamine lotion, hydrocortisone, and benzocaine.

2.4.7 Hazardous Plants

During the conduct of site activities the number and variety of hazardous plants that may be encountered is large and extensive. However the plants that present the greatest degree of risk to site personnel (i.e., potential for contact vs. effect produced) are those that produce skin reactions and skin and tissue injury.

2.4.7.1 Plants Causing Skin and Tissue Injury

Contact with splinters, thorns and sharp leaf edges is of special concern to site personnel, as is the contact with the pointed surfaces found on branches, limbs and small trunks left by site clearing and grubbing crews. This concern stems from the fact that punctures, cuts, and even minor scrapes caused by accidental contact may result in non-infectious skin lesions, and the introduction of fungi or bacteria through the skin or eye. This is especially important in light of the fact that the warm, moist environment created inside impermeable protective clothing is ideal for the propagation of fungal and bacterial infection. Personnel receiving any of the injuries listed above, even minor scrapes, will report immediately to the SSHO for initial and continued observation and care of the injury.

2.4.7.2 Plants Causing Skin Reactions

The poisonous plants of greatest concern are poison ivy and poison sumac (Figure 2-7). Poison ivy can be found throughout the state, while poison sumac prefers wet, low-lying areas. Poison ivy thrives in all types of light and usually grows in the form of a trailing vine; however, it can also grow as a bush and can attain heights of 10 ft or more. Poison ivy has shiny, pointed leaves that grow in clusters of three. Poison sumac is a tall shrub or slender tree that usually grows along swampy areas or ponds, and in wooded areas. Each poison sumac leaf stalk has 7 to 13 leaflets, which have smooth edges.

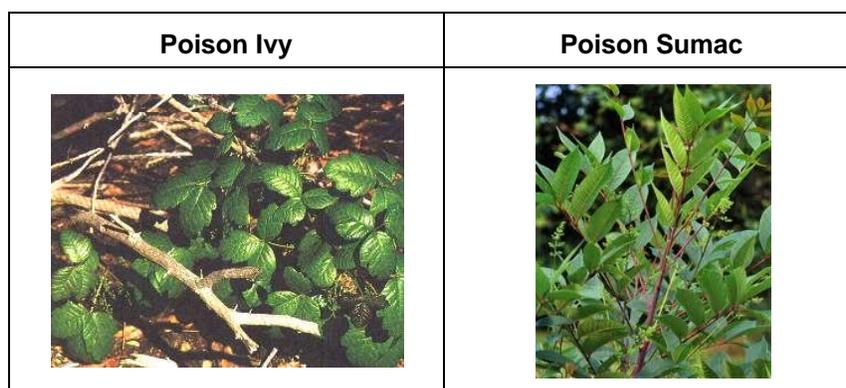


Figure 2-7: Poisonous Plants

The skin reaction associated with contacting these plants is caused by the body's allergic reaction to toxins contained in oils produced by the plant. Becoming contaminated with the oils does not require contact with just the leaves. Contamination can be achieved through contact with other parts of the plant such as the branches, stems or berries, or contact with contaminated items such as tools and clothing. Being downwind from areas where these plants are burning can also produce reactions. The allergic reaction associated with exposure to these plants will generally cause the following signs and symptoms:

- Blistering at the site of contact, usually occurring within 12 to 48 hours after contact
- Reddening, swelling, itching and burning at the site of contact
- Pain, if the reaction is severe
- Conjunctivitis, asthma, and other allergic reactions if the person is extremely sensitive to the poisonous plant toxin.

If the rash is scratched, secondary infections can occur. The rash usually disappears in 1 to 2 weeks in cases of mild exposure and up to 3 weeks when exposure is severe. Preventive measures, which can prove effective for most site personnel, are:

- Avoid contact with any poisonous plants on site, and keep a steady watch to identify, report, and mark poisonous plants found on site
- Wash hands, face or other exposed areas at the beginning of each break period and at the end of each workday
- Avoid contact with, and wash on a daily basis, contaminated tools, equipment, and clothing
- Barrier creams, detoxification/wash solutions and orally administered desensitization may prove effective and should be tried to find the best preventive solution
- Keeping the skin covered as much as possible (e.g., long pants and long-sleeved shirts) in areas where these plants are known to exist will limit much of the potential exposure.

2.5 HAZARD MITIGATION

The hazards listed above will be addressed through a combination of training, engineering controls, and personal protective equipment (PPE).

- Implementation of Engineering Controls and Work Practices
- Training in site procedures and the use of site equipment can prevent accidents from occurring.
- Upgrades/Downgrades in Levels of PPE

Due to the types of hazards at this site, Level D PPE will be required in most operations. This type of PPE is used for levels of contamination that may present a nuisance, but not an identifiable hazard. Level D PPE consists of a hard hat, safety glasses or goggles, leather or canvas work gloves (chemical resistant gloves will be used for fueling and handling soil with chemical contamination), and leather safety-toe work boots with ankle support and non-slip soles. For vegetation clearance operations, leg chaps, face shield and hearing protection will be added. Hearing protection will also be required for all heavy equipment operations.

During the excavation of the soil contaminated with lead and PAH, personnel may wear modified Level D PPE with chemical-resistant (Tyvek[®]) suit and overboots, and respirator slung. If dust monitoring equipment rings off at the action level of 30 $\mu\text{g}/\text{m}^3$, respiratory protection equipment will be donned, upgrading PPE to Level C. If chemical-specific sampling will be performed, personnel working in this operation will wear Level C PPE until a week's worth of data confirms exposure below the action level, in which case the SSHO in consultation with the CHSM may reduce PPE to Level D. If there is a visible increase in dust in the area, the SSHO may upgrade PPE to Level C and sampling may be initiated.

If site hazards are encountered that require additional PPE, the PPE level can be increased by the SSHO in consultation with the CHSM, who would base the decision on documented evidence of the hazards. If the site is not as hazardous as originally anticipated, the level of PPE can be downgraded by the CHSM.

This decision would also be based on definitive data that confirms the PPE can be lessened. Normally, downgrading of PPE would require at least one week's worth of data demonstrating that the site is not as hazardous as originally suspected.

- Work Stoppage

All personnel are trained to be constantly aware of their work environment. Anyone has the ability to stop operations for safety reasons. No worker is expected to perform any operation for which he has not been properly trained, or to perform any operation that is considered to be unsafe. After operations are stopped for safety reasons, the SSHO will be notified and will evaluate the situation. The SSHO will, in consultation with the CHSM, determine what steps need to be taken to make the situation safe for operations to continue. The RPM will be informed of the work stoppage, reason for the stoppage, and impending actions immediately. The RPM will also be informed when work has resumed.

- Emergency Evacuation

In the event of an emergency that requires evacuation of the site, an alarm will be sounded via radio, telephone, or verbal instruction by the SSHO to evacuate the area. Personnel will exit the area to the pre-designated assembly point. After evacuation, the SSHO will account for all personnel, ascertain information about the emergency and advise responding on-site personnel. The SSHO will contact, advise, and coordinate with responding off-site emergency personnel if deemed necessary by the situation.

In all situations that require evacuation, personnel will not re-enter the work area until:

- The conditions causing the emergency have been corrected
- The hazard has been reassessed
- The Site Specific Health and Safety Plan has been revised and reviewed with on-site personnel, if needed
- Instructions have been given for authorized re-entry by the SSHO.

- Prevention and/or Minimization of Public Exposure to Hazards Created by Site Activities

The creation of an EZ between the site footprint and the general public acts as a safety buffer to protect the public from site hazards. Controlling access to the site, closing roads, and installing signs and barricades are all means of keeping the general public from accidentally wandering into the site during operations. If unauthorized personnel are observed in the EZ, all operations will cease until the area is cleared of unauthorized personnel.

3.0 STAFF ORGANIZATION, QUALIFICATIONS AND RESPONSIBILITIES

See Section 4.0 of the Accident Prevention Plan (APP).

4.0 TRAINING

See Section 6.0 of the APP.

5.0 PERSONAL PROTECTIVE EQUIPMENT

When feasible, engineering controls and work practices, or a combination thereof, will be utilized to protect site workers from safety and health hazards and to maintain personal exposures to hazardous substances below established exposure limits. The exposure limits used by USA will be the lower of the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) found in 29 CFR 1910 Subpart G and 29 CFR 1910.1000, or the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs). Other recognized published exposure levels, such as those found on MSDSs, will be used if the substance is not listed by OSHA or the ACGIH. USA will not

utilize a system of employee rotation as a means of complying with the PPE, PEL, TLV or other published limits.

5.1 TYPES OF PPE

Requirements for task and activity-specific levels of protective clothing are presented on the AHAs located in Appendix B of the APP. Personnel performing site tasks will use the appropriate level and type of PPE specified in this plan for each individual task. This SHSP makes provisions for use of the following levels of PPE, in accordance with the hazards and contamination level anticipated for each task or operation: Level A, Level B, Level C, and Level D. The following sections describe the PPE requirements for activities and locations on the site.

5.1.1 Level A Protection

Level A Protection is not required.

5.1.2 Level B Protection

Level B Protection is not required.

5.1.3 Level C Protection

Level C Protection may be required, based on the air exposure levels during the contaminated soil excavation operation. If personal air samples are taken and shipped to a laboratory for analysis, persons working in this operation will wear Level C PPE until such time as a week's worth of samples can confirm that levels of lead and PAH are below the action level, and the level of PPE can be reduced by the SSHO in consultation with the CHSM. The following equipment will be used for Level C protection:

- Hard hat
- Chemical resistant gloves
- Safety glasses with side shields or safety goggles
- Hearing protection
- Sturdy safety toe leather work boots with ankle support and non-slip soles
- Chemical-resistant rubber overboots
- Chemical-resistant (Tyvek®) coveralls
- Air-purifying respirator.

5.1.4 Modified Level D Protection

During the excavation of contaminated soil, Modified Level D protection may be used if direct reading dust monitoring equipment is used. This equipment can be set to ring off at the action level of $30 \mu\text{g}/\text{m}^3$, which is the action level for lead, at which time the slung air purifying respirator would be donned and the Level C PPE would be implemented. The following equipment will be used for modified Level D protection:

- Hard hat
- Chemical resistant gloves
- Safety glasses with side shields or safety goggles
- Hearing protection
- Sturdy safety-toe leather work boots with ankle support and non-slip soles
- Chemical-resistant rubber over boots
- Chemical-resistant (Tyvek®) coveralls
- Air-purifying respirator, slung.

5.1.5 Level D Protection

The minimum level of protection that will be required of USA personnel and visitors at the site will be Level D. Level D PPE may be used in operations that are not in the vicinity of excavation or movement of contaminated soil. The SSHO may increase the level of protection due to changing requirements but may not decrease the level of protection without approval of corporate safety management. The following equipment will be used for Level D protection:

- Hard hat, in the vicinity of vegetation clearance and heavy equipment operations
- Face shield, in the vicinity of vegetation clearance operations
- Leather or canvas work gloves
- Safety glasses with side shields or safety goggles
- Hearing protection, where required by high noise levels, in the vicinity of vegetation clearance and heavy equipment operations
- Sturdy safety-toe leather work boots with ankle support and non-slip soles
- Cotton work clothes or coveralls
- Back supports (optional)
- Leg chaps – when working with vegetation clearance equipment (chain saws).

5.1.6 Eye Protection

All personnel will use appropriate eye protection when exposed to eye hazards from flying particles, liquid chemicals, or other eye hazards. All personnel will use eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors (e.g., clip-on or slide-on side shields) meeting the pertinent requirements of this section are acceptable.

- All personnel who wear prescription lenses while engaged in operations that involve eye hazards will wear eye protection that incorporates the prescription in its design, or wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.
- Eye protection will be distinctly marked to facilitate identification of the manufacturer.

5.1.7 Head Protection

When working in the vicinity of vegetation clearance operations and heavy equipment operations, hard hats will be worn.

5.1.8 Leg Protection

Leg chaps will be worn by chain saw operators during vegetation clearance operations.

5.1.9 Foot Protection

Due to the uneven working surfaces and potential for tripping hazards, all USA personnel will wear sturdy safety-toe leather work boots with ankle support and non-slip soles.

5.1.10 Hand Protection

USA selects and requires employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; thermal burns; and harmful temperature extremes. For most operations on this site, leather or canvas work gloves will provide adequate protection against minor cuts, which are a hazard in most site operations. Chemical-resistant gloves will be required in fueling operations and soil sampling and excavation operations.

5.1.11 Hearing Protection

USA will make hearing protectors available to all employees exposed to an 8-hour time-weighted average (TWA) of 85 dB or greater. Hearing protectors will be replaced as necessary. Hearing protection will be required for all personnel working in and around any operations likely to produce high noise levels, such as during the use of chain saws, weed-eaters, and other equipment used during vegetation clearance operations or heavy equipment operations.

5.2 PROPER PPE SELECTION

Each task outlined in the SOW has been assessed to determine the risk of personnel exposure to safety and health hazards that may be encountered during its conduct. The hazard assessment is based on available information pertaining to the historical use of the site, site contaminant characterization data, and the anticipated operational hazards. This information has been provided by the client, or collected by USA site personnel. The PPE assigned as a result of the hazard assessment represents the minimum PPE to be used during initial site activities. Since hazard/risk assessment is a continuing process, changes in the initial types and levels of PPE will be made in accordance with information obtained from the actual implementation of site operations and data derived from the site monitoring. As a general rule, the levels of PPE will need to be reassessed if any of the following occurs:

- Commencement of a new work phase, such as the start of drum sampling or work that begins on a different portion of the site
- Change in job tasks during a work phase
- Change of season/weather
- When temperature extremes or individual medical considerations limit the effectiveness of PPE
- Contaminants other than those previously identified are encountered
- Change in ambient levels of contaminants
- Change in work scope, which affects the degree of contact with contaminants.

During the selection of PPE, the CHSM and SSHO will also take into consideration the following factors:

- Limitations of the equipment
- Work mission duration
- Temperature extremes
- Material flexibility
- Durability/integrity of the equipment.

5.3 UPGRADING/DOWNGRADING PPE

If work tasks are added or amended after completion and approval of the APP/SHSP, the SSHO will conduct the task hazard assessment and consult with the CHSM. The level and type of PPE to be used will be identified. The SSHO can increase the level of PPE when the situation warrants, due to an increase in hazardous exposure. Any decreases in the level of PPE must be approved by the CHSM, only after review of documentation demonstrating that the conditions and/or potential for hazardous exposure are reduced enough to justify the downgrade. This will normally require at least one week's worth of data to confirm the hazard level and justify a downgrade in the level of PPE.

On this project, the excavation of contaminated soil may initially require Level C PPE until data can confirm that the PPE can be reduced based on contamination levels.

5.4 GENERAL REQUIREMENTS

All PPE will be provided, used, and maintained in a sanitary and reliable condition where it is necessary. PPE is required due to hazards of processes or environment, chemical hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body

through absorption, inhalation or physical contact. All PPE will be used in the manner for which it was designed. The assignment of PPE will be based upon hazard analysis, and the equipment will be selected based on its protection factor against site hazards.

5.5 INSPECTIONS

Each piece of PPE will be inspected daily prior to use. Defective or damaged PPE will not be used. It will be removed from service and turned in for repair, or removed from the site for disposal and replaced with new PPE. During the work task, buddy teams should periodically inspect each other's PPE for evidence of chemical attack, such as discoloration, swelling, stiffening, or softening.

5.6 CLEANING AND DECONTAMINATION

The SSHO will be responsible for ensuring that PPE is in good, clean, working order prior to issuing the PPE the first time. Once issued, site personnel will ensure that re-usable articles of PPE are maintained in a clean and sanitary fashion. For items used inside an EZ, site personnel will ensure that the PPE is properly decontaminated before removing the item from the EZ or Contamination Reduction Zone.

5.7 MAINTENANCE

Maintenance of PPE can vary greatly, based upon the complexity of the PPE and the intricacy of the repair involved. The SSHO will become familiar with the manufacturer's recommended maintenance and when possible repair defective PPE. If unable or unauthorized to conduct the repair, the SSHO will return the item to the manufacturer for repair, or procure a replacement.

5.8 STORAGE

PPE will be stored in a location, which is protected from the harmful effects of sunlight, damaging chemicals, moisture, extreme temperatures, impact, or crushing. If needed, the SSHO will designate a specified area for the storage of PPE.

5.9 PPE PROGRAM EFFECTIVENESS

Based on the inhalation hazard and potential chemical exposures on this site, Level C PPE is considered adequate for the excavation of soil contaminated with lead and PAH. If direct-reading dust monitoring equipment is used, this operation may start as modified Level D with respirators slung. If the action level of $30 \mu\text{g}/\text{m}^3$ is reached, respirators will be donned and PPE upgraded to Level C. Most of the other work that is to be accomplished at the site can be accomplished using Level D PPE. If work tasks are added to the SOW after approval of the APP/SHSP, the SSHO (as applicable) will identify and assess the task hazards and relay that information to the CHSM. The CHSM will prepare an amendment to the APP and submit the amendment for approval from NAVFAC. The amendment will be added to the APP upon NAVFAC approval.

The SSHO will ensure PPE use complies with all applicable OSHA and USA requirements. It is the responsibility of each employee to report to work wearing proper attire and to assemble the necessary PPE prior to initiating donning procedures.

5.10 TRAINING

USA will provide training to each employee who is required by this section to use PPE. Each affected employee will demonstrate an understanding of the training, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE. Each such employee will be trained to know at least the following:

- The decisions and justifications used to select each piece of PPE
- The nature of the hazards and the consequences of not using PPE
- When PPE will be required during the performance of each task

- How to properly don, doff, adjust, and wear each piece of PPE
- The proper inspection, cleaning, decontaminating, maintenance, and storage of each PPE item used
- The limitations of the PPE.

All personnel receiving PPE training will be required to demonstrate an understanding of the training topics and the ability to correctly use the PPE. This will be accomplished through the SSHO supervising and visually inspecting each individual's ability to properly don and use the PPE during initial use of the PPE.

When the SSHO has reason to believe that any affected employee who has already been trained does not have the understanding and skill required he should retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

- Changes in the workplace render previous training obsolete
- Changes in the types of PPE to be used render previous training obsolete
- Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

Upon completion of the training and after each employee has successfully demonstrated the requisite understanding, the SSHO will complete the Training Form (see Table 5-1). This form identifies the employees who attended the training course and successfully demonstrated the required knowledge; the date(s) of the training and demonstration session(s); and the PPE covered by the training session.

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6.0 MEDICAL SURVEILLANCE

Medical surveillance of USA employees will be conducted in accordance with the requirements of the OSHA 29 Code of Federal Regulations (CFR) 1910.120(f), 29 CFR 1910.134(b)(10) and other established guidelines. Personnel to be included in the Medical Surveillance Program will be those who perform hazardous waste operations that may potentially expose the worker to hazardous substances or other significant safety and health threats. All USA personnel on the project site will participate in the USA Medical Surveillance Program. Visitors desiring entry into the EZ must participate in their employer's Medical Surveillance Program and must have a current physician's statement prior to entry.

