# APPENDIX B

# SITE SAFETY AND HEALTH PLAN

# Site-Specific Safety and Health Plan
# Iron Mountain Road Ranges Soil Remediation on ALDOT EBC Property

## Skeet Range, Parcel 69Q;
## Range 12, Parcel 70Q; and
## Range 13, Parcel 71Q

**Prepared for:**

**U.S. Army Corps of Engineers, Mobile District**
**109 St. Joseph Street**
**Mobile, Alabama 36602**

**Prepared by:**

**Shaw Environmental, Inc.**
**312 Directors Drive**
**Knoxville, Tennessee 37923**

**Task Order CK11**
**Contract No. DACA21-96-D-0018**
**Project No. 800486**

**August 2004**

**Revision 0**

The following Safety and Health Plan (SHP) has been designed for the methods presently contemplated by the company for execution of the proposed work. Therefore, the SHP may not be appropriate if the work is not performed by or using the methods presently contemplated by the company. In addition, as the work is performed, conditions different from those anticipated may be encountered and the SHP may have to be modified. Therefore, the company only makes representations or warranties as to the adequacy of the SSHP for currently anticipated activities and conditions. This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan, Revision 1 and the Installation-Wide Ordnance and Explosives Management Plan, Fort McClellan, Alabama.

## Site-Specific Safety and Health Plan Attachment Approval
## Fort McClellan, Calhoun County, Alabama

I have read and approve this site-specific safety and health plan for the Iron Mountain Road Ranges soil remediation at Fort McClellan, Calhoun County, Alabama, with respect to project hazards, regulatory requirements, and Shaw procedures.

Jeanne Yacoub, PE
Project Manager

Date

Doug Russell
Health & Safety Manager

8/18/04
Date

Melissa Smith
Shaw Program CIH

8/18/04
Date

Jeff Tarr
Site Manager

Date

## *Acknowledgements*

The approved version of this site-specific safety and health plan (SSHP) for the Iron Mountain Road Ranges soil remediation at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.

_____ _____

Project Manager Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and the health and safety manager.

_____ _____

Site Manager Date

# Site-Specific Safety and Health Plan
# Acknowledgement Form

I have been informed of, and will abide by the procedures set forth in, this site-specific safety and health plan attachment for the Iron Mountain Road Ranges soil remediation at Fort McClellan, Alabama.

| ***Printed Name*** | ***Signature*** | ***Representing*** | ***Date*** |
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# Fort McClellan Project Emergency Contacts

| | |
|---|---|
| Range Control Office (Main Post) | (256) 848-6772 |
| Fire Department (on post) | 911 |
| Fire Department (off post) | (256) 237-3541 |
| Ambulance (off post) | 911 |
| Regional Medical Center | (256) 235-5121 |
| DOD Guard Force (Mr. Bolton) | (256) 848-5680, 848-4732 |
| Anniston Police Department | (256) 238-1800 |
| Chemical Agent Emergencies | (256) 895-1598 |
| Wilson Walters | (256) 990-1512, (256) 895-1543 |
| UXO Emergencies | (256) 895-1598 |
| OE Safety | (256) 895-1598 |
| UXO Nonemergencies/Reporting Only (Ronald Levy) | (256) 848-3758 |
| National Response Center & Terrorist Hotline | (800) 424-8802 |
| Poison Control Center | (800) 462-0800 |
| EPA Region IV | (404) 562-8725 |
| Ronald Levy, Chief, FTMC Environmental Management | (256) 848-3758 |
| Lee Coker, U.S. Army Corps of Engineers | (251) 690-3099 |
| Jeanne Yacoub, Shaw Project Manager | (770) 663-1429 |
| Doug Russell, Shaw H&S Manager | direct dial (865) 692-3584 |
| Jeff Tarr, Shaw Site Coordinator | (256) 848-3482 |
| Dr. Jerry H. Berke, Health Resources Occupational Physician | (800) 350-4511 |

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# 1.0 Site Work Plan Summary

***Project Objective.*** Shaw Environmental, Inc. (Shaw) will conduct a removal action of metals impacted soil at a skeet range and two small arms ranges at Fort McClellan (FTMC), Alabama. Soil removal will occur at the Iron Mountain Road (IMR) Ranges which shown on Figure 1-1 in the Interim Removal Action Work Plan and include: the Skeet Range, Parcel 69Q; Range 12 (Competitive Pistol Range), Parcel 70Q; and Range 13 (Qualification Pistol Range), Parcel 71Q. Range 19 (Qualification Pistol Range), Parcel 75Q and the Former Rifle Grenade Range, Parcel 221Q-X were originally investigated as part of the IMR Range RI, however they are not included in this scope of work. A cumulative area approximately 1 acre in size will be remediated. This area falls within the Alabama Department of Transportation (ALDOT) proposed Eastern Bypass Corridor (EBC). The work will be performed by Shaw in accordance with the provisions of Prime Contract DACA21-96-D-0018 with the U.S. Army Corps of Engineers (USACE), Mobile District.

The purpose of this removal action is to excavate and treat metals impacted soil at the Skeet Range, Range 12, and Range 13 where the lead concentration exceeds 880 milligrams per kilogram (mg/kg) within the area of the EBC. The ALDOT EBC boundary will be surveyed and a sampling grid established. Sampling data provided by the x-ray fluorescence (XRF) instrument will be used to direct the excavation crew remove the soil that exceeds the 880 mg/kg criterion. Based on existing data, it is assumed that an area of approximately 0.2 acres at the Skeet Range, 0.1 acres at Range 13, and 0.7 acres at Range 12 are anticipated. Assuming these areas are correct following the XRF survey, Shaw will excavate the top 1 foot of soil below ground surface (bgs). This excavation will yield approximately 1,572 cubic yards (CY) of material for treatment. The excavated soil will be treated on site with portland cement to stabilize the metals and then composite sampled for disposal. After stabilization, it is expected that 2,043 CY of material will be transported and disposed of in an appropriately permitted landfill. The excavated areas will be regraded and reseeded as necessary to prevent erosion.

### *Project Tasks*

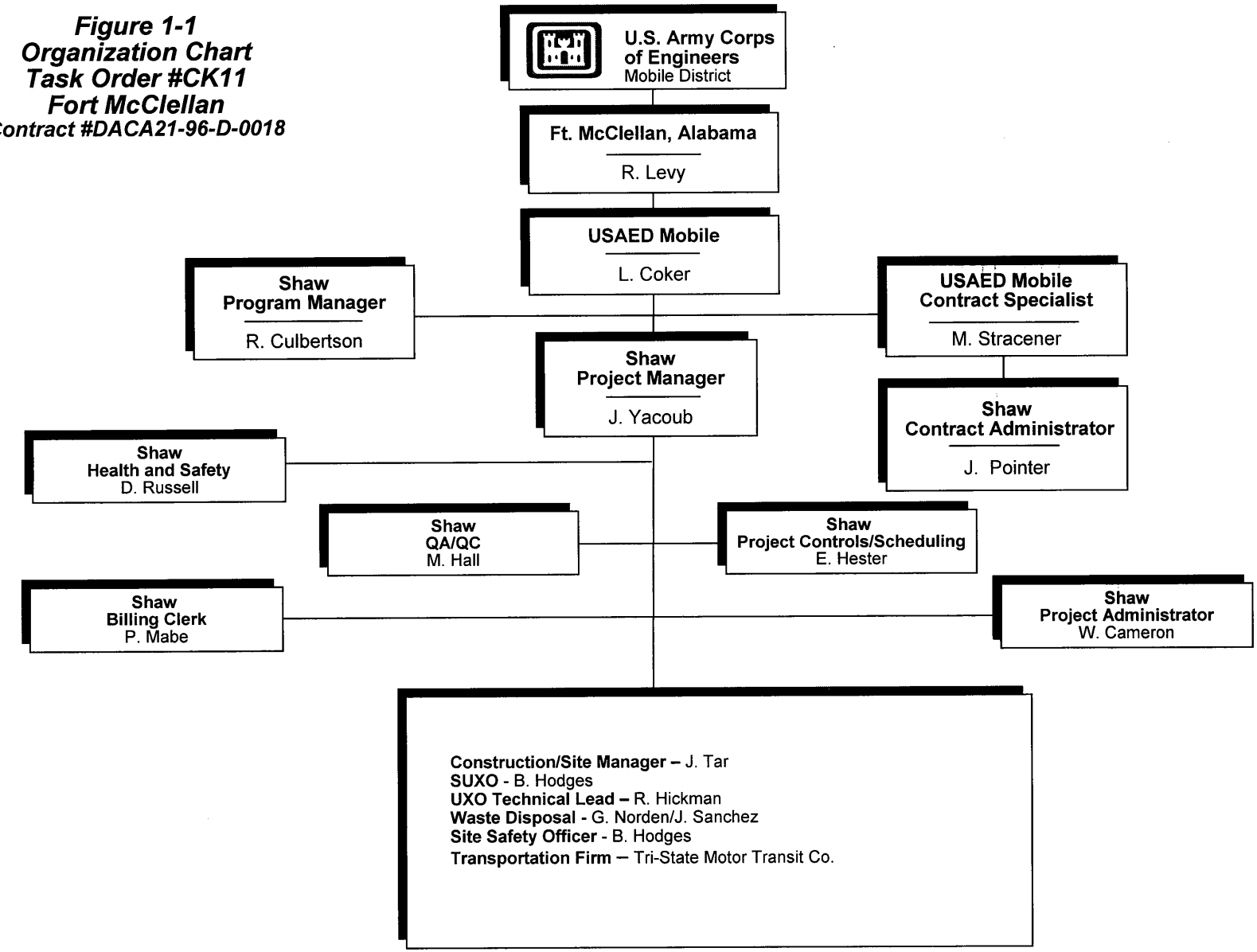
- Site surveying and XRF analysis
- Soil removal and treatment
- Post-excavation surface soil and treated soil sampling and analysis
- Waste characterization
- Transportation and disposal of treated soil
- Site restoration.

***Personnel Requirements.*** Up to 10 employees are anticipated to complete this scope of field work. See Figure 1-1 for an organization chart.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan (SHP) for site investigations at FTMC, understand the requirements of this site-specific SHP (SSHP).

This SSHP must be used in conjunction with the FTMC installation-wide SHP and the FTMC Installation-Wide OE Management Plan. Additionally, a Lead Compliance Plan has been developed in accordance with 29 Code of Federal Regulations (CFR) 1926.62 and in EM 385-1-1 06.B.05. The Lead Compliance Plan has been included as Attachment 1 to this SSHP.

***Figure 1-1***
***Organization Chart***
***Task Order #CK11***
***Fort McClellan***
***Contract #DACA21-96-D-0018***

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# 2.0 Site Characterization and Analysis

## 2.1 Anticipated Hazards

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis (AHA) indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE). The potential to encounter UXO has been determined to be low based on the anticipated soil excavation depth of one foot and previous UXO clearance activities by others. This evaluation and Department of the Army, Statement of Clearance Letter for Ordnance and Explosives at Site 2 of the Eastern Bypass at Fort McClellan, Alabama is presented in Attachment 2. However, in the event suspect items are encountered, do not disturb the item. Immediately suspend work and contact the Shaw UXO supervisor. Investigation of the suspect item will require approval of UXO construction support activity.

The toxicological and physical properties of chemicals and information on exposure effects and first-aid are included in Table 2-1.

## 2.2 General Site Information

The IMR Range sites are located in the southwest part of the Main Post, east of Iron Mountain Road and south of Summerall Gate Road. The western facing slopes of Sunset Hill and the Baltzell Hills form the main range boundary to the east. The major surface water body is Remount Creek which flows from the south to the north. Several ephemeral tributaries drain surface water run off from the western hillsides into Remount Creek in the IMR Range area. Except for a historical former rifle grenade range at the Skeet Range, the IMR Ranges were mostly used for small caliber weapons training and shotgun firing and were active immediately prior to base closure. Several of the ranges were built over land that was previously used for other types of training but no UXO items have been identified during site investigation activities in the EBC area. Bullets, shot, and bullet fragments are found in high concentrations on the surface of many of the IMR Range impact zones.