6.1 BASELINE HEALTH ASSESSMENT PHYSICAL OR ANNUAL PHYSICAL

A baseline health assessment physical or annual physical will be conducted prior to participating in site operations, to determine the worker's ability to perform hazardous waste operations in a safe and healthful manner. The Project Manager, in conjunction with the CHSM, will ensure that all health assessments address the site specific health hazards to which workers may be exposed.

Physicals will be scheduled through the Human Resources department of USA, who will contract the services of a board certified occupational medicine physician in the vicinity of the employee's home or job site. The designated physician will perform the medical assessments and review medical examination results to determine each worker's ability to perform his assigned hazardous waste duties. The physician will also be responsible for determining if supplemental or follow-up examinations are required, and for maintaining medical and exposure records in accordance with OSHA 29 CFR 1910.120(d).

The purpose of the Medical Surveillance Program is to:

- Assess the individual's health status prior to participation in hazardous waste operations
- Determine the individual's ability to perform work assignments that require the use of PPE
- Establish baseline data for comparison to future medical data in order to provide a means of monitoring a worker's health status
- Establish facilities and procedures for emergency and non-emergency medical treatment
- Establish procedures for maintenance and storage of medical and exposure records.

The USA medical surveillance program examination consists of:

- Medical and occupational history questionnaire, which includes information on past gastrointestinal, hematological, renal, cardiovascular, reproductive, immunological, and neuralgic problems
- Information and history of respiratory disease and personal smoking habits
- Physical examination
- Blood pressure measurements
- Complete blood count and differential to include hemoglobin and hematocrit determinations, red cell indices, and smear of peripheral morphology
- Blood urea nitrogen and serum creatinine
- SMAC 24
- Chest x-ray
- Pulmonary function test
- Audiogram
- Echocardiogram for employees over 45 years old, or when other complications indicate the necessity
- Drug (HR Panel 10) and alcohol screening
- Visual acuity

- Employees with a potential for exposure to lead will also be tested for blood lead and zinc protoporphyrin (ZPP) levels. This test will be repeated again at the end of operations.

The following information is provided to the examining physician:

- Description of the employee's duties
- Anticipated hazardous exposure and levels (to include such things as heat stress, cold stress, vibration, noise, biological hazards, respiratory hazards, chemical hazards, confined spaces, etc.)
- Description of the PPE commonly used
- Information from previous medical exams.

The medical surveillance provided to the employees includes a judgment by the medical examiner of the ability of the employee to use either positive or negative pressure respiratory equipment in accordance with 29 CFR 1910.134. Any employee found to have a medical condition that could directly or indirectly be aggravated by exposure to chemical substances or by the use of respiratory equipment will not be employed for any project requiring clearance under the Respiratory Protection Program. A copy of the medical examination is provided at the employee's request.

The employee will be informed of any medical conditions that would result in work restriction or that would prevent them from working at hazardous waste sites.

6.1.1 Physician's Statement

The results of this examination will be made available to the employee and a written physician's statement will be sent to USA. A copy of the physician's statement will be kept in each employee's file at the project site for the duration of site operations. The physician's statement will include the following:

- The physician's opinion regarding any conditions that would place the employee at an increased risk from working in hazardous waste operations
- The physician's recommended limitations, if any, upon the employee's assigned work
- A statement that the employee has been informed by the physician of the results of the examination, and any conditions that may require further examination or treatment.

6.1.2 Supplemental Examination

Any site worker who has: been injured; received health impairment; developed signs or symptoms from possible over-exposure; or received a documented over-exposure without the use of respiratory protection, will undergo a supplemental examination. The contents of this examination will be based upon the type of injury, illness, signs or symptoms of exposure involved and will be determined by the physician. Prior to reassignment to site activities, the physician will certify that the employee is fit to return to work. If necessary, the physician will specify in writing any activity restrictions or additional tests that may be required.

6.1.3 Follow-up Health Assessments

If, during any pre-assignment, annual or supplemental examination, a condition is detected that requires follow-up tests, the physician will notify USA and the employee as to the nature of the follow-up health assessment. The physician will determine the schedule and content of the follow-up health assessment. A statement outlining the employee's fitness for work will be provided to USA and the employee upon conclusion of the follow-up health assessment.

6.1.4 Emergency and Non-emergency Medical Treatment

USA will have a minimum of two site workers certified in First Aid/Cardiopulmonary Resuscitation (CPR). These workers will act as the first responders on site in the event of an accident or injury. They will provide emergency first aid services until professional medical personnel arrive on site to take over the

treatment. The first responders will take care of all first aid and non-serious injuries to site personnel and will inform the SSHO when such injuries occur. For serious injuries, the medical treatment facility for use at this project site will be Mid Coast Hospital, 123 Medical Center Drive, Brunswick, ME 04011. For non-serious medical services, the occupational health clinic for this project will be US Health Works Medical Group, 11 Medical Center Drive, Brunswick, ME 04011. For a map and directions to Mid Coast Hospital and US Health Works Medical Group, please refer to the Attachment provided at the end of this SHSP.

6.1.5 Medical Restriction

Should an occupational injury or illness occur that restricts an employee's ability to function at full capacity, USA maintains a policy of providing these employees with restricted duty assignments whenever possible to allow them to continue to be productive.

6.1.6 Record Keeping

USA will retain and maintain copies of all physician statements, exposure records, and associated information for USA employees involved in hazardous waste operations, in accordance with the requirements of 29 CFR 1910.120(f). These records will be kept at the project site for the duration of site operations. When the site work is complete, the records will be retained by USA at the Corporate Office located in Oldsmar, FL. Examining physicians will be responsible for maintaining records related to laboratory analyses and other tests for each USA employee examined. All records, whether maintained by USA or by the examining physician, will be kept on file for a period of 30 years beyond an employee's termination.

7.0 EXPOSURE MONITORING AND SAMPLING PLANS

There will be monitoring for hazardous exposures on this site. K&K Excavation will be performing soil moving operations of soil contaminated with lead and PAHs. They will perform monitoring of their work area to assure the lead level in the breathing zone does not exceed the Action Level of $30 \mu\text{g}/\text{m}^3$ (8-hour TWA) and PAH exposure does not exceed $.2 \text{ mg}/\text{m}^3$. If the dust level exceeds $30 \mu\text{g}/\text{m}^3$, personnel will be required to wear respiratory protection.

While personnel performing vegetation removal operations will be provided with hearing protection, noise monitoring may also be conducted. If the noise exposure level can be consistently demonstrated to be below the action level for noise (i.e., at least one week of readings below 85 dBA), the CHSM may decide to reduce this requirement based on monitoring results. See Section 2.1.6.1 of this SHSP for additional information.

Workers on this site will normally be in Level D PPE; however, heat stress monitoring will be required if the temperature goes above 75°F . Should the personnel be required to use Modified Level D or Level C PPE due to high levels of lead in the air, heat stress monitoring would be required if the temperature goes above 70°F . Should heat stress monitoring be required, site monitoring data will be recorded using the Site Monitoring Log and will be maintained as part of the project record.

7.1 LEAD MONITORING

K&K will be performing personal air monitoring in the breathing zone of employees with potential exposure to lead and PAH in the earth-moving operations of soil contaminated with lead and PAH. This may be augmented by dust monitoring in the area, at the discretion of the Supervisor. If a direct-reading dust monitor is used, personnel may start operations in modified Level D with respirator slung. If the dust readings remain consistently below the action level of $30 \mu\text{g}/\text{m}^3$, respirators will remain slung. If the action level is reached and a ring-off occurs at $30 \mu\text{g}/\text{m}^3$, PPE will be upgraded to Level C. If personal air samples are taken to be sent to the laboratory for results, Level C PPE must be worn while the samples are taken until such time that a week's worth of samples return from the lab that are below the Action Level, at which time the level of PPE can be reduced to Level D.

7.2 HEAT STRESS MONITORING

Heat stress monitoring will be conducted using temperature readings, obtained from an on-site Wet Bulb Globe Temperature (WBGT) monitor, in order to ensure adequate work/rest cycles are determined and implemented at the site. When the temperature approaches 75 °F or above (or 70 °F for personnel in Level C or Modified Level D PPE), heat stress monitoring is required. Monitoring will be performed by the SSHO and results will be documented. The WBGT readings may also be supplemented by pulse rate monitoring, at the discretion of the SSHO, if he feels it is necessary to ensure all site personnel are adequately acclimatized to the site conditions. All site monitoring records for heat stress will be maintained on site for the duration of site operations, after which they will become part of the official project files. Plenty of cold drinking water will be available on site to maintain hydration of site personnel. See Section 9.14.1 of the APP for additional information.

7.3 METEOROLOGICAL MONITORING

Rain can constitute a safety hazard to field operations at this site. The SSHO will be responsible for monitoring the weather closely. If the area becomes wet, muddy, or slippery such that an unacceptable level of risk exists for personnel, then site operations will cease until the SSHO determines the area is safe to continue.

No site operations will take place if an electrical storm is within 10 miles of the site. An electrical storm monitor, set to the proper distance, will be used to determine if an electrical storm is approaching. Site operations will cease when an electrical storm is within 10 miles of the site, and will not resume again until the SSHO determines that the electrical storm is at least 10 miles away from the site. Personnel will evacuate the site to the pre-designated evacuation point and will await the determination by the SSHO that it is safe to resume operations.

7.4 PERIMETER MONITORING

No perimeter monitoring is required.

8.0 SAFETY AND OCCUPATIONAL HEALTH PROCEDURES, ENGINEERING CONTROLS AND WORK PRACTICES

Using common sense and following safe practices can reduce hazards. Personnel must keep the prudent guidelines listed below in mind when conducting field activities.

- Hazard assessment is a continuous process. Personnel must be aware of their surroundings and constantly be aware of chemical and physical hazards that are or may be present.
- The number of personnel in the EZ will be the minimum number necessary to perform work tasks in a safe and efficient manner.
- 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/emergency equipment.
- Detection or appearance of unusual or unknown liquids, odors or discolored soil could indicate the presence of contaminants and should be reported to the SSHO immediately.
- Site personnel are to report any other unusual or potentially hazardous condition to the SSHO for investigation and/or corrective action.

8.1 SITE RULES/PROHIBITIONS

All personnel on site will be required to follow the safe work practices contained in this Plan, as they relate to the hazards encountered during site activities. All site personnel will be required to read, understand, and comply with the provisions of this SHSP. If new tasks or hazards are identified during site operations, which pose additional hazards, the SHSP will be amended by the CHSM, to include additional safe work practices and other control methods as needed.

8.1.1 Buddy System

The buddy system is a safety practice in which each individual is concerned with the health and well-being of co-workers. The buddy system will be implemented during all on-site activities and will be incorporated when workers may be isolated or as determined by the SSHO. The SSHO will assign "buddies" to ensure accounting of all site personnel. Additional procedures include:

- A minimum of two personnel, will be present during all operations to ensure that one person will always act as a safety observer. During all operations, only the minimum number of personnel required to safely perform the task will be allowed on site. All other personnel will evacuate to a pre-designated assembly point.
- At no time will an individual desert his "buddy" unless his "buddy" goes down, and it is considered too hazardous to render assistance. "Buddies" will enter and exit the EZ together and frequently monitor one another for signs of fatigue, heat stress, and any other problems. In such cases, the worker in danger may not be aware he/she is having a problem. The "buddy" must always be alert to changes in the behavior of his "buddy" so that he can remove him/her from the situation immediately.
- "Buddies" should frequently inspect each other's equipment, including PPE, to ensure that it is adequate and in proper working order.

8.1.2 Eating/Drinking/Smoking Restrictions

Hand and face washing facilities will be set up in the Support Zone (SZ) and will be utilized by all personnel exiting the EZ prior to eating, drinking, tobacco use, or other hand-to-face activities. Paper towels will be provided for drying. A trash receptacle will be provided for discarded paper towels. Eating, drinking and tobacco use will take place in the SZ.

Smoking will be permitted only in designated areas. These areas will be equipped with a fire extinguisher, as well as a can containing sand, where cigarette butts can be safely discarded without concern for the spread of fire. All lighters and matches will remain in the designated smoking area and will not be permitted into the site.

8.1.3 Safe Practices

Safe practices can reduce hazards associated with normal site activities. Personnel must keep the prudent guidelines listed below in mind when conducting field activities. The following general personnel requirements apply.

- Horseplay or fighting is prohibited.
- Eating, drinking, smoking, chewing gum, tobacco, or any other hand-to-face activities are prohibited on site, except in designated areas after both face and hands have been washed.
- When required to sit or kneel on the ground, avoid contaminated surfaces.
- Placing equipment on contaminated surfaces should be avoided.
- Climbing on or over obstacles is prohibited. Stacks of materials can be unstable and could cause injury.
- Open flames of any type are prohibited on site.
- Bringing defective or unsafe equipment on site is prohibited.

Only authorized employees may enter the work site. Visitors must check in with the SSHO, receive an appropriate safety briefing, and be escorted by USA personnel at all times while on site.

8.2 WORK PERMIT REQUIREMENTS

8.2.1 Radioactive Work

As there are no plans to perform work involving radioactive materials, work permits for this type of work will not be required.

8.2.2 Excavation Work

Excavation Permits will not be required for this project, as the excavation will only be 4 in. in depth (with a potential of up to 12 in.).

8.2.3 Hot Work

As there are no plans for welding operations on this site, there will be no requirement for hot work permits.

8.2.4 Confined Space

As there are no plans for confined space work on this site, confined space permits will not be required.

8.3 MATERIAL LIFTING AND HANDLING PROCEDURES

Many types of objects are handled in normal day-to-day operations. Care will be taken and training will be provided to all personnel for lifting and handling heavy or bulky items, as this is the cause of many joint and back injuries. The following fundamentals address the proper lifting of materials to avoid joint and back injuries.

- The size, shape, and weight of the object to be lifted must be considered. Site personnel will not lift more than they can handle comfortably.
- A firm grip on the object is essential; therefore, the hands and object will be free of oil, grease, and water, which might prevent a firm grip.
- The hands, and especially the fingers, will be kept away from any points that may cause them to be pinched or crushed, especially when setting the object down.
- The item will be inspected for metal slivers, jagged edges, burrs, rough or slippery surfaces, and pinch points, and heavy gloves will be used, if necessary, to protect the hands.
- The feet will be placed far enough apart for good balance and stability.
- Personnel will ensure that solid footing is available prior to lifting the object.
- When lifting, get as close to the load as possible and bend the legs at the knees, making sure that the back is kept as straight as possible.
- To lift the object, the legs are straightened from their bending position.
- 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, with the back kept straight, the legs bent at the knees, and the object lowered.
- If the item to be lifted is too large, bulky, or heavy (over 50 lb) for one person to safely lift, ask a co-worker for assistance. If a piece of material handling equipment is available that can do the job, the employee should use the equipment instead of trying to lift the object himself/herself.
- When two or more people 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 person, if possible, will face the direction in which the object is being carried.
- Ensure the pathway that will be taken while carrying the object is known by all personnel; is as level as possible; and is free of any slip, trip, and fall hazards.

8.3.1 Soil Handling Procedures

Workers will be handling soil contaminated with lead and PAH. These operations include soil sampling as well as excavation operations. While the soil may have high levels of lead and PAH, it does not necessarily imply that high levels will be in the air during operations. Personnel performing soil sampling are not expected to produce high levels of dust, and the potential source of entry for this operation would be through skin absorption. Personnel performing soil sampling will wear chemical-resistant gloves during that operation.

The operations with the greatest potential for exposure to lead and PAH is the excavation of the contaminated soil. Excavations will only be 4 in. in depth (with a potential of up to 12 in. in places), but will cover a large area. Heavy equipment will be used to perform the excavation operations and the contaminated soil will be loaded into a dump truck and transferred to an approved disposal site. There is a potential to create dust during the process of excavation and placing contaminated soil into the dump truck. The amount of dust created will be based on the amount of moisture in the soil, and is difficult to predict. The K&K Excavations (the excavation subcontractor) will perform dust and/or lead monitoring to determine the potential exposure for employees in these operations. If a direct-reading dust monitor is used, it will be set to ring off at the Action Level for lead, which is $30 \mu\text{g}/\text{m}^3$. Personnel may work in Modified Level D PPE with respirator slung in this situation, and must upgrade to Level C (don the respirator) should a ring-off occur. If personal sampling for lead and PAH is conducted and sent to a laboratory for analysis, all personnel will be required to remain in Level C PPE until a week's worth of data can confirm exposure levels to be below the action level for both contaminants, before the level of PPE can be reduced.

8.3.2 Liquid Handling Procedures

If workers will be required to handle liquid chemical materials, appropriate PPE will be used based on the specific type of chemical(s) to which they may be exposed. Liquid chemicals brought to the site will likely be fuels and lubricants for equipment. All flammable liquids will be stored in approved flammable liquid containers and stored in designated flammable liquid storage areas. Grounding and bonding procedures will be used when dispensing flammable liquids from one container to another or into equipment. Personnel performing fueling operations will use chemical-resistant gloves. No equipment will be fueled in the back of a pick-up truck with a bed liner due to static electricity concerns. No smoking will be permitted within at least 50 ft of flammable liquid use or storage.

8.3.3 Radioactive Materials Handling Procedures

Radioactive materials are not expected to be encountered at this project site.

8.3.4 Spill Contingency

Small quantity containers of chemicals will be used at the work site, which will minimize the amount of hazardous materials that could potentially become part of a spill should an accident occur. The majority of chemicals used will include fuels, oils, and lubricants for use in vegetation clearance equipment. Spill clean-up kits will be available for use to clean up these chemicals and the impacted soils in the event a spill occurs. Chemical-resistant gloves will be used during all cleanup activities. The spilled chemical and the contaminated soil will be cleaned up, placed in labeled plastic bags, and stored in drums or other secured location until such time as they can be removed from the site and sent to a certified disposition facility.

8.4 DRUM, CONTAINER, AND TANK HANDLING

USA does not anticipate the use of drums, containers, or tanks during activities under the SOW.

8.5 COMPREHENSIVE ACTIVITY HAZARD ANALYSIS OF TREATMENT TECHNOLOGIES

Treatment technologies are not expected to be used on this project.

9.0 SITE CONTROL MEASURES

Site control measures are used to prevent or minimize the potential for site hazards. The site control measures, as well as all requirements of this SHSP, are mandatory for all personnel entering the EZ of this project site. Authorized government personnel will undergo the mobilization training along with all USA personnel, which includes a briefing on all of the requirements of this SHSP. All personnel receiving this training must sign a statement that they were trained and fully understand the requirements of this SHSP.

9.1 SITE MAP

A site map (refer to Appendix A of the Work Plan for detailed site maps) will be utilized by the SSHO during the tailgate safety briefing to inform the workers of the location of hazardous areas on the site, the assembly areas to be used in the event of site evacuation, and any other information relevant to the day's activities. The site map will include:

- Site topography
- Site work zones
- Location of unusual/hazardous areas
- Prevailing winds
- Ingress and egress corridors
- Evacuation routes and assembly points
- Location of emergency supplies.