***Skeet Range, Parcel 69Q and Former Rifle Grenade Range at Skeet Range, Parcel 222Q-X.*** According to the EBS (ESE, 1998) the Skeet Range was constructed in 1988 and was in operation until October 1998. The Skeet Range (13 acres) was built over the land formerly

# Table 2-1

## Toxicological and Physical Properties of Chemicals
## Iron Mountain Road Ranges Soil Remediation
## Fort McClellan, Calhoun County, Alabama



| Substance [CAS] | IP[a] (eV) | Odor Threshold (ppm) | Route[b] | Symptoms of Exposure | Treatment | TWA[c] | STEL[d] | Source[e] | IDLH (NIOSH)[f] |
|---|---|---|---|---|---|---|---|---|---|
| Fuel oil (diesel oil, medium) | ? | ? | Ing<br>Inh<br>Con | Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, sub-sternal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system. | Eye: Irrigate promptly<br>Skin: Soap wash<br>Breath: Respiratory support<br>Swallow: Immediate medical attention<br>Aspiration: Immediate medical attention | | | PEL<br>TLV<br>REL | |
| Gasoline<br>[8006-61-9] | ? | 0.3 | Inh<br>Ing<br>Con | Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic. | Eye: Irrigate immediately (15 min)<br>Skin: Soap wash promptly<br>Breath: Respiratory support<br>Swallow: Immediate medical attention | 300 ppm<br>Ca, lowest feasible conc.<br>(LOQ 15 ppm) | 500 ppm | PEL<br>TLV<br>REL | ? |
| Lead<br>{7439-92-1} | N/A | N/A | Inh<br>Ing<br>Con | Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness. | Eye: Irrigate immediately<br>Skin: Soap wash immediately<br>Breath: Respiratory support<br>Swallow: Immediate medical attention | 0.050 $mg/m^3$<br>0.050 $mg/m^3$<br>0.100 $mg/m^3$ | | PEL<br>TLV<br>REL | 100 $mg/m^3$ |
| Motor oil<br>[NA] | ? | ? | Inh<br>Ing | See oil mist; usually only a problem if misted or ingested. | Eye: Irrigate immediately (15 min)<br>Skin: Soap wash immediately<br>Swallow: Immediate medical attention | | | PEL<br>TLV<br>REL | |

# Table 2-1

## Toxicological and Physical Properties of Chemicals
## Iron Mountain Road Ranges Soil Remediation
## Fort McClellan, Calhoun County, Alabama



| Substance [CAS] | IP[a] (eV) | Odor Threshold (ppm) | Route[b] | Symptoms of Exposure | Treatment | TWA[c] | STEL[d] | Source[e] | IDLH (NIOSH)[f] |
|---|---|---|---|---|---|---|---|---|---|
| Nitric acid<br><br>[7697-37-2] | 11.95 | 0.3–1 | Inh<br>Ing<br>Con | Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion. | Eye: Irrigate immediately<br>Skin: Water flush promptly<br>Breath: Respiratory support<br>Swallow: Immediate medical attention | 2 ppm<br>2 ppm<br>2 ppm | 4 ppm<br>4 ppm<br>4 ppm | PEL<br>TLV<br>REL | 100 ppm |
| Portland cement | | | Inh | Fine gray powder that can be irritating if inhaled or in eyes. | Eye: Irrigate immediately<br>Skin: Soap wash immediately<br>Breath: Respiratory support<br>Swallow: Immediate medical attention | | 15 $mg/m^3$/ total dust<br>5 $mg/m^3$<br>respirable fraction | PEL | |

[a]IP = Ionization potential (electron volts).
[b]Route = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.
[c]TWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.
[d]STEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.
[e]PEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).
AEL = Airborne Exposure Limit.
TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value—TWA.
REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.
[f]IDLH (NIOSH)—Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. No. 97-140, 1997).
C = Ceiling limit value which should not be exceeded at any time.
Ca = Carcinogen.
NA = Not applicable.
? = Unknown.
LEL = Lower explosive limits.
$LC_{50}$ = Lethal concentration for 50 percent of population tested.
$LD_{50}$ = Lethal dose for 50 percent of population tested.
NIC = Notice of intended change (ACGIH)

# Table 2-1

## Toxicological and Physical Properties of Chemicals
## Iron Mountain Road Ranges Soil Remediation
## Fort McClellan, Calhoun County, Alabama



References:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 2004, compiled by the American Conference of Governmental Industrial Hygienists.
Amoore, J. E. Hautula, "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, 1983.
Clayton, George D., Clayton, F. E., Patty's Industrial Hygiene and Toxicology, 3rd ed., John Wiley & Sons, New York.
Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, 2003.
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Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, CIVO, Netherlands, 1977.
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Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.
Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.
National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. 2003, No. 90-117, National Institute for Occupational Safety and Health.
Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.
Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.
Verschuseren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.
Warning Properties of Industrial Chemicals—Occupational Health Resource Center, Oregon Lung Association.
Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

used for the Rifle Grenade Range at the Skeet Range, Parcel 222Q-X (1.7 acres). The area of the former rifle grenade range is completely encompassed by the Skeet Range parcel and therefore has not been separately investigated. Base personnel used the Skeet Range for clay skeet and trap shooting competition. Historically, weapons fired at the range consisted of .410-gauge, .12-gauge, .20-gauge, .28-gauge shotguns. The Archives Search Report (ASR) (USACE, 2001) indicated that the Skeet Range is within the impact zone of two UXO ranges: the rifle grenade range (Parcel 222Q-X) and the former Combat Range #2. Combat Range #2 was used from the Inter-war period until 1958 and the weapons used there included grenades (rifle), rockets, and machine guns. Due to past use and proximity to these historical ranges, UXO items (2.36-inch rockets and WWII-era rifle grenades) have been found in and around the Skeet Range area, particularly in the northern half of the range.

***Range 12, Parcel 70Q.*** Range 12 was described in the EBS as constructed in 1951 and was in operation until October 1998. When the range was built, it was first listed as "Range 14" and was described as a "1000-inch range." By 1967, the range was renamed Range 12, the Competitive Pistol Range. Historically, weapons fired at the range consisted of 9-millimeter (mm) pistol and unidentified machine guns. FTMC Base Regulation 350-2 states .22 to .45-caliber pistols, 9-mm pistols, .22-caliber rifles, and .12-gauge shotguns were fired at Range 12. Interviews conducted by ESE with long-term FTMC employees for the EBS indicate that an area around Range 12 and Range 13 was used as a machine gun range in the 1960s. A map, dated 1966, confirms the interview reports identifying a range in the vicinity of Range 12 and Range 13 as a "Machine gun range, 30 m, Basic."

***Range 13, Parcel 71Q and AST at Range 13, Parcel 176(7).*** As described in the EBS, Range 13, the Qualification Pistol Range, was constructed in 1951 and was in operation until October 1998. This range was most recently used by U.S. Marine Corps personnel stationed at FTMC for small arms training. Historically, weapons fired at the range consisted of 9-mm pistol and unidentified machine guns. FTMC Base Regulation 350-2 states .22 to .45-caliber pistols, 9-mm pistols, .22-caliber rifles, and .12-gauge shotguns were fired at Range 13. Spent rifle cartridge casings have been found at Range 13, indicating some larger caliber rifle firing may have also occurred. There is some evidence that this area may have been used as a machine gun range in the 1960s. The ASR does not describe this range as an area where UXO should be a main concern and none has been found by Shaw personnel during site investigation activities.

***Duration of Planned Employee Activity.*** Employee activity duration is anticipated to be less than four weeks.

***Pathways for Hazardous Substance Dispersion.*** Possible pathways for hazardous substances dispersion from soils during the remedial effort is primarily cross contamination, surface runoff, and fugitive dust. Primary routes of exposure are inhalation and ingestion.

### *2.3 Personnel Decontamination*

Personnel decontamination shall be performed in compliance with Section 7.0 Decontamination, in the installation-wide SHP.

## 3.0 Personal Protective Equipment

The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, and Level C PPE is provided. Any change in PPE that may be required will require approval by the Shaw H&S manager and project manager.

| Task | Initial Level of PPE |
|---|---|
| Initial UXO avoidance sweep and equipment staging | Level D |
| Grid layout and XRF analysis | Level D* |
| Excavation of soil | Modified Level D** |
| Stabilization of soil | Modified Level D** |
| Confirmation sampling | Level D* |
| Site restoration | Level D |

**Initial level will be raised to Level C if real-time respirable dust monitoring levels exceed the action levels identified in Table 4-1. Engineering controls shall be utilized to the fullest extent prior to upgrade in respiratory protection. Engineering controls shall consist of wetting the work area with the water truck to maintain acceptable dust levels.

*Latex or Nitrile gloves shall be used to minimize dermal contact with soil during sampling activities.

***Level D.*** The minimal level of protection that will be required of Shaw personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).
- Latex or Nitrile gloves during sampling activities.

***Modified Level D.*** The following equipment will be used for Level D-Modified protection:

- Permeable Tyvek, Kleenguard, or its equivalent (Saran-coated tyvek for heavy equipment decontamination)

- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment)

Note: In addition to modified Level D PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the feet, shin guards and a face shield.

***Level C.*** Level C protection (or higher level) will not be used unless air-monitoring data indicate the need for upgrade; however, Level C equipment shall be readily available on site. The following equipment will be used for Level C protection:

- National Institute of Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, Survivair air-purifying respirators equipped with P-100 high-efficiency particulate air filter.
- Hooded, permeable Tyvek, taped at gloves, boots, and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the feet; shin guards, and a face shield may be used to minimize water spray to the respirator lens and cartridges.

## 4.0 Site Monitoring

The environmental contaminants of concern to construction workers performing remedial action as previously noted is lead in soil. The highest concentration identified within the remedial area of the EBC was at Range 12. Sample HR-70Q-SS01 indicated a total lead concentration of 10,600 mg/kg. This concentration was used to derive a conservative equivalent respirable dust concentration. The OSHA action level for lead is 30 $\mu g/m^3$ while the PEL is 50 $\mu g/m^3$. Using a safety factor of two, a total lead concentration of 10,600 mg/kg, and an action level of 30 $\mu g/m^3$, the respirable dust action level was calculated to be 1.42 $mg/m^3$.

Continuous air monitoring for respirable dust shall be performed by the site safety and health officer or qualified designee using a Data Ram PDR 1000. The monitoring will be required at the excavation site as well as the soil stabilization area. Since Portland cement will be utilized as the stabilization/fixation material respirable dust monitoring will be required during mixing operations. The OSHA PEL for Portland cement is 5 $mg/m^3$ respirable fraction, therefore the action level established for lead will provide a safety margin for employee protection to Portland cement while maintaining lead compliance below the lead action level. Material safety data sheets for lead and Portland cement are included as Attachment 3.

Table 4-1 indicates action levels and PPE criteria and Table 4-2 lists the initial air monitoring frequency and location for the Data Ram PDR 1000.

Engineering controls shall be immediately implemented if respirable dust levels reach the action level. If engineering controls do not reduce respirable dust levels then integrated personnel and work area air sampling for lead using approved OSHA or NIOSH methods shall be instituted. Employees shall also upgrade PPE to level C until integrated air samples confirm potential exposure below the OSHA action level.

***Unexploded Ordnance.*** If UXO, or any suspect CWM, is encountered, personnel will contact the site manager and UXO specialist immediately. All personnel will immediately evacuate the site and contact the Shaw health and safety manager.

# Table 4-1

## Action Levels
## Iron Mountain Road Ranges Soil Remediation
## Fort McClellan, Calhoun County, Alabama

When in Level C PPE

| Analyte | Action Level[a] | Required Action |
|---|---|---|
| Dust | > 2.84 mg/m$^3$ above background in BZ | Normal operations, initiate dust control to minimize migration. |

When in Level D Modified/D PPE

| Analyte | Action Level | Required Action[b] |
|---|---|---|
| Dust | $\geq$ 1.42 mg/m$^3$ above background in BZ | Stop work, Initiate dust control, upgrade to Level C PPE if dust control is not effective; Notify H&S Manager |

When in Support Zone

| Analyte | Action Level | Required Action |
|---|---|---|
| Dust | > 0.71 mg/m$^3$ above background in BZ | Stop work, Initiate dust control |

[a] Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

[b] Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls.

**No one is permitted to downgrade levels of PPE without authorization from the H&S manager.**

## Table 4-2

## Air Monitoring Frequency and Location
## Iron Mountain Road Ranges Soil Remediation
## Fort McClellan, Calhoun County, Alabama

| Work Activity | Instrument | Frequency | Location |
|---|---|---|---|
| Staging equipment, UXO avoidance sweeps, grid layout, and XRF sampling | Data Ram | Periodically | Breathing zone (BZ) of employees |
| Soil excavation and stabilization | Data Ram | Continuously | BZ of employees |
| Site restoration | Data Ram | Periodically | BZ of employees |

Data Ram = Aerosol, respirable (dust) monitor

# 5.0 Activity Hazard Analysis

The attached activity hazard analysis (Tables 5-1) is provided for the following activities:

- Lead contaminated soil sampling
- Surveying
- Excavation of contaminated materials
- Treatment of contaminated materials
- Backfilling and site restoration
- Equipment decontamination

All injuries and illnesses must be immediately reported to the site manager or the site safety and health officer, who will then notify off-site personnel and organizations as necessary in accordance with Shaw procedure *HS020, Accident Prevention Program: Reporting, Investigation and Review.*

If hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. A hospital route map is included in the installation-wide health and safety plan.

# Table 5-1

## Activity Hazard Analysis
## Lead Contaminated Soil Sampling



| Principal Steps | Potential Hazards | Recommended Controls |
|---|---|---|
| Sampling | Contact with lead | Wear a pair of chemical protection gloves. |
| | Back strain | Use care using shovel, lift loaded shovels with legs, not back. |
| | Inhalation hazard | Avoid creating dust, use water mist to control dust. |
| | Noise | If noise levels exceed 85 dBA wear hearing protection. |
| | Heavy lifting | Safe lifting procedures. Loads over 60 lbs. require assistance or mechanical lifting device. |
| | Slip, trip and fall hazards | Good housekeeping. |
| | Fire | A dry chemical fire extinguisher will be readily available. |
| | Radiological (XRF) | XRF operators shall have radiation general awareness training. XRF shall be used in accordance with manufactures safety and operational instructions. Required leak detection swipes shall have been performed. The instrument shall be stored and transported in the manufacturers case. |
| | UXO | If any suspect items are encountered, contact the UXO supervisor immediately. |
| **Equipment to be Used**<br>• Shovels<br>• Trowels<br>• XRF | **Inspection Requirements**<br>• Daily or before each use | **Training Requirements**<br>• Tailgate Safety Meeting<br>• Site-specific training<br>• Hazard waste operations<br>• Lead training<br>• MSDS file |

## Table 5-1

## Activity Hazard Analysis
## Surveying



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Surveying | Slips, trips, and falls | Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work areas for slip, trip, and fall hazards |
| | | When working on uneven surfaces, take care when stepping. Watch where you walk. |
| | Moving vehicles | The wearing of high visibility vests is required in areas where vehicle traffic may be encountered. |
| | | Flaggers and traffic control devices such as cones and barricades may be needed when working in traffic. |
| **Equipment to be Used**<br>• Survey Equipment<br>• PPE | **Inspection Requirements**<br>• None | **Training Requirements**<br>• Tailgate safety meeting<br>• Site specific orientation<br>• Hazard communications |