9.2 WORK ZONE DELINEATION AND ACCESS POINTS

Site work zones will be established by the SSHO prior to initiating operations to control site access. Establishment of site work zones is based upon site conditions, activities, and exposure potentials. A site EZ will be set up, which includes the footprint of the area where work will take place and a 100-ft minimum distance around that to protect areas outside the site from potential site hazards. Site work zones will be marked using barricades and signage closing roads into the area to unauthorized vehicular traffic. Barricades and signs will remain in place for the duration of site operations.

9.3 ON- AND OFF-SITE COMMUNICATION SYSTEM

On-site communication will be conducted by voice or hand signals. There may also be an alarm signal, such as an air horn, used for the purpose of site evacuation. Radio communication may also be used between teams.

If off-site communication is required, it will be established through the use of cellular telephones. The SSHO will have a cell phone available and all site vehicles will be equipped with a cell phone or radio for communications between teams and the SSHO. The list of emergency telephone numbers will be posted in each site vehicle and with each cell phone. Communications equipment will be tested daily prior to the start of field work to ensure there is always a means of emergency communication available to each team.

Site Access Control – The SSHO will control access to each work zone and will ensure that all site workers and visitors have received the proper training and medical surveillance required to enter a specific zone. Access will be denied to any potential entrant not meeting these requirements. Site control is the primary means for protection of the general public from site hazards. The SSHO will control access to each work zone to ensure that unauthorized entry to the site cannot be made by the general public. The following work zones will be established at this site.

- **Exclusion Zone (EZ)** – Area where a significant hazard does or could occur and includes all areas where PPE is required to control worker exposure to chemical or physical hazards. All personnel entering the EZ will be logged in/out by the SSHO. All visitors to the EZ must be escorted by a

USA employee (normally this is the SSHO). The EZ of this site will be designated as the footprint area of actual project operations and the buffer zone around it of at least 100 ft. Entry into the project area where the work will be performed will be under the control of USA.

- Contamination Reduction Zone - The CRZ at a chemical site is the transition zone between the EZ and the SZ and serves as a buffer between the EZ and the SZ to reduce the probability of clean areas becoming contaminated or affected by hazards in the EZ. The CRZ will also contain the site access corridor through which entrance to the EZ is controlled by the SSHO. It should be established based on the type and nature of the contaminant, the potential for contaminant release, site topography, meteorological conditions, and nature of site activities. It provides additional assurance that the transfer of contamination on personnel, equipment, or in the air is limited through the use of a combination of decontamination, segregation of site operations, dilution ventilation and distance between the exclusion and support zones. The CRZ is also the location of the personnel decontamination station (PDS), the equipment decontamination station (EDS) and the emergency PDS (EPDS). These stations are used to effectively prevent the spread of chemical contamination into clean areas through the application of chemical specific decontamination procedures. No tobacco product use, eating, drinking, application of cosmetics, or other hand-to-face activities are allowed in the CRZ or any of the decontamination stations
- Support Zone – Area outside the EZ where site support activities are conducted. This zone includes break areas and sanitation facilities. Visitors desiring entry into the EZ must first meet with the SSHO and receive the appropriate safety and emergency procedures briefing in the SZ before gaining admittance to the EZ. In addition, visitors will be escorted at all times by a USA employee while in the EZ.

Site access control will be implemented by USA and will be accomplished through a program that limits movement and activities of people and equipment at the project site. This control will be based on site-specific characteristics, to include:

- Potential chemical, biological, physical or explosive hazards
- Terrain
- Expected weather conditions
- Planned site activities
- Site proximity to populated areas.

The degree of site access control will include the following:

- Controlled site ingress/egress points – Work area will be clearly visible to anyone approaching the site and vice versa. Signs will be posted to warn unauthorized personnel against entry into the area. Anyone entering the work area must clear access through USA. Only authorized personnel will be permitted within the EZ during operations. All others will remain in the SZ.
- Worker/visitor registration – All personnel working on the site sign in daily at the time of their daily safety briefing in the morning. All visitors to the site must sign the visitor log when they report to the site for their visitor briefing.
- Escort of visitors – All visitors to the site will be escorted by a USA employee. Visitors will be briefed on site hazards, PPE requirements, and emergency procedures. If visitors need to access the EZ, all operations will cease while they are in the area, and the visitors will be escorted at all times.
- PPE requirements – PPE requirements have been established based on the site hazards. Personnel working in areas requiring PPE will wear required PPE for the duration of the operation. Visitors to the area will be required to have the required PPE for the area they will be visiting.

9.4 SECURITY PROCEDURES

As the Navy no longer has a presence on this site, USA will provide security for site operations.

10.0 PERSONNEL HYGIENE AND DECONTAMINATION FACILITIES AND PROCEDURES

Sanitation facilities will be provided in the SZ area so that employees can wash prior to eating, drinking, smoking, or engaging in any other hand-to-face activities. Chemical toilets will be available in the SZ of the work area. As chemical contamination of the soil is expected to be a hazard at this site, decontamination will be required for workers and equipment from the soil excavation and removal operations. Site sanitation will be established and maintained in accordance with OSHA 29 CFR 1910.120(n).

- Temporary toilet facilities will be provided in the work area of the site. Chemical toilets will be used in these locations and will be serviced every week. Each temporary toilet will be naturally lighted, have a toilet seat with a seat cover, have a urinal, have ventilation with vents screened, and be lockable from the inside. There will be at least one toilet for every 15 workers at the work site, as required.
- Hand- and face-washing facilities will be set up at the USA work site and will be utilized by all personnel exiting the EZ prior to eating, drinking, tobacco use, or other hand-to-face activities. Paper towels will be provided for drying. A trash receptacle will be provided for discarded paper towels. In accordance with ANSI Z358.1-1998, eye-wash facilities will be available on all work sites where operations involve handling substances that could be hazardous to the eyes. An eyewash kit consisting of bottled eyewash solution will also be located with each site first aid kit.

General work practices include the following:

- Safe work practices will be implemented when possible to eliminate or reduce the potential for employee exposure.
- Employees will wash their hands immediately or as soon as feasible after removal of gloves or other PPE.
- Employees will wash hands and any other skin with soap and water, or flush mucous membranes with water immediately following contact with blood or potentially infectious materials.
- If potentially contaminated sharps are encountered, the item will immediately be disposed of in an appropriate puncture-proof container or decontaminated.
- Eating, drinking, smoking, applying cosmetics or lip balm, handling of contact lenses, or storage/handling of food are prohibited in all areas where potentially infectious or other hazardous materials are present.
- Equipment that has become contaminated will be decontaminated prior to servicing or storage, unless decontamination is not feasible, in which case the equipment will be disposed of properly.

In order to significantly minimize the potential for contaminant contact and migration, it is imperative that site personnel decontaminate thoroughly, remove PPE very carefully, and follow the decontamination procedures outlined in the following paragraphs. Although these procedures apply to personnel exiting the EZ, their implementation is of pivotal importance to all other site personnel, the environment and the general public. Site personnel utilizing these procedures must remember and understand that improper decontamination can lead to not only personal contamination, but also to contamination of other site personnel, company equipment, personal property and the public. The procedures listed below represent the minimum requirements for personnel and equipment decontamination. If deemed necessary by site activities or conditions, revised or additional procedures may be added to this Plan by the SSHO. Additional or revised decontamination procedures must receive approval of the CHSM.

10.1 DECONTAMINATION OF LEVEL C PPE AT PERSONNEL DECONTAMINATION STATION (PDS)

This section applies to the decontamination of personnel dressed in Level C, which includes the use of a half or full-face air purifying respirator (APR). The Contamination Reduction Zone (CRZ) will be located adjacent to the EZ, and is the location where the PDS is set up. Personnel will process through the stations of the PDS and exit into the SZ.

Station 1: Equipment Drop

Enter Decontamination Line at Station 1 and deposit all reusable equipment on the drop cloth.

Station 2: Outer garments Decontamination (Chemical suit, gloves and boots)

This station involves washing all outer garments with a decontamination solution made of two parts water and one part household bleach. Start at head and brush or spray down to soles of boots. Scrub boots, including the bottoms, gloves and any other part of the suit necessary to remove all dirt, mud or other foreign debris.

Station 3: Outer garments Wash (Chemical suit, gloves and boots)

Starting at the head and working down, scrub entire surface of outer garments with brush and decontamination solution mixed to manufacturer's specifications.

Station 4: Outer garments Rinse

Starting at the head and working down, use clean water and brush off or spray all soap residues from the outer garment.

Station 5: Tape Removal

Remove all tape that would restrict the removal of the outer garments and place it in a plastic lined disposal container.

Station 6: Boot/Boot Cover Removal (Boot Rack)

Remove over boots, boot/boot covers and place on boot rack if serviceable; if not place in plastic lined container. The PDS attendant may assist from cold side of Hot Line, and will help ensure that personnel do not place unbooted feet back across the Hot Line. A chair or bench will be provided and a bootjack placed at this station to assist in boot removal.

Station 7: Outer Glove Removal

Remove outer gloves and place on table, if serviceable; if not, place in plastic lined container. Personnel should exercise extreme caution and make every effort not to touch the inner gloves with the outside of the outer gloves during their removal.

Station 8: Outer Suit Removal

Remove outer suit and place on table if reusable. The PDS attendant or buddy will assist in removal of the suit in an inside out fashion, using caution to touch the outer part of the suit as little as possible. If suit is unserviceable, put into plastic lined disposal container.

Station 9: Inner Glove Wash and Rinse

Wash inner gloves in decontamination solution mixed to manufacturer's specifications and rinse in clean water.

Station 10: Respirator Removal and Wash/Rinse

Remove respirator facepiece. If facepiece will be used again on this day, wipe down the facepiece, inside and out, using wipes provided. Place facepiece in personally assigned bag and place on table or rack, for collection by PDS attendant later. Place wipes into Station 14 disposal container. If this is the last use of

the day, remove cartridges, and dispose of them in designated plastic lined container. Dunk facepiece in sanitizing solution and then rinse with clean water. Place facepiece on table for collection later during the daily PDS clean up.

Station 11: Inner Glove Removal

Remove inner gloves and place into plastic lined waste container, using caution not to touch the outside of the inner gloves with the hands.

Station 12: Conduct Field Wash

Using soap and water, or handi-wipes, wash hands, face and neck.

10.2 EMERGENCY PDS (EPDS)

An EPDS will be set up alongside the PDS. If an emergency occurs inside the EZ resulting in personal injury or illness which prevents the affected individual from processing through the PDS, they will be processed out of the EZ through the Emergency PDS (EPDS). The function of the EPDS is to make available all the resources necessary to allow for the combined efforts of first aid and decontamination personnel. The EPDS will be set up so as to allow for the rapid decontamination of an injured worker, removal of PPE, and safe transport of the injured worker across the Hot Line.

Station A: Dropcloth for positioning, one gallon of decontamination solution, five gallons water and a plastic sheet for emergency wrap of personnel to be medically evacuated if complete removal of PPE is not possible due to the nature and extent of injuries.

Station B: Porous stretcher for EZ side of the Hot Line.

Station C: Drop cloth for location of: first aid kit, eye wash kit, fire extinguisher and other emergency equipment.

Station D: Stretcher for the PDS side of the Hot Line.

10.3 EQUIPMENT DECONTAMINATION FACILITIES AND PROCEDURES

Any equipment item or vehicle taken into the EZ may be contaminated and must be carefully inspected and decontaminated in the CRZ prior to leaving the site. Only clean water is to be used for decontamination of equipment and vehicles. It will be the responsibility of the SSHO to properly inspect, and approve for general cleanliness, all vehicles, heavy equipment and hand-held equipment being taken out of the EZ/CRZ. The frame and tires of all vehicles and heavy equipment leaving the CRZ must be thoroughly inspected and decontaminated. In order for a vehicle or piece of heavy equipment to pass inspection it must be in broom-clean condition, free of loose dirt or stabilized material on tailgates, axles, wheels, etc. Approval will be based on visual inspection of all exposed surfaces. Seats and flooring of equipment and vehicles that are used in the EZ will be covered to the extent possible with disposable polyethylene. Personnel assigned to vehicle decontamination will wear the PPE consistent with the established requirements for the area where the equipment was used.

If necessary, USA will utilize an equipment decontamination pad to be located at the entrance to the CRZ. This pad will be utilized to remove soil from all equipment leaving the work area. Decontamination procedures will consist of high-pressure washing of equipment to remove mud and dirt or by steam cleaning. All equipment requiring maintenance or repair will be staged in the CRZ prior to servicing. Equipment wash water residue will be collected for disposal. The water will be collected through the collection sump at the pad and transferred to storage containers.

10.4 ON-SITE FIRST AID AND EMERGENCY PROCEDURES AND EQUIPMENT

A minimum of two USA employees on the site will be First Aid/CPR certified and will serve as the first responders to any site emergency. Any person(s) who becomes ill or injured during work activities must immediately inform the SSHO regardless of the severity of the illness or injury. The SSHO will alert the first responders to assist the victim. If the injury or illness requires professional medical attention, the

SSHO will summon emergency medical assistance and the ambulance will transport the victim to the hospital. All personnel at the work site will use the buddy system. All personnel using the buddy system will stay within sight of their partner. If a partner becomes incapacitated or severely ill, the SSHO will be called. In the event that a cessation of work is ordered, all personnel should:

- Assist the first responders as required, in administering first aid
- Leave the area if the hazard warrants such action.

If the medical emergency is not severe (requiring only first aid), the victim will be treated on site by the first responders, with additional treatment at the hospital or clinic if required. If the medical emergency is serious, the victim will be brought to the hospital via ambulance, where the victim will be stabilized and treated. The SSHO will provide the ambulance and hospital personnel with the victim's medical background information and information on how the injury or illness occurred.

Should the emergency occur within the EZ during Level C operations, the victim will be processed through the EPDS prior to being taken to the hospital for treatment. The responding emergency personnel will be made aware of the circumstances of the incident, and if there is a potential for chemical contamination. The MSDS for the contaminants will be provided to the emergency responders.

An approved emergency first aid kit, blood-borne pathogen kit, CPR mask, stretcher, blankets, eye wash kits, trauma supplies, and basic emergency equipment will be kept in the SSHO vehicle. First aid kits are assigned by the Safety Office and approved by the Occupational Health Physician. The SSHO will be charged with providing regular inspections of the emergency supplies, replacing any items that are used, and maintaining readiness.

Eyewash kits will be located in the work area. A 10B:C fire extinguisher will be kept in each site vehicle for emergency use on site. This equipment will be inspected on a weekly basis to ensure it is maintained and ready to use. Fire extinguishers located on vehicles must be readily available to the driver or operator. Any used items will be replaced immediately.

Fire extinguishers will be stored where they are well marked and readily accessible. Fire extinguishers will be protected from the damaging effects of environmental elements. The SSHO is responsible for ensuring that all fire extinguishers are visually inspected monthly and that these inspections are documented. All site personnel will be familiar with the locations of fire extinguishers and will be trained in their use.

10.4.1 Emergency Response Plan and Contingency Procedures

The Emergency Response Plan and contingency procedures address emergencies that could occur during site operations, and outlines the appropriate response actions. This information can be found in Section 9.2, "Emergency Response Plans," of the APP.

10.4.2 Emergency Response Plan

10.4.2.1 Operations

The following operations require the use or potential for exposure to hazardous substances:

- Vegetation clearance operations
- Excavation of contaminated soil.

10.4.2.2 Pre-Emergency Planning with Local Responders

An agreement will be established between USA and emergency response personnel and the hospital regarding responsibilities of each party in responding to a project site emergency. The SSHO will verify all on-site emergency services information, to include procedures for requesting services. It will be the SSHO's responsibility to post these procedures and contact information in accordance with the requirements of this SHSP and APP. Pre-emergency planning tasks include:

- Post emergency instructions and call numbers at accessible telephone locations

- Inspect all emergency equipment and supplies to ensure they are in proper working order
- Provide a site map marked with planned evacuation routes, assembly points, and emergency equipment and supplies
- Provide a map with the route to the hospital marked and highlighted, with copies of this map posted in all site vehicles
- Conduct an emergency response drill to test the effectiveness of the Emergency Response Plan and Contingency Procedures (ERCP)
- Review and revise the ERCP in the event of a failure of the plan in an actual or staged emergency, or when changes in site conditions or SOW affect the ERCP.

Before normal activities are resumed, on-site personnel must be prepared and equipped to handle another emergency. The follow-up activities noted below should be completed.

- The CHSM will notify appropriate government agencies as required. (Reminder: OSHA must be notified if there have been any fatalities or three or more hospitalizations from the same event.)
- All equipment and supplies should be restocked, serviced and inspected
- All aspects of the SHSP should be reviewed and revised as necessary to address and prevent future emergencies of this type.

As part of mobilization training, prior to start of project, all personnel will review the points of contact list and where it is posted as well as the location of the nearest hospital. A meeting place off site will be identified in case of emergency evacuation; the responsibilities of all persons on site will also be reviewed. All personnel will review the locations of fire extinguishers and be competent to use one properly. All emergency telephone numbers will be posted next to the directions to the hospital map on site.

10.4.2.3 Personnel Roles, Lines of Authority, Training, and Communication

In the event of an emergency, the SSHO will be designated as the On-Scene Incident Commander and will have the overall responsibility for implementation of the ERCP and coordination with responding off site emergency services. In the event of a medical emergency, the SSHO will call in the first responders and the SSHO will determine if professional medical assistance (EMS) is required and will summon emergency response personnel.

a. Personnel and Lines of Authority

Specific responsibilities of the SSHO include, but are not limited to, the following:

- Notifying local police, fire department, and other off-site emergency units, as required
- Notifying the NAVFAC RPM and providing updates as conditions change
- Directing offsite emergency response personnel to the scene and providing assistance
- Site control
- Completing any follow-up reports
- Rescuing personnel
- Accounting for all site personnel and visitors
- Providing emergency first aid
- Preventing further injury of personnel
- Providing current status of the incident to the USA CHSM
- Ensuring that on-site emergency response personnel don the proper PPE if needed
- Assisting on-site emergency response personnel with treatment and transport of sick/injured

- Providing medical background information of the sick/injured and applicable site health and safety information to the off-site emergency medical responders
- Accompanying sick/injured personnel to hospital.

If the emergency involves employee injury, SSHO will complete the USA Accident Report. The CHSM will be responsible for notifying applicable Federal, state and local authorities/agencies. Once the emergency has been resolved, the SSHO, Project Manager, and CHSM will conduct a follow-up investigation and critique. Actions will be taken to prevent recurrence.

All USA personnel and visitors will be responsible for:

- Reporting any site emergencies to the SSHO
- Knowing the exit location and evacuation route within the EZ
- Knowing the pre-planned evacuation assembly point and going there in the event of an emergency
- Assisting emergency response personnel as requested.

b. Training

USA personnel receive training in emergency procedures in response to potential incident scenarios of all kinds on the site as part of their mobilization training. Part of this training involves the clean-up of small spills of hazardous materials, as well as the use of emergency equipment such as fire extinguishers, etc.

c. Communication

Communications between USA teams on the site will be verbal or via radio, depending on location. USA maintains cell phone communication capabilities in order to call for emergency assistance as required.