## Table 5-1

## Activity Hazard Analysis
## Excavation of Contaminated Materials



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Excavation | Underground utilities | All underground utilities will be located prior to excavating. |
| | Open excavations | Shaw Procedure HS307 - "Excavation and Trenching" will be adhered to at all times. |
| | UXO | Do not disturb suspect items. Contact the UXO supervisor immediately. |
| | Confined spaces | Shaw Procedure HS 300 - "Confined Spaces" will be adhered to at all times. |
| | Noise | Noise levels above 85 dBA mandates hearing protection. All personnel trained in hearing conservation. |
| | Heavy equipment operations | Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. |
| | | Equipment shall be inspected before being placed into service and at the beginning of each shift. |
| | | Preventive maintenance procedures recommended by the manufacturer shall be followed. |
| | | A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance. |
| | | Machinery and mechanized equipment shall be operated only by designated personnel. |
| | | Getting off or on any equipment while it is in motion is prohibited. |
| | | Machinery or equipment requiring an operator shall not be permitted to run unattended. |
| | | Machinery or equipment will not be operated in a manner that will endanger persons 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. |

## Table 5-1

## Activity Hazard Analysis
## Excavation of Contaminated Materials



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Excavation (continued) | Heavy equipment operation (continued) | All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons. |
| | | Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use. |
| | | All self-propelled construction equipment shall be equipped with a back-up alarm. |
| | Fire | Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1A5BC. |
| | Contact with potentially contaminated materials, pathogens or disease vectors | Real-time air monitoring will take place. Proper personal protective clothing and equipment will be utilized. |
| | | Good housekeeping will be stressed to safe guard against cross contamination of surrounding areas and eliminate safety hazards. |
| | | All site personnel will practice good personal hygiene. |
| | | The work area will be demarcated. All unnecessary personnel will be kept out of the work area and in an upwind location. |
| | | Refer to SHSP for chemical and environmental hazards (Sections 3.24 & 3.2.24, respectively). |
| | Lead involvement or exposure (hazard) | Personal air samples will be collected to determine an exposure assessment if respirable dust levels reach the established action level. |
| | | Engineering controls will be implemented. |
| | | Proper personal protective clothing and equipment will be utilized. |

## Table 5-1

## Activity Hazard Analysis
## Excavation of Contaminated Materials



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Excavation (continued) | Lead involvement or exposure (hazard) (continued) | Personal hygiene and good housekeeping practices will be followed |
| | | Work zones will be established and clearly marked. |
| | | Lead related training will be required. |
| | | Refer to the SSHP and Lead Compliance Plan for chemical hazard discussion |
| | Noise | Noise levels above 85 dBA mandates hearing protection. |
| | Slip, trip, and fall hazards | Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. |
| | Pinch points | Keep feet and hands clear of moving/suspended materials and equipment. |
| | | Beware of contact points. |
| | | Stay alert at all times! |
| | Strains and sprains | Use proper lifting techniques, lifts greater than 60 lbs. requires assistance or mechanical equipment; size up the lift. |
| Material hauling | Dump truck operations | Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use. |
| | | Dump trucks will have back-up alarms. |
| | | A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area. |
| | | Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle. |

## Table 5-1

## Activity Hazard Analysis
## Excavation of Contaminated Materials



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Material hauling | Dump truck operations (continued) | The load on every truck will be distributed, checked, tied down, or secured. |
| | | Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material. |
| | | All dump trucks will be equipped with a holding device to prevent accidental lowering of the body. |
| | | All hoist levers will be secured to prevent accidental starting or tripping of the mechanism. |
| | | Trip handles for tailgates will be arranged to keep the operator in the clear. |
| | | Dump truck drivers shall have completed Shaw safe driver training |
| **Equipment to be Used** | **Inspection Requirements** | **Training Requirements** |
| • Hand tools<br>• PPE<br>• Heavy equipment<br>• Dump trucks | • Pre-postmaintenance<br>• Visual prior to use. | • Tailgate Safety Meeting<br>• Site specific orientation<br>• Shaw safe driver training<br>• Hazardous waste operations<br>• Hazard communication<br>• Lead Compliance Plan |

## Table 5-1

## Activity Hazard Analysis
## Treatment of Contaminated Soils



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Placement and mixing of fixation materials | Noise | Noise levels above 85 dBA mandates hearing protection. |
| | Slip, trip, and fall hazards | Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. |
| | Pinch points | Keep feet and hands clear of moving/suspended materials and equipment. |
| | | Beware of contact points. Stay alert at all times! |
| | Dust | Utilize all necessary engineering controls to maintain respirable dust below action level. |
| | Fire | Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. |
| | Strains and sprains | Use proper lifting techniques, lifts greater than 60 lbs. require assistance or mechanical equipment. Size up the lift. |
| | Heavy equipment operations | Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. |
| | | Equipment shall be inspected before being placed into service and at the beginning of each shift. |
| | | Preventive maintenance procedures recommended by the manufacturer shall be followed. |
| | | All lockout-tagout procedure shall be used for equipment found to be faulty or undergoing maintenance. |
| | | Machinery and mechanized equipment shall be operated only by designated personnel. |
| | | Getting off or on any equipment while it is in motion is prohibited. |

## Table 5-1

## Activity Hazard Analysis
## Treatment of Contaminated Soils



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Placement and mixing of fixation materials (continued) | Heavy equipment operations (continued) | Machinery or equipment requiring an operator shall not be permitted to run unattended. |
| | | Machinery or equipment will not be operated in a manner that will endanger persons 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 at a location which provides protection from traffic for repair persons. |
| | | Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use. |
| | Knife cuts | Cutting strokes will always be away from the body. |
| | | Leather gloves will be worn when cutting. |
| | | Place knife in sheath on holder when not in use. |
| | | Unused knives will never be left with cutting edges exposed. |
| | | Never use a knife that is defective or has a broken blade or handle. |
| | | Never use a knife as a prybar or screwdriver. |
| | | Don't use a dull blade; replace or have sharpened prior to use. |
| | Pinch points | Keep feet and hands clear of moving/suspended materials and equipment. |
| | | Stay alert at all times! |
| | Flying debris | Wear safety glasses at all times. |

## Table 5-1

## Activity Hazard Analysis
## Treatment of Contaminated Soils



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Placement and mixing of fixation materials (continued) | Fire | A dry chemical fire extinguisher with a minimum UL rating of 1A5BC will be readily available. |
| | | No smoking or open flames within 50 ft. of the work area. (Work area will be posted) |
| | | Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. |
| | | All hoses, couplings, fixtures, etc. shall be properly bonded and grounded. |
| | | Shaw HS314 "Hot Work in Hazardous Locations" Policy and Procedure shall be adhered to at all times. |
| | Fueling | Only UL/FM approved safety cans shall be used to store fuel. |
| | | Do not refuel equipment while it is operating. |
| | | Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. |
| | Faulty or damaged equipment | Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. |
| | | Equipment shall be inspected before being placed into service and at the beginning of each shift. |
| | Dump truck operations | Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use. |
| | | Dump trucks will have back-up alarms. |

## Table 5-1

## Activity Hazard Analysis
## Treatment of Contaminated Soils



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Placement and mixing of fixation materials (continued) | Dump truck operations (continued) | A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area. |
| | | Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle. |
| Material hauling | Dump truck operations | The load on every truck will be distributed, checked, tied down, or secured. |
| | | Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material. |
| | | All dump trucks will be equipped with a holding device to prevent accidental lowering of the body. |
| | | All hoist levers will be secured to prevent accidental starting or tripping of the mechanism. |
| | | Trip handles for tailgates will be arranged to keep the operator in the clear. |
| | Mixing operations | Machinery or equipment requiring an operator shall not be permitted to run unattended. |
| | | Machinery or equipment will not be operated in a manner that will endanger persons 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 at a location which provides protection from traffic for repair persons. |

## Table 5-1

## Activity Hazard Analysis
## Treatment of Contaminated Soils



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Material hauling (continued) | Mixing operations (continued) | Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use. |
| | | Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. |
| | | Equipment shall be inspected before being placed into service and at the beginning of each shift. |
| | | Preventive maintenance procedures recommended by the manufacturer shall be followed. |
| | | All lockout-tagout procedure shall be used for equipment found to be faulty or undergoing maintenance. |
| | | Machinery and mechanized equipment shall be operated only by designated personnel. |
| | | Getting off or on any equipment while it is in motion is prohibited. |
| | Contact with potentially contaminated material | Workers will wear proper protective clothing and equipment. |
| | | All personnel will follow good hygiene practices. |
| | | Dust suppression methods will be installed to prevent generation of airborne dust. |
| **Equipment to be Used**<br>• Heavy equipment<br>• PPE<br>• Dump trucks<br>• Air monitors<br>• Hand tools | **Inspection Requirements**<br>• Pre-postmaintenance<br>• Visual prior to use | **Training Requirements**<br>• Tailgate Safety Meeting<br>• Site specific orientation<br>• Lead Compliance Plan<br>• Hazardous waste operations<br>• Hazard communication |

## Table 5-1

## Activity Hazard Analysis
## Backfilling and Site Restoration



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Backfilling and site restoration | Heavy equipment operations | Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. |
| | Areas on or adjacent to contaminated material | Implement appropriate level of protection. |
| | | Equipment shall be inspected before being placed into service and at the beginning of each shift. |
| | | Preventive maintenance procedures recommended by the manufacturer shall be followed. |
| | | A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance. |
| | | Machinery and mechanized equipment shall be operated only by designated personnel. |
| | | Getting off or on any equipment while it is in motion is prohibited. |
| | | Machinery or equipment requiring an operator shall not be permitted to run unattended. |
| | | Machinery or equipment will not be operated in a manner that will endanger persons 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 at a location which provides protection from traffic for repair persons. |

## Table 5-1

## Activity Hazard Analysis
## Backfilling and Site Restoration



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Backfilling and site restoration (continued) | Areas on or adjacent to contaminated material (continued) | Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use. |
| | | All self-propelled construction equipment shall be equipped with a back-up alarm. |
| | Fire | Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1 A5BC. |
| | Open excavations | Shaw Procedure HS307 "Excavation and Trenching" will be adhered to at all times. |
| | | Excavations will be backfilled as soon as possible. |
| | Dump truck operations | Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use. |
| | | Dump trucks will have back-up alarms. |
| | | A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area. |
| | | Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle. |
| | | The load on every truck will be distributed, checked, tied down, or secured. |
| | | Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material. |
| | | All dump trucks will be equipped with a holding device to prevent accidental lowering of the body. |
| | | All hoist levers will be secured to prevent accidental starting or tripping of the mechanism. |

## Table 5-1

## Activity Hazard Analysis
## Backfilling and Site Restoration



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Backfilling and site restoration (continued) | Dump truck operations (continued) | Trip handles for tailgates will be arranged to keep the operator in the clear. |
| | Contact with moving equipment | Ground personnel shall wear reflective vests. |
| | Noise | Noise levels above 85 dBA mandates the use of hearing protection. |
| Backfill with existing clear materials or borrow material | Confined space hazards and trenching | Excavation and trenching will comply with 29 CFR 1926, USACE (Subpart P and Section 06.I and 25A) |
| Final grading | Contaminated borrow material | Check historical and analytical data on borrow material |
| | Noise hazards | Administer hearing protection |
| | Heavy equipment, travel | Use qualified operators |
| | Mechanical moving parts, pinch, paint, etc. | Have all guarding in place |
| | | Use lockout/tagout for maintenance |
| | | Assure all emergency stop switches are working |
| **Equipment to be Used** | **Inspection Requirements** | **Training Requirements** |
| • Hand tools<br>• PPE<br>• Heavy equipment | • Pre-postmaintenance<br>• Visual prior to use | • Tailgate Safety Meeting<br>• Site specific orientation<br>• Hazardous waste operations<br>• Hazard communication |

## Table 5-1

## Activity hazard Analysis
## Decontamination of Equipment



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Job setup for decontamination of equipment | Heavy lifting | Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible. |
| | Slip, trip, and fall hazards | Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards. |
| | Cut hazards | Wear adequate hand protection. |
| | Lighting | Adequate lighting will be provided to ensure a safe working environment. |
| | Strains/sprains | When pulling or lifting, do not turn or twist your back. |
| | | Use the proper tool for the task being performed. |
| | Contact with potentially contaminated materials | Appropriate PPE protection will be required. |
| | | Real time air monitoring will take place during decontamination activities. |
| | | Keep airborne particulates to a minimum. |
| | | Practice good housekeeping, avoid spreading potentially contaminated materials. |
| | Fueling | Only UL/FM approved safety cans shall be used to store fuel. |
| | | Do not refuel equipment while it is operating. |
| | | Fire extinguishers rated at a minimum of 20BC shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. |
| | Faulty or damaged equipment | Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. |

## Table 5-1

## Activity hazard Analysis
## Decontamination of Equipment



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Job setup for decontamination of equipment (continued) | Faulty or damaged equipment (continued) | Equipment shall be inspected before being placed into service and at the beginning of each shift. |
| | | Preventive maintenance procedures recommended by the manufacturer shall be followed. |
| | | A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance. |
| Pressure washing equipment | High pressures | Shaw Procedure HS303 "Pressured water cleaning and cutting equipment" shall be adhered to at all times. |
| | | The operator shall be thoroughly instructed in handling and operating the gun, nozzle and controls prior to operating the unit. |
| | | Deadman controls shall not be lashed down or rendered inoperative. |
| | | Full Face protection shall be used at all times. This will include safety glasses/goggles and a face shield or a full face respirator. |
| | | The operator shall wear metatarsal covers (guards) at all times |
| | | At no time shall the pressure washer be used to wash/decon personnel. |
| | Unqualified operators | Machinery and mechanized equipment shall be operated only by designated personnel. |
| | Out of control equipment | Machinery or equipment requiring an operator shall not be permitted to run unattended. |
| | | Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded. |
| | Noise | Sound levels above 85 dBA mandates hearing protection. |