10.4.2.4 Emergency Recognition and Prevention

An emergency is an unplanned event that threatens the safety of any personnel. Compliance with this SHSP can assist in the prevention of anticipated site emergencies. These emergency situations can easily be recognized by visual observations, worker complaints, or monitoring instruments.

There are several emergencies, which could reasonably be anticipated during project activities, including:

- Thermal stress
- Worker injuries, slips, trips or falls, and/or illness
- Fires
- Health emergencies.

Prevention of emergencies will be aided by the effective implementation of this SHSP and APP, personnel awareness, contingency planning, and on-site safety meetings. Anticipated emergencies may include physical injury, illness, fire, explosion, chemical spill or release, inclement weather, and natural disasters. The SSHO will use the site-specific briefing and/or the Tailgate Safety Briefings to inform site workers of the recognition, prevention, and response procedures for each anticipated emergency.

In the event of an emergency, site personnel will be notified by either an alarm or verbal communication. Personnel will be notified to:

- Stop work activities
- Evacuate to the designated assembly point at the SZ
- Begin emergency procedures
- Notify off-site emergency response organizations.

After evacuation, the SSHO will account for all personnel, ascertain information about the emergency and advise responding onsite personnel. The SSHO will contact, advise, and coordinate with responding off-site emergency personnel if deemed necessary by the situation.

In all situations that require evacuation, personnel will not re-enter the work area until:

- The conditions causing the emergency have been corrected
- The hazard has been reassessed
- The SHSP has been revised and reviewed with onsite personnel, if needed
- Instructions have been given for authorized re-entry by the SSHO.

10.4.2.5 Safe Distances and Places of Refuge

The SSHO will determine safe distances and places of refuge. Prior to the start of each workday, the SSHO will hold a safety meeting with all personnel and discuss the following:

- Times when the gate to sites may be locked
- Who has the gate key or combination on site
- Evacuation routes from work areas
- The assembly point to be used in the event of an emergency
- Locations of the nearest fire extinguishers and spill containment equipment
- Discussion of specific health and safety concerns of personnel.

The EZ of this project is the actual project footprint and an additional distance of at least 100 ft. Everything beyond that distance is the SZ. Normally, during an evacuation, personnel would evacuate to the SZ, where the SSHO would take roll and account for all site personnel. In the case of encountering a CWM item, personnel would evacuate at least 450 ft upwind of the item. This location would change with the shifting winds, so it cannot be specifically identified.

10.4.2.6 Site Security and Control

USA will maintain control of the site during operations. The site will be marked and visitors will be required to check in with the SSHO in the SZ, where they will receive a briefing on safety and emergency procedures of the site. Visitors to the site will also provide documentation to verify that they have current HAZWOPER Training and a HAZWOPER physical that will allow them to enter a hazardous waste operations site. Visitors meeting these requirements who have a need to access the site will be required to have a USA escort for the duration of their visit to the site (normally the SSHO) and wear the PPE required for site operations. Unauthorized persons will not be admitted into the EZ of the site.

During an emergency situation, USA personnel will evacuate personnel from the area. Emergency responders will be called to the site to assist as required. USA personnel will man the access roads to the site in order to prevent unauthorized personnel from entering. USA personnel will inform emergency responders of known hazards at the site, required PPE for entering the site and provide assistance to emergency responders if requested to do so.

10.4.2.7 Evacuation Routes and Procedures

The SSHO will establish evacuation routes. Evacuation notification will be one long blast on an air horn, vehicle horn, or direct verbal communication. If evacuation is necessary, all personnel are to:

- Gather equipment to the extent safely possible
- Evacuate to the vehicle(s) location and prepare to move out.

In the event of an emergency requiring evacuation, the evacuation signal will be given as an alarm or through verbal instructions. Personnel will evacuate to a pre-determined evacuation point in the SZ. The

SSHO will account for all personnel and will summon emergency response personnel, if required. If the Fire Department is summoned, the SSHO will meet them upon their entrance to the site and will inform them of the situation, and offer assistance if requested.

Potentially hazardous weather conditions will be closely monitored by the SSHO. The SSHO will determine if high wind or heavy rain conditions pose a hazard to site operations, in which case personnel will evacuate to the pre-determined evacuation point and will wait for conditions to clear or for further instructions from the SSHO.

After the emergency situation has been controlled and eliminated, or has passed, the Project Manager, SSHO, and CHSM will review the way the emergency was handled and change procedures if necessary.

After allowing the appropriate wait time (24 hours in the case of a fire), the SSHO and a senior level site worker will enter the site together and determine if the site is safe for re-entry.

10.4.2.8 Decontamination

Emergency decontamination will be in accordance with Section 10.2 of this SHSP.

10.4.2.9 Emergency Medical Treatment and First Aid

Due to the nature of work to be performed on this site, a significant hazardous substance spill is unlikely to occur. However, there will be a minimum of two personnel trained and certified in First Aid/CPR onsite who will respond to site emergencies and will provide first aid care as necessary until medical authorities arrive and take over. They will have supplies and equipment on hand to decontaminate any chemical substance from the victim and to provide first aid treatment.

10.4.2.10 Emergency Alerting and Response Procedures

The emergency alerting procedures for a hazardous substance spill is the same for other emergencies that could occur on this site. In the event of an emergency, site personnel will be notified by either an alarm, radio, or verbal communication. Personnel will be notified to:

- Stop work activities
- Evacuate to the designated assembly point at the SZ
- Begin emergency procedures
- Notify off-site emergency response organizations.

10.4.2.11 Critique of Response and Follow-Up

Following any emergency drill or actual emergency, the PM, SSHO, and CHSM will review the incident or drill and evaluate the effectiveness of the emergency response. If there were areas of weakness in the emergency response action, the procedures will be adjusted accordingly in order to address problems prior to the next emergency.

10.4.2.12 PPE and Emergency Response Equipment

Due to the SOW for this project, special PPE will not be required for responding to an emergency. An approved emergency first aid kit, blood-borne pathogen kit, CPR mask, stretcher, blankets, eye wash kits, trauma supplies, and basic emergency equipment will be kept in the SSHO vehicle and will be available for use. Each field team will have access to a first aid kit, eye wash and fire extinguishers. A minimum of two USA employees on the site will be First Aid/CPR certified and will serve as the first responders to any site emergency. The SSHO will be charged with providing regular inspections of the emergency supplies, replacing any items that are used, and maintaining readiness.

10.4.3 Emergency Response Team

In the event of an on-site emergency, the individual team leader or first person aware of the emergency will contact the SSHO. There will be at least two site personnel who are currently trained in First Aid/CPR. The SSHO will normally be responsible for contacting the first responders to render emergency first aid treatment, and the SSHO will authorize site personnel to assist, where required. The SSHO will contact the ambulance to transport the victim to the hospital, should that be needed. If the order is given to evacuate the site of all personnel, each on-site team leader will assemble, account for, and evacuate all team personnel to the pre-designated staging area in the SZ.

The SSHO will function as the On-Scene Incident Commander in emergency response actions. During any site emergency, the SSHO will direct other site workers to assist in such areas as using fire extinguishers to put out fires in their incipient stages, setting up barricades, evacuation to the designated evacuation location in the SZ, etc. The SSHO will be responsible for assessing the situation and for calling for assistance from local emergency response organizations. The SSHO will interface directly with emergency response organizations when they arrive on the site and will direct USA workers to assist if requested to do so.

10.4.3.1 Personnel Training Requirements

Training in emergency procedures will be accomplished as part of the site mobilization training and by performing drills. After any drill or real emergency scenario, the PM, CHSM, and SSHO will evaluate the situation and determine any potential areas for improvement in the procedures. Procedures will be updated accordingly, and all site personnel will be made aware of any such changes.

At least two personnel on the site will have current training in First Aid/CPR.

10.4.3.2 Emergency Response Team Responsibilities

The site Emergency Response Team (ERT) will respond in a defensive manner to all emergency situations that arise on the site. The ERT will be trained to respond to all types of emergencies that are expected to arise on this project site. According to the SOW for this project, major hazardous substance releases are not expected to occur; however, site personnel will be trained and equipped to respond to small spills of chemical materials. All site personnel will be trained in the use of a fire extinguisher and the situations when a fire extinguisher should and should not be used. The personnel trained in First Aid/CPR will respond to all injury situations in order to provide first aid assistance until professional medical assistance arrives.

10.4.4 Confined Space Entry

Confined spaces are not expected to be an issue on this site, so confined space entry procedures will not be required.

10.4.5 Logs, Reports and Record Keeping

USA will perform and document safety inspections, as well as maintain a site visitor log. Personnel records will be kept on site, which document medical surveillance and appropriate training certifications. In addition, accident reports and site monitoring reports will be maintained on site. All site logs, documents, and records will be included in the final report.

10.4.5.1 Recordkeeping Procedures

Each person on the site will have an individual file folder, which contains a copy of the following:

- 40-hr HAZWOPER Certificate
- Current 8-hr HAZWOPER Annual Refresher Certificate
- 8-hr HAZWOPER Supervisor Certificate, if applicable
- Lead Awareness Training Certificate, as required

- Any other applicable training certificates.

Personnel folders will be maintained by the SSHO on site for the duration of site activities. A Training/Tailgate Safety Record will be completed for all on-site daily training. The SSHO will maintain the file, which will be made available for the client as requested.

a. Training Logs

Training logs documenting all training received on the project site will be maintained by the SSHO. This will include mobilization training, daily safety briefings, as well as other training and safety meetings. APP/SHSP training will be documented with signature sheets, which will remain on site for the duration of project operations. Daily safety briefings will also be documented on forms and signed by all personnel in attendance with forms maintained in files on site. Formal training in PPE, equipment familiarity, etc. will also be documented on USA Documentation of Training forms and will remain on file at the site for the duration of site operations.

b. Daily Safety Inspection Logs

The SSHO will perform and document daily and weekly safety inspections of all site operations on a scheduled and non-scheduled basis. The SSHO will conduct non-scheduled safety and health inspections as deemed appropriate, based upon the ongoing site activities. Scheduled safety and health inspections will be conducted as outlined in Table 10-1. When discrepancies are observed, follow-up will be documented in the SSHO log until the corrective actions required have been completed.

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Table 10-1: Inspection Type and Frequency

Area	Frequency
Sanitation	Daily
Medical and First Aid	Daily
Temporary Facilities	Weekly
Personal Protective and Safety Equipment	Daily
Hazardous Substances, Agents, and Environments	Weekly
Hazardous Materials Inventory	Weekly
Lighting	Monthly
Accident Prevention Signs, Tags, Labels, and Signals and Piping System Identification	Monthly
Fire Prevention and Protection	Weekly
Hand and Power Tools	Daily, if applicable
Material Handling, Storage and Disposal	Weekly
Machinery and Mechanized Equipment	Daily, if applicable
Motor Vehicles	Daily
Safe Access and Fall Protection	Weekly, if applicable
HTRW	Daily, if applicable

c. Employee/Visitor Registers

The Visitor's Log will be maintained by the SSHO and will document the visitor's name, company name, date, time, and reason for visit. There will also be documentation that the visitor was given a safety briefing prior to being permitted to enter the EZ of the site. Visitors will be escorted by USA personnel at all times within the EZ. The Visitor's Log will be maintained on the site for the duration of site operations.

Employees sign in each day on the daily safety briefing forms, which are maintained on site for the duration of site activities.

d. Medical Surveillance Records and Certifications

A copy of the Physician Statement from a licensed physician who is certified in Occupational Medicine by the American Board of Preventive Medicine, regarding the current annual HAZWOPER physical examination, will be maintained in the personnel folder with the HAZWOPER certificates. The Physician Statements will remain in the individual's file on the project site for the duration of site operations. The files will then be transferred to the USA Corporate Office in Oldsmar, FL, at the end of site operations.

e. Site Monitoring Results

All site monitoring results will be documented. These records will be kept in a file at the project site for reference, and will become a part of the permanent site record at the conclusion of site activities. At this site, lead and PAH exposure monitoring, dust monitoring, and possibly heat exposure monitoring are the types of monitoring anticipated. Results will be maintained on site and will be available for inspection by the client as well as by employees.

f. Personal Exposure Records

K&K Excavations may be performing lead and PAH personal exposure monitoring and/or dust monitoring on this site. These results will be used to determine if Level C PPE will continue to be used during the excavation of contaminated soil, or if the level of PPE can be safely reduce to Level D. Exposure records will be maintained on the site for the duration of site operations. Employees will be informed of the results of their personal exposure records.

10.4.5.2 Personal Exposure and Medical Monitoring Records

Personal exposure records are expected to be required on this project site due to the excavation of soil contaminated with lead and PAH. These will be shared with the individual employees involved, and will be kept in their individual personel files on the site for the duration of site operations. Medical monitoring will include the basic HAZWOPER physical as well as biological monitoring for lead (blood lead and ZPP levels) will be required. Medical monitoring records will be maintained in the individual personnel files on site for the duration of site operations. At the end of the field work, these records will be transferred to the USA Corporate office in Oldsmar, Florida, for the duration of employment plus 30 years.

10.4.5.3 Final Report

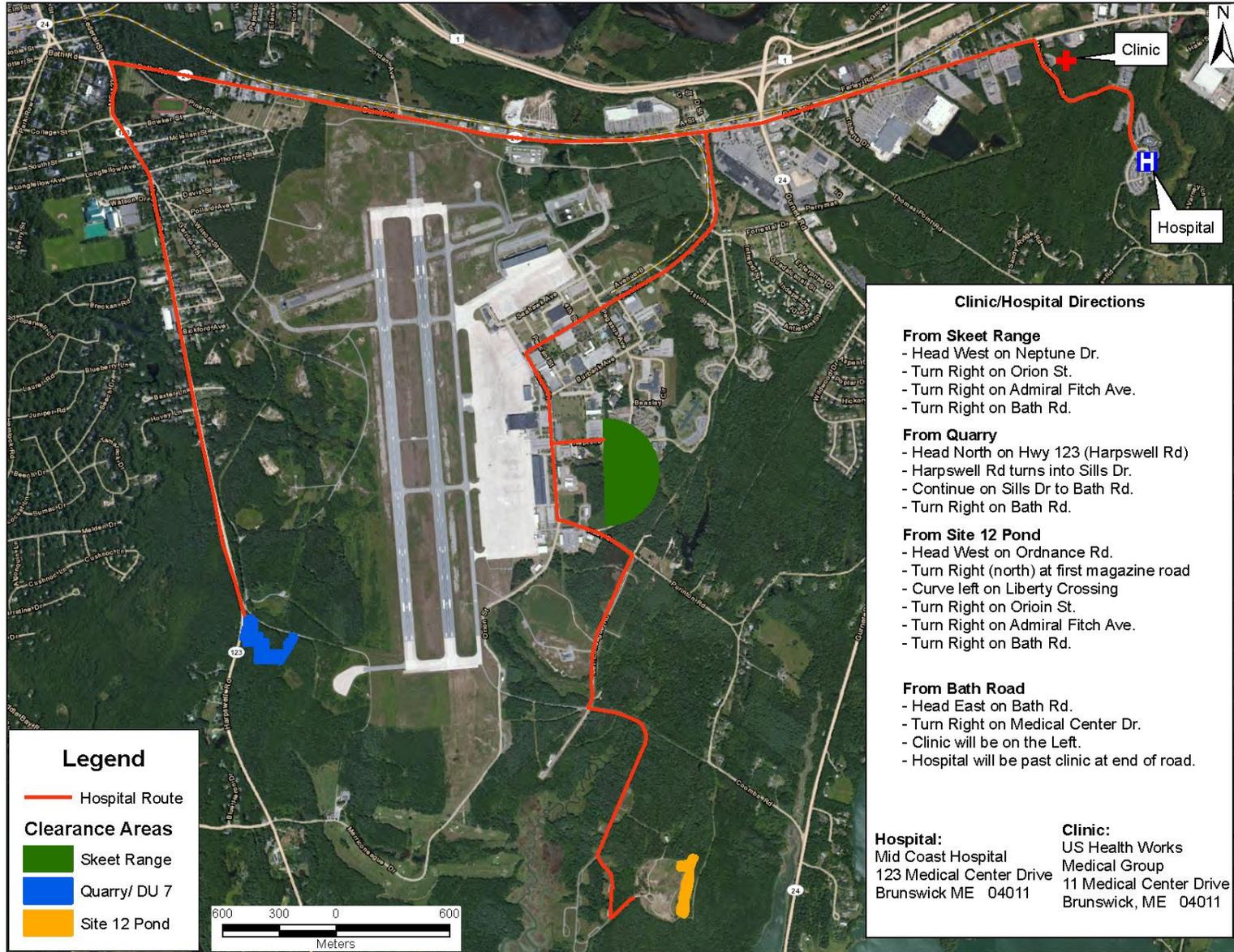
USA will develop, retain and submit as part of the final report, all visitor registration logs, training logs, and daily safety inspection logs as part of the daily quality control reports.

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**ATTACHMENT 1.
MAP AND DIRECTIONS TO HOSPITAL**

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APPENDIX D. PLAN FOR THE PREVENTION OF DRUG AND ALCOHOL ABUSE

This Appendix contains a copy of USA's Plan for the Prevention of Drug and Alcohol Abuse for use on this project:

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USA Environmental, Inc.

DRUG FREE WORK PLACE PROGRAM

January 01, 2013

The USA ENVIRONMENTAL, INC. program is an extension of our work safety and employee health programs. The program requires refraining from substance abuse both on and off the job as a condition of continued employment.

WHAT IS SUBSTANCE ABUSE?

Federal Acquisition Regulation Clause 23.500 defines substance abuse as the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in the workplace. USA ENVIRONMENTAL INC.'s program further expands that definition as follows: Substance abuse includes but is not limited to the consumption, by any means, of any legal or illegal substance that alters an individual's normal behavior and results in intoxication and/or renders the employee incapable of safe/efficient job performance. Substance abuse also includes over use or abuse of legally prescribed drugs. Also prohibited are the use of, selling, trading, giving away, possession or offering for sale illegal drugs, prescription drugs, or alcohol whether on company property, while operating a company vehicle or company-leased vehicle (on or off company property and during working or non-working hours), or operating a personal vehicle while on company business.

USA ENVIRONMENTAL SUBSTANCE ABUSE TESTING PROGRAM

The substance abuse program includes substance abuse testing under the following situations:

1. Pre-employment testing.
2. Testing for reasonable suspicion of substance abuse.
3. Testing following on-the-job accidents.
4. Testing as part of all "fitness for duty" medical examinations.
5. Quarterly testing for a period of 2 years after program completion for all employees participating in a substance abuse rehabilitation program.
6. Random testing of employees to promote abstinence.
7. Testing following a 30-day or greater layoff or return to work following a leave of absence or termination.

A urine, saliva or blood specimen will be analyzed for the presence of any of the following substances:

1. Marijuana - Cannabinoids, THC
2. Cocaine
3. Methadone - Dolophine, Methadose
4. Barbiturates - Nembutal, Tuinal, Seconal, etc.
5. Amphetamines - Desoxyn, Biphedamine, Dexedrine, etc.
6. Methaqualone - Qualudes
7. Opiates - Codeine, Percodan, Paregoric, Morphine, etc
8. Propoxyphene - Darvon, Dolene, etc.
9. Phencyclidine - (PCP)
10. Benzodiazepines - Librium, Valium, Xanax, Serax, Halcion, etc.
(Alcohol as required through breathalyzer or other testing means – Ethyl Alcohol as a beverage or as part of a medication)

USA Environmental, Inc.

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A list of the most common drugs or medication by brand name, common name, as well as chemical name, which may alter or affect a drug test will be provided to all job applicants and employees at the time of testing.

A form is provided for employees or job applicants to report, voluntarily and confidentially, the use of prescription or non-prescription medications both before and after being tested.

Specific confirmation testing will be performed for all positive screening test results. Employees testing positive for prescription drugs that are commonly abused must produce evidence from their attending physician to justify the treatment necessity for use of the drug(s).

USA ENVIRONMENTAL, INC. is responsible for testing costs, except for test costs incurred by the employee or job applicant challenging test results.

RANDOM TESTING

Unless prohibited by law, USA ENVIRONMENTAL, INC. reserves the right to randomly test its employees for substance abuse. The number of personnel tested and the frequency of tests will be solely at the discretion of USA ENVIRONMENTAL, INC. or as contractually specified by USA ENVIRONMENTAL INC.'s clients.

REASONABLE SUSPICION TESTING

Employees reporting to work or a USA ENVIRONMENTAL, INC. job site who demonstrate impaired conduct will be interviewed by two (2) supervisors or managers to determine the cause of the irregular behavior.

If both supervisors conclude that the irregular behavior is unsafe the employee will not be allowed to continue working and will be transported home or to a medical facility. The employee will not be allowed to drive any motor vehicle. If a medical problem is not the cause, the employee may be tested for substance abuse. The employee may also be tested for substance abuse regardless of the cause of irregular behavior.

Reasonable suspicion testing shall also be conducted when there is:

1. An independently corroborated report of observed substance abuse.
2. Evidence that an individual tampered with a drug test during his or her employment with USA ENVIRONMENTAL, INC.
3. Information that an employee caused or contributed to an accident while at work.
4. Evidence that an employee has used, possessed, sold, solicited, or transferred drugs while working on USA ENVIRONMENTAL, INC. premises or while operating vehicles, machinery or equipment belonging to USA ENVIRONMENTAL, INC.

Supervisors will complete an incident report for observed irregular conduct, documenting their observations and the results of the employee interview. Final disposition of the incident will be documented with signatures and the dates listed by both supervisors.

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A copy of the supervisor's report will be provided to the employee with appropriate employee's signature of receipt.

This confidential Incident Report will be retained by USA ENVIRONMENTAL, INC. for a period of at least one (1) year.

CONSEQUENCES OF POSITIVE TEST OR TEST REFUSAL

Refusal or failure to submit to testing or positive test results following an on-the-job injury disqualifies an employee from Workers' Compensation benefits.

Testing positive for abused substances will eliminate applicants from employment consideration.

Any employee may be terminated from employment for a positive test result. Refusal or failure to submit to testing following an on-the-job accident or random test will result in termination of employment.

Any employee who is given a "second chance" must seek treatment. Time away from work for treatment will be in a leave without pay status. The USA ENVIRONMENTAL, INC. Employee Assistance Program (EAP) will coordinate the employee's treatment plan. If the employee is enrolled in the employee health benefit plan or another medical plan, it may provide benefits to help pay for this treatment.

A second positive test for abused substances will result in termination.

OTHER GROUNDS FOR TERMINATION

An employee bringing onto the USA ENVIRONMENTAL, INC. premises or job sites; having possession of; being under the influence of; possessing in the employee's body, blood or urine (at levels exceeding or equal to established cut-off levels, 38F-9.007 (4)); or using, consuming, transporting, selling, attempting to sell, or giving away any illegal drugs (including prescription drugs illegally obtained or prescribed for the individual only), or alcohol, at any time, is guilty of misconduct and is subject to discipline to include discharge, suspension without pay or other actions even for a first offense. USA ENVIRONMENTAL, INC. reserves the right to inspect the property and person of individuals suspected of illegal drug or alcohol possession while on company property or at company job sites (see Right to Inspect).

CHALLENGING TEST RESULTS

An employee may challenge a confirmed positive test by submitting an explanation in writing to the Human Resources Department concerning personal circumstances that might have affected test results. This challenge must be submitted within 5 working days following the employee's notification of a confirmed positive test result. The donor of a tested specimen will be responsible for providing all necessary documentation, i.e., a doctor's report, signed prescription or current prescription container with relevant information and other related supporting documents.

USA ENVIRONMENTAL, INC. will, within 15 days of receipt of the employee's written explanation or challenge of positive test results, provide a written explanation to the employee

USA Environmental, Inc.

Drug Free Workplace Program

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as to whether, and if so, why, the employee's explanation is unsatisfactory, along with a copy of the positive test results.

The employee or job applicant desiring to challenge a test result will be responsible for notifying the original testing laboratory of an alternate HRS licensed laboratory, for the purpose of transferring, under Chain of Custody, a portion of the employee's or job applicant's specimen for re-testing. The employee may have a portion of their original specimen re-tested during a period of 180 days following written notice of a positive test result. When an employee undertakes a challenge to the result of a test, it shall be the employee's responsibility to notify the laboratory and the sample shall be retained by the laboratory until the matter is settled. Retesting will be at the employee's expense.

In the case of a denial of a workers' compensation claim, an employee may undertake an administrative challenge by filing a claim for benefits with a judge of compensation claims, concerning workplace injury. Other challenges not involving workplace injuries must challenge a test result in a court of competent jurisdiction.

Employees or job applicants may call the testing laboratory for technical information regarding prescription or non-prescription medications that may affect test results.

Employees and job applicants may report, in confidence, to their manager or Human Resources Director, the use of prescription or non-prescription medications that may affect job performance or testing results, either before or after testing.

Job applicants or employees whose drug test results are confirmed positive shall not by virtue of the result alone, be defined as having a "disability" under the Americans with Disabilities Act.

GETTING HELP

Employees who require a treatment program will be referred to USA ENVIRONMENTAL, INC.'s Employee Assistance Program (EAP).

Employees may inspect this program file and/or receive more information on the program on a confidential basis, in the USA ENVIRONMENTAL, INC. Human Resources Office, during normal hours of operation.

REQUIREMENT TO NOTIFY USA OF A CONVICTION

Any employee convicted of a criminal drug statute violation must notify USA ENVIRONMENTAL, INC., Attention: Human Resources Department, within 5 calendar days of the conviction. This notification must be in writing.

CONFIDENTIALITY OF INFORMATION

All drug test information, reasonable suspicion reports, or other related information concerning an employee or applicant will remain confidential and will not be disclosed except under conditions required by law.

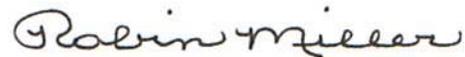
Release of such information under any circumstances, other than those required by law, will be

Drug Free Workplace Program
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solely pursuant to a written consent voluntarily signed by the person tested. The consent duration and precise information to be disclosed will be stated.

GOVERNMENTAL COMPLIANCE

The Drug Free Work Place Program is implemented pursuant to the requirements of Florida Statute 440.102 and Administrative Rules 38F-9-001 through 38F-9.014 of the Florida Department of Labor and Employment Security, Division of Workers' Compensation, and 48 CFR 23.500 (Federal Acquisition Regulation 23.500). Laws may be amended at project sites in other states due to those states' requirements.



Robin Miller
Vice President of Human Resources
and Administration

APPENDIX E. MATERIAL SAFETY DATA SHEETS (MSDS)

This appendix to the APP contains copies of the following Material Safety Data Sheets (MSDSs) applicable to work on this project:

- ABC Fire Extinguisher
- Anthracene
- Clorox Regular Bleach
- Diesel Fuel
- Lead
- OFF! Deep Woods Insect Repellent
- Permethrin
- Unleaded Gasoline.

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A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Commercial ABC Dry Chemical (Fire Extinguishing Agent)

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATIONS AND OF THE COMPANY UNDERTAKING

Product Name Commercial ABC Dry Chemical (Fire Extinguishing Agent)
Other Trade Names Multi-Purpose, Ammonium Phosphate, Monoammonium Phosphate
Product Description Fire Extinguishing Agent
Manufacturer/Supplier Badger Fire Protection
Address 944 Glenwood Station Lane, Suite 303
Charlottesville, VA 22901
USA
Phone Number (434)-964-3200
Chemtrec Number (800) 424-9300
(for emergencies only) (703) 527-3887 (International)
Revision Date: March 4, 2010
MSDS Date: February 9, 2009

Safety Data Sheet according to EC directive 2001/59/EC and OSHA's Hazcom Standard (29 CFR 1910.1200)

2. HAZARDS IDENTIFICATION

EU Main Hazards
Non Hazardous Powder

Routes of Entry

- Eye contact - Inhalation - Skin contact

Carcinogenic Status

See Section 11 - Toxicity

Target Organs

- Respiratory System - Skin - Eye

Health Effects - Eyes

Contact for short periods of time may cause irritation.

Health Effects - Skin

Contact may cause mild irritation.

Health Effects - Ingestion

Ingestion is not an expected route of exposure.

Health Effects - Inhalation

May irritate the respiratory tract. May cause transient cough and shortness of breath.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS#/Codes	Concentration	R Phrases	EU Classification
Monoammonium Phosphate	7722-76-1 EC#2317645	55 - 65%	None	None
Ammonium Sulfate	7783-20-2 EC#2319841	30 - 40%	None	None
Mica	12001-26-2	1 - 4%	None	None



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Commercial ABC Dry Chemical (Fire Extinguishing Agent)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS#/Codes	Concentration	R Phrases	EU Classification
Clay	8031-18-3	<2%	None	None
Amorphous Silica	7631-86-9 EC#2315454	<2%	None	None
Dye	NA	<0.1%	None	None

4. FIRST AID MEASURES

Eyes

Immediately flood the eye with plenty of water for at least 15 minutes, holding the eye open. Obtain medical attention if soreness or redness persists.

Skin

Wash affected area with soap and water. Obtain medical attention if irritation persists.

Ingestion

Dilute by drinking large quantities of water and obtain medical attention.

Inhalation

Move victim to fresh air. Obtain medical attention immediately for any breathing difficulty.

Advice to Physicians

Treat symptomatically.

5. FIRE - FIGHTING MEASURES

Extinguishing Media

This preparation is used as an extinguishing agent and therefore is not a problem when trying to control a blaze. Use extinguishing agent appropriate to other materials involved. Keep pressurized extinguishers and surroundings cool with water spray as they may rupture or burst in the heat of a fire.

Unusual Fire and Explosion Hazards

Pressurized containers may explode in heat of fire.

Protective Equipment for Fire-Fighting

Wear full protective clothing and self-contained breathing apparatus as appropriate for specific fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Sweep up or vacuum. Prevent skin and eye contact. Wear appropriate protective equipment.

7. HANDLING AND STORAGE

Pressurized extinguishers should be properly stored and secured to prevent falling or being knocked over. Do not drag, slide or roll extinguishers. Do not drop extinguishers or permit them to strike against each other. Never apply flame or localized heat directly to any part of the extinguisher or plastic container. Store pressurized extinguishers and plastic containers away from high heat sources. Storage area should be: - cool - dry - well ventilated - under cover - out of direct sunlight



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Commercial ABC Dry Chemical (Fire Extinguishing Agent)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Standards

Occupational exposure limits are listed below, if they exist.

Mica

ACGIH TLV: 3 mg/m³ TWA, measured as respirable fraction of the aerosol.

OSHA PEL: 20 mppcf, <1% crystalline silica

Nuisance Dust Limit

OSHA PEL: 50 mppcf or 15 mg/m³ TWA, total dust

15 mppcf or 5 mg/m³ TWA, respirable fraction

Engineering Control Measures

Use with adequate ventilation. There should be local procedures for the selection, training, inspection and maintenance of this equipment. When used in large volumes, use local exhaust ventilation.

Respiratory Protection

Not normally required. Use dust mask where dustiness is prevalent, or TLV is exceeded.

Hand Protection

Not normally needed when used as a portable fire extinguisher. Use gloves if irritation occurs.

Eye Protection

Chemical goggles or safety glasses with side shields.

Body Protection

Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Powder
Color	Pale Yellow
Odor	Odorless
Specific Gravity	Not available
Boiling Range/Point (°C/F)	Not applicable
Flash Point (PMCC) (°C/F)	Not Flammable
Solubility in Water	Not applicable
Vapor Density (Air = 1)	Heavier than air.
Vapor Pressure	Not applicable
Evaporation Rate	Not applicable

10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions.

Conditions to Avoid

- Heat - High temperatures - Exposure to direct sunlight

Materials to Avoid

- Strong oxidizing agents - strong acids - sodium hypochlorite

Hazardous Polymerization

Will not occur.



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Commercial ABC Dry Chemical (Fire Extinguishing Agent)

10. STABILITY AND REACTIVITY

Hazardous Decomposition Products

- oxides of carbon - ammonia – oxides of phosphorus – nitrogen oxides

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Low order of acute toxicity.

Chronic Toxicity/Carcinogenicity

This product is not expected to cause long term adverse health effects.

Mica and clay may contain small quantities of quartz (crystalline silica) as an impurity. Prolonged exposure to respirable crystalline silica dust at concentrations exceeding the occupational exposure limits may increase the risk of developing a disabling lung disease known as silicosis. IARC found limited evidence for pulmonary carcinogenicity of crystalline silica in humans.

Genotoxicity

This product is not expected to cause any mutagenic effects.

Reproductive/Developmental Toxicity

This product is not expected to cause adverse reproductive effects.

12. ECOLOGICAL INFORMATION

Mobility

No relevant studies identified.

Persistence/Degradability

No relevant studies identified.

Bio-accumulation

No relevant studies identified.

Ecotoxicity

No relevant studies identified.

13. DISPOSAL CONSIDERATIONS

Dispose of container in accordance with all applicable local and national regulations. Do not cut, puncture or weld on or near to the container. No harm to the environment is expected from this preparation.

14. TRANSPORT INFORMATION

DOT CFR 172.101 Data	Not regulated
UN Proper Shipping Name	Not regulated
UN Class	None
UN Number	None
UN Packaging Group	None



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Commercial ABC Dry Chemical (Fire Extinguishing Agent)

15. REGULATORY INFORMATION

EU Label Information

Classification and labelling have been performed according to EU directives 67/548/EEC and 99/45/EC including amendments (2001/60/EC and 2006/8/EC)

EU Hazard Symbol and Indication of Danger.

This preparation is not classified as dangerous.

R phrases

None

S phrases

None.

US REGULATIONS (Federal, State) and INTERNATIONAL CHEMICAL REGISTRATION LAWS

TSCA Listing

This product contains ingredients that are listed on or exempt from listing on the EPA Toxic Substance Control Act Chemical Substance Inventory.

EINECS Listing

All ingredients in this product have not been verified for listing on the European Inventory of Existing Commercial Chemical Substances (EINECS) or the European List of New Chemical Substances (ELINCS).

DSL/NDSL (Canadian) Listing

All ingredients in this product are listed on the Domestic Substance List (DSL) or the Non-Domestic Substance List (NDSL) or are exempt from listing.

WHMIS Classification

D2B

This product was classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations and the MSDS contains all the information required by these regulations.

MA Right To Know Law

All components have been checked for inclusion on the Massachusetts Substance List (MSL). Those components present at or above the de minimis concentration include: - Mica (12001-26-2) 1-4% - Amorphous Silica (7631-86-9) <2% - Ammonium Sulfate (7783-20-2) 30 - 40%

PA Right To Know Law

This product contains the following chemicals found on the Pennsylvania Hazardous Substance List: - Mica (12001-26-2) 1-4% - Amorphous Silica (7631-86-9) <2% - Ammonium Sulfate (7783-20-2) 30 - 40%

NJ Right To Know Law

This product contains the following chemicals found on the NJ Right To Know Hazardous Substance List: - Mica (12001-26-2) 1-4% - Amorphous Silica (7631-86-9) <2%

California Proposition 65

This product does not contain materials which the State of California has found to cause cancer, birth defects or other reproductive harm.

SARA Title III Sect. 302 (EHS)

This product does not contain any chemicals subject to SARA Title III Section 302.

SARA Title III Sect. 304

This product does not contain any chemicals subject to SARA Title III Section 304.



A UTC Fire & Security Company

MATERIAL SAFETY DATA SHEET

Commercial ABC Dry Chemical (Fire Extinguishing Agent)

15. REGULATORY INFORMATION

SARA Title III Sect. 311/312 Categorization

- Immediate (Acute) Health Hazard

SARA Title III Sect. 313

This product does not contain any chemicals that are listed in Section 313 at or above de minimis concentrations.

16. OTHER INFORMATION

NFPA Ratings

NFPA Code for Health - 1

NFPA Code for Flammability - 0

NFPA Code for Reactivity - 0

NFPA Code for Special Hazards - None

HMIS Ratings

HMIS Code for Health - 1

HMIS Code for Flammability - 0

HMIS Code for Reactivity - 0

HMIS Code for Personal Protection - See Section 8

Abbreviations

N/A: Denotes no applicable information found or available

CAS#: Chemical Abstracts Service Number

ACGIH: American Conference of Governmental Industrial Hygienists

OSHA: Occupational Safety and Health Administration

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit

NTP: National Toxicology Program

IARC: International Agency for Research on Cancer

R: Risk

S: Safety

Prepared By: EnviroNet LLC.

The information contained herein is based on data believed to be accurate. However, no representation, warranty, or guarantee is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for its own particular use. Badger Fire Protection assumes no responsibility for personal injury or property damage resulting from use, handling or from contact with this product.

Material Safety Data Sheet

Anthracene, 98%

ACC# 27391

Section 1 - Chemical Product and Company Identification

MSDS Name: Anthracene, 98%

Catalog Numbers: AC104870000, AC104871000, AC104875000, ACE1062405, ACE1062694, ACE1062744

Synonyms: Green oil; Anthracin; Paranaphthalene; Polycyclic aromatic hydrocarbon (PAH).

Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01

For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
120-12-7	Anthracene	98	204-371-1

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless with violet fluorescence when pure; yellow with green fluorescence when impure crystals.

Caution! Photosensitizer. May cause increased sensitivity to the sun. May cause eye and skin irritation. May cause respiratory tract irritation. Light sensitive.

Target Organs: Skin.

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation. Contact with the skin produces a phototoxic and photoallergic response characterized by swelling and blistering.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea.

Inhalation: May cause respiratory tract irritation.

Chronic: Repeated or prolonged contact with skin may cause dermatitis under the influence of UV light. Skin exposure may cause photosensitization. Photosensitization

is a condition where the skin becomes extremely sensitive to sunlight or burns easily upon exposure to sunlight.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.

Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.

Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: 121 deg C (249.80 deg F)

Autoignition Temperature: 540 deg C (1,004.00 deg F)

Explosion Limits, Lower:0.6

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Do not let this chemical enter the environment.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Use with adequate ventilation.