## Table 5-1

## Activity hazard Analysis
## Decontamination of Equipment



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Pressure washing equipment | Activation during repairs | All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done. |
| | Pinch points | Keep feet and hands clear of moving/suspended materials and equipment. |
| | | Stay alert at all times! |
| | Falling objects | Hardhats, remove unsecured tools and materials before operating equipment. |
| | Falling objects | Stay alert and clear of materials suspended overhead. |
| | Flying debris | Splash shield will be used. |
| | Contact with potentially contaminated materials | Appropriate PPE will be required. |
| | Hot work (hot water/steam cleaning) | Shaw Procedure HS314 "Hot Work in Hazardous Locations" will be adhered to at all times during any operations involving hot work. |
| Stage-setup equipment for pumping liquids | Pinch points | Keep hands, fingers, and feet clear of moving parts. |
| | Heavy lifting | Any lifting over 60 lbs requires assistance or the use of a mechanical lifting device. |
| | Moving equipment | Signal person will assist in positioning equipment. |
| | Contact with potentially contaminated materials | Real time air monitoring will take place. Appropriate PPE protection will be required. |
| | Faulty equipment | Equipment will be inspected prior to being placed into service and at the beginning of each shift. |
| | Pressurized systems | All discharge hoses and connections shall be routinely inspected. |
| | Noise | Sound levels above 85 dBA mandates hearing protection. |

## Table 5-1

## Activity hazard Analysis
## Decontamination of Equipment



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Pumping liquids | Fire | A dry chemical fire extinguisher with a minimum UL rating of 1A5BC will be readily available. |
| | Refueling | Proper bonding and grounding. Only UL/FM approved safety cans will be used. |
| | Noise | Noise levels above 85 dBA mandates hearing protection. |
| | Heavy equipment operations | Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. |
| | | Equipment shall be inspected before being placed into service and at the beginning of each shift. |
| | | Preventive maintenance procedures recommended by the manufacturer shall be followed. |
| | | A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance. |
| Loadout of equipment | | Machinery and mechanized equipment shall be operated only by designated personnel. |
| | | Getting on or off any equipment while it is in motion is prohibited. |
| | | Machinery or equipment requiring an operator shall not be permitted to run unattended. |
| | | Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded. |

## Table 5-1

## Activity hazard Analysis
## Decontamination of Equipment



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Loadout of equipment (continued) | Heavy equipment operations (continued) | All machinery or equipment will be shutdown 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 at a location which provides protection from traffic for repair persons. |
| | | All self-propelled construction equipment shall be equipped with a back-up alarm. |
| | Fire | Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 1A5BC. |
| | Truck and equipment traffic | Site personnel will wear orange safety vests to identify themselves to traffic. |
| | | Load out area will be properly demarcated. Ground personnel to make eye contact with equipment/vehicle operators prior to traffic zone entry. Ground personnel will avoid blind spots directly in front of and directly behind equipment/vehicles. |
| | Slip, trip, and fall hazards | Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. Look where you step, ensure safe footing when climbing on/off equipment etc. |
| | Pinch points | Keep feet and hands clear of moving/suspended materials and equipment. |
| | | Beware of contact points. Stay alert at all times! |
| | Strains/sprains | Use proper lifting techniques. Lifts greater than 60 lbs require assistance or mechanical equipment. Size-up the lift. When pulling on materials, pull in a straight line. Do not twist and pull simultaneously. |

## Table 5-1

## Activity hazard Analysis
## Decontamination of Equipment



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Loadout of equipment (continued) | Ropes, slings, chains, and hooks | The use of ropes, slings, and chains shall be in accordance with the safe recommendations of their manufacturer. |
| | | Rigging equipment shall not be loaded in excess of its recommended safe working load. |
| | | The use of open hooks is prohibited in rigging to lift any load where there is danger of relieving the tension on the hook due to the load or hook catching or fouling. |
| | | Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that have been bent, twisted, or otherwise damaged shall be removed from service. |
| | | Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to insure that it is safe. Defective rigging equipment shall be removed from service. |
| | | Rigging equipment, when not is use, shall be removed from the immediate work area and properly stored so as not to present a hazard. |
| | | Taglines shall be used to control the loads being handled by hoisting equipment. |
| | Hoisting equipment | All hoisting equipment shall be capable of passing a performance (operating) test prior to being placed into service. |
| | | At no time shall the hoisting equipment be loaded in excess of the manufacturers rating except during performance tests. |
| | | While hoisting equipment is in operation, the operator shall not perform any other work and he/she shall not leave his/her position at the controls until the load has been safely landed or returned to the ground. |

## Table 5-1

## Activity hazard Analysis
## Decontamination of Equipment



| Activity | Potential Hazards | Recommended Controls |
|---|---|---|
| Loadout of equipment (continued) | Hoisting equipment (continued) | A standard signal system shall be used on all hoisting equipment. |
| | Heat | Be aware of warning signs of these conditions |
| | Insects, spiders, and snakes | Inspect work area carefully and avoid placing hands and feet into concealed areas. |
| | Cut hazards | Wear adequate hand protection. |
| | Falling objects | Hardhat, stay alert and clear of materials suspended overhead, steel-toed boots. |
| **Equipment to be Used** | **Inspection Requirements** | **Training Requirements** |
| • Hand tools<br>• PPE<br>• Heavy equipment<br>• Pressure Washer | • Pre-postmaintenance<br>• Visual prior to use | • Tailgate Safety Meeting<br>• Site specific orientation<br>• Hazardous waste operations<br>• Hazard communication<br>• Pressure washer training |

# ATTACHMENT 1

# LEAD COMPLIANCE PLAN

# Lead Compliance Plan
# Iron Mountain Road Ranges Soil Remediation on ALDOT EBC Property

**Prepared for:**

**U.S. Department of the Army**
**Mobile District, Corps of Engineers,**
**109 St. Joseph Street**
**Mobile, Alabama 36602**

**Prepared by:**

**Shaw Environmental, Inc.**
**312 Directors Drive**
**Knoxville, Tennessee 37923**

**Contract Number DACA21-96-D-0018**
**Task Order CK11**
**Shaw Project No. 800486**

**August 2004**

**Revision 0**

## *Acknowledgements*

The approved version of this installation-wide safety and health plan amendment related to control of potential lead exposure from remediation activities at the Iron Mountain Road Ranges, Fort McClellan, Alabama has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this amendment. I will formally review this plan with the health and safety staff every 6 months until project completion.

_____ _____

Jeanne Yacoub, Shaw Project Manager Date

I acknowledge receipt of this amendment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and the health and safety manager.

_____ _____

Jeff Tar, Shaw Site Manager Date

# Safety and Health Plan
# Acknowledgement Form

I have been informed of, and will abide by the procedures set forth in this lead compliance plan related to control of potential lead exposure at the Iron Mountain Road Ranges, Fort McClellan, Alabama. By signing this acknowledgement form, I certify receipt of hazard communication training required for safe execution of my tasks and acknowledge review and understanding to the requirements of this site-specific safety and health plan.

| Name Printed | Date | Signature | Representing |
|---|---|---|---|

## *Reviews and Approvals*

I have read and approve this lead compliance plan for the Iron Mountain Road Ranges, Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and Shaw E&I, Inc. policies and procedures.

Jeanne Yacoub, Project Manager
Shaw Environmental, Inc.

Date

Doug Russell, Health and Safety Manager
Shaw Environmental, Inc.

8-18-04
Date

Melissa Smith
Shaw Program CIH

8-18-04
Date

Jeff Tar, Site Manager
Shaw Environmental, Inc.

Date

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# 1.0 Purpose

This Lead Compliance Plan (LCP), in conjunction with the Site-Specific Safety and Health Plan (SSHP), is intended to ensure that safe working conditions exist during certain lead related activities. The LCP describes the requirements and procedures to be used while performing specific activities and includes:

- Responsibilities of persons on site
- Training Program
- Medical Surveillance Program
- Hazard Analysis/Assessment
- Hazard Control Measures
- Personnel Protection Program
- Decontamination Procedures
- Industrial Hygiene Monitoring Program.

The LCP will, in conjunction with the SSHP, provide all the necessary procedures and guidelines for safe work and will comply with the occupational safety and health standards for lead in 29 Code of Federal Regulations (CFR) 1926.62 and in EM 385-1-1 06.B.05.

This LCP covers the construction activities associated with the investigation, testing, removal or encapsulation of materials or soil containing, or believed to contain, inorganic lead ("lead") which have the potential to expose personnel to lead at or above the action level of 0.030 milligrams per cubic meter of air ($mg/m^3$) or elevate an individual's blood lead level above 30 micrograms per deciliter of blood (µg/dL). Lead is primarily present in contaminated soils found at the Iron Mountain Road Ranges. The lead is generally in the form of bullet residue from former operations that under gross observation is indistinguishable from surrounding soil.

The scope of this LCP is consistent with that detailed in 29 CFR 1926.62. Organic lead compounds such as tetraethyl lead and tetramethyl lead are excluded. Implementation of this LCP is required when the exposure action level (0.030 $mg/m^3$) is, or may be, reached **or** employee blood lead levels exceed 30 µg/dL. The regulatory limit for airborne concentration of inorganic lead is 0.05 $mg/m^3$ and the acceptable concentration of lead in blood is 40 µg/dL or less. However, it is recommended in 29 CFR 1926.62 that blood lead levels not exceed 30 µg/dL in those workers (both male and female) who intend to have children to minimize adverse reproductive health effects to the parents and developing fetus.

# 2.0 References

This LCP, when accompanied by the Installation-wide Safety and Health Plan and the SSHP, complies with applicable Federal Occupational Safety and Health Administration (OSHA), United States Environmental Protection Agency (USEPA) regulations. This LCP follows the guidelines established in the following documents:

- ***Standard Operating Safety Guides*** (USEPA July 1986);
- ***Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*** (National Institute for Occupational Safety and Health [NIOSH] 86-116);
- Title 29 of the Code of Federal Regulations, Part 1926 (29 CFR 1926) (OSHA Occupational Safety and Health Standards - Construction Industry).
- United States Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, most current edition.

The contents of this LCP, when accompanied by the Installation-wide Safety and Health Plan and the Project SSHP, are consistent with, or supplement, all of the appropriate Shaw E&I (Shaw) corporate Health and Safety Policies and Procedures.

# 3.0 Definitions

***Metallic lead:*** All inorganic lead compounds and organic lead soaps. Organic lead compounds are excluded from this definition.

***Permissible Exposure Limit (PEL):*** 50 micrograms/cubic meter calculated as an 8 hour time weighted average.

***Action Level:*** 30 micrograms/cubic meter calculated as an 8 hour time weighted average.

***Competent Person:*** An individual who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

***Compliance Program:*** A written program identifying various practices, activities, technologies and schedules that will be utilized to achieve compliance with the OSHA PEL and Action Level.

# 4.0 General

All persons on site are responsible for continuous adherence to safety and health procedures during the performance of any work. In no case may work be performed in a manner which conflicts with the intent of, or the inherent safety precautions expressed in, this LCP. After due warning, persons who violate any procedure may be dismissed from the site, terminated, or have their contract revoked. Blatant disregard or repeated infractions of safety and health policies are grounds for immediate dismissal or removal from the site. Safety and health responsibilities for those responsible or governed by this LCP are detailed in the following sections.

All Shaw and contractor personnel governed by this LCP are required to participate in a review of and acknowledge their understanding of this LCP, the Installation-wide Health and Safety Plan and the appropriate SSHP.

Persons on site are required to immediately report any of the following to their Supervisor and/or the Site Superintendent/Project Manager:

- Accidents and injuries, no matter how minor
- Unexpected or uncontrolled release of lead contaminated materials or other chemical substances
- Any signs or symptoms of chemical or physical trauma
- Any unsafe or malfunctioning equipment
- Any changes to site conditions or working procedures which may affect the safety and health of project personnel
- Any deviation of required work practices which may contribute to lead exposure.

# 5.0 Training Program

## 5.1 General Requirements

All applicable training requirements identified in the SSHP will be met. Additional requirements, established in 29 CFR 1926.62, as outlined below, will be met.

Subcontractors performing activities covered by this LCP must provide verification of all required training before work may begin.

## 5.2 Lead Training Requirements

A pre-project meeting will be held prior to work beginning in any area covered by this LCP. Those required to attend include: Project Management and work crew (including subcontractor employees) and project SSHO.

The pre-project meeting will review, at a minimum, the following:

- The contents of this LCP and the SSHP
- The contents of 29 CFR 1926.62 including the written compliance program specified in 29 CFR 1926.62 (e)(2)
- The specific nature of the operations which could result in exposure to lead above the action level (i.e., project work plan)
- Hazards associated with exposure to lead
- The purpose, proper selection, fitting, use, and limitations of respirators
- Methods of controlling exposure to lead: including work area controls, personal protective equipment, decontamination and hygiene procedures, and safe work practices
- Purpose and description of the LCP Medical Surveillance Program, medical removal protection program and medical treatment available as described in 29 CFR 1926.62
- Purpose and description of the LCP industrial hygiene monitoring program
- Instructions to project personnel that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician

- Employee's rights as described in 29 CFR 1926.59 and 29 CFR 1910.1020.

### *5.3 Access to Information and Training Materials*

A copy of the 29 CFR 1926.62 standard and its appendices will be made readily available to all affected employees. Documentation of all training conducted in compliance with this LCP will be kept in a central file at Shaw's project management office and in the SSHO's site office. Access to these records will be made available upon request.

# 6.0 Medical Surveillance Program

## 6.1 General Program

The applicable medical examinations identified in the SSHP will be provided to all project personnel covered by this LCP. Contractors must provide documentation to the SSHO that these exams have been successfully completed by all crew members assigned to work areas governed by this LCP before work may begin.

## 6.2 Lead Program

A LCP Medical Surveillance Program shall be established, in compliance with 29 CFR 1926.62, for persons potentially occupationally exposed to lead during work activities according to the following guidelines:

### Biological Monitoring

- Persons supporting work activities identified as having lead exposure potential
- Persons identified by the CIH to be in a "lead sensitive" job category
- Persons occupationally exposed any day at or above the action level for lead ($0.030\ mg/m^3$).