Storage: Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from light.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Anthracene	0.2 mg/m ³ TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m ³ TWA (cyclohexane-extractable fraction) (listed under Coal tar pitches).80 mg/m ³ IDLH (listed under Coal tar pitches).	0.2 mg/m ³ TWA (as benzene soluble fraction) (listed under Coal tar pitches).

OSHA Vacated PELs: Anthracene: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Section 9 - Physical and Chemical Properties

Physical State: Crystals

Appearance: colorless with violet fluorescence when pure; yellow with green fluorescence when impure

Odor: weak aromatic odor

pH: Not available.

Vapor Pressure: .000003 mm Hg @ 25 deg C

Vapor Density: 6.15 (air=1)

Evaporation Rate:Not available.

Viscosity: Not available.

Boiling Point: 340 deg C

Freezing/Melting Point:216 deg C

Decomposition Temperature:Not available.

Solubility: Insoluble.

Specific Gravity/Density:1.25-1.28 g/cm³

Molecular Formula:C₁₄H₁₀

Molecular Weight:178.23

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions. Darkens on exposure to light.

Conditions to Avoid: Light, dust generation, excess heat, open flame.

Incompatibilities with Other Materials: Strong oxidizing agents, fluorine, calcium hypochlorite, chromic acid.

Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 120-12-7: CA9350000

LD50/LC50:

CAS# 120-12-7:

Oral, mouse: LD50 = 4900 mg/kg; <BR.

Carcinogenicity:

CAS# 120-12-7:

- **ACGIH:** A1 - Confirmed Human Carcinogen (as benzene soluble aerosol) (listed as 'Coal tar pitches').
- **NTP:** Known carcinogen (listed as Coal tar pitches).
- **IARC:** Group 1 carcinogen (listed as Coal tar pitches).

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: See actual entry in RTECS for complete information.
Other Studies: See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: Anthracene is very toxic to aquatic organisms and may cause long-term effects in the aquatic environment. Considered to be persistent, bioaccumulative, and toxic. Even when released in very small amounts, can accumulate and cause environmental problems.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Please contact Fisher Scientific for shipping information	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 120-12-7 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 120-12-7: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPO.

SARA Codes

CAS # 120-12-7: acute.

Section 313

This material contains Anthracene (CAS# 120-12-7, 98%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS# 120-12-7 is listed as a Priority Pollutant under the Clean Water Act.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 120-12-7 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, (listed as Coal tar pitches), Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

Not available.

Risk Phrases:

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 120-12-7: 2

Canada - DSL/NDSL

CAS# 120-12-7 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D2B.

Canadian Ingredient Disclosure List

CAS# 120-12-7 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 9/02/1997

Revision #5 Date: 10/14/2002

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.



The Clorox Company

1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product:	CLOROX REGULAR-BLEACH	
Description:	CLEAR, LIGHT YELLOW LIQUID WITH A CHARACTERISTIC CHLORINE ODOR	
Other Designations	Distributor	Emergency Telephone Nos.
Clorox Bleach EPA Reg. No. 5813-50	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies Chemtrec (800) 424-9300

II Health Hazard Data	III Hazardous Ingredients											
<p>DANGER: CORROSIVE. May cause severe irritation or damage to eyes and skin. Vapor or mist may irritate. Harmful if swallowed. Keep out of reach of children.</p> <p>Some clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g., irritation) occurs during exposure. Under normal consumer use conditions the likelihood of any adverse health effects are low.</p> <p>Medical conditions that may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, emphysema, chronic bronchitis or obstructive lung disease.</p> <p>FIRST AID: <u>Eye Contact:</u> Hold eye open and rinse with water for 15-20 minutes. Remove contact lenses, after first 5 minutes. Continue rinsing eye. Call a physician. <u>Skin Contact:</u> Wash skin with water for 15-20 minutes. If irritation develops, call a physician. <u>Ingestion:</u> Do not induce vomiting. Drink a glassful of water. If irritation develops, call a physician. Do not give anything by mouth to an unconscious person. <u>Inhalation:</u> Remove to fresh air. If breathing is affected, call a physician.</p>	<table border="1"> <thead> <tr> <th>Ingredient</th> <th>Concentration</th> <th>Exposure Limit</th> </tr> </thead> <tbody> <tr> <td>Sodium hypochlorite CAS# 7681-52-9</td> <td>5 - 10%</td> <td>Not established</td> </tr> <tr> <td>Sodium hydroxide CAS# 1310-73-2</td> <td><1%</td> <td>2 mg/m¹ 2 mg/m²</td> </tr> </tbody> </table> <p>¹ACGIH Threshold Limit Value (TLV) - Ceiling ²OHSA Permissible Exposure Limit (PEL) – Time Weighted Average (TWA)</p> <p>None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen lists.</p>	Ingredient	Concentration	Exposure Limit	Sodium hypochlorite CAS# 7681-52-9	5 - 10%	Not established	Sodium hydroxide CAS# 1310-73-2	<1%	2 mg/m ¹ 2 mg/m ²		
Ingredient	Concentration	Exposure Limit										
Sodium hypochlorite CAS# 7681-52-9	5 - 10%	Not established										
Sodium hydroxide CAS# 1310-73-2	<1%	2 mg/m ¹ 2 mg/m ²										

IV Special Protection and Precautions	V Transportation and Regulatory Data
<p>No special protection or precautions have been identified for using this product under directed consumer use conditions. The following recommendations are given for production facilities and for other conditions and situations where there is increased potential for accidental, large-scale or prolonged exposure.</p> <p><u>Hygienic Practices:</u> Avoid contact with eyes, skin and clothing. Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods.</p> <p><u>Engineering Controls:</u> Use general ventilation to minimize exposure to vapor or mist.</p> <p><u>Personal Protective Equipment:</u> Wear safety goggles. Use rubber or nitrile gloves if in contact liquid, especially for prolonged periods.</p> <p>KEEP OUT OF REACH OF CHILDREN</p>	<p><u>DOT/IMDG/IATA</u> - Not restricted.</p> <p><u>EPA - SARA TITLE III/CERCLA:</u> Bottled product is not reportable under Sections 311/312 and contains no chemicals reportable under Section 313. This product does contain chemicals (sodium hydroxide <0.2% and sodium hypochlorite <7.35%) that are regulated under Section 304/CERCLA.</p> <p><u>TSCA/DSL STATUS:</u> All components of this product are on the U.S. TSCA Inventory and Canadian DSL.</p>

VI Spill Procedures/Waste Disposal	VII Reactivity Data
<p><u>Spill Procedures:</u> Control spill. Containerize liquid and use absorbents on residual liquid; dispose appropriately. Wash area and let dry. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed, and/or poorly ventilated areas until hazard assessment is complete.</p> <p><u>Waste Disposal:</u> Dispose of in accordance with all applicable federal, state, and local regulations.</p>	<p>Stable under normal use and storage conditions. Strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species. Prolonged contact with metal may cause pitting or discoloration.</p>

VIII Fire and Explosion Data	IX Physical Data
<p><u>Flash Point:</u> None</p> <p><u>Special Firefighting Procedures:</u> None</p> <p><u>Unusual Fire/Explosion Hazards:</u> None. Not flammable or explosive. Product does not ignite when exposed to open flame.</p>	<p>Boiling point.....approx. 212°F/100°C</p> <p>Specific Gravity (H₂O=1) ~ 1.1 at 70°F</p> <p>Solubility in Water complete</p> <p>pH ~11.9</p>



MATERIAL SAFETY DATA SHEET

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHS Inc.
P.O. Box 64089
Mail station 525
St. Paul, MN 55164-0089

Transportation Emergency (CHEMTREC): 1-800-424-9300
Technical Information: 1-651-355-8443
MSDS Information: 1-651-355-8438

PRODUCT NAME: No. 1 DIESEL FUEL

MSDS: 0143-M2A0 - Rev. D (02/08/07)

COMMON NAME: No. 1 Distillate Fuel, No. 1 High Sulfur Diesel (Dyed)
No. 1 Low Sulfur Diesel (Dyed), No. 1 Ultra Low Sulfur Diesel (Dyed/Undyed)

CHEMICAL FORMULA: Mixture

CHEMICAL NAME: Petroleum Distillate

CHEMICAL FAMILY: A mixture of Paraffinic, Olefinic, Naphthenic, and Aromatic Hydrocarbon.

Section 2 - COMPOSITION AND INFORMATION ON INGREDIENTS

INGREDIENTS	PERCENTAGES (by weight)	PEL (OSHA) TWA	TLV (ACGIH) TWA	CAS #
Petroleum Distillates	0-100	N/D	200 ppm	8008-20-6
Biphenyl	0.5-1.5	0.2 ppm		92-52-4
Naphthalene	0-3	10 ppm		91-20-3
Xylene	0-2.5	100 ppm		1330-20-7
1,2,4-Trimethylbenzene	0-2		25 ppm	95-63-6

Note: The National Institute for Occupational Safety and Health has published a Recommended Exposure Limit (REL) of 100 mg/m³ TWA or » 14 ppm based on an average molecular weight of 170 for kerosene like fractions.
(TWA) - Time Weighted Average is the employee's average airborne exposure in any 8-hour work shift of a 40-hour work week which shall not be exceeded.
(STEL) - Short Term Exposure Limit is the employee's 15-minute time weighted average exposure which shall not be exceeded at any time during a work day unless another time limit is specified.

Section 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

A clear to light yellow liquid with a hydrocarbon odor. May contain dye.

OSHA HAZARD CLASSES

Based on OSHA definitions, the following ingredients in this product are hazardous. The OSHA physical and health hazard categories are shown below.

Petroleum Hydrocarbon - Combustible, toxic (moderate), target organ (skin).

1,2,4-Trimethylbenzene - Flammable, toxic, irritant, target organ (Central Nervous System, blood).

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Eye Contact, Dermal, Inhalation, Ingestion.

Section 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO TAKE IF MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Notify emergency response personnel as appropriate. If facility or operation has an "Oil or Hazardous Substance Contingency Plan", "Spill Prevention Control & Countermeasures (SPCC) Plan" or equivalent, activate its procedures. Prohibit persons not wearing protective equipment from entering the area. Stop leak at source, contain spill to prevent spreading. Small spills can be removed with inert absorbent. Dike areas of large spill to prevent runoff to sewers, streams, etc. Ventilate area. Avoid breathing vapors.

Section 7 - HANDLING AND STORAGE

HANDLING AND STORAGE: Transport, handle and store in accordance with OSHA Regulation 29 CFR 1910.106, and applicable D.O.T. Regulation. Caution: Misuse of empty containers can be hazardous. Empty containers can be hazardous since emptied containers retain product residue (vapor, liquid, and/or solid). Cutting or welding empty containers might cause fire, explosion or toxic fumes from residues.

Section 8 - EXPOSURE CONTROL - PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate local or dilution ventilation to keep vapors below permissible concentrations.

RESPIRATORY EQUIPMENT: Personnel should never enter areas of high concentrations without proper respiratory protection. If exposure limits for product or components are exceeded, NIOSH-approved respiratory protection equipment should be worn. Proper selection of respirators should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. Self-contained breathing apparatus or supplied air respiratory protection required for entry into tanks, vessels, or other confined spaces containing kerosene.

EYE PROTECTION: Chemical type goggles or face shield where contact with liquid or mist may occur.

PROTECTIVE CLOTHING: Wear impervious clothing and gloves when contact with skin may occur.

OTHER (SAFETY SHOWERS, EYE WASH STATIONS, ETC.): Water should be available for flushing and washing when exposure exists.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: A clear to light yellow liquid, may contain red dye.

ODOR: Hydrocarbon odor.

BOILING POINT: 340°F - 570° F

SPECIFIC GRAVITY (water=1): 0.82

VAPOR PRESSURE: < 50 mmHg @ 100°F

VAPOR DENSITY (air=1): >1

SOLUBLE IN WATER: Insoluble

EVAPORATION RATE (ether=1): >1

pH: N/D

Section 10 - STABILITY AND REACTIVITY

STABILITY:

STABLE X
UNSTABLE

INCOMPATIBILITY:

CONDITIONS TO AVOID: Heat, flame, all ignition sources and static electricity.

MATERIALS TO AVOID: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, and other petroleum decomposition products (hydrocarbons).

HAZARDOUS POLYMERIZATION: Has not been reported to occur under normal temperatures and pressures.

Section 11 - TOXICOLOGY INFORMATION

Note: CHS has not conducted specific toxicity tests on this product. Our hazard evaluation is based from similar ingredients, technical literature, and/or professional experience.

Section 12 - ECOLOGICAL INFORMATION

Note: CHS has not conducted specific ecological tests on this product.

Section 13 - DISPOSAL CONSIDERATION

WASTE DISPOSAL PROCEDURES: Recycle as much of the recoverable product as possible. Do not flush to drain or storm sewer or otherwise release to the environment. Dispose of non-recyclable material according to federal, state and local regulations.

Section 14 - TRANSPORTATION

DOT PROPER SHIPPING NAME: Fuel Oil #1

DOT HAZARD CLASS: Flammable Liquid

DOT IDENTIFICATION NUMBER: NA 1993

DOT EMER. RESPONSE GUIDE NO.: 128
(Formerly #27)

Proper Shipping Name-**Fuel Oil #1**; Hazard Class- **3**; UN/NA Identification #- **NA 1993**; Packing Group **III**; Placard- **FLAMMABLE LIQUID**.

Section 15 - REGULATORY INFORMATION

This product contains the following toxic chemicals subject to the reporting requirements of SARA Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372:

<u>CAS Number</u>	<u>Chemical Name</u>	<u>Percent by Weight</u>
95-63-6	1,2,4-Trimethylbenzene	0-2%
91-20-3	Naphthalene	0-3%

SARA SECTION 311-312 HAZARD CATEGORIES (40 CFR 370.2):

FIRE: Yes **SUDDEN RELEASE OF PRESSURE:** No **REACTIVE:** No **ACUTE:** Yes **CHRONIC:** Yes

Section 16 - OTHER INFORMATION

Prepared By: Hue Lam

Date: February 08, 2007

Title: EHS Compliance Specialist

Supersedes: December 24, 2003

Reason for Issue: Periodic review and update

THE INFORMATION CONTAINED IN THIS MSDS RELATES ONLY TO THE SPECIFIC MATERIAL IDENTIFIED. IT DOES NOT COVER USE OF THAT MATERIAL IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PARTICULAR PROCESS. IN COMPLIANCE WITH 29 C.F.R. 1910.1200(g), CHS HAS PREPARED THIS MSDS IN SEGMENTS, WITH THE INTENT THAT THOSE SEGMENTS BE READ TOGETHER AS A WHOLE WITHOUT TEXTUAL OMISSIONS OR ALTERATIONS. CHS BELIEVES THE INFORMATION CONTAINED HEREIN TO BE ACCURATE, BUT MAKES NO REPRESENTATION, GUARANTEE, OR WARRANTY, EXPRESS OR IMPLIED, ABOUT THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THE INFORMATION OR ABOUT THE FITNESS OF CONTENTS HEREIN FOR EITHER GENERAL OR PARTICULAR PURPOSES. PERSONS REVIEWING THIS MSDS SHOULD MAKE THEIR OWN DETERMINATION AS TO THE MATERIAL'S SUITABILITY AND COMPLETENESS FOR USE IN THEIR PARTICULAR APPLICATIONS.



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Lead MSDS

[Click Here to Download the PDF](#), (Suitable for Printing)

MATERIAL SAFETY DATA SHEET FOR LEAD

SECTION 1 – MATERIAL IDENTIFICATION

Material Name:

Lead

Description:

Bluish-Grey metal, apparently odorless

Other Designations:

Soft lead, Hard Lead, Calcium lead.

Manufacturer:

Mars Metal Company,

4140 Morris Drive,

Burlington, Ontario

L7L 5L6

Emergency Phone Number: (905) 637-3862

SECTION II – HAZARDOUS INGREDIENTS EXPOSURE GUIDELINES

Base Metal:

Lead – C.A.S. #7439-9201/Exposure Limits: 1.05 Mg/M3 ACGIH TWA

Alloys:

Sb, Sn, As, Cu, Ca – Antimony C.A.S. #7440-36-0/

Exposure Limits:

0.50 Mg/M3 ALGIH TWA

SECTION III – PHYSICAL DATA:

Boiling Point:

3164 degrees Fahrenheit

Melting Point:

622 degrees Fahrenheit

Specific Gravity:

(H_o = 1) Approximately 10.3

Vapour Pressure:

(MM HG) N.A.

Solubility in Water:

Negligible

SECTION IV – FIRE AND EXPLOSION DATA

Hazards:

Toxic fumes and vapours are produced by molten lead. Dust explosion potential exists

Extinguishing Media:

Dry chemical or carbon dioxide should be used on surrounding Area.

Firefighting Procedures:

Full body protective clothing should be worn and positive pressure breathing apparatus used.

Flammability:

Metal is not flammable, powders or dust may be flammable.

SECTION V – REACTIVITY DATA

Chemical Stability:

Metal is stable.

Incompatibility:

Strong oxidizers, Hydrogen Peroxide, Active metals.

Hazardous Decomposition Products:

High temperature may produce hazardous fumes.

SECTION VI – HEALTH HAZARD DATA AND FIRST AID

Threshold Limit Value:

Time weighed average exposure 0.15 MG/M3. Short term Exposure 0.30 MG/M3.

Routes of Exposure:

Ingestion, Inhalation, and Eyes.

EFFECTS OF EXPOSURE:

Acute Overexposure:

May cause weakness, vomiting, loss of appetite and Constipation.

Chronic Exposure:

May cause weakness, Insomnia, Hypertension, Anemia, Neuromuscular dysfunction's and joint pain.

EMERGENCY AND FIRST AID PROCEDURES:

Ingestion:

Rinse mouth, give plenty of water, get medical attention.

Inhalation:

Remove from exposure to fresh air, get medical attention.

Eyes:

Rinse thoroughly with water, get medical attention.

Skin:

Remove contaminated clothing and wash effected area with water and soap.

SECTION VII – SPILL AND LEAK PROCEDURES:

Released or Spilled:

Sweep up carefully using water (or other suitable wetting agent) to prevent emissions, place waste in sealable containers which are to be disposed of in accordance with local legislation.

Waste Disposal Method:

Contact local authorities for instructions on proper disposal procedures in your area.

SECTION VIII – SPECIAL PROTECTION INFORMATION:

Respiratory:

Use respirators as per the regulations respecting Lead.

Eye Protection:

Face shield/approved safety glasses.

Hands:

Protective gloves should be worn when handling Lead.

Other Protective Equipment:

Clean overalls, safety boots, and helmets.

Local Exhaust:

Adequate local and general ventilation must be provided.

SECTION IX – SPECIAL PRECAUTIONS:

Handling and Storage:

Lead dust should be handled in sealed containers. Every effort should be made to prevent dusts from becoming airborne.

Other Precautions:

Use wet methods for dust control whenever possible. Ensure that there is sufficient ventilation in areas of lead use.