### Lead Specific Medical Exam

- Persons identified to be in a "lead sensitive" job category
- Persons occupationally exposed at or above the action level for lead ($0.030\ mg/m^3$)
- Persons for whom biological monitoring has indicated lead or zinc protoporphyrin levels beyond established acceptable levels
- Persons showing signs or symptoms associated with lead intoxication
- Persons in work areas covered by this LCP requesting medical advice concerning the effects of current or past lead exposures
- Persons in work areas covered by this LCP, with a confirmed pregnancy
- Persons in work areas covered by this LCP demonstrating difficulty breathing during use of respiratory protective equipment.

This LCP Medical Surveillance Program shall be provided to employees by Shaw. Where this LCP Medical Surveillance Program and the Medical Program required by 29 CFR 1926.65, 1910.120, are duplicated, efforts shall be made to utilize available medical information. Where the programs differ, the most conservative program requirements, in terms of the patient, shall be met. A list of current program participants will be maintained by the health and safety manager and the SSHO.

Subcontractors must provide documentation that their employees participate in a Medical Surveillance Program for Lead which meets or exceeds the Shaw Program described in this LCP.

### *6.2.1 Lead Program Exam Content*

***Biological Monitoring.*** The biological monitoring aspect of the LCP Medical Surveillance Program will consist of blood sampling and analysis for lead and zinc protoporphyrin (ZPP) levels.

***Lead Specific Medical Exam.*** The Lead Specific Medical Exam aspect of the LCP Medical Surveillance Program will be managed by Health Resources and is consistent with applicable regulations. At a minimum, the exam contains the following:

- A detailed work history and a medical history, with particular attention to past lead exposure (occupational and non-occupational), personal habits (smoking, hygiene, etc) and past gastrointestinal, hematologic, renal, cardiovascular, reproductive and neurological concerns
- A thorough physical examination, with particular attention to teeth, gums, hematologic, gastrointestinal, renal, cardiovascular, and neurological systems
- Blood pressure measurement
- Blood sample and analysis to determine:
  - Blood lead levels
  - Hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology
  - Zinc protoporphyrin

- Blood urea nitrogen
- Serum creatinine.

- A routine urinalysis with microscopic examination
- Any laboratory or other test relevant to lead exposure which the examining physician deems necessary by sound medical practice
- A pregnancy test, if appropriate.

The following information will be provided to the examining physician by the CIH:

- A copy of 29 CFR 1926.62
- A description of the person's anticipated or actual job duties as they relate to the potential exposure
- Anticipated and/or actual exposure levels to lead and any other toxic substances (as appropriate)
- A description of personal protective equipment to be used
- Occupation history, if available.

### *6.2.2 Lead Program Exam Frequency*

Biological monitoring will be performed every 2 months for the first 6 months, and every 6 months thereafter, while the activity which required the monitoring is being performed. Should the activity requiring the monitoring not last over a two month period, an initial exam and an exam at the end of the activity will be conducted for those who do not perform lead abatement activities on a regular basis. All employees that test at 30 μg of lead/100 grams of blood or higher will submit to a monthly test until the level decreases.

The Lead Specific Medical Exam shall be performed at least annually for those employees having the potential to be exposed or who had exposure. The exam will also be made available as medically appropriate to persons who have either been removed from exposure to lead due to a risk of sustaining material impairment to health, or otherwise been limited pursuant to a final medical determination.

### 6.2.3 Exit Exam

If a Shaw or subcontractor employee covered by this LCP transfers to a non-lead area, terminates, or completes the contracted project within six months of the due date of the physical , an exit exam will be given in accordance with Shaw Procedures HS100 and this LCP. It is the responsibility of the PM and/or the employee's immediate supervisor to notify the CIH within a reasonable time period (one week) prior to transfer, termination, or completion of contracted work to allow for the necessary arrangements. Employees refusing an exit exam will be sent a certified letter stating the exam is available at time of end of service to the project.

### 6.2.4 Chelation

In accordance with 29 CFR 1926.62, Shaw shall assure that affected project personnel do not engage in prophylactic chelation at any time. If therapeutic or diagnostic chelation is required as a result of workplace exposure to lead, Shaw shall assure that it be done under the supervision of a licensed physician, in a clinical setting, with thorough and appropriate medical monitoring, and that the person is notified in writing prior to its occurrence.

### 6.4 Notification of Results

Shaw will obtain a written medical opinion from Health Resources, in the form of a Medical Summary Report (MSR) which contains the following information:

- The physician's opinion as to whether the employee has any detected medical condition which would place the employee at increased risk of material impairment of the employee's health from exposure to lead
- Any recommended special protective measures to be provided to the employee, or limitations to be placed upon the employee's exposure to lead
- Any recommended limitation upon the employee's use of respirators, including determination of whether the employee can wear a powered air purifying respirator (PAPR) if a physician determines that the employee cannot wear a negative pressure respirator
- The results of the blood lead and other biological exam determinations.

A representative of the H&S Department will communicate medical results and any restrictions/recommendations through the Medical Summary Report per Shaw Procedure HS100. It is the responsibility of Health Resources to communicate, in writing, all medical findings, determinations, and opinions relating to an employee's potential or real exposure to the health and safety manager in a timely manner so that any necessary arrangements to mitigate the

exposure, establish an air monitoring program and observe work restrictions established by the physician can be made.

## 6.5 Interpretation of Results

### 6.5.1 Multiple Physician Review

Because Shaw has selected the physician to conduct the examinations for the LCP, persons participating in the program may designate a second physician:

- To review any findings, determinations or recommendations of the initial physician
- To conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate the review.

The participant has a right to this second physician review after each occasion that the Shaw selected physician conducts a medical examination or consultation related to this LCP. This second opinion will be provided at no cost to the participant. The participant will be provided a written reminder of this right at the time the appointment is kept (Figure 2). However, the participant must do the following within 15 days after the receipt of the Shaw selected physician's written opinion in order to qualify for the second opinion:

- Inform the health and safety manager, in writing, that they intend to seek a second medical opinion
- Initiate steps to make an appointment with the physician of their choice.

### 6.5.2 Medical Removal

Any employee with an elevated blood lead (at or above 30 µg/dL) will be removed from any potential or real exposure to lead and additional medical evaluations performed. Any employee whose medical evaluation results in a medical finding, determination, or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead shall be temporarily removed from any potential or real exposure to lead. Persons with elevated blood lead levels will not be required to enter the exclusion zones.

Shaw will provide a Shaw Associate up to 18 months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead or otherwise limited pursuant to this LCP. This means that, as long as the job the employee was removed from continues, the

employee shall retain the total normal earnings, seniority and other employment rights and benefits of a Shaw Associate. This includes the employee's right to their former job status as though the employee had not been medically removed or otherwise medically limited.

### 6.5.3 Medical Restrictions

Where a medical determination results in any recommended special protective measures for the employee, or limitations on the employee's exposure to lead, Shaw shall implement and act consistent with the recommendation. The employee's supervisor, as well as appropriate members of project management will be informed of any medical restrictions so that compliance with those restrictions may be assured.

### 6.5.4 Return to Former Job Status

The employee who has been medically removed from activities which may have resulted in lead exposure may be returned to former job status when:

- Two consecutive blood sampling events indicate that the employee's blood lead level is at or below 30 μg/dL
- A subsequent medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

Any limitations placed on an employee or any special protective measures provided will be removed upon receipt of a medical determination result which indicates that those limitations or measures are no longer needed. The employee must provide appropriate documentation of medical clearance to the health and safety manager and SSHO and cannot return to work activities covered by this LCP until a Return to Work Authorization has been completed by the Shaw physician. A copy of the authorization form is in Shaw procedures.

## 6.6 Recordkeeping

Medical records will be maintained in accordance with Shaw Procedures HS102 and 104 and 29 CFR 1926.62 section (n).

## 6.7 Qualifying Activities and Job Titles

### 6.7.1 Activities

Activities which are covered by this LCP and qualify for participation in the LCP Medical Surveillance Program include:

- Hazardous waste operations in the LCP Work Areas
- Handling of materials from the LCP Work Areas
- Engineering activities involving lead containing materials/waste
- Construction activities involving lead containing materials/waste
- Sampling activities which list lead or lead compounds as a constituent
- Other activities which involve the potential contact with lead containing materials/waste.

### 6.7.2 Job Titles/Groups

Persons potentially exposed to contaminated soil or other potentially contaminated material shall be included in the LCP Medical Surveillance Program.

# 7.0 Lead Exposure Potential, Routes of Entry and Assessment

## 7.1 Exposure Potential and Routes of Entry

### 7.1.1 Exposure Potential

Selected work activities will, as previously described in SSHP, may require contact with soil, dust, and potentially other substances that may be contaminated with lead, or lead containing materials. The anticipated primary route of exposure will be inhalation and possible skin contact with contaminated materials.

#### 7.1.1.1 Chemical Identification

- Chemical formula for Lead is Pb.
- Appearance of Pb: heavy, soft gray ductile solid.
- Current OSHA Permissible Exposure Limit (PEL) for lead is 0.05 $mg/m^3$.
- The action level for inorganic lead in air is 0.030 $mg/m^3$.

Pure lead is a metal at room temperature and pressure and is a basic chemical element. It can combine with other substances to form other lead compounds, such as tetraethyl lead (TEL) or tetramethyl lead (TML).

#### 7.1.1.2 Health Risk Information

Lead is very toxic to the body, especially the nervous system. Health effects from lead exposure include nervousness, sleep disturbances, learning disabilities, and behavior abnormalities. Research indicates that adverse health effects from exposure to lead can occur at levels lower than previously recognized. Lead is especially toxic to children because their nervous system is more vulnerable.

### 7.1.2 Routes of Exposure

All forms of lead can be absorbed into the body by inhalation (breathing) and ingestion (eating). Inorganic lead is not absorbed through the skin such as TEL, which is readily absorbed through the skin. When lead is scattered in the air as a dust, fume, or mist, it can be inhaled and absorbed through the lungs and upper respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. Lead can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. It may readily enter the body through

the skin. Lead is also absorbed through the digestive system if swallowed. If you handle food, cigarettes, chewing tobacco, or make-up with hands contaminated with lead, it will contribute to an exposure through ingestion.

A significant portion of the lead that is inhaled or ingested can get into the blood stream. Once in the blood stream, lead is circulated throughout the body and stored in various organs and body tissues. Some of this lead is quickly filtered and excreted, but some remains in the blood and other tissues. As exposure to lead continues, the amount stored in the body will increase if the body is absorbing more lead than excreting. Even though there is no awareness of immediate symptoms of disease, the lead stored in the body tissue can be slowly causing irreversible damage.

#### *7.1.2.1 Short-Term (Acute) Overexposure*

Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma and death from cardio-respiratory arrest. Short term occupational exposures of this magnitude are highly unusual, but not impossible. Similar forms of encephalopathy may arise from extended chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead and chronic effects which take longer to acquire.

#### *7.1.2.2 Long-Term (Chronic) Overexposure*

Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain. Damage to the central nervous system in general and the brain (encephalopathy) in particular are among the most severe forms of lead poisoning.

The absorption by humans of a sufficient quantity of tetraethyl lead either briefly at a high rate or for prolonged periods at a lower rate may cause intoxication. The onset of symptoms may be delayed for up to eight days after termination of exposure. The milder toxic effects are difficulty in sleeping, tiredness, wild dreams, anxiety, trembling, spasms, slow heart beat, low body temperature, paleness, nausea and loss of appetite. More severe intoxication causes episodes of disorientation, hallucinations, grimacing, and intense activity which requires that the person be

restrained. These episodes may convert into manic or violent convulsive seizures which may end in unconsciousness or death. Organic lead may cause irritation of the eyes.

Chronic overexposure to lead also results in kidney damage with few, if any, symptoms appearing until permanent damage has occurred.

Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. Lead exposure may result in decreased fertility and abnormal menstrual cycles in women. Lead is also toxic to the developing fetus and can result in birth defects, mental retardation and behavioral disorders.

Personnel shall inform their supervisor and SSHO of any non-visual effects of toxic exposure such as:

- Headache, dizziness, blurred vision, insomnia, numbness
- Nausea, cramps, muscle or joint pain
- Metallic taste, loss of appetite
- Irritation of the eyes, skin or respiratory tract.

#### *7.1.2.3 Health Protection*

The measurement of the body's blood lead level is the most useful indicator of the amount of lead being absorbed by an individual. The best way to prevent all forms of lead-related impairments and diseases - both short and long term - is to maintain the blood lead level below 30 μg/dl. The provisions of the OSHA lead standard and Shaw's LCP are designed with this end in mind. Medical surveillance, respiratory protection guidelines, work practices, and hygiene standards are all part of the design to control exposure to lead to a safe level. Shaw has the prime responsibility to provide a healthy work place, but all employees have a responsibility to follow safety and health procedures and practices.

### *7.2 Exposure Assessment*

It is required that the SSHP address lead exposure conditions during tasks involving lead containing coatings, paints, soils and any additional aspects of construction/demolition or remediation activities. 29 CFR 1926.62 (d) is to be reviewed and the required lead exposure assessment will incorporate the PPE and respiratory protection for specific tasks.

### 7.2.1 Exposure Monitoring

Exposure monitoring will be conducted for exposure assessment of tasks utilizing full shift personnel sampling of each job classification and each work area.

### 7.2.2 Compliance Program

This document fulfills the requirement for a written compliance program to be developed prior to the initiation of any lead construction related tasks. The elements of this program are those identified as 29 CFR 1926.62 (e)(2).

# 8.0 Hazard Control Program, Treatment Methods and Disposal

## 8.1 Hazardous Chemical Exposure

Personal protective equipment (PPE) will be utilized to minimize worker exposure to lead or lead containing compounds when engineering or administrative controls are not feasible. Engineering controls may include ventilation equipment, working upwind, dust control, and vapor suppression techniques. Engineering controls are the preferred methods for hazard control. Administrative controls include reducing the duration of a single worker's exposure by increasing the number of operators and rotating them. Rotation is not recommended as it increases the numbers of persons potentially exposed. PPE includes such items as chemical resistant coveralls, respiratory and hearing protection, monitoring equipment and safety gear. Selection of appropriate PPE will be made by the SSHO, under the supervision of the health and safety manager, and will be based on knowledge of the chemical and physical state of the lead compounds, concentration in air/materials potentially contacted, duration of exposure, nature of the activities to be conducted in the work area, potential safety hazards, additional potential chemical hazards, and the construction and material of the PPE being considered. The health and safety manager will have final authority on PPE selection and makes initial decisions on PPE selection.

## 8.2 Hygiene Practices and Housekeeping

In addition to the decontamination procedures detailed in the SSHP, lead-associated housekeeping procedures detailed in 29 CFR 1926.62 (h), and the following hygiene and housekeeping practices will be followed:

- Clean change areas shall be maintained in the Support (Clean) Zone (SZ).
- Do not dry sweep, shovel or handle lead contaminated materials where the potential for airborne dust generation is likely.
- Shower facilities shall be maintained and available at all times during field work covered by the LCP if potential lead exposure exceeds the action level listed in the SSHP related to specific tasks to be performed.
- Vacuum use shall be with HEPA filtration only.
- An adequate supply of cleansing agents and towels shall be maintained.

- Compressed air shall not be used where lead contaminated materials may be generated in air.

- All reusable clothing materials shall be laundered.

- A Decontamination Station will be available in the Contamination Reduction Zone (CRZ) for all projects covered by this LCP.

- Food, beverage, and tobacco products shall not be present or consumed in the Exclusion Zone (EZ) or the CRZ.

- Project personnel will wash their hands, forearm, face and neck before eating, drinking, smoking or applying cosmetics.

- No used protective clothing or equipment is permitted inside the support zone clean areas without being properly decontaminated.

- Appropriate PPE and/or work clothes for use during project activities shall be provided by Project Management if required based on potential for exposure as noted in the SSHP for the task.

- Project personnel shall shower at the end of the shift before leaving the site as determined by the SSHO or CIH.

- An adequate supply of potable water shall be provided at the work site.

- Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap. Water shall not be dipped from the container.

- Containers used to distribute drinking water shall be clearly marked and not used for any other purpose.

- Single service cups (to be used only once) will be supplied. A sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

### *8.3 Lead Waste*

Lead containing waste (whether wet or dry) resulting from the movement or demolition of building components, or equipment will be segregated by waste stream, packaged appropriately and disposed of in accordance with the waste acceptance criteria of the disposal site.

# 9.0 Work Area Control

## 9.1 General

The Hazard Control Program for the project is detailed in the Installation-wide Safety and Health Plan and SSHP. The SSHP will detail the control program, based on all site hazards, including those related to lead exposure. This LCP details the control program required for work areas where lead exposure is expected or anticipated.

The work areas covered by this LCP will be delineated into exclusion zones. These zones are defined and described in the installation-wide health and safety plan. The SSHO shall record in the Field Activity Daily Log all persons entering a work area supported by this LCP. The Entry Log shall be maintained at each work area. At the end of each shift, the Entry Logs will be turned into the Site Administrative Assistant for filing.

## 9.2 Work Zones and Signs

Prior to work beginning, the SM/PM will classify the work area into three zones as required if an employee's exposure to lead exceeds the PEL: (1) Exclusion Zone (EZ), (2) Contamination Reduction Zone (CRZ), and (3) Support (Clean) Zone (SZ). The purpose of this classification is to reduce the accidental spread of hazardous substances between contaminated and clean areas. The establishment of work zones will help ensure that; personnel are properly protected against potential hazards present, work activities and contamination are confined to appropriate areas, and personnel can be located and evacuated in an emergency. The EZ will be identified by some physical means (such as barrier tape) and labeled with the following warning sign:

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

Only Shaw personnel, contractors and authorized visitors who have completed the 40-hour Hazardous Waste Operations training course (or equivalent) and meet the additional requirements of the Exclusion Zone (e.g., Lead Safety Training) will be allowed within the area.

### 9.3 Personnel Protection Program (PPE)

#### 9.3.1 Acceptable Contaminant Concentrations

- Current OSHA PEL for lead is 0.05 $mg/m^3$.
- The action level for inorganic and organic lead compounds is 0.030 $mg/m^3$

#### 9.3.2 Personal Protective Equipment (PPE)

Personal protective equipment (PPE) will be assigned according to project tasks and work areas.

The health and safety manager has the only authority to downgrade PPE levels. This type of change will be based on a minimum of two consecutive sets of integrated monitoring data (no less than one and no more than three work days apart), or real-time monitoring which indicate that airborne contaminant concentrations are below current action levels recommended/required by appropriate agencies.

##### 9.3.2.1 Levels of Protection

Project-specific personnel protective equipment requirements are given in the SSHP related to a specific task.

##### 9.3.2.2 PPE Selection Criteria

PPE will be selected based on the level of hazard to which the workers may be exposed. Criteria will generally relate to physical condition of the lead and the potential to create respirable dusts. Downgrading of the PPE levels will not be made without the approval of the health and safety manager.

### 9.4 Respiratory Protection Program

The Respiratory Protection Program detailed in the SSHP shall be followed. Respiratory protection procedures detailed in 29 CFR 1926.62 shall also be followed. The following additions are required for work covered by this LCP.

- Air-purifying respirators will be cleaned with mild soap and warm water daily by the wearer. The respirator will be air-dried before being reassembled and stored in a sealable container in the SZ. Employees responsible for such activity will be given adequate training annually by the SSHO.

- Respirators will not be placed in unprotected areas of potential contamination when not in use.

- Qualified project personnel will have an assigned air purifying respirator when use is required.

- Qualified personnel will have been fit tested and certified in the use of air purifying respirators within the past 12 months. Fit test and respirator qualification cards or certifications must be available prior to commencing work covered by this LCP.

- Within the past year, project personnel assigned to use respiratory protection must have been medically certified as being capable of wearing a respirator. Documentation of the medical certification must be available to the SSHO prior to commencement of site work.

- Project personnel scheduled to wear a respirator will be clean shaven. Mustaches and side burns are permitted, but they must not interfere with the face-to-face piece seal of the respirator.

- Respirators will be inspected and a positive and negative pressure test performed prior to each use by the user.

- After each use, the respirator will be wiped with a disinfectant cleansing wipe. The respirator will also be thoroughly cleaned at the end of the work shift. The respirator will be stored in a clean sealable plastic bag.

### *9.5 Decontamination Program*

The decontamination program has been designed to eliminate the spread of hazardous material contamination beyond the CRZ and to reduce that contamination to a minimum outside the Exclusion Zone. By following decontamination procedures and reducing the spread of contamination, the risk of exposure to contaminants while removing protective clothing is also reduced and good personal hygiene practices are enhanced.

The procedures listed in the SSHP for personnel decontamination will be implemented based on the required level of protection. Procedures for equipment decontamination are also outlined. Modification to these procedures or the program must be approved, in writing, by the CIH and communicated to all project personnel prior to implementation.

# 10.0 Industrial Hygiene Monitoring Program

The health and safety manager shall be responsible for determining method, type, and extent of industrial hygiene (IH) monitoring to be conducted prior to initiating project activities. The monitoring program detailed in the SSHP shall be followed. In addition, the following LCP Air Monitoring Program shall be implemented.

## 10.1 IH Monitoring Schedule

The health and safety manager will determine the type and extent of exposure monitoring to be conducted based on the project site-specific conditions. The SSHO compiles data for the health and safety manager to review as needed.

### 10.1.1 New Project Phase

Monitoring will be conducted at the beginning of each project phase to: (1) evaluate effectiveness of protective equipment assigned, (2) assess current hazard potentials, and (3) evaluate operation exposures. For projects covered by this LCP, this will include, as a minimum, integrated sampling for inorganic lead.

### 10.1.2 Safety and Health Assessment

Monitoring will be repeated, as appropriate, to provide the health and safety manager adequate information to make accurate assessments concerning the safety and health of persons on site. For projects covered by this LCP, this will include, as a minimum, integrated sampling for inorganic lead and real-time monitoring for total dust levels.

### 10.1.3 Condition Change

Monitoring will be conducted at any time project conditions change which may affect the exposure of persons in a work area. A change in condition may include, but is not limited to:

- Weather changes
- Worker complaints/concerns
- Variation in work plan/procedures.

Monitoring to be conducted will be determined by the health and safety manager and based on the type of condition and the level of change. Real time dust monitoring results which exceed the action levels established in the SSHP will automatically trigger the initiation of integrated air sampling.

# 11.0 Lead Management Plan Amendments

All changes to this LCP must be made in writing. The health and safety manager must approve, by signature, any changes (excluding those exempted below) prior to implementation. Upon submittal and approval, changes will be communicated to all site personnel and contractors before actual field implementation. Those changes which do not require prior approval from the health and safety manager to be implemented by the SSHO include:

- PPE level upgrade
- Changes in decontamination procedures during an emergency or injury related incident
- Changes required by state, local, and federal law which require immediate action.

These changes shall be documented by the SSHO.

# ATTACHMENT 2

# DEPARTMENT OF THE ARMY STATEMENT OF CLEARANCE FOR THE ORDNANCE AND EXPLOSIVE SITE 2 OF THE EASTERN BYPASS AT FORT MCCLELLAN, ALABAMA
# AND
# EVALUATING OE/UXO/CWM IN SUPPORT OF HTRW ACTIVITIES

DEPARTMENT OF THE ARMY
HUNTSVILLE CENTER, CORPS OF ENGINEERS
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO ATTENTION OF:

CEHNC (200-1C)

07 April 2004

MEMORANDUM FOR Commander, U.S. Army Garrison, ATTN: ATZN-ENV (Mr. Ron Levy), 291 Jimmy Park Boulevard, Fort McClellan, AL 36205-5000

SUBJECT: Statement of Clearance for the Ordnance and Explosive Site 2 of the Eastern Bypass at Fort McClellan, Alabama

1. Enclosed for your use is the Statement of Clearance related to Ordnance and Explosives (OE) Removal Action completed on the subject property. The U.S. Army Engineering and Support Center, Huntsville has reviewed the Final Removal Report and concurs with its findings. The report discusses the action taken and the OE items recovered from the property.

2. Based upon the actions taken, as documented in the Final Removal Report, it is recommended that the Eastern Bypass be made available for unrestricted use contingent on the requirements stated in the Statement of Clearance. Any residual risk remaining as a result of this removal action and construction support will be managed thru a deed notice. This deed notice will provide information on notification requirements in the event an OE item is encountered.

3. If you have any questions or comments regarding this submittal, please contact me at 256-895-1300 or Mr. David Douthat, OE Director, at 256-895-1510.

Encl

JOHN D. RIVENBURGH
Colonel, U.S. Army
Commanding

**Statement of Clearance**
**Ordnance and Explosives Site 2**
**of the Proposed Eastern Bypass at**
**Fort McClellan, Alabama**

The Proposed Eastern Bypass at Fort McClellan was divided into three Ordnance and Explosives Sites (OES). The signed Action Memo for the Eastern Bypass recommends different actions for each OES. This statement of clearance covers only OE Site 2 (OES 2). The OES 2 of the Proposed Eastern Bypass, located within the boundary of Fort McClellan, Alabama, has been given careful search and has been cleared to depth of all dangerous and explosive ordnance reasonably possible to detect with the exception of the construction debris areas identified in Figure 4-6 of the *Site-Specific Final Report Eastern Bypass OE Removal, Fort McClellan, AL, March 2004*. The ordnance items described in the *Site-Specific Final Report Eastern Bypass OE Removal, Fort McClellan, AL, March 2004* were recovered from within OES 2.

It is recommended that the OES 2 of the Proposed Eastern Bypass may be used for any purpose for which the land is suited contingent upon the following:

1) A total of 48 full or partial grids were not cleared due to a high content of construction debris. Based on a discussion with the Fort McClellan Transition Force, EPA, and ADEM during the 20 Feb 2002 BRAC Cleanup Team meeting, it was decided that providing construction support during bypass construction would be acceptable for the grids that were not cleared. Construction support as required for an unknown risk of encountering UXO (ref. DOD 6055.9, C12.4.3.2.2) would be provided in the 48 full or partial grids identified as construction debris areas in the Site-Specific Final Report, dated March 2004. This is further explanation of the action identified in the Action Memo and is not a change in the recommended action. This simply documents that this action will occur during construction.
2) Construction support as required for a low risk of encountering UXO (ref. DOD 6055.9, C12.4.3.2.1) be provided in the remainder of OES 2.
3) Reasonable and prudent precautions be taken when conducting intrusive operations on the transferred property since the Army cannot guarantee that 100% of the ordnance has been removed. These precautions will include, at a minimum, Ordnance Familiarization Training and notification procedures for all construction workers.

This action has been conducted in accordance with Army Regulation 384-64 (Ammunition and Explosives Safety Standards), AR 405-90 (Disposal of Real Estate), and the Explosives Safety Submission approved by the Department of Defense Explosives Safety Board.