January 2011

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



OFF!™ DEEP WOODS® INSECT REPELLENT VII

Version 3.0

Print Date 08/31/2012

Revision Date 08/22/2012

MSDS Number 350000012887
SITE_FORM Number
300000000000000003296.005

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name : OFF!™ DEEP WOODS® INSECT REPELLENT VII

Use of the Substance/Mixture : Insect Repellent

Company : S.C. Johnson & Son, Inc.
1525 Howe Street
Racine WI 53403-2236

Emergency telephone number : 24 Hour Medical Emergency Phone: (866)231-5406
24 Hour International Emergency Phone: (703)527-3887
24 Hour Transport Emergency Phone: (800)424-9300

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor : clear / liquid / pleasant

Immediate Concerns

: Warning
FLAMMABLE:
CAUSES EYE IRRITATION.
Keep away from heat, sparks and flame.
Harmful if swallowed.
Avoid contact with eyes and lips.

Potential Health Effects

Exposure routes : Eye, Skin, Inhalation, Ingestion.

Eyes : Causes:
Moderate eye irritation

Skin : May cause skin reactions in rare cases.
Prolonged or repeated contact may dry skin and cause irritation.

Inhalation : May cause nose, throat, and lung irritation.
Inhalation may cause central nervous system effects.

Ingestion : May cause irritation to mouth, throat and stomach.
May cause abdominal discomfort.
Causes headache, drowsiness or other effects to the central nervous system.
Harmful if swallowed.

Material Safety Data Sheet

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Aggravated Medical Condition : Do not apply to cuts or irritated skin. Persons with pre-existing skin disorders may be more susceptible to irritating effects. Individuals with chronic respiratory disorders such as asthma, chronic bronchitis, emphysema, etc. may be more susceptible to irritating effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous chemicals present at or above reportable levels as defined by OSHA 29 CFR 1910.1200 or the Canadian Controlled Products Regulations are listed in this table:

Chemical Name	CAS-No.	Weight percent
Ethyl alcohol	64-17-5	30.00 - 60.00
N,N-Diethyl-m-toluamide	134-62-3	10.00 - 30.00

For additional information on product ingredients, see www.whatsinsidescjohnson.com.

4. FIRST AID MEASURES

Eye contact : Remove contact lenses. Flush immediately with plenty of water for at least 15 to 20 minutes. Get medical attention if irritation develops and persists.

Skin contact : Wash off immediately with plenty of water. Rinse with plenty of water. Get medical attention if irritation develops and persists. If you suspect a reaction to this product, discontinue use and remove contaminated clothing.

Inhalation : Remove to fresh air.

Ingestion : If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards during firefighting : Flammable liquid. Vapors are heavier than air and may travel to a source of ignition and flash back. Liquid run-off to sewers may create fire/explosion hazard. Container may melt and leak

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- in heat of fire. Do not allow run-off from fire fighting to enter drains or water courses. Burns with colourless flame.
- Further information : Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. For large quantities of flammable liquids, consider containment to prevent the spread of fire. Wear full protective clothing and positive pressure self-contained breathing apparatus. In case of fire and/or explosion do not breathe fumes.
- Flash point : 29 °C
84.2 °F
Method: Tag Closed Cup (TCC)
- Lower explosion limit : Note: no data available
- Upper explosion limit : Note: no data available

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Remove all sources of ignition.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Wear personal protective equipment.
- Environmental precautions : Do not flush into surface water or sanitary sewer system.
Use appropriate containment to avoid environmental contamination.
Outside of normal use, avoid release to the environment.
- Methods for cleaning up : Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Use only non-sparking equipment.
Dike large spills.
Clean residue from spill site.

7. HANDLING AND STORAGE

Handling

- Advice on safe handling : Avoid contact with eyes and lips.
Avoid breathing vapors, mist or gas.
For personal protection see section 8.
Use only as directed.

Material Safety Data Sheet

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KEEP OUT OF REACH OF CHILDREN AND PETS.
Smoking, eating and drinking should be prohibited in the application area.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
Take measures to prevent the build up of electrostatic charge.

Storage

Requirements for storage areas and containers : Keep away from food, drink and animal feedingstuffs.
Keep container closed when not in use.
Keep in a dry, cool and well-ventilated place.

Other data : Stable under normal conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Non-standard units	Basis
Ethyl alcohol	64-17-5	1,900 mg/m3	1,000 ppm	-	OSHA TWA
Ethyl alcohol	64-17-5	-	1,000 ppm	-	ACGIH STEL

Personal protective equipment

Respiratory protection : Use only with adequate ventilation.
Do not spray in enclosed areas.

Hand protection : No special requirements.

Eye protection : Safety glasses with side-shields

Skin and body protection : No special requirements.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Smoking, eating and drinking should be prohibited in the application area.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	liquid
Color	:	clear
Odor	:	pleasant
pH	:	5.3
Boiling point	:	no data available
Freezing point	:	no data available
Flash point	:	29 °C 84.2 °F Method: Tag Closed Cup (TCC)
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Density	:	0.93 g/cm ³
Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	not applicable
Volatile Organic Compounds Total VOC (wt. %)*	:	34.7 % - additional exemptions may apply *as defined by US Federal and State Consumer Product Regulations

10. STABILITY AND REACTIVITY

Conditions to avoid : Heat, flames and sparks.

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Materials to avoid : Strong oxidizing agents

Hazardous decomposition products : Thermal decomposition can lead to release of irritating gases and vapours.

Hazardous reactions : Stable under recommended storage conditions.

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity : LD50
4,103 mg/kg

Acute inhalation toxicity : LC50
> 2.07 mg/l

Acute dermal toxicity : LD50
> 5,000 mg/kg

Chronic effects

Carcinogenicity : no data available

Mutagenicity : None Anticipated

Reproductive effects : no data available

Teratogenicity : no data available

Sensitisation : Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects : no data available

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13. DISPOSAL CONSIDERATIONS

PESTICIDAL WASTE:

Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.

Consumer may discard empty container in trash, or recycle where facilities exist.

RCRA waste class : D001 (Ignitable Waste)

14. TRANSPORT INFORMATION

Land transport

U.S. DOT and Canadian TDG Surface Transportation:

Proper shipping name UN 1993 FLAMMABLE LIQUID N.O.S. (ethanol), 3, III

Class: 3

UN number 1993

Packaging group: III

Note: Limited quantities derogation may be applicable to this product, please check transport documents.

Sea transport

IMDG:

Proper shipping name UN 1993 FLAMMABLE LIQUID N.O.S. (ethanol), 3, III

Class: 3

UN number: 1993

Packaging group: III

EmS: F-E, S-E

Note: Limited quantities derogation may be applicable to this product, please check transport documents.

Air transport

ICAO/IATA:

Proper shipping name UN 1993 FLAMMABLE LIQUID N.O.S. (ethanol), 3, III

Class: 3

UN/ID No.: UN 1993

Packaging group: III

Note: SC Johnson typically does not ship products via air. Refer to IATA/ICAO Dangerous Goods Regulations for detailed instructions when shipping this item by air.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



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15. REGULATORY INFORMATION

- Notification status : All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
- Notification status : All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
- California Prop. 65 : This product is not subject to the reporting requirements under California's Proposition 65.
- Canada Regulations : This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Registration # / Agency
4822-399/US/EPA
29931/PMRA

16. OTHER INFORMATION

HMIS Ratings

Health	2
Flammability	3
Reactivity	0

NFPA Ratings

Health	2
Fire	3
Reactivity	0
Special	-

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Material Safety Data Sheet

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Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)
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MATERIAL SAFETY DATA SHEET

PERMETHRIN

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CALL CHEMTREC - DAY OR NIGHT 1-800-424-9300

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

FORMULATED FOR:

LOVELAND PRODUCTS, INC.
P.O. Box 1286 • Greeley, CO 80632-1286

24-Hour Emergency Phone: 1-800-424-9300
Medical Emergencies: 1-866-944-8565
U.S. Coast Guard National Response Center: 1-800-424-8802

PRODUCT NAME: PERMETHRIN
CHEMICAL NAME: Permethrin: (3-Phenoxyphenyl) methyl (±) cis-trans-3- (2,2-dichloroethyl)-2,2-dimethylcyclopropanecarboxylate*
CHEMICAL FAMILY: Pyrethroid Insecticide
EPA REG. NO.: 34704-873
MSDS Number: 000873-09-LPI MSDS Revisions: Sections 1, 4, 8, 13 Date of Issue: 03/24/09 Supersedes: 10/15/08

2. HAZARDS IDENTIFICATION SUMMARY

KEEP OUT OF REACH OF CHILDREN – CAUTION - AVISO – Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle (If you do not understand the label, find someone to explain it to you in detail.) Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling. This product is amber liquid with an aromatic solvent odor.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Ingredients:	Percentage by Weight:	CAS No.	TLV (Units)
Permethrin	38.40	52645-53-1	not listed
Inert ingredients, including:	61.60		
Aromatic Hydrocarbons		64742-95-6	not listed

4. FIRST AID MEASURES

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 - 20 minutes. Call a poison control center or doctor for treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN: Vomiting should be supervised by a physician or the professional staff because of the possible pulmonary damages by aspiration of the solvent.

FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565. Have the product label or container with you when calling a poison control center or doctor, or going for treatment.

5. FIRE FIGHTING MEASURES

FLASH POINT (°F/Test Method): 108°F / 42.2°C (CC)

FLAMMABLE LIMITS (LFL & UFL): None established

EXTINGUISHING MEDIA: Foam, CO₂, or dry chemical. Soft stream water fog only if necessary.

HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide and/or carbon dioxide. Chlorine and hydrogen chloride may be formed.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus with full protective clothing. Fight fire from upwind and keep all non-essential personnel downwind and out of area.

UNUSUAL FIRE AND EXPLOSION HAZARDS: If water is used to fight fire and cool the containers, contain run-off by diking to prevent contamination of water supplies. Containers in fire may burst or explode from excessive heat. Vapors may travel a considerable distance to source of ignition and flash back along vapor trail.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

For small spills, absorb with an absorbent material such as pet litter. Sweep up and transfer to containers for possible land application according to label use or for proper disposal. Wash the spill with water containing a strong detergent, absorb with pet litter or other absorbent material, sweep up and place in a chemical container and handle in an approved manner. Check local, state and federal regulations for proper disposal. Flush the area with water to remove any residue. For large spills: contain liquid by diking the area, keep product out of water supplies. Large spills that soak into ground should be dug up to a depth of 1 to 2 inches, placed in drums and disposed of in accordance with instructions provide under DISPOSAL, section 13 of this MSDS. Any recovered spilled liquid should be similarly collected and disposed of.

CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

7. HANDLING AND STORAGE

HANDLING: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE: Do not store below 10°F / -12.2°C. Do not use or store near heat, open flame, or hot surfaces. Keep out of reach of children and animals. Store in original containers only. Store in a cool dry place and avoid excess heat. Carefully open containers. After partial use, replace lids and close tightly. Do not put concentrate or dilute material into food or drink containers. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

RESPIRATORY PROTECTION: Not normally required; if vapors or mists become excessive, wear a NIOSH approved pesticide respirator with cartridges for pesticide vapors.

EYE PROTECTION: Chemical goggles or shielded safety glasses.

SKIN PROTECTION: Wear protective clothing: long-sleeved shirts and pants, shoes plus socks. Wear rubber or chemical-resistant gloves.

	OSHA PEL 8 hr TWA	ACGIH TLV-TWA
Xylene (mixed isomers)	435 mg/m ³	434 mg/m ³
Ethyl benzene	435 mg/m ³	434 mg/m ³
Trimethylbenzene	not listed	123 mg/m ³
Cumene	245 mg/m ³ (Skin)	246 mg/m ³

Personal Protective Equipment (PPE): All mixers, loaders, applicators and other handlers must wear: long sleeved shirt and long pants, shoes plus socks, chemical-resistant gloves for all handlers except for applicators using motorized ground equipment, pilots, and flaggers. Chemical-resistant apron for mixers/loaders, persons cleaning equipment, and persons exposed to the concentrate. Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched (except as required by directions for use) or heavily contaminated with this product's concentrate. Do not reuse them.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Amber liquid with an aromatic solvent odor.

SPECIFIC GRAVITY (Water = 1): 1.002 g/ml

VAPOR PRESSURE: Not applicable

PERCENT VOLATILE (by volume): Not applicable

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.

BULK DENSITY: 8.36 lbs/gal.

BOILING POINT: Not established

EVAPORATION RATE: Not applicable

SOLUBILITY: Emulsifiable

pH: 5.0 - 5.6 (1% solution)

10. STABILITY AND REACTIVITY

STABILITY: Stable

INCOMPATIBILITY: Not established.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide and/or carbon dioxide, chlorine and hydrogen chloride may be formed in a fire situation.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Excessive heat and fire.

11. TOXICOLOGICAL INFORMATION

Acute Oral LD₅₀ (rat): 1,030 mg/kg

Eye Irritation (rabbit): Moderate eye irritant

Inhalation LC₅₀ (rat): 25.7 mg/L (4 hr).

Carcinogenic Potential: Ethyl benzene is listed as a Class 2B carcinogen (limited evidence for carcinogenicity in humans) by the International Agency for Research on Cancer (IARC). Ethyl benzene was found to be possibly carcinogenic to humans by NTP. Not listed by OSHA or ACGIH.

Acute Dermal LD₅₀ (rabbit): >2000 mg/kg

Skin Irritation (rabbit): Not established

Skin Sensitization (guinea pig): Not established.

12. ECOLOGICAL INFORMATION

This pesticide is extremely toxic to fish and aquatic invertebrates. For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift from target areas. Do not contaminate water by cleaning equipment or disposal of wastes. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

13. DISPOSAL CONSIDERATIONS

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative of the nearest EPA Regional Office for guidance. **CONTAINER DISPOSAL:** Nonrefillable container. Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at www.acrcycle.org. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

14. TRANSPORT INFORMATION

DOT Shipping Description: LESS THAN 119 GALLONS NOT REGULATED BY USDOT FOR SURFACE (GROUND) TRANSPORTATION.
U.S. Surface Freight Classification: INSECTICIDES OR FUNGICIDES, INSECT OR ANIMAL REPELLENTS, NOI, OTHER THAN POISON (NMFC 102120; CLASS: 60)
Consult appropriate ICAO/IATA and IMDG regulations for shipment requirements in the Air and Maritime shipping modes. Packaging and classification for these modes of transportation are more stringent.

15. REGULATORY INFORMATION

NFPA & HMIS Hazard Ratings:	NFPA		HMIS
	2 Health	0 Least	2 Health
	2 Flammability	1 Slight	2 Flammability
	1 Instability	2 Moderate	1 Reactivity
		3 High	H PPE
		4 Severe	

SARA Hazard Notification/Reporting				
SARA Title III Hazard Category:	Immediate <u>Y</u>	Fire <u>Y</u>	Sudden Release of Pressure <u>N</u>	
	Delayed <u>Y</u>	Reactive <u>N</u>		

Reportable Quantity (RQ) under U.S. CERCLA: Xylene (mixed isomers) (CAS: 1330-20-7) 100 pounds; Cumene (CAS: 98-82-8) 5000 pounds; Ethylbenzene (CAS: 100-41-1) 1000 pounds
SARA, Title III, Section 313: Permethrin (CAS: 52645-53-1) 38.40%; 1,2,4 Trimethylbenzene (CAS: 95-63-6): <17.0%; Xylene (mixed isomers) (CAS: 1330-20-7) < 2.0%; Cumene (CAS: 98-82-8) < 1.0%; Ethylbenzene (CAS: 100-41-1) <1.0%
RCRA Waste Code: Not listed.
CA Proposition 65: Not listed.

16. OTHER INFORMATION

MSDS STATUS: Sections 1, 4, 8, and 13 revised
PREPARED BY: Registrations and Regulatory Affairs **REVIEWED BY:** Environmental/ Regulatory Services
This product is a Restricted Use Pesticide (Toxic to Fish and Aquatic Organisms)
 U.S. Patent No. 4,024,163
**cis/trans ratio: Max. 55% (±) cis and min. 45% trans*

Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and LOVELAND PRODUCTS, INC. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purpose.



1. Product and company identification

Product name	ARCO Unleaded Gasoline
MSDS #	APPC306
Code	APPC306
Product use	USE AS MOTOR FUEL ONLY.
Synonyms	ARCO Unleaded Regular, Midgrade and Premium gasolines; ARCO EC Unleaded Regular, Midgrade and Premium gasolines, CARB Gasoline
Supplier	BP Products North America Inc. 150 West Warrenville Road Naperville, Illinois 60563-8460 USA
EMERGENCY HEALTH INFORMATION:	1 (800) 447-8735 Outside the US: +1 703-527-3887 (CHEMTREC)
EMERGENCY SPILL INFORMATION:	1 (800) 424-9300 CHEMTREC (USA)
OTHER PRODUCT INFORMATION	1 (866) 4 BP - MSDS (866-427-6737 Toll Free - North America) email: bpcares@bp.com

2. Hazards identification

Physical state	Liquid.
Color	Clear
Emergency overview	DANGER ! EXTREMELY FLAMMABLE. VAPOR MAY CAUSE FLASH FIRE. INHALATION OF VAPOR/AEROSOL CONCENTRATIONS ABOVE THE RECOMMENDED EXPOSURE LIMITS CAUSES HEADACHES, DIZZINESS, DROWSINESS, AND NAUSEA, AND MAY LEAD TO UNCONSCIOUSNESS OR DEATH. HARMFUL IF SWALLOWED. HARMFUL OR FATAL IF LIQUID IS ASPIRATED INTO LUNGS. CAUSES EYE AND SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. LONG-TERM EXPOSURE TO VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS. Extremely flammable liquid. Do not ingest. If ingested, do not induce vomiting. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Keep away from heat, sparks and flame. Keep container tightly closed and sealed until ready for use. Use only with adequate ventilation. Wash thoroughly after handling. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.
Routes of entry	Dermal contact. Eye contact. Inhalation. Ingestion.
Potential health effects	
Eyes	Causes eye irritation.
Skin	Causes skin irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. See toxicological information (Section 11)
Inhalation	Inhalation of vapor/aerosol concentrations above the recommended exposure limits causes headaches, drowsiness and nausea and may lead to unconsciousness or death. See toxicological information (Section 11)
Ingestion	Aspiration hazard if swallowed. Can enter lungs and cause damage. See toxicological information (Section 11)

3. Composition/information on ingredients

Ingredient name	CAS #	%
Gasoline	Mixture	90 - 100
Ethanol	64-17-5	0 - 10
Contains:		
Benzene	71-43-2	0 - 3
n-hexane	110-54-3	1 - 2
Cyclohexane	110-82-7	0 - 1
Ethylbenzene	100-41-4	0 - 2
Toluene	108-88-3	4 - 11
1,2,4-Trimethylbenzene	95-63-6	0 - 3
xylene	1330-20-7	4 - 11
Naphthalene	91-20-3	0 - 0.5

4. First aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin contact	Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Clean shoes thoroughly before reuse. Wash contaminated clothing before reuse. Get medical attention.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention immediately.
Ingestion	Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5. Fire-fighting measures

Flammability of the product	Extremely flammable liquid.
Flash point	Closed cup: -42.778°C (-45°F)
Explosion limits	Lower: 1.3% Upper: 7.6% (Estimated.)
Fire/explosion hazards	Extremely flammable liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
Unusual fire/explosion hazards	Extremely explosive in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Extinguishing media	
Suitable	Use dry chemical, CO ₂ , water spray (fog) or foam.
Not suitable	Do not use water jet.
Fire-fighting procedures	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Hazardous combustion products	Combustion products may include the following: carbon oxides (CO, CO ₂) (carbon monoxide, carbon dioxide)
Protective clothing (fire)	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Special remarks on fire hazards	Do not use water jet.

6. Accidental release measures

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Personal protection in case of a large spill

Chemical splash goggles. Chemical-resistant protective suit. Boots. Chemical-resistant gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

Methods for cleaning up

Large spill

Stop leak if without risk. Eliminate all ignition sources. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Small spill

Stop leak if without risk. Eliminate all ignition sources. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Handling

Put on appropriate personal protective equipment (see Section 8). Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Never siphon by mouth.

For use as a motor fuel only. Do not use as a cleaning solvent, thinner or for other non-motor fuel uses. Do not use as a portable heater or appliance fuel.

Warning! Customers should not re-enter vehicle during the re-fueling process as this can generate static electricity and cause a spark and flash fire hazard if sufficient vapors are present. The flow of gasoline through a pump nozzle can produce static electricity, which may cause a fire if gasoline is pumped into an ungrounded container. To avoid static spark hazard when filling portable containers:

- Fill only containers approved to hold gasoline
- Place container on the ground while dispensing fuel.
- Do not fill container in or on a vehicle or on a truck or trailer bed.
- Keep nozzle in contact with container while filling.

"Empty" containers retain liquid and vapor residues and can be dangerous. Do not pressurize, cut, weld, drill, grind or expose to heat, flame, sparks, static electricity, or other sources of ignition, containers with ANY residue; they may explode and cause injury or death.

Storage

Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Other information

Do not enter storage tanks without breathing apparatus unless the tank has been well ventilated and the tank atmosphere has been shown to contain hydrocarbon vapor concentrations of less than 1% of the lower flammability limit and an oxygen concentration of at least 20% volume.

Light hydrocarbon vapors can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapor in tank headspaces).

Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Electrical equipment should not be used unless it is intrinsically safe (i.e. will not produce sparks).

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name

Occupational exposure limits

Gasoline	<p>ACGIH TLV (United States). TWA: 300 ppm 8 hour(s). Issued/Revised: 5/1996 TWA: 890 mg/m³ 8 hour(s). Issued/Revised: 5/1996 STEL: 500 ppm 15 minute(s). Issued/Revised: 5/1996 STEL: 1480 mg/m³ 15 minute(s). Issued/Revised: 5/1996</p>
Ethanol	<p>ACGIH TLV (United States). STEL: 1000 ppm 15 minute(s). Issued/Revised: 11/2008 OSHA PEL (United States). TWA: 1900 mg/m³ 8 hour(s). Issued/Revised: 6/1993 TWA: 1000 ppm 8 hour(s). Issued/Revised: 6/1993</p>
Benzene	<p>ACGIH TLV (United States). Absorbed through skin. STEL: 8 mg/m³ 15 minute(s). Issued/Revised: 5/1997 STEL: 2.5 ppm 15 minute(s). Issued/Revised: 5/1997 TWA: 1.6 mg/m³ 8 hour(s). Issued/Revised: 5/1997 TWA: 0.5 ppm 8 hour(s). Issued/Revised: 5/1997 OSHA PEL (United States). STEL: 5 ppm 15 minute(s). Issued/Revised: 6/1993 TWA: 1 ppm 8 hour(s). Issued/Revised: 6/1993 OSHA PEL Z2 (United States). AMP: 50 ppm 10 minute(s). Issued/Revised: 6/1993 CEIL: 25 ppm Issued/Revised: 6/1993 TWA: 10 ppm 8 hour(s). Issued/Revised: 6/1993</p>
n-hexane	<p>OSHA PEL (United States). Absorbed through skin. TWA (States of California & Washington): 50 ppm 8 hour(s). Form: Vapor TWA: 1800 mg/m³ 8 hour(s). Issued/Revised: 6/1993 TWA: 500 ppm 8 hour(s). Issued/Revised: 6/1993 STEL (State of Washington): 75 ppm 15 minute(s). ACGIH TLV (United States). Absorbed through skin. TWA: 50 ppm 8 hour(s). Issued/Revised: 9/1998</p>
Cyclohexane	<p>ACGIH TLV (United States). TWA: 100 ppm 8 hour(s). Issued/Revised: 1/2002 OSHA PEL (United States). TWA: 1050 mg/m³ 8 hour(s). Issued/Revised: 6/1993 TWA: 300 ppm 8 hour(s). Issued/Revised: 6/1993</p>
Ethylbenzene	<p>ACGIH TLV (United States). TWA: 20 ppm 8 hour(s). Issued/Revised: 12/2010 OSHA PEL (United States). TWA: 435 mg/m³ 8 hour(s). Issued/Revised: 6/1993 TWA: 100 ppm 8 hour(s). Issued/Revised: 6/1993</p>
Toluene	<p>OSHA PEL Z2 (United States). AMP: 500 ppm 10 minute(s). Issued/Revised: 6/1993 CEIL: 300 ppm Issued/Revised: 6/1993 TWA: 200 ppm 8 hour(s). Issued/Revised: 6/1993 ACGIH TLV (United States). TWA: 20 ppm 8 hour(s). Issued/Revised: 11/2006</p>
1,2,4-Trimethylbenzene	<p>ACGIH TLV (United States). TWA: 123 mg/m³ 8 hour(s). Issued/Revised: 9/1994 TWA: 25 ppm 8 hour(s). Issued/Revised: 9/1994</p>
xylene	<p>ACGIH TLV (United States). STEL: 651 mg/m³ 15 minute(s). Issued/Revised: 5/1996 STEL: 150 ppm 15 minute(s). Issued/Revised: 5/1996 TWA: 434 mg/m³ 8 hour(s). Issued/Revised: 5/1996 TWA: 100 ppm 8 hour(s). Issued/Revised: 5/1996 OSHA PEL (United States). TWA: 435 mg/m³ 8 hour(s). Issued/Revised: 6/1993 TWA: 100 ppm 8 hour(s). Issued/Revised: 6/1993</p>

Naphthalene

ACGIH TLV (United States). Absorbed through skin.

STEL: 79 mg/m³ 15 minutes. Issued/Revised: 5/1996

STEL: 15 ppm 15 minutes. Issued/Revised: 5/1996

TWA: 52 mg/m³ 8 hours. Issued/Revised: 5/1996

TWA: 10 ppm 8 hours. Issued/Revised: 5/1996

OSHA PEL (United States).

TWA: 50 mg/m³ 8 hours. Issued/Revised: 6/1993

TWA: 10 ppm 8 hours. Issued/Revised: 6/1993

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Some states may enforce more stringent exposure limits.

Control Measures

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Personal protection

Eyes

Avoid contact with eyes. Safety glasses with side shields or chemical goggles.

Skin and body

Do not get on skin or clothing. Wear clothing and footwear that cannot be penetrated by chemicals or oil.

Respiratory

Use only with adequate ventilation. Avoid breathing vapor or mist. If ventilation is inadequate, use a NIOSH certified respirator with an organic vapor cartridge and P95 particulate filter.

CAUTION: The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of air-purifying respirator.

Hands

Wear gloves that cannot be penetrated by chemicals or oil.

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Consult your supervisor or Standard Operating Procedure (S.O.P) for special handling instructions.

9. Physical and chemical properties

Physical state	Liquid.
Color	Clear
Odor	Hydrocarbon.
Flash point	Closed cup: -42.778°C (-45°F)
Explosion limits	Lower: 1.3% Upper: 7.6% (Estimated.)
Density	750 kg/m ³ (0.75 g/cm ³)
Boiling point / Range	26.67 to 221°C (80 to 430°F)
Vapor pressure	48.134 to 103.146 kPa (361.97 to 775.66 mm Hg)
Volatility	100% (v/v)
Solubility	Very slightly soluble in water

Product name ARCO Unleaded Gasoline

Product code APPC306

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Version 2 **Date of issue** 12/31/2012.

Format US-COMP

Language ENGLISH

(US-COMP)

(ENGLISH)

10. Stability and reactivity

Stability and reactivity	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	Keep away from heat, sparks and flame. Avoid all possible sources of ignition (spark or flame).
Incompatibility with various substances	Reactive or incompatible with the following materials: oxidizing materials. Chlorine and Fluorine
Hazardous decomposition products	carbon oxides (CO, CO ₂) (carbon monoxide, carbon dioxide)
Hazardous polymerization	Will not occur.

11. Toxicological information

Classification

Product/ingredient name	IARC	NTP	OSHA
xylene	3	-	-
Toluene	3	-	-
Benzene	1	Proven.	+
Ethylbenzene	2B	-	-
Naphthalene	2B	Possible	-

IARC :

- 1 - Carcinogenic to human.
- 2B - Possible carcinogen to human.
- 3 - Not classifiable as a human carcinogen.

NTP :

- Proven - Known to be human carcinogens.
- Possible - Reasonably anticipated to be human carcinogens.

OSHA :

- + Potential occupational carcinogen

Other information

Aspiration of this product into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Do not siphon by mouth.

Excess exposure to vapors may produce headaches, dizziness, nausea, drowsiness, irritation of eyes, nose and throat and central nervous system depression. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Inhalation of unleaded gasoline vapors did not produce birth defects in laboratory animals. Ingestion of this material can cause gastrointestinal irritation and diarrhea.

In a long-term inhalation study of whole unleaded gasoline vapors, exposure-related kidney damage and kidney tumors were observed in male rats. Similar kidney effects were not seen in female rats or in mice. At the highest exposure level (2056 ppm), female mice had an increased incidence of liver tumors. Results from subsequent scientific studies have shown that a broad variety of chemicals cause these kidney effects only in the male rat. Further studies have discovered the means by which the physiology of the male rat uniquely predispose it to these effects. Consequently, the Risk Assessment Forum of the Environmental Protection Agency has recognized that these responses are not predictive of a human health hazard. The liver tumors that were increased in the high-dose female mice are likewise of questionable significance because of their high spontaneous occurrence even without chemical exposure and because the rate of their occurrence is accelerated by a broad spectrum of chemicals not commonly considered to be carcinogens (e.g., phenobarbital). Thus, the significance of the mouse liver tumor response in terms of human health is questionable.

Gasoline is a complex mixture of hydrocarbons and contains benzene (typically no more than 2 volume%), toluene, and xylene. Chronic exposure to high levels of benzene has been shown to cause cancer (leukemia) in humans and other adverse blood effects (anemia). Benzene is considered a human carcinogen by IARC, NTP and OSHA. Over exposure to xylene and toluene

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can cause irritation to the upper respiratory tract, headache and narcosis. Some liver damage and lung inflammation were seen in chronic studies on xylene in guinea pigs but not in rats.

Solvent "sniffing" (abuse) or intentional overexposure to vapors can produce serious central nervous system effects, including unconsciousness, and possibly death.

Exposure to vapor at high concentrations may have the following effects: heart beat irregularity (arrhythmia)

Gasoline as a mixture is classified as a 2B (possible human) carcinogen by IARC.

Gasoline engine exhaust is classified as possibly carcinogenic to humans by IARC (2B). This classification is based primarily on animal and in vitro studies of gasoline engine exhaust condensates/extracts. Studies of the gaseous exhaust stream in animals did not provide sufficient evidence for classification as a carcinogen.

Gasoline: Additional toxicity information on components.

This product contains n-hexane. Overexposure to n-hexane may cause progressive and potentially irreversible damage to the peripheral nervous system, particularly in the arms and legs. Animal studies have also shown that n-hexane overexposure may cause testicular injury. However, animal studies conducted with commercial hexane, containing 53% n-hexane, showed neither peripheral nervous system damage nor testicular injury at inhalation exposures up to 9000 ppm.

Ethanol:

Irritancy - Skin: A single 4h semi-occlusive application to intact rabbit skin produced minimal signs of irritation (mean scores for erythema or oedema less than 2).

Irritancy - Eye. The eye irritancy has been investigated by OECD Test method 405. Single application to the rabbit eye produced conjunctival irritation and transient corneal damage. The effect was insufficient to warrant classification as an eye irritant.

Sensitization: The material is not sensitizing in standard animal tests. In rare cases non -irritant contact dermatitis has been identified in humans after skin exposure to this material. Such cases have been identified as delayed hypersensitivity or as urticarial reactions. In reactive individuals such reactions may also be elicited by drinking alcoholic drinks or by cross reaction to certain other alcohols.

Sub-acute/Subchronic Toxicity: It has been shown in many animal experiments that the repeated oral consumption of large doses of ethanol can lead to damage in practically all organ systems. The main manifestations of the toxic effects are shown by the liver.

Chronic toxicity/carcinogenicity: No convincing evidence of carcinogenic effects in animal studies.

Genotoxicity : The product has been tested in a number of bacterial and mammalian systems. The product did not exhibit mutagenic activity in the following systems (with and without metabolic activation): Drosophila. Salmonella typhimurium. Human lymphocytes in vitro. Most in vitro tests and all in vivo tests for chromosome aberrations report negative results. The product did not induce micronuclei in standard bone marrow tests in vivo. There is some evidence that ethanol both induces SCE in vivo and can also act as an aneugen at high doses. Overall, there is no robust evidence that ethanol is a genotoxic hazard according to the criteria normally applied for the purpose of classification and labelling of industrial chemicals.

Reproductive/Developmental Toxicity: Adverse effects on the male reproductive system have been reported in laboratory animals following repeated exposure to high concentrations. Developmental effects have been observed in laboratory animals following large oral exposures.

Human data: In humans excessive consumption of alcoholic beverages during pregnancy is associated with the induction of Fetal Alcohol Syndrome in the offspring. Reduced birth weight and physical and mental defects occur. There is no evidence that such effects might be caused by exposures other than direct ingestion of alcoholic drinks. In humans high lifetime consumption of alcoholic beverages can be associated with certain cancers and effects on the liver. There is no evidence that these can be caused by exposure other than direct ingestion of alcoholic drinks (IARC 1988).

Potential chronic health effects

Carcinogenicity

Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

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12. Ecological information

Ecotoxicity

No testing has been performed by the manufacturer.

Persistence/degradability Inherently biodegradable

Mobility Spillages may penetrate the soil causing ground water contamination.

Bioaccumulative potential This product is not expected to bioaccumulate through food chains in the environment.

Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

13. Disposal considerations

Waste information The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal

14. Transport information

International transport regulations

Regulatory information	UN number	Proper shipping name	Class	Packing group	Additional information
DOT Classification	UN1203	Gasoline	3	II	-
TDG Classification	UN1203	GASOLINE	3	II	-
IMDG Classification	UN1203	GASOLINE. Marine pollutant	3	II	Emergency schedules (EmS) F-E, S-E
IATA/ICAO Classification	----	Proper classification to be determined at the time of shipment	----	----	-

15. Regulatory information

U.S. Federal Regulations

United States inventory (TSCA 8b) All components are listed or exempted.

SARA 302/304: No products were found.

SARA 311/312 Hazards identification: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

SARA 313

Product name **CAS number** **Concentration**

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Form R - Reporting requirements

Toluene	108-88-3	4 - 11
xylene	1330-20-7	4 - 11
Benzene	71-43-2	0 - 3
1,2,4-Trimethylbenzene	95-63-6	0 - 3
n-hexane	110-54-3	1 - 2
Ethylbenzene	100-41-4	0 - 2
Cyclohexane	110-82-7	0 - 1
Naphthalene	91-20-3	0 - 0.5

Supplier notification

Toluene	108-88-3	4 - 11
xylene	1330-20-7	4 - 11
Benzene	71-43-2	0 - 3
1,2,4-Trimethylbenzene	95-63-6	0 - 3
n-hexane	110-54-3	1 - 2
Ethylbenzene	100-41-4	0 - 2
Cyclohexane	110-82-7	0 - 1
Naphthalene	91-20-3	0 - 0.5

CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):

CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.54 kg); n-hexane: 5000 lbs. (2270 kg); Cyclohexane: 1000 lbs. (454 kg); Ethylbenzene: 1000 lbs. (454 kg); Toluene: 1000 lbs. (454 kg); xylene: 100 lbs. (45.4 kg); Naphthalene: 100 lbs. (45.4 kg);

State regulations**Massachusetts Substances**

The following components are listed: XYLENE; TOLUENE; ETHYL ALCOHOL; BENZENE; PSEUDOCUMENE; HEXANE; ETHYL BENZENE; CYCLOHEXANE

New Jersey Hazardous Substances

The following components are listed: XYLENES; BENZENE, DIMETHYL-; TOLUENE; BENZENE, METHYL-; ETHYL ALCOHOL; ALCOHOL; BENZENE; PSEUDOCUMENE; 1,2,4-TRIMETHYL BENZENE; n-HEXANE; HEXANE; ETHYL BENZENE; BENZENE, ETHYL-; CYCLOHEXANE; NAPHTHALENE; MOTH FLAKES

Pennsylvania RTK Hazardous Substances

The following components are listed: GASOLINE; BENZENE, DIMETHYL-; BENZENE, METHYL-; DENATURED ALCOHOL; BENZENE; PSEUDOCUMENE; HEXANE; BENZENE, ETHYL-; CYCLOHEXANE; NAPHTHALENE

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer. Ethylbenzene; Naphthalene

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. Toluene

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. Benzene

Other Prop 65 chemicals will result under certain conditions from the use of this material. For example, burning fuels produces combustion products including carbon monoxide, a Prop 65 reproductive toxin.

Other regulations**Canada inventory**

All components are listed or exempted.

REACH Status

For the REACH status of this product please consult your company contact, as identified in Section 1.

Australia inventory (AICS)

At least one component is not listed.

China inventory (IECSC)

At least one component is not listed.

Japan inventory (ENCS)

All components are listed or exempted.

Korea inventory (KECI)

All components are listed or exempted.

Philippines inventory (PICCS)

All components are listed or exempted.

16. Other information

Label requirements

DANGER !

EXTREMELY FLAMMABLE.
VAPOR MAY CAUSE FLASH FIRE.
INHALATION OF VAPOR/AEROSOL CONCENTRATIONS ABOVE THE RECOMMENDED EXPOSURE LIMITS CAUSES HEADACHES, DIZZINESS, DROWSINESS, AND NAUSEA, AND MAY LEAD TO UNCONSCIOUSNESS OR DEATH.
HARMFUL IF SWALLOWED.
HARMFUL OR FATAL IF LIQUID IS ASPIRATED INTO LUNGS.
CAUSES EYE AND SKIN IRRITATION.
PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION.
LONG-TERM EXPOSURE TO VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS.

HMIS® Rating :

Health * 1
Flammability 3
Physical 0
Hazard
Personal protection X

National Fire
Protection
Association (U.S.A.)



History

Date of issue 12/31/2012.

Date of previous issue 03/01/2012.

Prepared by Product Stewardship

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

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