SUBMITTED BY:

7 APR 04
Date

John D. Rivenburgh
COL, EN
Commander, Engineering and Support Center,
Huntsville

APPROVED BY:

19 APR 04
Date

Gary Harvey
BRAC Site Manager

# Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities



**Date:** 8-10-2004

**Name of person completing form:** R. McBride

**Site Name:** IMR Ranges

**Title:** Proj Chemist/Range Task Mgr

**Job Number:** 800486

**Signature:**

| | Yes | No |
|---|---|---|
| **1a. Have the historical records available for this HTRW site been reviewed?** | ☒ | ☐ |

If the answer to **1a.** is yes, proceed to **1b.**
If the answer to **1a.** is no, review site information prior to completing this form.

| | Yes | No |
|---|---|---|
| **1b. Is there recent information (site walk, worker interviews, etc.) that indicates a potential OE/CWM hazard at this site?** | ☒ | ☐ |

Proceed to **2.**

**2. According to the records review, is this site known or suspected to have been used for:**

| | Yes | No |
|---|---|---|
| **2a. Manufacturing, production, or shipping of conventional or chemical warfare materiel (CWM) OE:** | ☐ | ☒ |
| **Live fire testing of any ordnance:** | ☒ | ☐ |
| **Conventional or CWM OE training:** | ☒ | ☐ |
| **Storage of conventional or CWM OE:** | ☐ | ☒ |
| **Disposal or demilitarization of conventional or CWM OE:** | ☐ | ☒ |
| **Other (specify):** | | |

| | Yes | No |
|---|---|---|
| **2b. Manufacturing, production, or shipping of chemical agent:** | ☐ | ☒ |
| **Research or testing of chemical agent:** | ☐ | ☒ |
| **Chemical agent related training:** | ☐ | ☒ |
| **Storage of chemical agent:** | ☐ | ☒ |
| **Disposal or demilitarization of chemical agent:** | ☐ | ☒ |
| **Other (specify):** | | |

Any **2a** question answered "YES" indicates UXO support is required for all site activities. If all **2a** questions are answered "NO", UXO support may not be required. Refer to Installation-Wide Safety and Health Plan (SHP) for additional information concerning UXO support. Proceed to question **2b.**

Any **2b** question answered "YES" requires the remainder of this form to be completed. If all **2b** questions are answered "NO", real-time monitoring for chemical agent will not be required and completing the remainder of this form is not required. Refer to SHP for additional information concerning agent monitoring.

Additional space for notes and explanations on page 4.

**Continue to page 2 of 4 –**

# Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities

**Site Name: IMR Ranges**

**Job Number: 800486**

**Date: 10-Aug-04**

| 3. For sites where the manufacturing, testing, storage, or disposal of CWM is suspected: | Yes | No |
|---|---|---|
| Is there evidence that the CWM is/was containerized in potentially unexploded ordnance: | ☐ | ☒ |
| Is there evidence that the CWM is/was containerized in nonexplosive containers: | ☐ | ☒ |
| Is there evidence that the CWM is open to the environment (i.e., in an open container or free liquid/solid in the soil/water): | ☐ | ☒ |
| Is there evidence that the CWM hazard has been removed from the site or that the site has been decontaminated: | ☐ | ☒ |
| Has the site been previously monitored or sampled for chemical agent or agent breakdown products: | ☐ | ☒ |
| For any "YES" above, was the agent or breakdown product identified? | ☐ | ☐ |

**For any "Yes", list types of agent (mustard, lewisite, etc.) and the form (in ordnance, in drum, etc.) the CWM is expected to be found (or state "unknown"):**

N/A

**List agent breakdown products identified:**

N/A

| 4. Defining the Potential for the Presence of CWM: | Agent Monitoring Requirements for Site Activities: |
|---|---|
| **4a.** High Presence Potential – Definition: CWM is known or highly suspected to be present at the site in a condition (within ordnance and/or nonexplosive container, or in an uncontainerized form in sufficient volume that weathering of the product has not rendered it harmless) that will cause potential harm to personnel if it is encountered. | Mandatory personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP). |
| **4b.** Moderate Presence Potential - Definition: CWM is suspected to have been present at the site, but has been previously removed and/or decontaminated, or has been open to the environment such that it is expected to have degraded and been rendered harmless. | The need for personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples will be reviewed on a site-by-site basis. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP). |
| **4c.** Low Presence Potential – Definition: No indications that CWM will be present in quantity or reactivity (in munitions, projectiles, drums, etc.). | No specific personal or area monitoring for chemical agents required beyond what is specified in the SHP. |

**Continue to page 3 of 4 -**

# Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities

**Site Name:IMR Ranges**

**Job Number: 800486** **Date: 10-Aug-04**

**Based on the information available for this site, including information gathered during completion of this form, the potential for CWM to be present at this site, as defined above, is expected to be:** ***LOW***

**Exceptions/Explanations:** Little site history to indicate CWM usage at IMR Ranges. (additional space for notes and explanations on page 4)

| **5. Based on the information provided in questions 1 through 5, above, the following guidelines will be used for establishing PPE requirements for activities to be performed at this site; Specific details are provided in the SSHP:** | |
|---|---|
| **5a.** High Exposure Potential - High exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s). | Subject to review by the Shaw CIH, PPE for all personnel in the exclusion zone at a site identified as having a "High Exposure Potential" will be Level B (supplied air) or Level C (full-face respirator with HEPA/Acid Gas/OV cartridges w/ emergency egress hood) and chemically resistant coveralls. Specific PPE requirements are in the SSHP for this site. |
| **5b.** Moderate Exposure Potential - Moderate exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s). | Subject to review by the Shaw CIH, PPE for all personnel in the exclusion zone at a site identified as having a "Moderate Exposure Potential" will be Modified Level D (disposable coveralls and emergency egress hood) carried by all personnel. Specific PPE requirements are in the SSHP for this site. |
| **5c.** Low Exposure Potential - Low exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s). | Subject to review by the Shaw CIH, no additional PPE requirements above those stated in the SSHP are needed for sites identified as having "Low Exposure Potential." Specific PPE requirements are in the SSHP for this site. |

**Based on all available information, the exposure potential at this site is considered to be:** ***LOW***

**Exceptions/Explanations: Low potiential, surface soil excavation only (top 1-ft), 2 week duration for obtrusive work expected.**

**Review Signatures:**

Shaw UXO Technical Manager _____ Date: 11 Aug 04 Shaw H&S Specialist _____ Date: 8-11-04

**Site Name:IMR Ranges**

**Job Number: 800486** **Date: 10-Aug-04**

***Additional Notes and Explanations:***

IMR Ranges consist of three small arms training ranges and a skeet range. Historical evidence indicates the presence of UXO at the Skeet Range is somewhat likely; however, UXO clearance has been performed inside the ALDOT Eastern Bypass Corridor (EBC) area already by Foster-Wheeler. During sampling by Shaw in the area, no UXO items were identified.

In the scope of this remediation effort, areas outside the EBC will not be excavated. If personnel or equipment access is needed in the adjacent non-EBC area, UXO avoidance sweep will be performed by qualified UXO personnel before entry.

# ATTACHMENT 3

# MATERIAL SAFETY DATA SHEETS

**AMES METAL PRODUCTS**
**LEAD SHOT Revised: 01/01/1989**

**MSDS Contents**



MATERIAL SAFETY DATA SHEET

AMES

AMES METAL PRODUCTS CO.

THIS MATERIAL SAFETY DATA SHEET COMPLIES WITH OSHA HAZARD COMMUNICATION STANDARD 29CFR 1910.1200

PRODUCT: LEAD SHOT

CODE: 2004

COMMON NAME OR SYNONYMS:
DROP, BUCK, FREE FLOW TYPE SHOT AND LEAD BALLS - ALL SIZES

## SECTION I

MANUFACTURERS NAME:

4323 SOUTH WESTERN BOULEVARD
CHICAGO, ILLINOIS 60609

PHONE 773-523-3230
FAX 312-523-3854

INFORMATION PHONE: TOLL FREE/OUTSIDE IL

EMERGENCY PHONE: 1-800-255-6937

CHEMTREC: 800-424-9300

PREPARATION DATE: JANUARY 1989

## SECTION II - HAZARDOUS INGREDIENTS

| INGREDIENT | CAS NO. | OSHA PEL | ACGIH TLV | OTHER | WT. PERCENT |
|---|---|---|---|---|---|
| LEAD | 7439-92-1 | 0.05 MG/M3 | 0.15 MG/M3 | -- | 99.9+ |

ADDITIONAL INFORMATION:
OSHA ACTION LEVEL FOR LEAD 0.03 MG/M3 (SEE 29 CFR 1910.1025)

## SECTION III - PHYSICAL DATA

APPEARANCE & ODOR (AT NORMAL CONDITIONS):
SOLID SPHERES - SILVER METALLIC TO GRAY METALLIC METAL - NO ODOR

| | |
|---|---|
| SPECIFIC GRAVITY (H2O=1): | 11.34 |
| MELTING POINT (DEGREES C): | 328 |
| BOILING POINT (DEGREES C): | 1744 |
| SOLUBILITY IN WATER: | INSOLUBLE |
| EVAPORATION RATE (BUTYL ACETATE=1): | NOT APPLICABLE |
| VAPOR DENSITY (AIR = 1): | NOT APPLICABLE |
| VAPOR PRESSURE (MMHG): | NOT APPLICABLE |
| pH: | NOT APPLICABLE |

## SECTION IV - FIRE & EXPLOSION HAZARD DATA

| | |
|---|---|
| FLASH POINT: | NON-FLAMMABLE |
| FLAMMABLE LIMITS: | NOT APPLICABLE |
| EXTINGUISHING MEDIA: | NO SPECIFIC AGENTS RECOMMENDED |

SPECIAL FIRE FIGHTING PROCEDURES:
IF INVOLVED IN FIRE, USE FULL PROTECTIVE CLOTHING AND NIOSH/MSHA APPROVED SELF-CONTAINED BREATHING APPARATUS OPERATED IN A POSITIVE-PRESSURE MODE.

UNUSUAL FIRE & EXPLOSION HAZARDS: NONE

## SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID: NOT APPLICABLE

INCOMPATIBILITY:
STRONG OXIDIZERS, HYDROGEN PEROXIDE, ACTIVE METALS - SODIUM, POTASSIUM.
POWDERED LEAD FUSED WITH AMMONIUM NITRATE MAY CAUSE A VIOLENT REACTION.

HAZARDOUS DECOMPOSITION PRODUCTS:
AT TEMPERATURES ABOVE THE MELTING POINT LEAD OXIDE FUMES MAY BE EVOLVED.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

## SECTION VI - HEALTH HAZARD DATA

EXPOSURE TO THE SOLID FORM OF THIS PRODUCT PRESENTS FEW HEALTH HAZARDS IN ITSELF. HOWEVER, NORMAL HANDLING OR PROCESSING OF THIS MATERIAL MAY RESULT IN THE GENERATION OF LEAD DUSTS AND/OR FUMES.

ROUTES OF ENTRY:
INHALATION OF DUST/FUME & INGESTION OF DUST FROM PROCESSING OR MELTING OF SHOT.

SYMPTOMS & EFFECTS OF OVEREXPOSURE:
CHRONIC (PROLONGED) OVEREXPOSURE TO LEAD CAN RESULT IN SYSTEMIC-LEAD POISONING WITH SYMPTOMS OF METALLIC TASTE, ANEMIA, INSOMNIA, WEAKNESS, CONSTIPATION, ABDOMINAL PAN, GASTROINTESTINAL DISORDERS, JOINT AND MUSCLE PAINS, AND MUSCULAR WEAKNESS, AND MAY CAUSE DAMAGE TO THE BLOOD-FORMING , NERVOUS, KIDNEYS, & REPRODUCTIVE SYSTEMS. DAMAGE MAY INCLUDE REDUCED FERTILITY IN BOTH MEN AND WOMEN, DAMAGE TO THE FETUS OF EXPOSED PREGNANT WOMEN, ANEMIA, MUSCULAR WEAKNESS & KIDNEY DISFUNCTION.

ACUTE (SEVERE SHORT-TERM) OVEREXPOSURE TO LEAD MAY LEAD TO CENTRAL NERVOUS SYSTEM DISORDERS, CHARACTERIZED BY DROWSINESS, SEIZURES, COMA & DEATH. IT SHOULD BE RECOGNIZED THAT EXPOSURES OF THIS MAGNITUDE IN AN INDUSTRIAL ENVIRONMENT ARE EXTREMELY UNLIKELY.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED BY EXPOSURE:
DISEASES OF THE BLOOD AND BLOOD FORMING ORGANS, KIDNEYS, NERVOUS & POSSIBLE REPRODUCTIVE SYSTEMS.

CARCINOGENICITY: NOT LISTED AS A CARCINOGEN BY NTP, IARC, OSHA

EMERGENCY & FIRST AID PROCEDURES:

SKIN: NORMAL HYGIENE PROCEDURES - WASH WITH SOAP AND WATER.

EYES:
FLUSH WELL WITH RUNNING WATER TO REMOVE PARTICULATE. IF IRRITATION PERSISTS GET MEDICAL ATTENTION.

INHALATION: REMOVE FROM EXPOSURE. GET MEDICAL ATTENTION.

INGESTION:
GIVE WATER; INDUCE VOMITING IN A CONSCIOUS INDIVIDUAL; GET MEDICAL ATTENTION.

## SECTION VII - PROTECTION MEASURES

RESPIRATORY PROTECTION:
RESPIRATORY PROTECTION IS REQUIRED WHERE AIRBORNE EXPOSURES EXCEED OSHA/ACGIH

PERMISSIBLE AIR CONCENTRATIONS. RESPIRATOR SELECTION SHALL BE MADE IN ACCORDANCE WITH THE OCCUPATIONAL EXPOSURE STANDARD FOR LEAD, 29 CFR 1910.1025.

VENTILATION:
VENTILATION, AS DESCRIBED IN "INDUSTRIAL VENTILATION, A MANUAL OF RECOMMENDED PRACTICE", BY THE AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS, IS RECOMMENDED TO MAINTAIN EXPOSURE LEVELS BELOW THE PERMISSIBLE EXPOSURE LIMITS (PEL'S) OR THRESHOLD LIMIT VALUES (TLV'S) SPECIFIED BY OSHA OR OTHER LOCAL OR STATE REGULATIONS.

PROTECTIVE GLOVES:
RECOMMENDED FOR PROLONGED CONTACT/HEAT. REQUIRED ABOVE THE LEAD PEL.

EYE PROTECTION:
SAFETY GLASSES OR GOGGLES ARE RECOMMENDED WHERE THE POSSIBILITY EXISTS OF GETTING DUST PARTICLES IN THE EYES. SAFETY GLASSES OR GOGGLES WITH FACESHIELD ARE RECOMMENDED AROUND MOLTEN METAL.

OTHER PROTECTIVE EQUIPMENT:
FULL PROTECTIVE CLOTHING AND SHOES ARE REQUIRED FOR EMPLOYEE EXPOSURE ABOVE THE LEAD PEL. OTHER SAFETY EQUIPMENT SHOULD BE WORN AS APPROPRIATE FOR THE WORK ENVIRONMENT. KEEP WORK CLOTHING SEPARATE FROM STREET CLOTHES.

WORK/HYGIENIC PRACTICES:
DO NOT PERMIT EATING, DRINKING, OR THE USE OF COSMETICS OR TOBACCO PRODUCTS WHILE HANDLING OR PROCESSING MATERIAL OR IN LEAD WORK AREAS. PRACTICE GOOD PERSONAL HYGIENE PROCEDURES. WASH HANDS AND FACE THOROUGHLY BEFORE EATING, DRINKING, APPLYING COSMETICS OR USING TOBACCO PRODUCTS. FULL PROTECTIVE CLOTHING IS TO BE WORN BY WORKERS EXPOSED TO CONCENTRATIONS OF LEAD DUST/FUME ABOVE THE PEL, AND SHOWERING IS REQUIRED BEFORE CHANGING INTO STREET CLOTHES. KEEP WORK CLOTHING SEPARATE FROM STREET CLOTHES. WORK CLOTHES AND EQUIPMENT SHOULD REMAIN IN DESIGNATED LEAD CONTAMINATED AREAS AND NEVER TAKEN HOME OR LAUNDERED WITH PERSONAL CLOTHING. AVOID INHALATION AND INGESTION OF PRODUCT, AND ACTIVITIES WHICH GENERATE DUST OR FUMES. KEEP MELTING TEMPERATURES AS LOW AS POSSIBLE TO MINIMIZE THE GENERATION OF FUMES.

## SECTION VIII - PRECAUTIONS FOR SAFE HANDLING & USE

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING:
PRACTICE GOOD HOUSEKEEPING PROCEDURES TO PREVENT DUST ACCUMULATIONS. KEEP MATERIAL DRY. AVOID STORAGE NEAR INCOMPATIBLE MATERIALS (SEE SECTION V). KEEP PRODUCT AWAY FROM CHILDREN & THEIR ENVIRONMENT, FEED PRODUCTS AND FOOD PRODUCTS.

OTHER PRECAUTIONS:
SPECIAL ATTENTION IS DRAWN TO THE REQUIREMENTS OF THE OSHA LEAD STANDARD (1910.1025) AND RESPIRATOR STANDARD (1910.134) SHOULD AIRBORNE EXPOSURES EXCEED THE OSHA ACTION LEVEL (AL) OR PEL.

## SECTION IX - SPILL OR LEAK PROCEDURES

SPILL OR LEAK PROCEDURES:
1) MATERIAL IN DUST FORM - MINIMIZE EXPOSURE. CLEAN UP USING DUSTLESS METHODS (I.E. VACUUM). DO NOT USE COMPRESSED AIR.

2) PLACE IN CLOSED LABELED CONTAINERS FOR RECYCLING OR DISPOSAL.

3) KEEP OUT OF WATERWAYS.

NOTE:
CLEAN UP PERSONNEL SHOULD WEAR PROTECTIVE CLOTHING AND RESPIRATORY PROTECTION WHERE DUST/FUME EXPOSURE EXISTS.

OTHER PROCEDURES:
WE RECOMMEND THAT THE PURCHASER ESTABLISH A SPILL PREVENTION, CONTROL AND COUNTER MEASURE PLAN. THIS PLAN SHOULD INCLUDE PROCEDURES FOR PROPER STORAGE AS WELL AS CLEAN-UP OF SPILLS OR LEAKS. THE PROCEDURES SHOULD CONFORM TO SAFE PRACTICES AND PROVIDE FOR PROPER RECOVERY AND/OR DISPOSAL. DEPENDING ON THE QUANTITY SPILLED, NOTIFICATION TO THE NATIONAL RESPONSE CENTER (800-424-8802) MAY BE REQUIRED IN CASE OF HAZARDOUS SUBSTANCES. (SEE EPA AND DOT REGULATIONS; ALSO VARIOUS STATE AND LOCAL REGULATIONS.)

WASTE DISPOSAL METHODS:
MAY HAVE VALUE ON A RECYCLED BASIS. IF DISPOSED OF, DISPOSE OF IN A PERMITTED DISPOSAL SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE REGULATIONS.

## SECTION X - SARA TITLE III INFORMATION

THIS PRODUCT/MIXTURE CONTAINS THE FOLLOWING TOXIC CHEMICAL(S) SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPER FUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372. THE PERCENT BY WEIGHT OF EACH TOXIC CHEMICAL AND ITS ASSOCIATED CHEMICAL ABSTRACT SYSTEM (CAS) NUMBER ARE TO BE FOUND IN SECTION II OF THIS MATERIAL SAFETY DATA SHEET.

| CHEMICAL NAME | EHS RQ (LBS) (*1) | EHS TPQ (LBS) (*2) | SEC.313 (*3) | 313 CATEGORY (*4) | 311/312 CATEGORIES (*5) |
|---|---|---|---|---|---|
| LEAD | NOT APPLICABLE | NOT APPLICABLE | YES | LEAD | H-1, H-2 |

FOOTNOTES

=REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SECTION 302.

*2=THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SECTION 302.

*3=TOXIC CHEMICAL, SECTION 313

*4=CATEGORY AS REQUIRED BY SECTION 313 (40 CFR 372.42). MUST BE USED ON TOXIC RELEASE FORM.

*5=HAZARD CATEGORY FOR SARA SECTION 311/312:

HEALTH

H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD

H-2 = DELAYED (CHRONIC) HEALTH HAZARD

PHYSICAL

P-3 = FIRE HAZARD

P-4 = SUDDEN RELEASE OF PRESSURE HAZARD

P-5 = REACTIVE HAZARD

## SECTION XI - CERCLA INFORMATION

THIS PRODUCT/MIXTURE CONTAINS THE FOLLOWING CHEMICALS SUBJECT TO THE RELEASE REPORTING REQUIREMENTS OF SECTION 302.

| CHEMICAL NAME | RQ (LBS) (*1) | |
|---|---|---|
| LEAD | 1.0 | CERCLA STATUTORY RQ |

FOOTNOTES

*1 = REPORTABLE QUANTITY (RQ) UNDER CERCLA SECTION 302. SPILLS TO THE ENVIRONMENT EXCEEDING THE REPORTABLE QUANTITY IN ANY 24 HOUR PERIOD MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER (800-424-8802). NO REPORTING OF RELEASES OF THE HAZARDOUS SUBSTANCE(S) IS REQUIRED IF THE DIAMETER OF THE PIECES OF THE SOLID METAL(S) RELEASED IS EQUAL TO OR EXCEEDS 100 MICROMETERS (0.004 INCHES).

## SECTION XII - TRANSPORTATION INFORMATION (172.101)

DOT SHIPPING NAME:
THIS PRODUCT IS NOT REGULATED BY THE DOT AS SHIPPED. THIS MATERIAL IS ONLY REGULATED BY THE DOT IF IN A POWDER FORM WITH A PARTICLE SIZE LESS THAN 100 MICROMETERS. (0.0040 INCHES).

| | |
|---|---|
| HAZARD CLASS: | NOT APPLICABLE |
| UN/ID NO: | NOT APPLICABLE |
| DOT LABEL(S): | NOT APPLICABLE |

## SECTION XIII - ADDITIONAL INFORMATION

OSHA BIOLOGICAL LIMIT FOR BLOOD LEAD LEVEL IS A 3 SAMPLE/6 MONTH AVERAGE OF 50 MCG PER 100G (OR HIGHER) OF WHOLE BLOOD AND/OR TWO(2) CONSECUTIVE SAMPLES OF 60 MCG PER 100G (OR HIGHER). SEE OSHA STANDARD 29 CFR 1910.1025 FOR FURTHER INFORMATION.

LEAD AND ITS COMPOUNDS HAS TENTATIVELY BEEN FOUND TO BE A CLASS B-2 CARCINOGEN BY THE USEPA CARCINOGEN ASSESSMENT GROUP. IARC LISTS LEAD AND ITS COMPOUNDS AS A TERATOGEN.

THIS MATERIAL SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION,

CONSIDERATION AND INVESTIGATION. AMES METAL PRODUCTS CO. PROVIDES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ASSUMES NO RESPONSIBILITIES FOR THE ACCURACY OR COMPLETENESS OF THE DATA CONTAINED IN THIS DOCUMENT. THE DATA IN THIS MATERIAL SAFETY DATA SHEET RELATES ONLY TO THIS PRODUCT AND DOES NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS.

WARNING:
THIS PRODUCT CONTAINS A CHEMCIAL OR CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO:

A) CAUSE CANCER OR

B) CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.
(22 CAL. CODE 12601 (B) (5)

**ALAMO CEMENT**
**CEMENT, PORTLAND** **Revised: 03/04/1991**

**MSDS Contents**



U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OMB NO 1218-0074
EXPIRATION DATE 05/31/86

MATERIAL SAFETY DATA SHEET

REQUIRED UNDER USDL SAFETY AND HEALTH REGULATIONS FOR SHIPYARD EMPLOYMENT
(29 CFR 1915)

3/4/91

## SECTION I

MANUFACTURER'S NAME: ALAMO CEMENT

ADDRESS (NUMBER, STREET, CITY, STATE AND ZIP CODE):
P.O. BOX 34807
SAN ANTONIO, TX 78233

EMERGENCY TELEPHONE NO.

CHEMICAL NAME AND SYNONYMS: CEMENT

TRADE NAME AND SYNONYMS: CEMENT, PORTLAND

CHEMICAL FAMILY: CEMENT, CALCIUM

FORMULA: SILICATES & ALUMINATES

## SECTION II - HAZARDOUS INGREDIENTS

| PAINTS, PRESERVATIVES AND SOLVENTS | % | TLV (UNITS) |
|---|---|---|
| PIGMENTS | N/A | |
| CATALYST | N/A | |
| VEHICLE | N/A | |
| SOLVENTS | N/A | |

| | | |
|---|---|---|
| ADDITIVES | N/A | |
| OTHERS | N/A | |

| ALLOYS AND METALLIC COATINGS | % | TLV (UNITS) |
|---|---|---|
| BASE METAL | N/A | |
| ALLOYS | N/A | |
| METALLIC COATINGS | N/A | |
| FILLER METAL PLUS COATING OR CORE FLUX | N/A | |
| OTHERS | N/A | |

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

| | % | TLV (UNITS) |
|---|---|---|
| N/A | | |

## SECTION III - PHYSICAL DATA

| | |
|---|---|
| BOILING POINT (DEG. F): | N/A |
| SPECIFIC GRAVITY (H2O = 1): | 3.17 |
| VAPOR PRESSURE (MM HG.): | N/A |
| PERCENT VOLATILE BY VOLUME (%): | 0.0 |
| VAPOR DENSITY (AIR = 1): | N/A |
| EVAPORATION RATE ( = 1): | 0.0 |
| SOLUBILITY IN WATER: | 50% - 80% |
| APPEARANCE AND ODOR: | GREY, NO ODOR |

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASHPOINT (METHOD USED): N/A

FLAMMABLE LIMITS: LEL: UEL:

EXTINGUISHING MEDIA: N/A

SPECIAL FIRE FIGHTING PROCEDURES: N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

## SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE:

EFFECTS OF OVEREXPOSURE: MAY CAUSE SLIGHT SKIN IRRITATION OR DRYING OUT AS A RESULT OF PROLONGED OVEREXPOSURE.

EMERGENCY FIRST AID PROCEDURES: WASH WITH EYE WASH IF DUST GETS IN EYE, SEE PHYSICIAN. WASH HANDS AND SKIN WITH SOAP AND WATER, USE NORMAL HAND MOISTURIZING CREAM IF SKIN IS DRY OR CHAPPED.

## SECTION VI - REACTIVITY DATA

STABILITY:
UNSTABLE ( )
STABLE (X)

CONDITIONS TO AVOID:

INCOMPATIBILITY (MATERIALS TO AVOID):

HAZARDOUS DECOMPOSITION PRODUCTS: NONE

HAZARDOUS POLYMERIZATION:
MAY OCCUR ( )
WILL NOT OCCUR (X)

CONDITIONS TO AVOID:

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: SHOVEL OR SWEEP UP AND RE-USE, IF POSSIBLE; OTHERWISE, DISPOSE OF AS AN AGGREGATE AND AVOID WATER DUE TO CEMENT'S NATURE OF HARDENING IN CONTACT WITH WATER.

WASTE DISPOSAL METHOD: SEE ABOVE

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): OSHA-MSHA APPROVED SILICA DUST RESPIRATOR

VENTILATION: SUBJECT TO LOCAL CODES
LOCAL EXHAUST:
MECHANICAL (GENERAL):
SPECIAL:
OTHER:

PROTECTIVE GLOVES: COTTON OR NORMAL RUBBER GLOVES

EYE PROTECTION: STANDARD SAFETY GLASSES

OTHER PROTECTIVE EQUIPMENT: USE CLOTHING AS NECESSARY TO AVOID SKIN CONTACT

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: PROTECT FROM MOISTURE

OTHER PRECAUTIONS: