



Exxon Environmental Services

**VCC-Durham-Specific Health and
Safety Plan**

June 2012

**The Master Copy of this Site-Specific Health and
Safety Plan will be kept in the ARCADIS Field
Trailer.**

ARCADIS



**Former VCC Durham Site
Site-Specific Health and Safety
Plan**

Prepared for:
Exxon Environmental Services

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Our Ref.:
B0085794.

Date:
June 2012

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Health and Safety Plan Addendum Log

Changes in the scope of the project or introduction of new hazards to the project may require revision of the Health and Safety Plan (HASP) by the HASP writer and reviewer and approval by the Project Manager. Addendums are to be added to every copy of the HASP, and logged in the following table to verify that all copies of the HASP are current:

Addendum Number	Date of Addendum	Reason for Addendum	Person Completing Addendum
0			
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- 1 JSAs
- 2 Material Safety Data Sheets
- 3 Site Incident Procedures
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- 5 North Carolina Snakes
- 6 Visitor Log Sheet
- 7 Hazardous Materials Transportation Form

1. Approvals and Acknowledgements**Approvals**

I have read and approved this *Health and Safety Plan* (HASP) with respect to project hazards, regulatory requirements, and ARCADIS and ENTACT procedures.

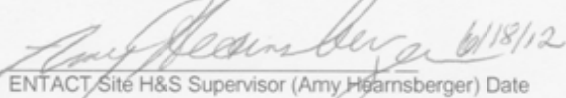
Project Name: Former VCC Durham Sites, Durham, North Carolina. ARCADIS

Project Numbers: B0085794

 6/25/12  6/22/12
Project Officer (Geoff Germann) Date Project Manager (Mike Purvis) Date

 6/22/12  6/22/12
ARCADIS Site H&S Supervisor (Katie Nicholson) Date Project H&S Manager (Greg Ertel) Date

 5/3/12  5/3/12
Construction Manager (Rich Price) Date Project H&S Manager (Rick MacIntyre) Date

 6/18/12
ENTACT Site H&S Supervisor (Amy Hearnberger) Date

Acknowledgments

The final approved version of this HASP has been provided to the Site Supervisor. I acknowledge my responsibility to provide the Site Supervisor with the equipment, materials, and qualified personnel to implement fully all safety requirements in this HASP. I will formally review this HASP with the Health and Safety Staff and continually update throughout the project duration.

 
Construction Manager (Rich Price) Date Project Manager (Erik Gehringer) Date

I acknowledge receipt of this HASP from the Project Manager/Task 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

ATTACHMENT B SAFETY PLAN ACKNOWLEDGMENT FORM

I have been informed and understand and will abide by the procedures set forth in the Health and Safety Plan and Amendments for the site.

Printed Name	Signature	Company	Date
Russell Rannes	<i>[Signature]</i>	ENTACT	6-18-12
Austin Money	<i>[Signature]</i>	Entact	6/18/12
Mike Collier	<i>[Signature]</i>	Entact	6/18/12
Amy Heersberger	<i>[Signature]</i>	Entact	6/18/12
Daniel de Leon	<i>[Signature]</i>	Entact	6/18/12
John M. Lefo	<i>[Signature]</i>	ARCADIS	6-23-12
Charles W. Ambrosini	<i>[Signature]</i>	EJT	6-19-12
MAT Nienhuis	<i>[Signature]</i>	Entact	6-28-12
Katie Nicholson	<i>[Signature]</i>	ARCADIS	6-26-12
Kirstyn White	<i>[Signature]</i>	ARCADIS	6-28-12

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2. Emergency Contact Information

Emergency phone numbers are listed below.

Local Emergency Contacts – Notify Immediately as Needed

Local Emergency Contacts	Telephone No.
Fire: Durham Fire Department	919-560-4254 or 911
Police: Durham Police Department	919-560-4415 or 911
Hospital/Ambulance: Duke University Hospital	919-684-2413 or 911
WorkCare Clinic: Concentra Urgent Care	919-941-1911 1-800-455-6155

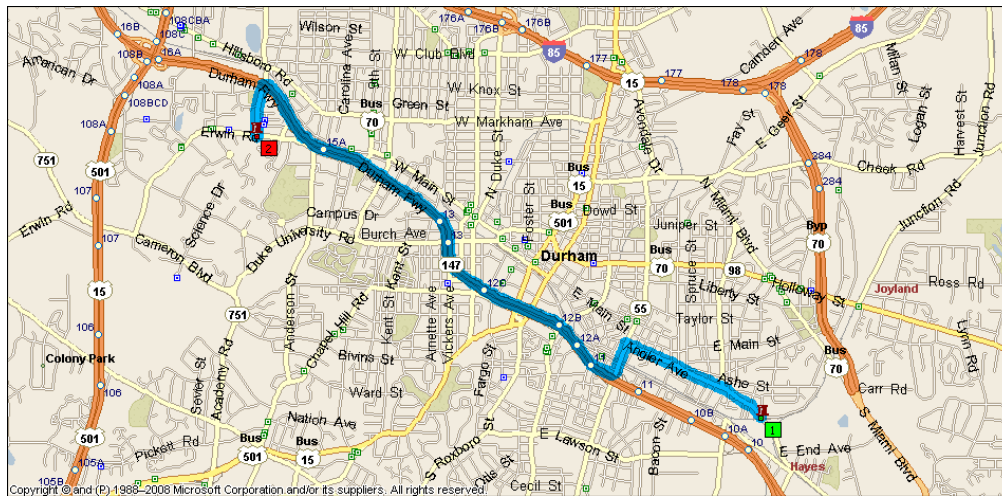
Project Emergency Contacts		Telephone No.
ARCADIS: Greg Ertel – HSO	Work	585.662-4025
	Cell	585.303.0633
ARCADIS: Rich Price – Project Manager	Work	315.671.9247
	Cell	315.439.0542
ARCADIS: Mike Purvis	Cell	919.610.5562
ARCADIS: Geoff Germann 801 Corporate Center Drive Raleigh, NC 27607	Work	919.415.2253
	Cell	919.624.5917
Exxon: Lauren Gordon 3225 Gallows Road, RM 8B102 Fairfax, Virginia 22037	Work	703-846-3804
	Cell	703-673-8854
USEPA National Response Center		1-800-424-8802

Emergency Project Manager Contacts – Notify Immediately

ARCADIS Site Personnel		
Role	Name	Address/Telephone No.
Site Supervisor	Brian Loomis	Cell: 313-510-6278
Site HSO	Katie Nicholson	Cell: 859-221-3387
Incident Reporting Hotline	ARCADIS	1-866-242-4304
ENTACT Key Personnel		
Project Manger	Erik Gehringer	Cell: 561.707.7088
Project H&S Coordinator	R.F. (Rick) MacIntyre CSP	214.663.3282
Field Project Manager	Russell Karnes	Cell: 785.342.3850
Site HSO	Amy Hearnberger	Cell: 630.453.1797

3. Directions to Duke University Hospital –

2301 Erwin Road, Durham North Carolina 27710 919-684-2413

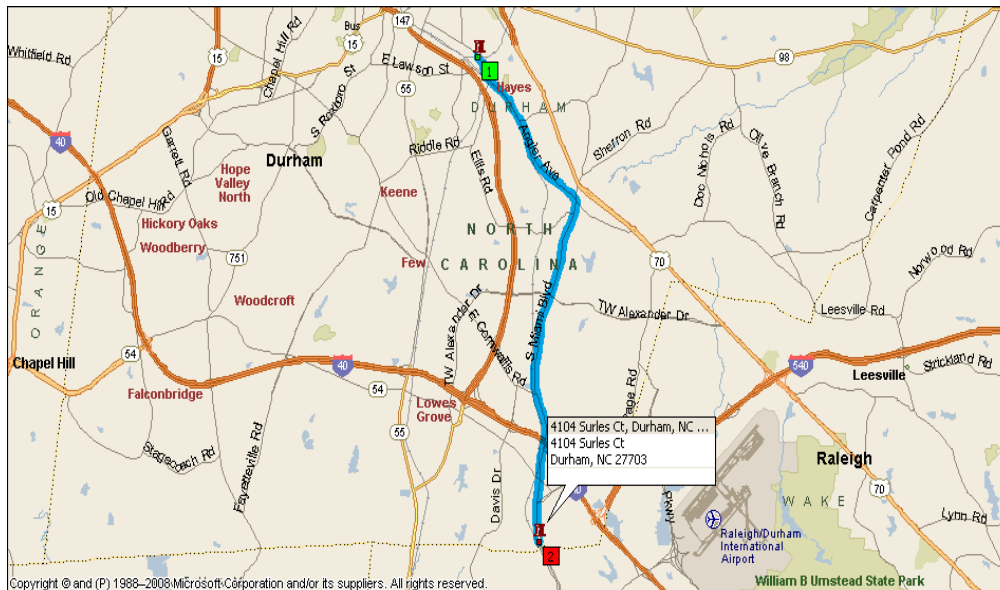


Directions to Duke University Hospital:

- Depart on Angier Ave northwest 1.1 miles
- Turn LEFT (South) onto SR-55 (S Alston Ave) 0.2 mile
- Take Ramp (RIGHT) onto SR-147 (East-West Expy) 3.3 miles
- Turn RIGHT onto Ramp (Hillandale Rd/Fulton St) 0.2 mile
- Keep Left to stay on Ramp (Fulton St) 120 yds
- Bear LEFT (South) onto Fulton St) 0.4 mile

Total Distance: 5.3 miles Estimated Time: 7 minutes

4. Directions and Map to Non-Emergency WorkCare Facility Concentra Medical Center – 4104 Surles Court, Durham, North Carolina 27703 – 919-941-1911



Directions to Concentra Medical Center:

- Depart Angier Ave (south east) 2.3 miles
- Keep straight on Angier Ave (Durham-Raleigh Hwy) 0.7 mile
- Bear RIGHT (South) onto S Miami Blvd 4.6 mile
- Bear LEFT (south) onto SR-54 (Chapel Hill Rd) 76 yards

Total Distance: 8.5 miles Estimated Time: 11 minutes

5. Stop Work Authority

Every ARCADIS employee or subcontractor at the site has the responsibility and the authority to stop the work of a coworker or stop the job if the working conditions or behaviors observed are considered unsafe.

		Hospital Directions and WorkCare Clinic Acknowledgment	
<p><i>I have reviewed the directions to the nearest emergency medical facility as well as to the local WorkCare affiliated clinic for non-emergency injuries. The Site Supervisor and a representative for each on-site contractor also acknowledge: I have driven the route to become familiar with the route.</i></p>			
Name (Print)	Signature	Representing/Title	Date

6. Background and Description

6.1 Objectives

This Health and Safety Plan (HASP) is to be used to provide procedures to perform a Non-Time Critical Removal Action (NTCRA) for soil, at the former Virginia-Carolina Chemical Corporation (VCC) Durham Site in Durham, NC.

Procedures include potential encounters with site contaminants, general safety hazards, and emergency/contingency planning at the Site. Any changes in the scope of work and/or site conditions may require modifications to this HASP.

The objective of this HASP is to provide a mechanism for establishing safe working conditions at the Site. The safety organization, procedures, and levels of personal protective equipment (PPE) were established based on an analysis of potential physical, chemical, and biological hazards. Specific hazard control methodologies were evaluated and selected to minimize the potential of injury, illness, or other hazardous incident.

6.2 Client Core Safety Expectations

The following Core Safety Expectations will be followed at all times while working at the site:

1. ALWAYS FOLLOW FALL PROTECTION STANDARDS WHEN WORKING AT ELEVATED HEIGHTS
2. ALWAYS FOLLOW WRITTEN WORK PERMIT PROCEDURES REGARDING
 - a. Confined Space
 - b. Hot Work
 - c. Excavation and Subsurface Work
 - d. Gas testing and air monitoring
3. ALWAYS FOLLOW LOCKOUT/TAGOUT (LOTO) PROCEDURES
4. ALWAYS FOLLOW DEFEAT OF CRITICAL PROCEDURES

**5. ALWAYS FOLLOW THE WRITTEN PPE REQUIREMENTS FOR THE WORK
BEING PERFORMED**

Failure to comply with these core safety expectations will involve investigation development of corrective actions including disciplinary action as appropriate.

This HASP refers to several forms and documents included in the Operational Integrity and Management System (OIMS) Binder. The sections of the OIMS Binder include:

- Section 1: Directions to Hospital (for Emergencies) and WorkCare Clinic (for Non-Emergencies)
- Section 2: Emergency Information (Evacuation Routes, Emergency Sirens)
- Section 3: Illness and Injury Management Plan
- Section 4: Project Start Notification
- Section 5: Daily Site Safety Meeting Checklist
- Section 6: Traffic Control Plan
- Section 7: Loss Prevention Observation Forms (LPOs)
- Section 8: Consultant/Contractor Field Audit Checklist
- Section 9: Job Safety Analyses (JSAs)
- Section 10: Personnel Records: Alcohol, Drug, Medical Screening and Training
- Section 11: Loss/Near Loss Investigation Forms
- Section 12: Selected Exxon Best Practices and Safety Bulletins
- Section 13: Management of Change (MOC) and Project Transfer Forms

6.3 Site Description

The Site is located in Durham, Durham County, North Carolina; as shown on the United States Geological Survey (USGS) 7.5-minute quadrangle maps for Southwest and Southeast Durham, North Carolina. The Site is bisected from the northwest to southeast by Angier Ave and the current street address that most closely matches the former acid chamber location is 2700 Angier Avenue. The site is bordered to the north, west, southwest, and east by the Norfolk Southern Railroad. The approximate geographical location of the center of the Site is at 35.97714° North Latitude and 78.87089° West Longitude (North American Datum of 1983 [NAD83]).

Based on historical data, the Site became a complete fertilizer manufacturing plant, with an acid chamber structure, between 1907 and 1913. Fertilizer manufacturing continued at this site until sometime between 1950 and 1979. In 1970, Mobil Oil Corporation sold the Durham plant site to Swift Agricultural Chemical Corporation.

Currently, the former Durham site is occupied by three tax parcels that together cover approximately 20 acres. The eastern parcel (Parcel 118814) is undeveloped and heavily vegetated, while the southern parcel (Parcel 118830) consists of a vacant lot that is partially vegetated. The northwestern parcel (Parcel 118815) is occupied by industrial facilities including Magnetic Attractions and Portable On Demand Storage (PODS). The Magnetic Attractions facility and adjacent parking lot are located on the central portion of the property along Angier Avenue and are fenced off from the road. The PODS warehouse and parking lot are located on the western portion of the site and are adjacent to the railroad tracks. Most of the area where the former VCC facility structures were located is currently paved as a parking lot or covered by the existing facility buildings. No surface water features are present on or immediately adjacent to the Site, other than a typically dry drainage ditch on Parcel 118814. Land use around the former Durham VCC Site includes commercial and industrial facilities, residential properties, a church, and undeveloped land.

7. Hazard Control

Effective hazard control begins with appropriate planning. ARCADIS and ENTACT have established several tools to help develop and implement hazard controls and avoid incidents at various risk levels. Hazard control becomes an ongoing exercise that supports a safer working environment through continuous planning and preparation. This section provides details related to:

- Anticipated Site Tasks

- Job Safety Analyses (JSAs)
- ARCADIS Health and Safety Procedures
- ENTACT Health and Safety Procedures
- ARCADIS Field Health and Safety Handbook
- Hazard Communication

7.1 Anticipated Site Tasks

Anticipated site tasks may include the following:

- Site Mobilization/Demobilization

Site Survey

- Excavation of Soil
- Loadout of Soil
- Bulldozer operations
- Soil Sampling
- Construction Oversight

7.2 Job Safety Analyses

A JSA is a tool used for identifying potential hazards and developing corrective or protective systems to eliminate the hazard. A JSA has been completed for each safety critical task and they are included in Attachment 1. The JSA also lists the type of personal protection equipment (PPE) required for the completion of the project. A detailed list of PPE for the project is located in Section 11.5.

JSAs are constantly reviewed and updated as the work progresses. The JSA must be reviewed and signed by all persons involved in performing the JSA-described task. The task must not be started until all personnel understand the task, the hazards, and how hazards are to be mitigated. If a new task is to be undertaken with no current JSA available, the task may not be performed until a JSA has been developed and

approved. Blank forms are provided in the Operations Integrity Management System (OIMS) document.

7.3 ARCADIS Health and Safety Procedures

ARCADIS Health and Safety Procedures applicable to this project are listed below. These procedures should be reviewed with site personnel:

- ARC HSFS019 – Utility Location
- ARC HSCS005 – Excavation and Trenching
- ARC HSCS006 – Heavy Equipment

7.4 ARCADIS Field Health and Safety Handbook

The ARCADIS Field Health and Safety Handbook is an ARCADIS document containing information about topic-specific health and safety requirements for the field. This handbook contains relevant general topics and is used as part of the overall HASP process. To aid in the consistency of the HASP process, the handbook will be used as an informational source in conjunction with this HASP. The following handbook sections will be reviewed by the Site Supervisor with site personnel:

- Section III-A. Daily Safety Meetings/Tailgates
- Section III-F. General Housekeeping, Personal Hygiene and Field Sanitation
- Section III-G. Site Security, Work Zone, and Decontamination for HAZWOPER Sites
- Section III-H. Personal Safety and Other Unique Site Conditions
- Section III-I. Severe Weather
- Section III-M. Heat and Cold Stress
- Section III-CC. Hand and Power Tools
- Section III-GG. HAZWOPER and HAZMAT Response

- Section III-II. Drums and Other Materials Handling
- Section III-KK. Signs, Signals, and Barricades
- Section III-NN. Backing Safety
- Section IV – D. Excavation and Trenching
- Section IV-I. Demolition
- Section V-G. Water Operations Work

7.5 Hazard Communication

All project required chemicals must be handled in accordance with Occupational Safety and Health Association (OSHA) 29 Code of Federal Regulations (CFR) 1910.1200, ARCADIS-HazCom Procedure (ARC HSGE007), and the requirements outlined in the ARCADIS Field Health and Safety Handbook. Material safety data sheets (MSDS) for chemicals brought on site and chemicals of concern (COCs) for the site are included in Attachment 2.

8. Emergency Procedures

8.1 Emergency Response

If a medical incident occurs, the following steps will be taken: follow the site incident procedures (Attachment 3) and, if required, the WorkCare Incident Flowchart (Attachment 4).

In the event of a contaminant release, notify the ARCADIS and ENTACT Site Health and Safety Supervisors immediately and don required level of PPE and prepare to implement control procedures. The Site Supervisor (Brian Loomis) has the authority to commit resources, as needed, to contain and control released material and to prevent its spread to off-site areas.

8.1.1 Emergency Care Steps

Survey the scene. Determine if it is safe to proceed. Try to determine if the conditions that caused the incident are still a threat. Protect yourself from exposure before attempting to rescue the victim.

- Do a primary survey of the victim. Check for airway obstruction, breathing, and pulse. Assess likely routes of chemical exposure by examining the eyes, mouth, nose, and skin of the victim for symptoms.
- Phone Emergency Medical Services (EMS). Give the location, telephone number used, caller's name, what happened, number of victims, victim's condition, and help being given.
- Maintain airway and perform rescue breathing as necessary.
- Perform cardiopulmonary resuscitation (CPR) as necessary.
- Do a secondary survey of the victim. Check vital signs and do a head-to-toe exam.

Treat other conditions as necessary. If the victim can be moved, take him/her to a location away from the work area where EMS can gain access.

8.2 Off-Site Non-Emergency, Non-Life Threatening Work-Related Injury or Illness

For minor illnesses or injuries that may be work-related and are **not** life threatening or emergencies (e.g., you are in your hotel room and your lower back tightens up, earlier in the day you hand-augured 50 borings; you cut your hand in the office, put a band-aid on the cut, and go back to work, but when you get home you realize the cut is deep and is still bleeding; you hit your head on a cabinet while loading paper, and later on that day you suddenly feel dizzy) employees will take the following steps **before** seeking medical treatment at a medical treatment facility:

- Contact your supervisor and then contact WorkCare at 800-455-6155. Once you have spoken with WorkCare, you can let your supervisor know what has transpired.
- The Site Supervisor and employee will follow the procedures as listed in Attachments 3 and 4 for the category of injury that you have incurred.

8.3 First Aid – General

All persons must report any injury or illness to their immediate supervisor who will report up to his/her respective company Site Supervisor. Trained personnel will provide first aid. Injuries and illnesses requiring medical treatment must be documented. The ARCADIS and ENTACT Site Health and Safety Supervisors must conduct an Incident Investigation (II) as soon as emergency conditions no longer exist and first aid and/or medical treatment have been obtained. IIs must be completed and submitted to the ARCADIS and ENTACT Project Managers within 24 hours after the incident.

If first-aid treatment is required, first-aid kits are kept in the work vehicles and in site offices.

8.3.1 First Aid – Inhalation

Any employee complaining of symptoms of chemical overexposure will be removed from the work area and transported to the designated medical facility for examination and treatment.

8.3.2 First Aid – Ingestion

Call EMS and consult a poison control center for advice. Refer to the MSDS for treatment information. If the victim is unconscious, keep them on their side and clear the airway if vomiting occurs.

8.3.3 First Aid – Skin Contact

Project personnel, who have had skin contact with contaminants will, unless the contact is severe, proceed to the wash area. Personnel will remove any contaminated clothing and then flush the affected area with water. The worker should be transported to the medical facility if he/she shows any sign of skin reddening, irritation, or if he/she requests a medical examination.

8.3.4 First Aid – Eye Contact

Project personnel who have had contaminants splashed in their eyes or who have experienced eye irritation must immediately proceed to the eyewash station. Do not decontaminate prior to using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Flush the eye with clean running water. Arrange prompt transport to the designated medical facility.

8.4 Reporting Injuries, Illnesses, and Near-Loss Incidents

Injuries and illnesses, however minor, will be reported to the ARCADIS and ENTACT Site Health and Safety Supervisors immediately. The ARCADIS and ENTACT Site Health and Safety Supervisors will complete an injury report and submit it to the ARCADIS and ENTACT Health and Safety Managers and Project Managers within 24 hours.

Near-loss incidents are situations in which no injury or property damage occurred, but under slightly different circumstances an injury or property damage could have occurred. Near-losses are caused by the same factors as injuries; therefore, they must be reported and investigated in the same manner. An assessment must be done immediately after an injury, illness, near-loss, or other incident to determine if it is safe to proceed with the work.

8.5 Air Monitoring

Work area and worker air monitoring will be required at this job site. However, ENTACT is not responsible for any community air monitoring program at this work site. Action levels and air testing requirements for the protection of site workers and site occupants are presented in this Section. In the event that action levels are exceeded, we will investigate the source of particulates, reduce work productivity and/or increase dust control measures. The dust control and air monitoring components shall include two components: (1) monitoring to be performed at the perimeter of the exclusion zone; and (2) monitoring of site personnel working in the exclusion zone. Requirements for monitoring to be performed at the perimeter of the exclusion zone are provided in Table 8.1, below. Requirements for monitoring to be performed within the exclusion zone for the protection of site personnel shall be proposed by the RAC and shall be based on OSHA requirements.

8.6 Dust Suppression

Dust suppression methods will be used to control exposure to metals and nuisance dust with the goal of dust suppression being the avoidance of any visible dust. If work site conditions indicate that other chemical hazards are present, the FPM or HSO will issue a stop work order and will contact the Project Health and Safety Coordinator (PHSC) to revise or amend this HASP.

Appropriate dust control measures include fine water mist spraying of equipment and excavation faces, and covering excavated areas and materials with polyethylene after excavation activities. A supply of water and a means of dispersion will be maintained onsite for immediate dust control.

Note that the standard site work practice for dust suppression to begin is whenever dust is visible at the point of generation.

8.7 Respirable Dust Monitoring

Real time monitoring for respirable dust will be performed using a field-portable monitor that displays airborne dust concentrations immediately and continuously on a digital LCD screen in units of milligrams per cubic meter of air (mg/m³) with a data logging feature. These units use optical light scattering and has a built-in power source. These units are sometimes referred to as real-time aerosol monitors (RAM) or personal data RAM (PDR). Calibration of the RAM will be in accordance with the manufacturer's instructions.

Monitoring will be performed as needed, such as for newly detected particulates which were not previously detected or anticipated. Readings above 0.15 mg/m³ will require

additional dust suppression. Dust suppression may be accomplished by slowing or stopping the work activity, increased application of water and the use of less aggressive techniques for mixing and excavating soils and sludge. Speed limits on the site will be set to control generation of road dust.

8.8 Metal Monitoring (Arsenic and Lead)

Personal and area samples will be collected in accordance with NIOSH Method 7300 utilizing pre-weighed MCE filters and calibrated personal sampling pumps (Gillian or equal). Calculated air volumes for each sample will be provided to the laboratory in order to obtain the time-weighted average concentrations. Samples will be analyzed by a qualified laboratory for the presence of inorganic arsenic and lead. Samples will be collected from the following general locations:

- The downwind perimeter of the excavation, sediment removal, stabilization or load out
- Upwind of work area
- A worker inside the work area

Adequate samples will be collected to determine compliance with OSHA standards and the action levels listed above. The number of samples collected and required turnaround time for laboratory analysis will be determined by the PHSC. Prior to starting soil excavation or sediment removal a set of background samples will be collected to establish appropriate background readings for the site.

In addition to the monitoring required above, a 4-gas meter with PID will be available onsite for use in monitoring unexpected conditions, atmospheres within excavations and spills.

TABLE 8.1

AIRBORNE CONTAMINANT ACTION LEVELS

Parameter	Reading	Action	Measurement Frequency
Total Particulates ^{(1),(3)}	< 0.15 mg/m ³	Normal operations	Real-time monitoring for dust concentrations on an hourly basis (minimum) from a minimum of four locations around the perimeter of the excavation area.
	> 0.15 mg/m ³	Stop work, investigate source of particulates, reduce generation rate. Contact health and safety officer.	
TWA Monitoring ⁽⁴⁾	As < 0.005 mg/m ³ , Pb < 0.030 mg/m ³	Normal operations	Time-weighted average samples for total dust, arsenic and lead from a minimum of four locations around the perimeter of the support zone around the excavation area.
	As > 0.005 mg/m ³ , Pb > 0.030 mg/m ³	Stop work, investigate source of particulates, reduce generation rate. Contact health and safety officer.	

8.9 Air Monitoring Log and Posting of Results

The Field Project Manager will ensure that all air monitoring data is logged including instruments, data, work process, location, calibration, and analyte concentration.

All personal air monitoring results will be posted in the site break area within two days of receiving the results. Area and perimeter air sampling results will be made available upon request. A summary of all real-time air monitoring data will be sent to the PC and PHSC weekly.

ENTACT shall provide results of the air monitoring program to the ARCADIS representative as they are received.

8.10 Noise Monitoring

Noise monitoring will be conducted as required. Hearing protection is mandatory for all employees in noise hazardous areas, such as around heavy equipment. As a general rule, sound levels that cause speech interference at normal conversation distance should require the use of hearing protection.

8.11 Monitoring Equipment Maintenance and Calibration

All direct-reading instrumentation calibrations should be conducted under the approximate environmental conditions the instrument will be used. Instruments must be calibrated before and after use, noting the reading(s) and any adjustments that are necessary. All air monitoring equipment calibrations, including the standard used for calibration, must be documented on a calibration log or in the field notebook. All completed health and safety documentation/forms must be reviewed by the ARCADIS and ENTACT Site Health and Safety Supervisors and maintained by the ARCADIS Site Supervisor and ENTACT Site Superintendent.

All air monitoring equipment will be maintained and calibrated in accordance with the specific manufacturer's procedures. Preventive maintenance and repairs will be conducted in accordance with the respective manufacturer's procedures. When applicable, only manufacturer-trained and/or authorized personnel will be allowed to perform instrument repairs or preventive maintenance.

If an instrument is found to be inoperative or suspected of giving erroneous readings, the ARCADIS and ENTACT Site Health and Safety Supervisors must be responsible for immediately removing the instrument from service and obtaining a replacement unit. If the instrument is essential for safe operation during a specific activity, that activity must cease until an appropriate replacement unit is obtained. The ARCADIS and ENTACT Site Health and Safety Supervisors will be responsible for confirming that a replacement unit is obtained and/or repairs are initiated on the defective equipment.

Instrument	Calibration Requirement	Comments
PDR Dust Monitor	Daily pre-use zero in HEPA zero Bag	Annual factory calibration
Personal Air Sampling Pumps with sampling media	Daily pre and post use flow calibration with NIST traceable standard	Dynamic calibration with sample media in line
Multi-RAE 4-gas + PID	Daily pre-use Bump Test	Factory calibration per manufacturer's instructions
Area Air Sampling Pumps with sampling media	Daily pre and post use flow calibration with NIST traceable standard	Dynamic calibration with sample media in line

8.12 Action Levels

The following table presents airborne contaminant action levels that will be used to determine the procedures and protective equipment necessary based on conditions as measured at the site. The action levels provided below are for air concentrations that are measured in the work zone where employees are working.

Monitoring Equipment	Hazard	Action Level Above Background	Action
PID	Organic gas/vapor	< 10 ppm	Level D or D+
		> 10 ppm	Withdraw from operation until elevated readings subside.
LEL Monitor	Explosive atmosphere	< 10% LEL	Level D

		> 10% LEL	Immediate withdrawal. Explosive hazard. Contact the HSC for further instructions.
PDR	Nuisance Dust	0.5 mg/m ³	Increase application of water. Stop work and contact PHSC if level defy control.

9. Roles and Responsibilities

9.1 Policy Statement

EXXON, ARCADIS, and ENTACT's policy is to provide a safe and healthful work environment. No aspect of operations is of greater importance than injury and illness prevention. A fundamental principle of safety management is that all injuries, illnesses, and incidents are preventable. ARCADIS and ENTACT will take every reasonable step to eliminate or control hazards to minimize the possibility of injury, illness, or incident.

This HASP prescribes the procedures that must be followed during site activities. Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without the prior approval of the EXXON Project Manager, or the ARCADIS and ENTACT Project Managers and the ARCADIS and ENTACT Health and Safety Managers. Significant changes in site conditions and/or the scope of work may require a review and modification to this HASP. Such changes will be completed in the form of an addendum or a revision to this HASP.

The provisions of this HASP are mandatory for all ARCADIS and ENTACT personnel and ARCADIS and ENTACT subcontractors assigned to the project. All visitors to ARCADIS and ENTACT work areas on site must abide by the requirements of this HASP.

9.2 All Personnel

All ARCADIS, ENTACT and subcontractor personnel must adhere to the procedures outlined in this HASP while performing their work. Participation in the Loss Prevention System™ (LPS™) program is mandatory. Each person is responsible for completing tasks safely, and reporting any unsafe acts or conditions to their supervisor. No person

may work in a manner that conflict with these procedures. After due warnings, ARCADIS will dismiss from the site any person or subcontractor who violates safety procedures. Prior to initiating site activities, all personnel will receive training in accordance with applicable regulations and be familiar with the requirements and procedures contained in this HASP. In addition, all personnel will attend twice daily safety meetings (tailgate meetings) to discuss site-specific hazards prior to beginning each day's work and again after lunch. Every employee at the site has the responsibility to stop the work of a coworker or subcontractor if the working conditions or behaviors are considered unsafe.

9.2.1 Project Manager

The ARCADIS Project Manager is responsible for verifying that project activities are completed in accordance with the requirements of this HASP. As well as for confirming that the ARCADIS Site Supervisor has the equipment, materials, and qualified personnel to fully implement the safety requirements of this HASP, and/or that other subcontractors assigned to this project meet the requirements established by ARCADIS, it is also the responsibility of the ARCADIS Project Manager to:

- Consult with the ARCADIS and ENTACT Health and Safety Supervisors on site health and safety issues.
- Verify that subcontractors meet health and safety requirements prior to commencing work.
- Validate, via questioning, the performance of Safe Performance Self Assessments (SPSAs).
- Participate in Loss Prevention Observation (LPO) feedback sessions.
- Review LPO forms.
- Verify that all incidents are thoroughly investigated.
- Report all losses and near-losses to the EXXON Project Manager and the ARCADIS Health and Safety Officer within 24-hours.
- Verify that Loss Investigation and Near-Loss Investigation corrective actions are implemented within the appropriate time period
- Contact the ARCADIS Health and Safety Officer and the EXXON Project Manager, immediately of any injury or accident.
- Approve, in writing, addenda, or modifications of this HASP.

- Suspend work or modify work practices, as necessary, for personal safety, protection of property, and regulatory compliance.

9.2.2 Health and Safety Officers

The ARCADIS and ENTACT Health and Safety Officers have overall responsibility for the technical health and safety aspects of the project, including review and approval of this HASP. Inquiries regarding ARCADIS and ENTACT health and safety procedures and project procedures should be addressed to these individuals.

9.2.3 Site Supervisor/Site Superintendent

The ARCADIS Site Supervisor and ENTACT Site Superintendent are responsible for implementing this HASP, including communicating requirements to on-site personnel and subcontractors. The ARCADIS Site Supervisor will be responsible for informing the ARCADIS and ENTACT Project Managers of changes in procedures or site conditions so that those changes may be addressed in this HASP. Other responsibilities are to:

- Consult with the ARCADIS and ENTACT Health and Safety Managers regarding site health and safety issues.
- Conduct LPOs at the site, and complete the LPO forms.
- Obtain a site map and determine and post routes to hospital and emergency telephone numbers.
- Observe on-site project personnel for signs of ill health effects.
- Investigate and report any incidents to the ARCADIS and ENTACT Health and Safety Managers and Project Managers.
- Verify that all on-site personnel have had applicable training.
- Verify that on-site personnel have read the HASP or its contents have been presented to them, they understand the contents, and agree to abide by them.
- Verify that on-site personnel are informed of the physical, chemical, and biological hazards associated with site activities and the procedures and protective equipment necessary to control the hazards.

- Suspend work, modify work practices, or stop work, as necessary, for personnel safety, protection of property, or regulatory compliance.
- Complete all necessary forms that are included in this HASP.

9.2.4 Health and Safety Supervisor

The ARCADIS and ENTACT Health and Safety Supervisors are responsible for field health and safety issues, including the execution of this HASP. Questions in the field regarding health and safety procedures and project procedures should be addressed to this individual. Although the ARCADIS and ENTACT Health and Safety Officers/Managers may not be on site, the ARCADIS and ENTACT Health and Safety Supervisors are the primary site contacts for health and safety matters within their respective organizations and coordinate with the ARCADIS Site Supervisor and ENTACT Site Superintendent. It is the responsibility of the ARCADIS and ENTACT Health and Safety Supervisors to:

- Provide technical assistance and LPS™ training to all on-site staff, including subcontractors.
- Participate in all IIs and confirm that they are reported to the EXXON Project Manager within 24 hours.
- Designate the Site Supervisor to conduct site safety orientation training and safety meetings.
- Verify that ARCADIS and ENTACT personnel and subcontractors have received the required physical examinations and medical certifications.
- Review site activities with respect to compliance with this HASP.
- Maintain required health and safety documents and records.
- Assist the Site Supervisor in instructing field personnel on project hazards and protective procedures.
- Review LPO forms.
- Suspend or modify work practices, as necessary, for personnel safety, protection of property, or regulatory compliance.

9.3 Short Service Employee Program

Recognizing that employees who are new are at a greater risk for incidents, the following guidelines are established to identify those employees and ease their transition. Short Service Employees (SSEs) will have an assigned field mentor to assist them in adjusting to the project requirements and procedures. SSEs will be identified in the field by wearing an orange hardhat.

- ARCADIS and ENTACT employees new to the industry and new to ARCADIS and ENTACT will be designated SSEs for 6 months.
- ARCADIS and ENTACT employees experienced in the industry but new to ARCADIS and ENTACT will be designated SSEs for 3 months.

Additionally, the following apply:

- A crew of two to three may have one SSE on site.
- A crew of five may have two SSEs on site.
- A crew of 10 or more may have no more than three SSEs on site.
- Special measures by the contractor company may be appropriate when the ratio of SSEs versus SSMPs in a work group exceeds 50% (second and third tiered subcontractors). Examples of such special measures may include:
 - Deploying extra trained resources several days in advance of the commencement of work such that they become familiar with the work, its hazards, and the contractor workforce capabilities.
 - Providing more comprehensive orientation/training for a "core group" of contractor personnel. This "core group" can be graduated in a timely manner into the SSMP role prior to the mobilization of the workforce on the site.
 - Intensive interaction with SSEs, such as through frequent safety observations, LPOs and interventions.
 - Special measures may be appropriate to guide contractors with a short presence on the site, such as truckers and specialty SSWs.
 - ENTACT's SSE program may include the maintenance of a list of SSEs, including date of entry and graduation to Site Safety Mature

Person (SSMP). Graduation criteria and sign-off used by the contractor company should be clear and documented.

- a) Appropriate supervision of the SSEs:
 - The ENTACT supervisor of the SSE (and sub contractor SSE's) shall be responsible and accountable for SSE's competency, safety behavior, and performance. The Mentor/Coach shall be accountable for guiding the SSE's safety behavior throughout the work shift.
- b) Training/Mentoring and Graduation plan:
 - A documented safety training/mentoring plan for SSEs should include assessment of competency, graduation to SSMP or potential removal from site for individuals who do not graduate within a reasonable period of time. The contractor company should establish criteria for workers to graduate from SSEs to SSMPs. Examples of criteria include: competency testing, a minimum number of Loss Prevention Observations (LPOs), a minimum amount of time on-the-job, etc.

9.4 Subcontractors

Subcontractors and their personnel must understand and comply with applicable regulations and site requirements established in this HASP. All subcontractor personnel will receive training in accordance with applicable regulations, and be familiar with the requirements and procedures contained in this HASP prior to initiating site activities. All subcontractor personnel will attend an initial LPS™ safety training session prior to beginning work at the site. Additionally, on-site subcontractor personnel must attend and participate in all daily safety meetings.

9.5 All On-Site Personnel

All on-site personnel (including subcontractors) must read and acknowledge their understanding of this HASP before commencing work and abide by the requirements of this HASP. All on-site personnel will sign the HASP Acknowledgement Form following their review of this HASP.

All ARCADIS, ENTACT, and subcontractor personnel will receive training in accordance with applicable regulations and be familiar with the requirements and procedures contained in this HASP prior to initiating site activities. In addition, all on-site personnel must attend a mandatory LPS™ training session prior to beginning work at the site. Attendance is also required for all daily safety meetings and any other required safety meetings as necessary.

All on-site personnel must perform an SPSA prior to beginning each work activity. The SPSA process involves determining worst-case scenarios for the tasks at hand and then taking adequate steps to eliminate or mitigate the risk. This process must be performed prior to beginning each activity and after any near-loss or other incident to determine if it is safe to proceed. The Site Supervisor of ARCADIS or ENTACT or the EXXON Project Manager may verify the performance of SPSAs through random interviews with any or all on-site personnel. On-site personnel will immediately report the following to the Site Supervisor:

- Personnel injuries and illnesses no matter how minor.
- Unexpected or uncontrolled release of chemical substances.
- Symptoms of chemical exposure.
- Unsafe or hazardous situations.
- Unsafe or malfunctioning equipment.
- Changes in site conditions that may affect the health and safety of project personnel.
- Damage to equipment or property.
- Situations or activities for which they are not properly trained.
- Near losses.

9.6 Visitors

All visitors to ARCADIS and ENTACT work areas must check in with the ARCADIS Site Supervisor. Visitors will be cautioned to avoid skin contact with surfaces, soils, or other materials that may be suspected to be impacted by COCs.

All visitors will receive a general safety orientation prior to having any access to the work area. Generally, visitors will be restricted to non-working areas at the site and will not be allowed access to any portion of the work area without escort by site personnel or another authorized ARCADIS, ENTACT, or EXXON representative. To access working areas of the site, visitors must show documentation of valid 24 hr or 40 hr



**Former VCC Durham
Site Specific Health
and Safety Plan**

HAZWOPER training. Visitors do not include personnel associated with the USEPA or other regulatory agencies.

10. Training

10.1 Authorization to Enter

Only personnel with the appropriate training (e.g. 40 hr HAZWOPER training) and medical certifications will be allowed to work at the site. The ARCADIS Site Supervisor will maintain a list of authorized workers; only personnel on the work authorized list, regulatory agency personnel, authorized EXXON employees, and others authorized by the Project Manager will be allowed to enter the site work areas.

10.2 Loss Prevention System™

All ARCADIS and ENTACT employees and subcontractors at the site must participate in the LPS™ system. LPS™ is a behavior-based program that aims to eliminate accidents, environmental incidents, and deviations from prescribed work procedures. LPS™ consists of the following tools, which will be implemented at the site and include SPSA, Loss and Near-Loss Investigation, LPO, JSA, and stewardship. Optimization of the LPS™ depends upon timely reporting (both internal and external) of all types of LPS™ tools (e.g., near loss, observations, incidents).

10.2.1 Job Safety Analysis

A JSA is a tool used for identifying potential hazards and developing corrective or protective systems to eliminate the hazard. The person doing the work will contribute to the development of the JSA. Any changes in site conditions and/or the scope of work may require a review and modification to the JSA in question or the additions of JSAs. During this review process, comments on the JSA and its procedures should be obtained from personnel associated with the activity being analyzed. Current JSAs are provided in Attachment 1, blank JSA forms are provided in the OIMS document.

10.3 Occupational Safety and Health Administration

All on-site project personnel who work in areas where they may be exposed to site contaminants must be trained as required by OSHA Regulation 29 CFR 1910.120 (HAZWOPER). Personnel who completed their initial training more than 12 months prior to starting the project must have completed an 8-hour refresher course within the past 12 months. The Site Supervisor has completed the additional 8 hours of supervisory training. All employees assigned to this project that will be working on site

must attend an LPS™ training session and a site health and safety orientation briefing with the ARCADIS and ENTACT Health and Safety Supervisors.

Personnel working in regulated areas (those areas where a specific OSHA standard applies to the work, such as arsenic, and lead,) shall receive the training required by that standard.

Lead Standard (29 CFR 1910.1025, or 1926.62 as applicable)

Inorganic Arsenic Standard (29 CFR 1910.1018)

10.4 Site-Specific Training

Site-specific training will be accomplished by on-site personnel reading this HASP and associated JSAs. The review must include a discussion of the chemical, physical, and biological hazards; PPE; safe work procedures; and emergency procedures for the project.

No person will be allowed in the work area during site operations without first being given a site orientation, safety briefing, and LPS™ training and/or refresher training. Following this initial meeting, safety meetings will be held as required. All people entering the site work areas, including visitors, must document their attendance at this briefing, as well as any required safety meetings on the forms included with this HASP. No person will be allowed in the work area unless they are wearing the minimum PPE. A safety meeting must also be held prior to new tasks, and repeated if new hazards are encountered.

10.5 First Aid and Cardiopulmonary Resuscitation

At least one employee current in first aid/CPR will be assigned to the work crew and will be on site during operations. Refresher training in first aid and CPR (every other year) is required to keep the certificate current. These individuals must also receive training regarding the precautions and PPE necessary to protect against exposure to blood borne pathogens.

10.6 Certification Documents

A training and medical file has been established for this project and will be kept with field personnel and in the ARCADIS job trailer during site operations. Specialty training, such as first aid/CPR certificates, as well as current medical clearances for all project field personnel required to wear respirators, will be maintained within that file. All ARCADIS, ENTACT, and subcontractor personnel must provide their training and medical documentation to the Site Supervisor prior to starting work.

11. Levels of Protection

PPE is required to safeguard site personnel from various hazards. Varying levels of protection may be required depending on COC levels and the degree of physical hazard. This section presents the various levels of protection and defines the conditions of use for each level.

11.1 Contaminants of Concern

The COCs at the site are arsenic and lead.

It is not expected that exposure to arsenic and lead will exceed OSHA PELs or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs). The Health and Safety Supervisor will initiate air monitoring to confirm that airborne concentrations are below levels requiring additional precautions. If sampling indicates that exposures exceed PEL/TLV or the OSHA action level for lead, appropriate precautions will be instituted and this HASP modified as needed. Base PPE for the below levels is listed in Table 12-1 Personal Protective Equipment Levels.

Contaminants of Concern

Contaminant	OSHA PEL	ACGIH TLV	Exposure routes	acute symptoms	Chronic symptoms	Target organ	IP	Spec. gravity
Arsenic	0.005	0.010	Inhalation	Ulceration of	GI	Liver,	na	5.73
See OSHA Standard 1910.1018	mg/m ³ Action level 0.010 mg/m ³ PEL	mg/m ³	Absorption Contact Ingestion	nasal septum, dermatitis, respiratory Irritation	disturbances peripheral neuropathy cancer	kidney, skin, lungs		
Lead	0.030 mg/ m ³ Action level 0.050 mg/ m ³ PEL	0.5 mg/ m ³	Inhalation Contact Ingestion	Ulceration of nasal septum, dermatitis, respiratory Irritation	GI disturbances peripheral neuropathy cancer	Eyes, skin, resp sys, CNC, Liver, Kidneys,	11.34	

11.2 Level D Protection

The minimum level of protection that is required of personnel and subcontractors at the site is Level D, which is worn when activities do not involve potential dermal contact with contaminants and there is no indication that an inhalation hazard exists, unless otherwise specified in the JSA.

11.3 Modified Level D Protection

Modified Level D will be used when airborne contaminants are not present at levels of concern for inhalation, but site activities present the potential for skin contact with contaminated materials.

11.4 Level C Protection

Level C protection will be required when the airborne concentrations of COCs reaches one-half of the OSHA PEL or ACGIH TLV.

Table 12-1 Personal Protective Equipment Levels

Req'd PPE	Level D	Modified Level D	Level C
Work clothing as prescribed by weather	x	x	x
Safety-toe work boots, meeting American Society for Testing and Materials (ASTM) F2412 and F2413 with puncture resistant soles or, puncture-resistant insoles.	x	x	x
Safety glasses with side shields or goggles, meeting American National Standards Institute (ANSI) Z87.	x	x	x
Hard hat, meeting ANSI Z89.	x	x	x
Hearing protection (if noise levels exceed 85 decibels [dBA], then hearing protection with a USEPA Noise Reduction Rating [NRR] of at least 20 dBA must be used).	x	x	x

Req'd PPE	Level D	Modified Level D	Level C
Long-sleeved shirt.	x	x	
Face shield along with glasses or goggles when using power washer or chainsaw	x	x	
Reflective vest	x	x	x
Nitrile outer gloves worn over nitrile surgical gloves.		x	x
Latex or polyvinyl chloride (PVC) overboots when contact with COC-impacted media is anticipated.		x	x
Full-face or ½ face, as appropriate, air-purifying respirator with appropriate cartridges for site COCs.			x
Tyvek [®] suit, with ankles and cuffs taped to boots and gloves. (Polycoated if splash hazard exists)		x	x
Cut-Resistant Gloves when working with sharps	x	x	x
Cut 2 Gloves must be worn by all site personnel while in the work zone as per EXXON	x	x	x

11.5 Personal Protective Equipment Selection

PPE will be selected based on the potential for contact, site conditions, ambient air quality, and the judgment of supervising site personnel and health and safety professionals. The PPE used will be chosen to be effective against the COCs present on site.

Specifically, the level of PPE selected will be based on the work environment and an assessment by the Site Supervisor of the potential for skin contact with COCs. The minimum required PPE is defined in the JSA for each activity.

11.6 Using Personal Protective Equipment

Depending upon the level of protection selected, specific donning and doffing procedures may be required. The procedures presented in this section are mandatory if Modified Level D PPE is used. All personnel entering the exclusion zone (EZ) must put on the required PPE in accordance with the requirements of this HASP. When leaving the EZ, PPE will be removed in accordance with the procedures listed to minimize the spread of COCs.

12. General Safety Practices

12.1 General Safety Rules

General safety rules for site activities include, but are not limited to, the following:

- At least one copy of this HASP must be in a location at the site that is readily available to personnel, and all project personnel will review this HASP prior to starting work.
- Wear all PPE, as required, and stop work and replace damaged PPE immediately.
- Upon skin contact with materials that may be impacted by COCs, remove contaminated clothing and wash the affected area immediately. Contaminated clothing must be changed. Any skin contact with materials potentially impacted by COCs must be reported to the Site Supervisor or the ARCADIS and ENTACT Health and Safety Supervisors immediately. If needed, medical attention should be sought.
- Practice contamination avoidance. Avoid contact with surfaces either suspected or known to be impacted by COCs, such as mud or discolored soil.
- There will be no eating, drinking or smoking in the exclusion zone.
- Remove PPE, as required, before leaving the work area to limit the spread of COC-containing materials.
- Dispose all soiled gloves in designated receptacles designated for this purpose.
- Report all injuries, illnesses, near losses, and unsafe conditions or work practices to the Site Supervisor.

12.2 Biological Hazards

Biological hazards may include poison ivy, thorny bushes and trees, ticks, mosquitoes, chiggers, fire ants, snakes, stray animals, and other pests.

12.2.1 Tick-Borne Diseases

Lyme disease commonly occurs in summer and is transmitted by the bite of infected ticks. *Erlchiosis* also commonly occurs in summer and is transmitted by the bite of infected ticks. These diseases are transmitted primarily by the deer tick, which is smaller and redder than the common wood tick. Tick repellent containing diethyltoluamide should be used when working in tick-/mosquito-infested areas. In addition, workers should search the entire body daily for attached ticks. Ticks should be removed promptly and carefully without crushing because crushing can squeeze the disease-causing organism into the skin.

12.2.2 Poisonous Plants

Poisonous plants may be present in the work area. Personnel should be alerted to its presence and instructed on methods to prevent exposure. The main control is to avoid contact with the plant, cover arms and hands, and frequently wash potentially exposed skin. Particular attention must be given to avoiding skin contact with objects or protective clothing that have touched the plants. Treat every surface that may have touched the plant as contaminated and practice contamination avoidance. If skin contact is made, the area should be washed immediately with soap and water and observed for signs of reddening.

12.2.3 Snakes

The possibility of encountering snakes exists, specifically for personnel working in wooded/vegetated areas. To minimize the threat of snakebites, all personnel walking through vegetated areas must be aware of the potential for encountering snakes and the need to avoid actions that could lead to encounters. If a snake bite occurs, an attempt should be made to visually identify the snake. The victim must be transported immediately to the nearest hospital; first aid consists of applying a constriction band and washing the area around the wound to remove any unabsorbed venom. Snakes of North Carolina are detailed in the Safety Share listed at Attachment 5.

12.2.4 Spiders

Personnel may encounter spiders during work activities. Two spiders are of concern: the black widow and the brown recluse. Both prefer dark sheltered areas, such as basements, equipment sheds and enclosures, and around woodpiles. To minimize the threat of spider bites, all personnel walking through vegetated areas must be aware of the potential for encountering these spiders. Personnel need to avoid actions that may result in encounters. If a spider bite occurs, the victim must be transported to the nearest hospital as soon as possible; first aid consists of applying ice packs and washing the area around the wound to remove any unabsorbed venom.

12.3 Spill Control

All personnel must take every precaution to minimize the potential for spills during site operations. All on-site personnel will immediately report any discharge, no matter how small, to the Site Supervisor. All sorbent materials used for the cleanup of spills will be containerized and labeled appropriately. Sorbent material will be stored in the site vehicle prior to use. In the event of a spill, all field personnel will take appropriate measures to contain and control released materials and to prevent its spread.

13. General Site Access and Control

The ENTACT Site Safety Officer will coordinate access and control security at the work site. As the work dictates, the Site Safety Officer will establish a work area perimeter. The size of the perimeter will be based on the daily task activities and will be discussed with all project personnel during the tailgate meeting and then documented on the tailgate meeting form. Additional information on site control is found in the ARCADIS Employee Field H&S Handbook, Section G, Site Security, Work Zones and Decontamination for HAZWOPER Sites.

13.1 Contamination-Control Zones

Contamination-control zones are maintained to prevent the spread of contamination and to prevent unauthorized people from entering hazardous areas.

13.1.1 Exclusion Zone (Red Zone)

A Red Zone may consist of a specific work area or may be the entire area of potential contamination. All employees entering a Red Zone must use the required PPE and must have the appropriate training and medical clearance for hazardous waste work. The Red Zone is the defined area where there is a possible respiratory and/or contact health hazard. Cones, caution tape, or a site diagram will identify the location of each Red Zone.

13.1.2 Contamination-Reduction Zone (Yellow Zone)

The Yellow Zone or transition area will be established, if necessary, to perform decontamination of personnel and equipment. All personnel entering or leaving the Red Zone will pass through this area to prevent any cross-contamination. Tools, equipment, and machinery will be decontaminated in a specific location. The decontamination of all personnel will be performed on site adjacent to the Red Zone. Personal protective outer garments and respiratory protection will be removed in the Yellow Zone and prepared for cleaning or disposal. This zone is the only appropriate corridor between the Red Zone and the Green Zone.

13.1.3 Support Zone (Green Zone)

The Green Zone is a clean area outside the Yellow Zone located to prevent employee exposure to hazardous substances. Eating, drinking, and cell phone use will be

permitted in the Green Zone only after proper decontamination. Smoking may be permitted in the Green Zone.

13.2 Posting

Work areas will be prominently marked and delineated using orange construction fences, cones, caution tape, or a site diagram. The Site Safety Officer will monitor work zones for effectiveness and adjust as required.

Only authorized personnel will be allowed beyond the perimeter. Other site workers and visitors to the site should be kept out of the work site. If visitors need access to the site, the Site Safety Officer will escort the visitor at all times. All visitors will log in and out with the Site Safety Officer. The visitor log sheet is included in Attachment 8.

13.3 Traffic Safety

Work activities will be performed adjacent to city roads, in the right of ways, and in city roads (trucking activities). To minimize the likelihood of project personnel and activities being affected by traffic, the following procedures will be implemented. When working adjacent to roadways or in parking lots, cones will be placed along the perimeter of the work area to alert drivers to the presence of personnel and equipment. All crewmembers will remain behind the equipment and the traffic barrier. All site personnel will wear an outer layer of orange warning garments, such as vests, jackets, or shirts. Traffic control procedures are found in the OIMS document.

13.4 Noise

Exposure to noise over the OSHA action level can cause temporary impairment of hearing; prolonged and repeated exposure can cause permanent damage to hearing. The risk and severity of hearing loss increases with the intensity and duration of exposure to noise. In addition to damaging hearing, noise can impair voice communication, thereby increasing the risk of accidents on site.

All personnel must wear hearing protection when it is difficult to hear a coworker at normal conversation distance. Activities that require hearing protection include, but are not limited to, clearing/grubbing, chipper operation, and excavator operation. The Site Safety Officer should be contacted if there is any doubt as to whether hearing protection is required.

13.5 Lifting Safety

Using proper lifting techniques may prevent back strain or injury. The fundamentals of proper lifting include:

- Consider the size, shape, and weight of the object to be lifted.
- The hands and the object should be free of dirt or grease that could prevent a firm grip.
- Fingers must be kept away from points that could crush or pinch them, especially when putting an object down.
- The load should be kept as low as possible, close to the body, with the knees bent.
- To lift the load, grip firmly and lift with the legs, keeping the back as straight as possible.
- When putting an object down, the stance and position are identical to that for lifting: the legs are bent at the knees, and the back is straight as the object is lowered.
- Two-person lifts are required for lifting objects greater than 50 pounds or awkwardly shaped.

13.6 Emergency Equipment

Adequate emergency equipment will be available for the activities being conducted on site and as required by applicable sections of 29 CFR 1910. Personnel will be provided with access to emergency equipment (located in site vehicle), including, but not limited to, the following:

- Fire extinguishers of at least 5 pounds, class, number, and location as required by applicable sections of 29 CFR 1910.
- Industrial first-aid kits of adequate size for the number of personnel on site.
- Emergency eyewash and/or shower, if required by operations being conducted on site.

13.7 Lockout/Tagout Procedures

Only fully qualified and trained personnel will perform maintenance procedures. Before maintenance begins, lockout/tagout procedures per OSHA 29 CFR 1910.147 will be followed. Lockout is the placement of a device that uses a positive means, such as lock, to hold an energy- or material-isolating device such that the equipment cannot be operated until the lockout device is removed. If a device cannot be locked out, a tagout system will be used. Tagout is the placement of a warning tag on an energy- or material-isolating device indicating that the equipment controls may not be operated until the tag is removed by the personnel who attached the tag.

13.8 Electrical Safety

Electricity may pose a particular hazard to site workers due to the use of permanent and portable electrical equipment. If wiring or other electrical work is needed, a qualified electrician must perform it. General electrical safety requirements include:

- Portable and semiportable tools and equipment must be grounded by a multiconductor cord having an identified grounding conductor and a multicontact polarized plug-in receptacle.
- Electric wire or flexible cord passing through work areas must be protected from foot traffic, vehicles, sharp corners, projections, or pinching.
- All circuits must be protected from overload.
- Plugs and receptacles must be kept out of water unless of an approved submersible construction.
- All extension cord outlets must be equipped with ground fault circuit interrupters.
- Attachment plugs or other connectors must be equipped with a cord grip and be constructed to endure rough treatment.
- Extension cords or cables must be inspected prior to each use and replaced if worn or damaged. Cords and cables must not be fastened with staples, hung from nails, or suspended by bare wire.
- Flexible cords must be used only in continuous lengths without splice, with the exception of molded or vulcanized splices made by a qualified electrician.

13.9 Department of Transportation Dangerous Good Shipping Requirements

Hazardous materials and dangerous goods (re: Canadian regulatory term) are those materials that have one or more of the following characteristics: explosives, compressed and liquefied gases, flammable liquids and solids, oxidizing materials, and other substances that are poisonous, infectious, radioactive or corrosive. It is the handling, loading, packing, or placing of hazardous materials (dangerous goods) in or from a container or vehicle at any facility for the purpose of transportation (including storing) in the course of transportation. This also includes the packing and transporting for air and ground shipment of laboratory analysis samples.

Regulations governing hazardous materials and dangerous goods exist to protect people, the environment, or property when these goods are being transported by road, rail, sea, or air. Given the increased emphasis of federal (i.e., Federal Aviation Administration and United States Department of Transportation [USDOT], and the Transportation of Dangerous Goods Act) attention to the transport of hazard material-containing goods, it is imperative that all shipments are packaged and transported such that they adhere to all federal requirements. ARCADIS and ENTACT have strict policies in place, whether shipping via ground or air, designed to meet the associated federal requirements. As such, only ARCADIS and ENTACT staff that have been trained in the proper methods to prepare and ship hazardous materials are authorized to do so. If you have not received training on the appropriate preparation and shipping protocols, you are to contact your supervisor or health and safety representative prior to packaging and/or shipping any material that is, or suspected to be, hazardous. Employees who ship by air must have taken an International Air Transport Association training course.

13.9.1 Materials of Trade

The USDOT allows for a small amount of hazardous materials that are used in or an inherent part of our work to be transported in company vehicles. This includes things like gasoline, paint, small compressed gas cylinders, calibration gas. To transport these:

- Staff will complete Materials of Trade training.
- Vehicles used in transportation to and from off-site work locations will be in conformance with ARCADIS vehicle safety procedures.

Hazardous materials will be transported as described above as a result of the activities covered in this HASP. Site personnel who transport materials mentioned above will complete the Hazardous Materials Transportation Form included in Attachment 7.

13.10 Decontamination

The ENTACT Site Safety Officer is responsible for establishing and supervising decontamination on site. All personnel must undergo personal decontamination prior to exiting the work area. Personnel decontamination will include the removal of gross contamination from their outer clothing and boots, and the removal and disposal or cleaning of PPE. In addition, all equipment used on site will be decontaminated prior to leaving the site. The rinsate will be collected for disposal. PPE and rinsate will be collected in designated drums to be disposed of at an EXXON- approved facility.

13.11 Medical Surveillance

13.11.1 Medical Examination

All personnel who are potentially exposed to site contaminants must participate in a medical surveillance program as defined by OSHA at 29 CFR 1910.120 (f).

13.11.2 Pre-Placement Medical Examination

All potentially exposed personnel must have completed a comprehensive medical examination prior to assignment, and periodically thereafter, as defined by applicable regulations. The pre-placement and periodic medical examinations typically include the following elements:

- Medical and occupational history questionnaire.
- Physical examination.
- Complete blood count, with differential.
- Liver enzyme profile.
- Chest X-ray, at a frequency determined by the physician.
- Pulmonary function test.

- Audiogram.
- Electrocardiogram for persons older than 45 years of age, or if indicated during the physical examination.
- Drug and alcohol screening, as required by job assignment.
- Visual acuity.
- Follow-up examinations, at the discretion of the examining physician or the corporate medical director.

The examining physician provides the employee with a letter summarizing his findings and recommendations, confirming the worker's fitness for work and ability to wear a respirator. Documentation of medical clearance will be available for each employee during all project site work.

Subcontractors will certify that all their employees have successfully completed a physical examination by a qualified physician. The physical examinations must meet the requirements of 29 CFR 1910.120 and 29 CFR 1910.134. Subcontractors will supply copies of the medical examination certificate for each on-site employee.

13.11.3 Other Medical Examinations

In addition to pre-employment, annual, and exit physicals, personnel may be examined:

- At employee request after known or suspected exposure to toxic or hazardous materials.
- At the discretion of the Health and Safety Supervisor, Health and Safety Officer, or occupational physician in anticipation of, or after known or suspected exposure to toxic or hazardous materials.

13.11.4 Periodic Exam

Following the placement examination, all employees must undergo a periodic examination, similar in scope to the placement examination. For employees potentially exposed over 30 days per year, the frequency of periodic examinations will be annual. For employees potentially exposed less than 30 days per year, the frequency for periodic examinations will be 24 months.

13.11.5 Medical Restrictions

When the examining physician identifies a need to restrict work activity, the employee's supervisor must communicate the restriction to the employee and the Health and Safety Supervisor. The terms of the restriction will be discussed with the employee and the supervisor.

Attachment 1

JSAs

Attachment 2

Material Safety Data Sheets

Section 1 - Chemical Product and Company Identification

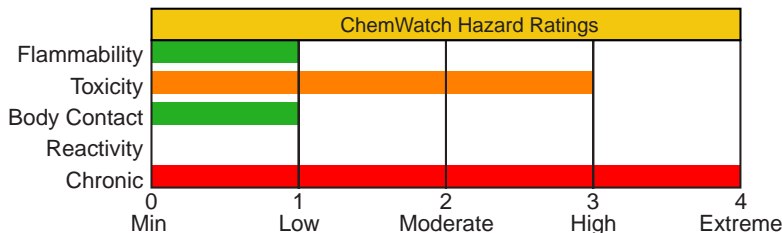
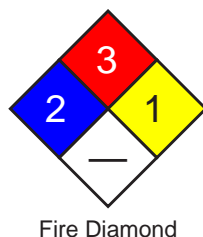
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Material Name: Arsenic **CAS Number:** 7440-38-2
Chemical Formula: As
Structural Chemical Formula: As₄
EINECS Number: 231-148-6
ACX Number: X1002785-7
Synonyms: ARSEN; ARSENIA; ARSENIC; ARSENIC-75; ARSENIC BLACK; ARSENICALS; COLLOIDAL ARSENIC; GRAY ARSENIC; GREY ARSENIC; METALLIC ARSENIC
General Use: In metallurgy for hardening copper, lead alloys. In the manufacture of certain types of glass.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
Arsenic		>98
OSHA PEL TWA: 0.01 mg/m ³ .	NIOSH REL Ceiling: 0.002 mg/m ³ ; 15-minute.	
ACGIH TLV TWA: 0.01 mg/m ³ .	IDLH Level 5 mg/m ³ (as As).	

Section 3 - Hazards Identification



HMIS
3 Health
2 Flammability
2 Reactivity

ANSI Signal Word

Warning!



☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Brittle, crystalline, silvery-black metal. Irritating to eyes/skin/respiratory tract. Also causes: damage to blood-forming organs, nervous and cardiovascular systems. Cancer hazard. Generally found as a powder which is flammable.

Potential Health Effects

Target Organs: liver, kidneys, skin, lungs, lymphatic system

Primary Entry Routes: inhalation, ingestion of dust and fumes, skin absorption

Acute Effects

Inhalation: The dust is toxic and discomforting to the upper respiratory tract and lungs.

Acute inhalation exposure can cause cough, chest pain, shortness of breath, dizziness, headache, pulmonary edema and extreme general weakness.

Prolonged or repeated exposure can cause perforation of the nasal septum.

High exposures can cause poor appetite, nausea, vomiting and muscle cramps. Heart effects with abnormal EKG can also occur with very high exposures.

Eye: The dust may produce eye discomfort causing smarting, pain and redness.

Skin: The material is moderately discomforting to the skin and may be harmful.

Exposure may result in abnormal redness (caused by capillary congestion), burning, itching, swelling, skin eruptions and dermatitis.

Toxic effects may result from skin absorption.

Repeated skin contact can cause thickened skin and/or patchy areas of darkening and loss of pigment. Some persons develop white lines on the nails.

Ingestion: The solid/dust is discomforting to the gastrointestinal tract and is toxic and may be fatal if swallowed. Symptoms of acute poisoning by ingestion, which develop within 4 hours include epigastric pain, vomiting and watery diarrhea. Blood may appear in vomitus and stools. If amount ingested is sufficiently high, shock may develop, followed by death within 24 hours.

Considered an unlikely route of entry in commercial/industrial environments.

Carcinogenicity: NTP - Class 1, Known to be a carcinogen; IARC - Group 1, Carcinogenic to humans; OSHA - Listed as a carcinogen; NIOSH - Listed as carcinogen; ACGIH - Class A1, Confirmed human carcinogen; EPA - Class A, Human carcinogen; MAK - Class A1, Capable of inducing malignant tumors as shown by experience with humans.

Chronic Effects: Symptoms of chronic poisoning by inhalation include weight loss, nausea and diarrhea alternating with constipation, pigmentation and eruption of the skin, loss of hair, peripheral neuritis, blood disorders (anemia), striations on fingernails and toenails.

Long-term exposure can cause an ulcer or hole in the 'bone' dividing the inner nose. Hoarseness and sore eyes also occur.

High or repeated exposure can cause nerve damage with 'pins and needles', burning, numbness, and later weakness of arms and legs. Repeated exposure can also damage the liver, causing narrowing of the blood vessels, or interfere with the bone marrow's ability to make red blood cells.

Many cases of skin cancer have been reported among people exposed to arsenic through medical treatment with inorganic trivalent arsenic compounds. In some instances skin cancers have occurred in combination with other cancers, such as liver angiosarcoma, intestinal and urinary bladder carcinomas and meningioma. Epidemiological studies of cancer after medical treatment have shown an excess of skin cancers but no clear association with other cancers has been shown. An association between environmental exposure to arsenic through drinking water and skin cancer has been observed and confirmed. Epidemiological studies in areas where drinking water contained 0.35-1.14 mg/l arsenic elevated risks for cancers of the bladder, kidney, skin, liver, lung and colon in both men and women. Occupational exposure to inorganic arsenic, especially in mining and copper smelting, has consistently been associated with an increased risk of cancer. An almost tenfold increase in the incidence of lung cancer was found in workers most heavily exposed to arsenic and relatively clear dose-response relationships have been obtained with regard to cumulative exposure. Other smelter worker populations have been shown to have consistent increases in lung cancer incidence, as well as increases of about 20% in the incidence of gastrointestinal cancer and of 30% for renal cancer and hematolymphatic malignancies.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air. Lay patient down. Keep warm and rested.

If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor.

Eye Contact: Immediately hold the eyes open and wash continuously for at least 15 minutes with fresh running water.

Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.

Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Quickly but gently, wipe material off skin with a dry, clean cloth.

Immediately remove all contaminated clothing, including footwear.

Wash affected areas with water (and soap if available) for at least 15 minutes. Transport to hospital or doctor.

Ingestion: Contact a Poison Control Center.

If swallowed, and if more than 15 minutes from a hospital, induce vomiting, preferably using Ipecac Syrup APF.

Note: DO NOT INDUCE VOMITING in an unconscious person

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For acute or short term repeated exposures to arsenic, soluble compounds:

Treat as per arsenic poisoning.

1. Acute skin lesions such as contact dermatitis usually do not require other treatment than removal from exposure.
2. If more severe symptoms of the respiratory system, the skin or the gastrointestinal tract occur, British Anti-Lewisite (BAL, dimercaprol) may be given. Prompt administration in such cases is vital; to obtain maximum benefit such treatment should be administered within 4 hours of poisoning.
3. In addition, general treatment such as prevention of further absorption from the gastrointestinal tract are mandatory.
4. General supportive therapy such as maintenance of respiration and circulation, maintenance of water and electrolyte balance and control of nervous system effects, as well as elimination of absorbed poison through dialysis and exchange transfusion, may be used if feasible.
5. Dimercaprol is given by deep intramuscular injection as a 5% solution in peanut oil (or a 10% solution with benzylbenzoate in vegetable oil). It is usually given in a dose of 3 mg/kg, 4-hourly, for the first two days, or twice daily for up to seven days.
6. BAL Therapy is effective for hematological manifestations of chronic arsenic poisoning but not for neurological symptoms. Watch for side effects (e.g. urticaria, burning sensation in the lips, mouth and throat, fever, conjunctivitis etc).
7. Some relief results from administration of diphenhydramine (Benadryl) (1.5 mg/kg intramuscularly or by mouth every 6 hour).

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

<u>Determinant</u>	<u>Index</u>	<u>Sampling Time</u>	<u>Comments</u>
Inorganic arsenic metabolites in urine	50 ug/g creatinine	End of workweek	B

B: Background levels occur in specimens collected from subjects NOT exposed
Consult specific documentation.

Section 5 - Fire-Fighting Measures

Flash Point: Noncombustible solid

Extinguishing Media: Use fire fighting procedures suitable for surrounding area.

General Fire Hazards/Hazardous Combustion Products: Solid which exhibits difficult combustion or is difficult to ignite.

Avoid generating dust, particularly clouds of dust in a confined or unventilated space. Dust may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion.

Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport. Build-up of electrostatic charge may be prevented by bonding and grounding.

Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Decomposes on heating and produces toxic fumes of arsenic oxides (AsO_x).

Fire Incompatibility: Avoid contact with acids, oxidizing agents, halogens.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.

Wear breathing apparatus plus protective gloves for fire only. Prevent, by any means available, spillage from entering drains or waterways.

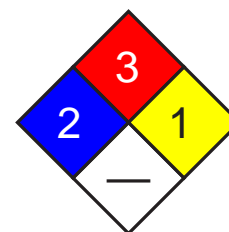
Use fire fighting procedures suitable for surrounding area.

Do not approach containers suspected to be hot.

Cool fire exposed containers with water spray from a protected location.

If safe to do so, remove containers from path of fire.

Equipment should be thoroughly decontaminated after use.



Fire Diamond

Section 6 - Accidental Release Measures

Small Spills: Clean up all spills immediately. Wear protective clothing, impervious gloves and safety glasses. Increase ventilation.

Use a vacuum or a wet method to reduce dust during clean-up. DO NOT dry sweep.

Place in suitable containers for disposal.

Wash area down with large quantity of water and prevent runoff into drains.

Large Spills: POLLUTANT -contain spillage. Clear area of personnel and move upwind.

Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or waterways.

If contamination of drains or waterways occurs, advise emergency services.

Shut off all possible sources of ignition and increase ventilation.

Stop leak if safe to do so.

Contain spill with sand, earth or vermiculite.

Use dry clean up procedures and avoid generating dust.

Collect recoverable product into labeled containers for recycling. Collect residues and seal in labeled drums for disposal.

Wash area down with large quantity of water and prevent runoff into drains.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Use good occupational work practice.

Avoid contact with skin and eyes.

Avoid generating and breathing dust.

Use in a well-ventilated area.

Wear protective clothing when risk of exposure occurs.

Avoid sources of heat. Avoid contact with incompatible materials. Avoid physical damage to containers.
 Keep containers securely sealed when not in use.
 When handling, DO NOT eat, drink or smoke.
 Wash hands with soap and water after handling.
 Work clothes should be laundered separately: NOT at home.

Recommended Storage Methods: Glass container. Plastic drum. Polyethylene or polypropylene container. Steel drum. Metal drum.

Check that containers are clearly labeled.

Storage Requirements: Observe manufacturer's storing and handling recommendations.

Store in a cool, dry place. Store in a well-ventilated area. Store away from sources of heat or ignition/bare lights.

Avoid storage at temperatures higher than 60 °C. Store away from incompatible materials. Store away from foodstuff containers.

Protect containers against physical damage.

Keep containers securely sealed.

Check regularly for spills and leaks.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: General exhaust is adequate under normal operating conditions.

Local exhaust ventilation may be required.

Use ventilated helmet or air-line hood to provide clean air at the breathing zone.

If risk of overexposure exists, wear NIOSH approved respirator. Correct fit is essential to obtain adequate protection.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses. Chemical goggles.

Full face shield.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Impervious, gauntlet length gloves; Rubber gloves. Neoprene gloves.

Rubber boots.

Respiratory Protection:

Exposure Range >0.01 to 0.1 mg/m³: Air Purifying, Negative Pressure, Half Mask

Exposure Range >0.1 to 1 mg/m³: Air Purifying, Negative Pressure, Full Face

Exposure Range >1 to <5 mg/m³: Supplied Air, Constant Flow/Pressure Demand, Full Face

Exposure Range 5 to unlimited mg/m³: Self-contained Breathing Apparatus, Pressure Demand, Full Face

Cartridge Color: magenta (P100)

Other: Overalls. PVC apron. PVC protective suit may be required if exposure severe.

Eyewash unit. Ensure there is ready access to a safety shower.

* Preplacement and periodic medical examinations are essential for workers exposed to arsenic. Preplacement physical examinations should give particular attention to allergic and chronic skin lesions, eye disease, psoriasis, chronic eczematous dermatitis, hyperpigmentation of the skin, keratosis and warts, baseline weight, baseline blood and hemoglobin counts, baseline urinary arsenic determinations.

Annual physical examinations should give attention to general health, weight, skin condition, and any evidence of excessive exposure or absorption of arsenic.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Grey, shiny, brittle, metallic-looking rhombohedral crystals. Can be heated to burn in air with a bluish flame, giving off an odor of garlic and dense white fumes of arsenic trioxide. Loses its luster on exposure to air. Converted by nitric acid or hot sulfuric acid into arsenous or arsenic acid.

Brinell hardness: 147

Mohs' scale: 3.5

Physical State: Divided solid

pH: Not applicable

Vapor Pressure (kPa): Not applicable

pH (1% Solution): Not applicable

Vapor Density (Air=1): Not applicable

Boiling Point: Sublimes

Formula Weight: 74.92

Freezing/Melting Point: 817 °C (1502.6 °F) at 28 atm

Specific Gravity (H₂O=1, at 4 °C): 5.73

Volatile Component (% Vol): Not applicable

Evaporation Rate: Not applicable

Water Solubility: Insoluble

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Contact with acids liberates toxic gases. Presence of heat source and ignition source.

Product is considered stable under normal handling conditions. Hazardous polymerization will not occur.

Storage Incompatibilities: Segregate from oxidizing agents, halogens.

Contact with acids produces toxic fumes.

Section 11 - Toxicological Information**Toxicity**

Oral (man) TD_{Lo}: 7857 mg/kg/55 years

Oral (rat) LD₅₀: 763 mg/kg

Tumorigenic - Carcinogenic by RTECS criteria.

Irritation

Nil reported

See NIOSH, RTECS CG 0525000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.

Ecotoxicity: Food chain concentration potential: Bioaccumulated by fresh water and marine aquatic organisms

BCF: bioaccumulated by aquatic organisms

Biochemical Oxygen Demand (BOD): none

Section 13 - Disposal Considerations

Disposal: Follow all federal, state, and local regulations.

Section 14 - Transport Information**DOT Transportation Data (49 CFR 172.101):**

Shipping Name: ARSENIC

Hazard Class: 6.1

ID No.: 1558

Packing Group: II

Label: Poison [6]

Section 15 - Regulatory Information**EPA Regulations:**

RCRA 40 CFR: Listed

CERCLA 40 CFR 302.4: Listed per CWA Section 307(a), per CAA Section 112 1 lb (0.454 kg)

SARA 40 CFR 372.65: Listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

Section 1 - Chemical Product and Company Identification

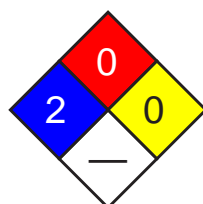
61

Material Name: Lead **CAS Number:** 7439-92-1
Chemical Formula: Pb
Structural Chemical Formula: Pb
EINECS Number: 231-100-4
ACX Number: X1000227-2
Synonyms: C.I. 77575; C.I. PIGMENT METAL 4; GLOVER; KS-4; LEAD; LEAD FLAKE; LEAD INORGANIC; LEAD METAL; LEAD S2; LEAD SZ; OLOW; OMAHA & GRANT; PB-S 100; PLUMBUM
General Use: Used as a construction material in chemical reaction equipment (tank piping, etc.); manufacture of tetraethyl lead; pigments for paints.
 Used in pottery glazes, glass, ceramics, bearing metal and alloys, solder and other lead alloys.
 Also used in metallurgy of steel and other metals, cable sheathing, storage batteries, radiation shielding and ammunition.

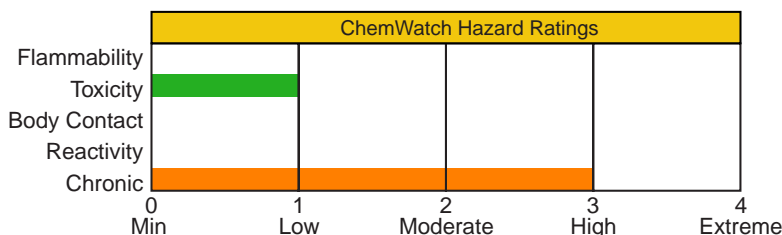
Section 2 - Composition / Information on Ingredients

Name	CAS	%
lead	7439-92-1	>99
OSHA PEL TWA: 0.05 mg/m ³ ; as Pb inorganic.	NIOSH REL TWA: 0.050 mg/m ³ . IDLH Level 100 mg/m ³ (as Pb).	DFG (Germany) MAK TWA: 0.1 mg/m ³ ; PEAK: 8 mg/m ³ ; measured as inhalable fraction of the aerosol; Excluding lead arsenate and lead chromate.
ACGIH TLV TWA: 0.05 mg/m ³ .		
EU OEL TWA: 0.1 mg/m ³ .		

Section 3 - Hazards Identification



Fire Diamond



HMIS	
3	Health
1	Flammability
0	Reactivity

ANSI Signal Word

Danger!



Poison

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Bluish-white, silvery, or gray metal. Cumulative poison. Chronic Effects: severe neurological effects, blood/kidney damage, sterility, decreased fertility, developmental damage to fetus. Possible cancer hazard.

Potential Health Effects

Target Organs: blood, central nervous system (CNS), peripheral nervous system, kidneys, gastrointestinal (GI) tract

Primary Entry Routes: inhalation, ingestion

Acute Effects

Inhalation: The dust may be discomfoting to the upper respiratory tract and may be harmful if inhaled.

Eye: The dust may be discomfoting to the eyes.

Skin: The material may be mildly discomfoting to the skin.

Prolonged exposure may cause skin reactions.

Skin absorption is not considered a significant route of exposure.

Ingestion: The material is moderately discomfoting to the gastrointestinal tract and may be harmful if swallowed.

In rats intestinal lead absorption is bidirectional and does not follow a linear relationship with oral dose.

Acute effects of exposure are generally minor because of its relative insolubility and physical form. Unusual instances of exposure have been reported in inadequately ventilated indoor firing ranges (as fume), in the application of surma, a mascara-like cosmetic agent, to the conjunctival surfaces in Asian countries and in lead-smelting and associated occupations.

In humans lead metabolism fits into a three compartment model. The first compartment in which lead has a half-life of about 35 days includes the blood; it receives blood from the gut and delivers some of it to the urine and communicates with the other two pools. The second compartment in which lead has a similar half-life includes the soft tissues which contain about half the blood level; they share lead with hair, nails, sweat, saliva, bile and other digestive secretions. The skeleton is the third compartment and contains the vast bulk of the total body burden, possesses a very long half-life and demonstrates a difference between the dense and less dense components to bind lead.

Carcinogenicity: NTP - Not listed; IARC - Group 2B, Possibly carcinogenic to humans; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class B2, Probable human carcinogen based on animal studies; MAK - Not listed.

Chronic Effects: Symptoms of exposure include headache, fatigue, sleep disturbances, abdominal pains and decreased appetite. Overexposure to lead in the form of dust has toxic effects on the lungs and kidneys and on the nervous system resulting in mental disturbances and anemia.

Skin absorption is not considered to be a significant route of exposure.

Worker exposure to lead must be kept to a minimum, especially in cases where lead is worked at temperatures whereby lead vapors are evolved e.g. metal refining.

Lead is an accumulative poison and exposure even to small amounts can raise the body's content to toxic levels. Potential adverse effects on the offspring of pregnant workers have been cited in the literature.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air.

Lay patient down. Keep warm and rested.

If available, administer medical oxygen by trained personnel.

If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital or doctor, without delay.

Eye Contact: Immediately hold the eyes open and flush continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids.

Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Wash affected areas thoroughly with water (and soap if available).

Seek medical attention in event of irritation.

Ingestion: Rinse mouth out with plenty of water.

Seek medical attention if irritation or discomfort persist.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: 1. Gastric acids solubilize lead and its salts and lead absorption occurs in the small bowel.

2. Particles of less than 1 µm diameter are substantially absorbed by the alveoli following inhalation.

3. Lead is distributed to the red blood cells and has a half-life of 35 days.

It is subsequently redistributed to soft tissue & bone-stores or eliminated. The kidney accounts for 75% of daily lead loss; integumentary and alimentary losses account for the remainder.

4. Neurasthenic symptoms are the most common symptoms of intoxication.

Lead toxicity produces a classic motor neuropathy.

Acute encephalopathy appears infrequently in adults.

Diazepam is the best drug for seizures.

5. Whole-blood lead is the best measure of recent exposure; free erythrocyte protoporphyrin (FEP) provides the best screening for chronic exposure. Obvious clinical symptoms occur in adults when whole-blood lead exceeds 80 µg/dL.

6. British Anti-Lewisite is an effective antidote and enhances fecal and urinary excretion of lead. The onset of action of BAL is about 30 minutes and most of the chelated metal complex is excreted in 4-6 hours, primarily in the bile.

Adverse reaction appears in up to 50% of patients given BAL in doses exceeding 5 mg/kg. CaNa2EDTA has also been used alone or in concert with BAL as an antidote.

D-penicillamine is the usual oral agent for mobilization of bone lead; its use in the treatment of lead poisoning remains investigational.

2-3-dimercapto-1-propanesulfonic acid (DMPS) and dimercaptosuccinic acid (DMSA) are water soluble analogues of BAL and their effectiveness is undergoing review.

As a rule, stop BAL if lead decreases below 50 µg/dL; stop CaNa2EDTA if blood lead decreases below 40 µg/dL or urinary lead drops below 2 mg/24 hrs.

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

<u>Determinant</u>	<u>Index</u>	<u>Sampling Time</u>	<u>Comments</u>
Lead in blood	50 ug/100 mL	Not Critical	B
Lead in urine	150 ug/gm creatinine	Not critical	B
Zinc Protoporphyrin in blood	250 ug/100 mL erythrocytes OR 100 ug/100 mL blood	After 1 month exposure	B

B: Background levels occur in specimens collected from subjects NOT exposed.

Section 5 - Fire-Fighting Measures

Flash Point: Not available; probably noncombustible

Autoignition Temperature: Not applicable

LEL: Not applicable

UEL: Not applicable

Extinguishing Media: There is no restriction on the type of extinguisher which may be used.

General Fire Hazards/Hazardous Combustion Products: Noncombustible.

Not considered to be a significant fire risk; however, containers may burn.

Moderate fire hazard, in the form of dust, when exposed to heat or flames.

Decomposition products may include toxic lead dust and lead oxide fumes.

Fire Incompatibility: Incompatible with strong acids, oxidants, ammonium nitrate, chlorine trifluoride and sodium azide.

Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.

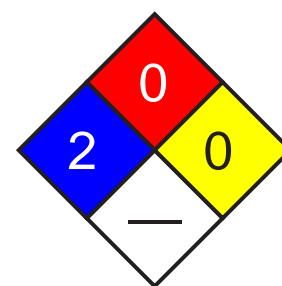
Use fire fighting procedures suitable for surrounding area.

Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways.

If safe to do so, remove containers from path of fire.

Cool fire-exposed containers with water spray from a protected location.

Equipment should be thoroughly decontaminated after use.



Fire Diamond

Section 6 - Accidental Release Measures

Small Spills: Clean up all spills immediately. Avoid contact with skin and eyes.

Wear protective clothing, gloves, safety glasses and dust respirator.

Use dry clean-up procedures and avoid generating dust.

Vacuum up.

Place spilled material in clean, dry, sealable, labeled container.

Large Spills: Clear area of personnel and move upwind.

Contact fire department and tell them location and nature of hazard.

Control personal contact by using protective equipment and dust respirator.

Prevent spillage from entering drains, sewers or waterways.

Recover product wherever possible. Avoid generating dust. Sweep / shovel up.

If required, wet with water to prevent dusting.

Put residues in labeled plastic bags or other containers for disposal.

Wash area down with large quantity of water and prevent runoff into drains.

If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Limit all unnecessary personal contact.

Wear protective clothing when risk of exposure occurs.

Use in a well-ventilated area.

Avoid contact with incompatible materials.

When handling, DO NOT eat, drink or smoke.

Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling.

Work clothes should be laundered separately.

Use good occupational work practices. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Recommended Storage Methods: Check that containers are clearly labeled.

Packaging as recommended by manufacturer.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: General exhaust is adequate under normal operating conditions.

If risk of overexposure exists, wear NIOSH-approved dust respirator.

Correct fit is essential to obtain adequate protection.

Personal Protective Clothing/Equipment:

Eyes: Safety glasses with side shields; or as required, chemical goggles.

Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Impervious gloves; rubber gloves.

Rubber boots.

Protective footwear.

Respiratory Protection:

Exposure Range >0.05 to 0.5 mg/m³: Air Purifying, Negative Pressure, Half Mask

Exposure Range >0.5 to 2.5 mg/m³: Air Purifying, Negative Pressure, Full Face

Exposure Range >2.5 to 50 mg/m³: Powered Air Purifying Respirator, Half or Full Facepiece or Hood

Exposure Range >50 to 100 mg/m³: Supplied Air Respirator with Full Facepiece, Hood, Helmet, or Suit, operated in a Positive Pressure Mode

Exposure Range >100 to unlimited mg/m³: Self-contained Breathing Apparatus, Pressure Demand, Full Face Cartridge Color: magenta (P100)

Note: (29CFR 1910.1025) for general industry

Other: Overalls. Eyewash unit. Skin cleansing cream.

Provide adequate ventilation in warehouse or closed storage areas.

General and local exhaust ventilation usually required to maintain airborne dust levels to safety levels.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Bluish-white, silvery-gray metal. Malleable, lustrous when freshly cut and tarnishes when exposed to air. Reacts with strong acids like nitric acid, sulphuric or hydrochloric acid. Attacked by water in presence of oxygen. Poor electrical conductor. Lead fumes are formed at temperatures above 500-700 °C.

Physical State: Divided solid

pH: Not applicable

Vapor Pressure (kPa): 0.24 at 1000 °C

pH (1% Solution): Not applicable.

Vapor Density (Air=1): Not applicable

Boiling Point: 1740 °C (3164 °F)

Formula Weight: 207.19

Freezing/Melting Point: 327.4 °C (621.32 °F)

Specific Gravity (H₂O=1, at 4 °C): 11.34

Volatile Component (% Vol): Not applicable

Evaporation Rate: Not applicable

Water Solubility: Insoluble in water

Section 10 - Stability and Reactivity

Stability/Polymerization/Conditions to Avoid: Hazardous polymerization will not occur. Stable under normal storage conditions.

Storage Incompatibilities: Avoid storage with strong acids, oxidants, ammonium nitrate, chlorine trifluoride and sodium azide.

Section 11 - Toxicological Information

Toxicity

Oral (woman) TD_{Lo}: 450 mg/kg/6 years

Inhalation (human) TC_{Lo}: 0.01 mg/m³

WARNING: Lead is a cumulative poison and has the potential to cause abortion and intellectual impairment to unborn children of pregnant workers.

Irritation

Nil Reported

See RTECS OF 7525000, for additional data.

Section 12 - Ecological Information

Environmental Fate: If released or deposited on soil, it will be retained in the upper 2-5 cm of soil, especially soils with at least 5% organic matter or a pH 5 or above. Leaching is not important under normal conditions although there is some evidence to suggest that it is taken up by some plants. Generally, the uptake from soil into plants is not significant. It is expected to slowly undergo speciation to the more insoluble sulfate, sulfide, oxide, and phosphate salts. It enters water from atmospheric fallout, runoff or wastewater; little is transferred from natural ores. It is a stable metal and adherent films of protective insoluble salts form that protect the metal from further corrosion. That which dissolves tends to form ligands. It is effectively removed from the water column to the sediment by adsorption to organic matter and clay minerals, precipitation as insoluble salt (the carbonate or sulfate, sulfide), and reaction with hydrous iron and manganese oxide. Under most circumstances, adsorption predominates. It does not appear to bioconcentrate significantly in fish but does in some shellfish such as mussels. When released to the atmosphere, it will generally be in dust or adsorbed to particulate matter and subject to gravitational settling and be transformed to the oxide and carbonate.

Ecotoxicity: LC₅₀ Japanese quail (*Coturnix japonica*), males or females, 14 days old, oral (5-day ad libitum in diet) >5,000 ppm; at 1000, 2236 & 5000 onset of toxic signs began at 7, 7 & 7 days and remitted at 11, 11 & 12 days, respectively, no mortality was observed; control references were dieldrin & dicrotophos; corn oil diluent was added to diet at ratio of 2:98 by wt; (extreme concentrations: 1,000-5,000 ppm)

BCF: freshwater fish 1.38 to 1.65

Section 13 - Disposal Considerations

Disposal: Recycle wherever possible. Consult manufacturer for recycling options.
Follow applicable federal, state, and local regulations.

Section 14 - Transport Information

DOT Hazardous Materials Table Data (49 CFR 172.101):

Shipping Name and Description: None

Section 15 - Regulatory Information

EPA Regulations:

RCRA 40 CFR: Listed

CERCLA 40 CFR 302.4: Listed per CWA Section 307(a) 10 lb (4.535 kg)

SARA 40 CFR 372.65: Listed

SARA EHS 40 CFR 355: Not listed

TSCA: Listed

Section 16 - Other Information

Disclaimer: Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Genium Group, Inc. extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: Ferric Sulfate

Phone: PREMIER CHEMICALS: 1-800-227-4267

Date Prepared: 5/10

CHEMTREC, 24-Hr Emergency Assistance: 1-800-424-9300

This Revision:

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material/Product Name(s): Ferric Sulfate

CAS Number: 010028-22-5

Chemical family: Inorganic Salt

Formula: $\text{Fe}_2(\text{SO}_4)_3 \cdot 9\text{H}_2\text{O}$

General Use: Employed as a flocculation agent in environmental waste water applications and metals stabilization.

Manufacturer/Supplier:

PREMIER CHEMICALS

300 Barr Harbor

Suite 250

West Conshohocken, PA 19380-2998

SECTION 2. INGREDIENTS/COMPOSITION

Ingredient name:	CAS Number:	Percent:	Carcinogen:	ACGIH TLV	OSHA PEL
Ferric Sulfate					
As $\text{Fe}_2(\text{SO}_4)_3 \cdot 9\text{H}_2\text{O}$	010028-22-5	50-66%	No	1mg/m ³	2mg/m ³
Sulfuric Acid	7664-93-9	<0.1%	No	1mg/m ³	1mg/m ³

SECTION 3. HAZARDS IDENTIFICATION

HMIS

HEALTH HAZARD	2 – MODERATE
FLAMMABILITY HAZARD	0 – MINIMAL
REACTIVITY HAZARD	0 – MINIMAL
CORROSIVE	YES
PERSONAL PROTECTION	H- Goggles, Gloves, Apron and Respirator

WHMIS Classification: Class E

EMERGENCY OVERVIEW:

Irritating to skin, eyes and mucous membranes.

Primary route(s) of entry: Inhalation, skin contact and ingestion.

Target organs: Eyes, Skin, Digestive Tract, Respiratory Tract.

Medical Conditions Aggravated by Exposure: Pre-existing medical conditions, including dermatitis, asthma or chronic lung disease may be aggravated by exposure; individuals who are atopic (with a history of allergies) may experience greater amounts of respiratory irritation.

Signs and Symptoms of Overexposure:

Eye Contact: Corrosive to the eye by contact. Excessive contact may cause burns and irritation.

Skin Contact: Prolonged skin contact may cause skin irritation and burns. Intravenous route is highly toxic.

Inhalation: Excessive inhalation of mist is very irritating to the nasal septum and the upper respiratory system.

Ingestion: An unlikely route of exposure. If ingested in large amounts it may cause stomach irritation, nausea, vomiting, diarrhea, abdominal pain, black stool, and can lead to liver cirrhosis.

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: Ferric Sulfate

Phone: PREMIER CHEMICALS: 1-800-227-4267

Date Prepared: 5/10

CHEMTREC, 24-Hr Emergency Assistance: 1-800-424-9300

This Revision:

SECTION 4. FIRST AID MEASURES

- Eye contact:** Flush eyes, including under the eyelids, with large amounts of water. If irritation persists, seek medical attention.
- Skin contact:** Wash affected areas with mild soap and water.
- Inhalation:** Remove victim to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.
- Ingestion:** Ingestion is an unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel. Seek immediate medical attention.

SECTION 5. FIRE FIGHTING MEASURES

NFPA code: Flammability: 0, Health: 2, Reactivity: 0, Special: 0.

Flash point: Not Combustible

Unusual Fire Hazard: None

Extinguishing Media: Water, Dry Chemical, Carbon Dioxide or Foam

Hazardous Decomposition Products: At high temperature decomposition releases toxic SO₂ and iron fumes.

Fire fighting instructions: Firefighters should wear NIOSH-approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill procedures: Dike spills to prevent release into sewers and waterways. Neutralize liquid spills with lime or sodium carbonate; this could generate carbon dioxide, so ventilation maybe necessary. Clean up spilled material and place into a suitable container and adsorb onto clay. If conditions warrant, clean-up personnel should wear approved respiratory protection, gloves, and goggles to prevent irritation from contact and/or inhalation.

SECTION 7. HANDLING AND STORAGE

Storage: Product is corrosive to cast iron, galvanized steel and copper and its alloys. It is also corrosive to aluminum and concrete. It may be stored in fiberglass, plastic (e.g. PE, PPP, PVC, ABS) and 316 stainless steel.

Handling: Wear appropriate PPE when handling this product.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering controls: Provide sufficient ventilation, in both volume and air flow patterns, to control mist/dust concentrations below allowable exposure limits.

Personal protective equipment: The use of chemical safety goggles, gloves and long sleeve clothing is recommended.

Respiration protection: Provide workers with NIOSH approved respirators in accordance with requirements of 29 CFR 1910.134 for level of exposure incurred.

Hygienic Practices: Avoid contact with skin, eyes and clothing. After handling this product, wash hands before eating or drinking.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: The product is a dark reddish brown liquid.

Boiling Point: 220°F	Specific Gravity (g/cc): 1.4-1.6
Freezing Point: -50°F	Bulk Weight (lbs/cu.ft): No data
Water Solubility: Soluble	% Volatile by volume: 0
pH (1% solution): 1.84	Evaporation rate: Not Applicable

SECTION 10. STABILITY AND REACTIVITY

Stability: Product is stable.

Hazardous Polymerization: Will not occur

Chemical Incompatibilities: Will corrode, steel, cast iron, bronze, brass, copper, 304ss, aluminum, concrete and Hastalloy B.

Hazardous Decomposition Products: SO₂ and iron fumes when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

lpr-mus LD₅₀ – 601 mg/kg, ldr-rbt LD₅₀>2g/kg, Orl-rbt LD₅₀ – 2140 mg/kg

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: Ferric Sulfate

Phone: PREMIER CHEMICALS: 1-800-227-4287

Date Prepared: 5/10

CHEMTREC, 24-Hr Emergency Assistance: 1-800-424-9300

This Revision:

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicological/Chemical Fate Information:

No data available on any adverse effects of this material on the environment.

SECTION 13. DISPOSAL INFORMATION

Waste Management/Disposal: Follow all applicable federal, state and local regulations for safe disposal.

RCRA: Test material for corrosivity, D002 prior to disposal.

SECTION 14. TRANSPORT INFORMATION

DOT Shipping Name: Corrosive liquid, acidic, inorganic, NOS

Hazard Class/Division: 8: Corrosive Liquid

Identification Number: UN3264

Packing Group: 3

SECTION 15. REGULATORY INFORMATION

Product or components of mixture regulated under following lists:

SARA TITLE III:

Section 302: No (Extremely Hazardous Substances)

Section 304: No (Emergency Release Reporting)

Section 311: Yes Toxic, Acute and Chronic Effects – MSDS

Section 312: Yes, Inventory and Location (Tier 1 / 2)

Section 313: No (Toxic Chemicals, Toxic Chemical Release Reporting, Form R)

CERCLA Hazardous Substance List, RQ: 1000 lb.

TSCA: All substances in this product are listed in the Chemical Substance Inventory of the Toxic Substances Control Act.

California Proposition 65: No

Clean Water Act Requirements: Designated as a hazardous substance under sections 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act amendments of 1977 and 1978.

SECTION 16. OTHER INFORMATION

ACRONYMS AND REFERENCES USED IN PREPARATION OF MSDS:

ACGIH:	American Conference of Governmental Industrial Hygienists
CAS#:	CAS Registration Number is an assigned number to identify a specific chemical substance/material.
CERCLA:	Comprehensive Environmental Response, Compensation & Liability Act
EPCRA:	Emergency Planning and Community Right-to-Know Act of 1986
HMIS™:	Hazardous Materials Identification System (National Paint & Coatings Association)
IARC:	International Agency for Research on Cancer
MSHA:	Mine Safety and Health Administration
mg/m³:	Milligrams per cubic meter
NIOSH:	National Institute for Occupational Safety and Health
NFPA:	National Fire Protection Association
NTP:	National Toxicology Program
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit (OSHA)
SARA:	Superfund Amendments and Reauthorization Act
TITLE III:	Emergency Planning and Community Right To Know Act
Section 302:	Extremely Hazardous Substances
Section 304:	Emergency Release
Section 311:	Community Right-to-Know, MSDSs or List of Chemicals
Section 312:	Community Right-to-Know, Inventories and Locations, (Tier I/II)

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: Ferric Sulfate

Date Prepared: 5/10

This Revision:

Phone: PREMIER CHEMICALS: 1-800-227-4287

CHEMTREC, 24-Hr Emergency Assistance: 1-800-424-9300

Section 313: Toxic Chemicals, Toxic Chemical Release Reporting, Form R

TLV: Threshold Limit Values (ACGIH)

TWA: Time Weighted Average

29CFR1910.134: OSHA Respiratory Protection Standard

REFERENCES:

Sax, N. Irving: Dangerous Properties of Industrial Materials, Ninth Edition, Van Nostrand Reinhold Co., Inc., 1996.

Kirk, R. and Othmer, D., Encyclopedia of Chemical Technology, Third Edition, Wiley-Interscience, New York, NY 1982.

Clansky, K.B., Suspect Chemicals Sourcebook, 1992-2 Edition, Roytech Publications, Bethesda, Maryland.

Sax, N. Irving and Lewis, R.J. Hawley's Condensed Chemical Dictionary, Eleventh Ed., Van Nostrand Reinhold Co., Inc., NY

Manufacturers/Suppliers, Material Safety Data Sheets on Raw Materials Used

American National Standard for Hazardous Industrial Chemicals - Material Safety Data Sheets - Preparation.

American National Standards Institute, Inc. 11 West 42nd St, New York, NY 10036.

Prepared by: Mark A. Shand

May 4, 2010

Although reasonable care has been taken in the preparation of the information contained herein, Premier Chemicals extends no warranties, makes no representation and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: EB-Standard Coarse

Date Prepared: 11/09

Phone: PREMIER CHEMICALS: 1-800-227-4287

This Revision:

CHEMTREC, 24-Hr Emergency Assistance: 1-800-424-9300

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material / Product Name(s): EnviroBlend® Standard Coarse

CAS Number: Mixture

Chemical Family: Inorganic - Mineral

General Use: A varying blend of magnesium oxide and calcium phosphates. Mix ratio depends on customer requirements and may vary from 1-99. Product used for metal containing waste stabilization.

Manufacturer / Supplier: PREMIER CHEMICALS, LLC
300 Barr Harbor
Suite 250
West Conshohocken, PA 19428-2998

SECTION 2. INGREDIENTS / COMPOSITION

Ingredient name:	CAS Number:	Percent:	IARC/NTP/OSHA:	Exposure Limits:
Nonhazardous Ingredients:		99-100	No	Nuisance Particulate OSHA PEL:TWA 15mg/m ³ ;respirable: 5mg/m ³ . ACGIH TLV:TWA Total dust:10mg/m ³ ; respirable dust: 5mg/m ³ .
A variable blend of magnesium oxide and calcium phosphates	1309-48-4 7758-23-8 7758-87-4			
Phosphoric Acid	7664-38-2	0 - 1	No	OSHA PEL:TWA 1.0mg/m ³ ; STEL 3.0mg/m ³ as mist.
Quartz*	14808-60-7	<1	Yes	ACGIH TLV:TWA respirable quartz 0.05mg/m ³ .

***Quartz.** Product may contain a trace of quartz, a polymorph of crystalline silica, which is classified by IARC as a "Known Human Carcinogen - Group 1." NTP lists respirable crystalline silica amongst substances which may "reasonably be anticipated to be carcinogens".

SECTION 3. HAZARDS IDENTIFICATION

HMIS	
HEALTH HAZARD	1 - SLIGHT
FLAMMABILITY HAZARD	0 - MINIMAL
REACTIVITY HAZARD	1 - SLIGHT
PERSONAL PROTECTION	B - Glasses, Gloves

EMERGENCY OVERVIEW:

Tan to gray coarse material. Blends high in magnesium oxide will react with water generating some heat. Not a fire or spill hazard. Low toxicity. Dust is classified as a "nuisance particulate not otherwise regulated".

Target Organs: Chronic overexposure may cause lung damage.

Primary route(s) of entry: Inhalation

Acute effects: Excessive exposure to airborne particulate may cause eye and upper respiratory irritation.

Chronic effects: Product dust is classified as a "nuisance particulate, not otherwise regulated" as specified by ACGIH and OSHA. The excessive, long-term inhalation of mineral dusts may contribute to the development of industrial bronchitis, reduced breathing capacity, and may lead to the increased susceptibility to lung disease.

Page 1 --

HAZARD IDENTIFICATION continues on page 2

-- Page 1

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: EB Standard Coarse

Date Prepared: 11/09

This Revision:

Phone: PREMIER CHEMICALS: 1-800-227-4287

CHEMTRAC, 24-Hr Emergency Assistance: 1-800-424-9300

HAZARD IDENTIFICATION continued from page 1

Signs & symptoms of overexposure:

Eye contact: Particulate is a physical eye irritant.

Skin contact: Low toxicity by skin contact.

Inhalation: Chronic overexposure by inhalation of airborne particulate may irritate upper respiratory system as well as the throat.

Ingestion: An unlikely route of exposure. If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea.

SECTION 4. FIRST AID MEASURES

Eye contact: Flush eyes, including under the eyelids, with large amounts of water. If irritation persists, seek medical attention.

Skin contact: Wash affected areas with mild soap and water.

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.

Ingestion: Ingestion is an unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.

SECTION 5. FIRE FIGHTING MEASURES

NFPA code: Flammability: 0, Health: 0, Reactivity: 1, Special: 0.

Flash point: Not Combustible

Unusual Fire Hazard / Extinguishing Media: Product will react with water generating some heat. Use sufficient water to dissipate any excessive heat buildup.

Hazardous Decomposition Products: None

Firefighting Instructions: Firefighters should wear NIOSH-approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill procedures: Product is not harmful to the environment. Carefully, clean up and place spilled material into a suitable container, being careful to avoid creating excessive dust. If conditions warrant, clean up personnel should wear approved respiratory protection, gloves, and goggles to prevent irritation from contact and/or inhalation.

SECTION 7. HANDLING AND STORAGE

Storage: Store in dry, protected storage. Do not allow water to get inside containers; reaction with water will cause product to swell, generate heat, and burst its container. Exposed and unprotected the product will absorb moisture from the air. Minimize dust generation during material handling and transfer.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering controls: Provide sufficient ventilation, in both volume and air flow patterns to control mist/dust concentrations below allowable exposure limits.

Personal protective equipment: The use of eye protection, gloves and long sleeve clothing is recommended.

Respiration protection: Provide workers with NIOSH approved respirators in accordance with requirements of 29 CFR 1910.134 for level of exposure incurred.

Hygienic Practices: Avoid contact with skin eyes and clothing. After handling this product, wash hands before eating or drinking.

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MSDS continues on page 3

-- Page 2

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: EB Standard Coarse

Phone: PREMIER CHEMICALS: 1-800-227-4287

Date Prepared: 11/09

CHEMTRAC, 24-Hr Emergency Assistance: 1-800-424-9300

This Revision:

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: A grayish-brown granular; odorless.

Boiling Point: Not Applicable

Specific Gravity (g/cc): Mixture

Melting Point: >3800°F (>2100°C)

% Volatile by volume: 0

Water Solubility: Slight <1%

Evaporation rate: Not Applicable

pH (10% aqueous slurry): 2.5-10 (depending on blend ratio)

Bulk Density (lbs./cu.ft.): 45-70 (depending on blend ratio)

SECTION 10. STABILITY AND REACTIVITY

Hazardous Polymerization: Will not occur

Chemical Incompatibilities: The magnesium oxide component is soluble in aqueous acids generating heat and steam; violent reaction or ignition with interhalogens (e.g., bromine pentafluoride; chlorine trifluoride). Incandescent reaction with phosphorus pentachloride. Will react with water generating some heat.

Hazardous Decomposition Products: None

SECTION 11. TOXICOLOGICAL INFORMATION

Magnesium Oxide CAS #1309-48-4 Toxic and Hazard Review: low toxicity - a nutrient and/or dietary supplement food additive. THERAP CAT: antacid. (Sax) an experimental tumorigen. Inhalation of fume (not MgO dust particulate) produced upon decomposition of magnesium compounds can produce a febrile reaction and leukocytosis in humans.

TOXICITY DATA: Ihl-hmn TCLo:400mg/m³; Itr-ham TDLo:460 mg/kg/30w-I-ETA.

Triple Super Phosphate CAS#65996-95-4. Produced by addition of phosphoric acid to phosphate rock. Can contain up to 1% phosphoric acid. Phosphoric acid is cited as a human poison by unspecified route. Moderately toxic by ingestion and skin contact. A corrosive irritant to eyes, skin and mucous membranes and a systemic irritant by inhalation. (Please note, any free phosphoric acid in the triple super phosphate will react with the magnesium oxide component of the product forming a magnesium phosphate - the product will not contain any free acid.)

TOXICITY DATA: No LD₅₀ or LC₅₀ found for oral, dermal, or inhalation routes of administration.

Quartz CAS #14808-60-7. Toxic and Hazard Review (Sax): Experimental poison by intratracheal and intravenous routes. An experimental carcinogen, tumorigen, and neoplastigen. Human systemic effects by inhalation: cough, dyspnea, liver effects. Listed by IARC as a "Known Human Carcinogen" Group 1. Listed by NTP. No LD₅₀ in RTECS. Inhalation human: TCLo 16 million particles per cubic centimeter per 8 hours per 17.9 Years-Intermittent: Pulmonary system effects; Inhalation-human LCLo: 300 micrograms/m³ per 10 years-Intermittent liver. Other species toxicity data (NIOSH RTECS): Intravenous-rat LDLo: 90mg/kg; Intraperitoneal-rat LDLo: 20mg/kg; Intravenous-mouse LDLo: 40mg/kg; Intravenous-dog LDLo: 20mg/kg.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicological / Chemical Fate Information:

No data available on any adverse effects of this material on the environment.

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: EB Standard Coarse

Phone: PREMIER CHEMICALS: 1-800-227-4287

Date Prepared: 11/09

CHEMTRAC, 24-Hr Emergency Assistance: 1-800-424-9300

This Revision:

SECTION 13. DISPOSAL INFORMATION

Waste Management/Disposal: This product, as manufactured will not exhibit any characteristics of a hazardous waste, and is suitable for landfill disposal. Please be advised, however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material. If, however, the product has been altered or contaminated with other hazardous materials, appropriate waste analysis may be necessary to determine the proper method for disposal. Waste characterization and disposal/treatment methods should be determined by a qualified environmental professional in accordance with applicable federal, state and local regulations.

SECTION 14. TRANSPORT INFORMATION

US Department of Transportation: Not regulated by DOT as a hazardous material. No hazard class, no label or placard required, no UN or NA number assigned.

Canadian TDG Hazard Class & Pin: Not regulated.

SECTION 15. REGULATORY INFORMATION

Product or components of mixture regulated under following lists:

SARA TITLE III:

Section 302: NO (Extremely Hazardous Substances)

Section 304: NO (Emergency Release)

Section 311: YES (Community Right-to-Know, MSDSs or List of Chemicals)

Section 312: YES (Community Right-to-Know, Inventory and Location, (Tier III))

Section 313: NO (Toxic Chemicals, Toxic Chemical Release Reporting, Form R)

TSCA: All substances in this product are listed in the Chemical Substance Inventory of the Toxic Substances Control Act.

CERCLA Hazardous Substance List, RQ: No

California Proposition 65: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive toxins.

SECTION 16. OTHER INFORMATION

ACRONYMS AND REFERENCES USED IN PREPARATION OF MSDS:

ACGIH: American Conference of Governmental Industrial Hygienists

CAS#: CAS Registration Number is an assigned number to identify a material. CAS stands for Chemical Abstracts Service.

CERCLA: Comprehensive Environmental Response, Compensation & Liability Act

EPCRA: Emergency Planning and Community Right-to-Know Act of 1986

HMIS™: Hazardous Materials Identification System (National Paint & Coatings Association)

IARC: International Agency for Research on Cancer

MSHA: Mine Safety and Health Administration

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: EB Standard Coarse

Phone: PREMIER CHEMICALS: 1-800-227-4287

Date Prepared: 11/09

This Revision:

CHEMTRAC, 24-Hr Emergency Assistance: 1-800-424-9300

mg/m ³ :	Milligrams per cubic meter
NIOSH:	National Institute for Occupational Safety and Health
NFPA:	National Fire Protection Association
NTP:	National Toxicology Program
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit (OSHA)
REL:	Recommended Exposure Limit (OSHA)
SARA:	Superfund Amendments and Reauthorization Act
TITLE III:	Emergency Planning and Community Right-to-Know Act
Section 302:	Extremely Hazardous Substances
Section 304:	Emergency Release
Section 311:	Community Right-to-Know, MSDSs or List of Chemicals
Section 312:	Community Right-to-Know, Inventory and Location, (Tier I/II)
Section 313:	Toxic Chemicals, Toxic Chemical Release Reporting, Form R
TLV:	Threshold Limit Values (ACGIH)
TWA:	Time Weighted Average
29CFR1910.134:	OSHA Respiratory Protection Standard

REFERENCE:

Sax, N. Irving: Dangerous Properties of Industrial Materials, Ninth Edition, Van Nostrand Reinhold Co., Inc., 1996.

Kirk, R. and Othmer, D., Encyclopedia of Chemical Technology, Third Edition, Wiley-Interscience, New York, NY 1982.

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Manufacturers / Suppliers, Material Safety Data Sheets on Raw Materials Used

American National Standard for Hazardous Industrial Chemicals - Material Safety Data Sheets - Preparation, American National Standards Institute, Inc., 11 West 42nd St, New York, NY 10036.

Prepared/ revised: Mark A. Shand November 13, 2009

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MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: EM Coarse

Date Prepared: 11/09

Phone: PREMIER CHEMICALS: 1-800-227-4287

This Revision:

CHEMTREC, 24-Hr Emergency Assistance: 1-800-424-9300

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material / Product Name(s): EnviroMag Coarse

CAS Number: 1309-48-4

Chemical Family: Inorganic Oxide

General Use: A granular magnesium oxide used in heavy metals remediation.

Manufacturer / supplier: PREMIER CHEMICALS

300 Barr Harbor

Suite 250

West Conshohocken, PA 19428-2998

SECTION 2. INGREDIENTS / COMPOSITION

Ingredient name:
Magnesium Oxide

CAS Number:
1309-48-4

Percent:
100

IARC/NTP/OSHA:
No

Exposure Limits:
Nuisance Particulate OSHA
PEL:TWA 15mg/m³;respirable:
5mg/m³. ACGIH TLV:TWA
Total dust:10mg/m³; respirable
dust: 5mg/m³.

SECTION 3. HAZARDS IDENTIFICATION

HMIS

HEALTH HAZARD	1 - SLIGHT
FLAMMABILITY HAZARD	0 - MINIMAL
REACTIVITY HAZARD	1 - SLIGHT
PERSONAL PROTECTION	B - Glasses, Gloves

EMERGENCY OVERVIEW:

A tan granular material. Will react with water generating heat. Not a fire or spill hazard. Low toxicity. Dust is classified as a "nuisance particulate not otherwise regulated".

Target Organs: Chronic overexposure may cause lung damage.

Primary route(s) of entry: Inhalation

Acute effects: Excessive exposure to airborne particulate may cause eye and upper respiratory irritation.

Chronic effects: Product dust is classified as a "nuisance particulate, not otherwise regulated" as specified by ACGIH and OSHA. The excessive, long-term inhalation of mineral dusts may contribute to the development of industrial bronchitis, reduced breathing capacity, and may lead to the increased susceptibility to lung disease.

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: EM Coarse

Phone: PREMIER CHEMICALS: 1-800-227-4287

Date Prepared: 11/09

CHEMTRAC, 24-Hr Emergency Assistance: 1-800-424-9300

This Revision:

HAZARD IDENTIFICATION continued from page 1

Signs & symptoms of overexposure:

Eye contact: Particulate is a physical eye irritant.

Skin contact: Prolonged contact may cause slight skin irritation.

Inhalation: Chronic overexposure by inhalation of airborne particulate may irritate upper respiratory system as well as the throat.

Ingestion: An unlikely route of exposure. If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea.

SECTION 4. FIRST AID MEASURES

Eye contact: Flush eyes, including under the eyelids, with large amounts of water. If irritation persists, seek medical attention.

Skin contact: Wash affected areas with mild soap and water.

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.

Ingestion: Ingestion is an unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.

SECTION 5. FIRE FIGHTING MEASURES

NFPA code: Flammability: 0, Health: 0, Reactivity: 1, Special: 0.

Flash point: Not Combustible

Unusual Fire Hazard / Extinguishing Media: Product will react with water generating heat. If contact with water is unavoidable, use sufficient water to dissipate any excessive heat buildup.

Hazardous Decomposition Products: None

Firefighting Instructions: Firefighters should wear NIOSH-approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill procedures: Carefully, clean up and place material into a suitable container, being careful to avoid creating excessive dust from dried product. If conditions warrant, clean up personnel should wear approved respiratory protection, gloves, and goggles to prevent irritation from contact and/or inhalation.

SECTION 7. HANDLING AND STORAGE

Storage: Store in dry, protected storage. Do not allow water to get inside containers; reaction with water will cause product to swell, generate heat, and burst its container. Exposed, unprotected magnesium oxide will absorb moisture and carbon dioxide from the air. Minimize dust generation during material handling and transfer.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering controls: Provide sufficient ventilation, in both volume and air flow patterns to control mist/dust concentrations below allowable exposure limits.

Personal protective equipment: The use of eye protection, gloves and long sleeve clothing is recommended.

Respiration protection: For dust concentrations above allowable nuisance particulates limit provide employee with NIOSH/MSHA approved particulate dust respirator in accordance with requirements of 29 CFR 1910.134.

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

Phone: PREMIER CHEMICALS: 1-800-227-4287
CHEMTRAC, 24-Hr Emergency Assistance: 1-800-424-8300

MSDS No.: EM Coarse

Date Prepared: 11/09

This Revision:

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Tan granular; odorless.

Boiling Point: Not Applicable

Melting Point: $\approx 3800^{\circ}\text{F}$ ($\approx 2100^{\circ}\text{C}$)

Water Solubility: Slight $<1\%$

pH (10% aqueous slurry): 10-11

Specific Gravity (g/cc): 3.56

Bulk Density (lbs./cu.ft.): 70-80

% Volatile by volume: 0

Evaporation rate: Not Applicable

SECTION 10. STABILITY AND REACTIVITY

Hazardous Polymerization: Will not occur

Chemical Incompatibilities: Magnesium oxide is soluble in aqueous acids generating heat and steam; violent reaction or ignition with interhalogens (e.g., bromine pentafluoride; chlorine trifluoride). Incandescent reaction with phosphorus pentachloride. Will react with water generating some heat.

Hazardous Decomposition Products: None

SECTION 11. TOXICOLOGICAL INFORMATION

Magnesium Oxide CAS #1309-48-4 Toxic and Hazard Review: low toxicity - a nutrient and/or dietary supplement food additive. THERAP CAT: antacid. (Sax) an experimental tumorigen. Inhalation of fume (not MgO dust particular) produced upon decomposition of magnesium compounds can produce a febrile reaction and leukocytosis in humans.

TOXICITY DATA: Inh-hmn TClO:400mg/m³; ltr-ham TDLo:480 mg/kg/30w-LETA.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicological / Chemical Fate Information:

No data available on any adverse effects of this material on the environment.

SECTION 13. DISPOSAL INFORMATION

Waste Management/Disposal: This product does not exhibit any characteristics of a hazardous waste. The product is suitable for landfill disposal. Follow all applicable federal, state and local regulations for safe disposal.

SECTION 14. TRANSPORT INFORMATION

US Department of Transportation: Not regulated by DOT as a hazardous material. No hazard class, no label or placard required, no UN or NA number assigned.

Canadian TDG Hazard Class & Pin: Not regulated.

SECTION 15. REGULATORY INFORMATION

SARA TITLE III: This product does not contain any substances reportable under Sections 302, 304 or 313. Sections 311 and 312 do apply. (Routine Reporting and Chemical Inventories)

TSCA: All substances in this product are listed in the Chemical Substance Inventory of the Toxic Substances Control Act.

MATERIAL SAFETY DATA SHEET

PREMIER CHEMICALS

MSDS No.: EM Coarse

Phone: PREMIER CHEMICALS: 1-800-227-4287

Date Prepared: 11/09

CHEMTRAC, 24-Hr Emergency Assistance: 1-800-424-9300

This Revision:

SECTION 16. OTHER INFORMATION

ACRONYMS AND REFERENCES USED IN PREPARATION OF MSDS:

ACGIH:	American Conference of Governmental Industrial Hygienists
CAS#:	CAS Registration Number is an assigned number to identify a material. CAS stands for Chemical Abstracts Service.
CERCLA:	Comprehensive Environmental Response, Compensation & Liability Act
EPCRA:	Emergency Planning and Community Right-to-Know Act of 1986
HMIS™:	Hazardous Materials Identification System (National Paint & Coatings Association)
IARC:	International Agency for Research on Cancer
MSHA:	Mine Safety and Health Administration
mg/m ³ :	Milligrams per cubic meter
NIOSH:	National Institute for Occupational Safety and Health
NFPA:	National Fire Protection Association
NTP:	National Toxicology Program
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit (OSHA)
REL:	Recommended Exposure Limit (OSHA)
SARA:	Superfund Amendments and Reauthorization Act
TITLE III:	Emergency Planning and Community Right-to-Know Act
Section 302:	Extremely Hazardous Substances
Section 304:	Emergency Release
Section 311:	Community Right-to-Know, MSDSs or List of Chemicals
Section 312:	Community Right-to-Know, Inventory and Location, (Tier III)
Section 313:	Toxic Chemicals, Toxic Chemical Release Reporting, Form R
TLV:	Threshold Limit Values (ACGIH)
TWA:	Time Weighted Average
29CFR1910.134:	OSHA Respiratory Protection Standard

REFERENCES:

Sax, N. Irving: Dangerous Properties of Industrial Materials, Ninth Edition, Van Nostrand Reinhold Co., Inc., 1996.
Kirk, R. and Othmer, D., Encyclopedia of Chemical Technology, Third Edition, Wiley-Interscience, New York, NY 1982.
Clansky, K.B., Suspect Chemicals Sourcebook, 1992-2nd Edition, Roytech Publications, Bethesda, Maryland.
Sax, N. Irving and Lewis, R.J. Hawley's Condensed Chemical Dictionary, Eleventh Ed., Van Nostrand Reinhold Co., Inc., NY
Manufacturers / Suppliers, Material Safety Data Sheets on Raw Materials Used
American National Standard for Hazardous Industrial Chemicals - Material Safety Data Sheets - Preparation, American National Standards Institute, Inc., 11 West 42nd St, New York, NY 10036.

Prepared/revised: Mark A. Shand

November 12, 2009

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Page 4 --

End of MSDS

-- Page 4

Attachment 3

Site Incident Procedures

**ARCADIS Site Illness & Injury Management Procedures (IIMP)
for ExxonMobil Environmental Services Company (EMESC)
Projects**

VCC-Wando and Swift

SCENARIO #1: ARCADIS Employee suffering a Minor First Aid (small cuts, blisters, bruises, aches, pains resulting from work)

The ARCADIS Onsite CONSTRUCTION SUPERINTENDENT will:

1. **Stop work** when an incident occurs.
2. Notify a trained first aid responder to report the incident location.
3. Contact ARCADIS Onsite Construction Resident and **Greg Ertel, 585.303.0633**
4. Contact WorkCare (WC) at **1-800-445-6155** with employee to review symptoms.
5. Comply with WC instructions regarding first aid or transport to occupational health clinic.
6. Dispatch onsite Construction Resident to drive employee to clinic if required (For anything beyond a very minor scratch/sting bite, the ARCADIS Onsite CONSTRUCTION SUPERINTENDENT will drive or accompany the employee to the clinic).
7. If WC recommends visit to clinic, contact Corporate H&S (Workers Compensation) at **720-344-3844** to report incident.
8. Oversee departure of employee to clinic.
9. Notify ARCADIS Project Manager (PM) (See below for ARCADIS PM responsibilities).
10. After speaking with Construction Resident at the clinic, contact ARCADIS Corporate H&S to update incident status and receive information as required on Workers Compensation requirements.
11. Check EMPLOYEE status upon return to site to verify treatment and ability to work. If employee did go to WorkCare clinic then collect a copy of any written documentation provided by the clinic and call Chuck Webster with that information.
12. Coordinate and implement incident investigation using the Loss Prevention System (LPS) tools.
13. Review conditions that led to the incident with field team, address key issues, and make the determination when to resume work based on feedback.

The ARCADIS Onsite Construction Resident will:

1. Report immediately to incident location, and provide first aid as necessary.
2. Review WorkCare (WC) instructions with CONSTRUCTION SUPERINTENDENT and EMPLOYEE.
3. Drive EMPLOYEE to occupational health clinic, if needed.
4. Communicate key findings from the health clinic provider.
5. Stay with EMPLOYEE until care is given and EMPLOYEE is allowed to depart clinic.
6. Report back to CONSTRUCTION SUPERINTENDENT with employee upon discharge to begin incident investigation.

ARCADIS PM will:

1. Communicate with onsite CONSTRUCTION SUPERINTENDENT as needed to advise on incident.
2. Notify EMESC Project Manager Bruce Frink, the ARCADIS Principal-in-Charge, and the ARCADIS Program Manager.
3. Interface with Corporate H&S to validate whether EMPLOYEE will receive onsite treatment, or require visit to occupational health clinic. Notify Corporate H&S of employee's duties and availability of light duty work, if required.
4. Assist/review in the incident investigation process.

ARCADIS CORPORATE HEALTH AND SAFETY MANAGER will:

1. Handle reporting to Workers Compensation Third Party Administrator (TPA) and then work with the CONSTRUCTION SUPERINTENDENT, TPA adjuster and employee to ensure appropriate medical care, work release (including light duty release when medically appropriate) and discharge from care.
2. If visit to a physician is not advised, WC will follow up with employee AND Corporate H&S Manager until injury is resolved.

Scenario # 2: ARCADIS Employee suffering an Injury possibly requiring Medical Treatment (Deeper cuts, strains/sprains, possible chemical exposure)

The ARCADIS CONSTRUCTION SUPERINTENDENT will:

1. **Stop work** when an incident occurs.
2. Notify a trained first aid responder to report to incident location.
3. Contact ARCADIS Onsite Construction Resident, ARCADIS Project Manager (PM) and ARCADIS EMESC Safety Manager Greg Ertel, 585.303.0633
4. Contact ARCADIS Onsite Construction Resident.
5. Contact WorkCare (WC) at **1-800-445-6155** with employee to review symptoms.
6. Comply with WC instructions regarding first aid or transport to Concentra Urgent Care, 4115 Dorchester Rd. #100, Charleston - (843) 554-6737
7. Dispatch ARCADIS Onsite Construction Resident to drive employee to clinic and accompany the injured employee and Construction Resident to the clinic.
8. Contact Corporate H&S (Workers Compensation) at **720-344-3844** to report incident and departure of employee to clinic.
9. Contact Corporate H&S (**720**)**344-3779/ 3844** to update incident status and receive information as required on Workers Compensation requirements.
10. Provide Employee with "HAZCOM Letter" and "Questions to Ask Your Doctor" upon arrival at the clinic. Be sure that EMPLOYEE provides HAZCOM Letter to the treating physician.
11. Stay with the employee until he is released from the clinic, or the situation is stable. Collect a copy of any written documentation provided by medical provider. Review with Greg Ertel prior to leaving clinic.
12. Check EMPLOYEE status upon return to site to verify treatment and ability to work.

The ARCADIS Onsite Construction Resident will:

1. Report to incident location and provide first aid, as necessary.
2. Review WC instructions with CONSTRUCTION SUPERINTENDENT and EMPLOYEE.
3. Drive EMPLOYEE to occupational health clinic, if needed.
4. Upon arrival at clinic, contact Corporate H&S (Workers Compensation) at **720-344-3844** to report status of employee.
5. Stay with EMPLOYEE until care is given and EMPLOYEE is allowed to depart clinic.
6. Report back to CONSTRUCTION SUPERINTENDENT with employee (if EMPLOYEE is able) upon discharge to begin incident investigation.

ARCADIS PM will:

1. Communicate with onsite CONSTRUCTION SUPERINTENDENT as needed to advise on incident.
2. Notify EMESC Project Manager Bruce Frink, the ARCADIS Principal-in-Charge, and the ARCADIS Program Manager.
3. Interface with Corporate H&S to validate whether EMPLOYEE will receive onsite treatment, or require visit to occupational health clinic. Notify Corporate H&S of employee's duties and availability of light duty work, if required.
4. Assist/review in the incident investigation process using the LPS tools.

ARCADIS CORPORATE HEALTH AND SAFETY MANAGER will:

1. Handle reporting to Workers Compensation Third Party Administrator (TPA) and then work with the CONSTRUCTION SUPERINTENDENT, TPA adjuster and employee to ensure appropriate medical care, work release (including light duty release when medically appropriate) and discharge from care.

2. If visit to a physician is not advised, WC will follow up with employee AND Corporate H&S Manager until injury is resolved.

Scenario #3: Emergency Situation (broken limbs, amputation, significant loss of blood, loss of consciousness, heat injuries, chest pain, etc.)

The employee discovering the incident will call for assistance and begin first aid if properly trained

The ARCADIS CONSTRUCTION SUPERINTENDENT will:

1. **Stop work** when an incident occurs.
2. Notify a trained first aid responder to report to incident location.
3. Contact ARCADIS PM and ARCADIS EMESC Safety Manager Greg Ertel, 585.303.0633.
4. Contact ARCADIS onsite Construction Resident.
5. Accompany EMPLOYEE to hospital.
6. Contact Corporate H&S (Workers Compensation) at **720-344-3844** to report EMPLOYEE status upon arrival at hospital.
7. Notify next of kin as required.
8. Follow guidance from Corporate H&S, as required, during time at hospital.
9. Work with Corporate H&S and Human Resources to determine restricted work, light duty release status, etc., as appropriate.

The ARCADIS Construction Resident will:

1. Report to incident location and make sure that the situation is stabilized.
2. Verify that 911 has been called.
3. Personally go to meet the ambulance and accompany injured employee to incident location.
4. Begin incident investigation.

ARCADIS PM will:

1. Communicate with onsite CONSTRUCTION SUPERINTENDENT as needed to advise on incident.
2. Notify EMESC Project Manager Bruce Frink, the ARCADIS Principal-in-Charge, and the ARCADIS Program Manager.
3. Interface with Corporate H&S to validate whether EMPLOYEE will receive onsite treatment, or require visit to occupational health clinic. Notify Corporate H&S of employee's duties and availability of light duty work, if required.
4. Assist/review in the incident investigation process using the LPS tools.

ARCADIS CORPORATE HEALTH AND SAFETY MANAGER will:

1. Handle reporting to Workers Compensation Third Party Administrator (TPA) and then work with the CONSTRUCTION SUPERINTENDENT, TPA adjuster and employee to ensure appropriate medical care, work release (including light duty release when medically appropriate) and discharge from care.
2. Assist with Next of Kin notification, if required.

**ENTACT Site Illness & Injury Management Procedures (IIMP)
for ExxonMobil Environmental Services Company Projects**

SCENARIO #1: ENTACT Employee suffering a Minor First Aid (small cuts, blisters, bruises, aches, pains resulting from work)

ENTACT SITE SUPERVISOR will:

1. Stop Work
2. Provide first aid or, request a trained responder
3. Notify ARCADIS Construction Superintendant
4. Contact WorkCare (WC) at **1-800-445-6155** with employee to review symptoms.
5. Comply with WC instructions regarding first aid or transport to occupational health clinic.
6. Drive employee to clinic if required (For anything beyond a very minor scratch/sting bite, the ARCADIS Onsite CONSTRUCTION SUPERINTENDENT will accompany the employee to the clinic).
7. Collect a copy of any written documentation provided by medical provider prior to leaving clinic.

ARCADIS CONSTRUCTION RESIDENT will:

1. Stop Work
2. Provide first aid or, request a trained
3. Notify ARCADIS Construction Superintendant (CS) of status/updates

The ARCADIS CONSTRUCTION SUPERINTENDANT will:

1. Contact Greg Ertel at 585.303.0633.
2. Resource incident investigation; validate whether or not the EMPLOYEE needs to be transported to occupational health clinic Concentra Urgent Care 4115 Dorchester Rd. #100, Charleston - (843) 554-6737
3. Check on EMPLOYEE status to verify treatment and ability to work.

Scenario # 2: ENTACT Employee suffering an Injury possibly requiring Medical Treatment (Deeper cuts, strains/sprains, possible chemical exposure)

The ENTACT SITE SUPERVISOR will:

1. Stop Work
2. Secure the area
3. Administer first aid or, call for a trained responder
4. Notify the ARCADIS Construction Superintendant (CS)
5. Contact WorkCare (WC) at **1-800-445-6155** with employee to review symptoms.
6. Comply with WC instructions regarding first aid or transport to occupational health clinic.
7. Drive employee to clinic if required (For anything beyond a very minor scratch/sting bite, the ARCADIS Onsite CONSTRUCTION SUPERINTENDENT will drive or accompany the employee to the clinic).
8. Drive EMPLOYEE to the Concentra Urgent Care, 4115 Dorchester Rd. #100, Charleston - (843) 554-6737 and stay for the duration of treatment
9. Provide EMPLOYEE with "HAZCOM Letter" and "Questions to Ask Your Doctor" upon arrival at the clinic. Be sure that EMPLOYEE provides HAZCOM Letter to the treating physician.
10. Begin incident investigation

The ARCADIS CONSTRUCTION RESIDENT will:

1. Stop Work
2. Secure the area
3. Administer first aid or, call for a trained responder
4. Notify the ARCADIS Construction Superintendant (CS)
5. Have ENTACT Site Supervisor drive EMPLOYEE to Concentra Urgent Care, 4115 Dorchester Rd. #100, Charleston - (843) 554-6737 and stay for the duration of treatment
6. Begin incident investigation

The ENTACT H&S Supervisor will:

1. Remain on site and begin incident investigation

The ARCADIS CONSTRUCTION SUPERINTENDANT (CS) will:

1. Stop Work
2. Validate that a trained responder has reported to incident location
3. Contact ARCADIS Project Manager and, Chuck Webster at 315-247-5971
4. Accompany the EMPLOYEE to the Concentra Urgent Care, 4115 Dorchester Rd. #100, Charleston - (843) 554-6737
5. Check EMPLOYEE status upon return to site to verify treatment and ability to work.

The ARCADIS ExxonMobil H&S Manager will:

1. Notify ARCADIS ExxonMobil PIC
2. Notify Frank Serrapere of ExxonMobil

Scenario #3: Emergency Situation (broken limbs, amputation, significant loss of blood, loss of consciousness, heat injuries, chest pain, etc.)

The employee discovering the incident will call for assistance and begin first aid if properly trained

The ENTACT Site Supervisor will:

1. Call 911
2. Stop Work
3. Notify a trained responder to report to incident location
4. Secure the site
5. Contact ARCADIS CS
6. Travel to hospital with EMPLOYEE
7. Notify next of kin as required
8. Contact ENTACT Corporate from hospital to provide incident information

The ENTACT H&S MANAGER will:

1. Go to front gate, meet ambulance and lead to injured employee
2. Assist with securing the scene
3. Work with ARCADIS CONSTRUCTION RESIDENT to begin incident investigation

The ARCADIS CONSTRUCTION RESIDENT will:

1. Stop Work
2. Secure the area
3. Administer first aid or, call for a trained responder
4. Notify the ARCADIS Construction Superintendant (CS)
5. Have ENTACT Site Supervisor drive EMPLOYEE to Concentra Urgent Care, 4115 Dorchester Rd. #100, Charleston - (843) 554-6737 and stay for the duration of treatment
6. Begin incident investigation

The ARCADIS CONSTRUCTION SUPERINTENDANT (CS) will:

1. Contact Greg Ertel at 585.303.0633.
2. Accompany EMPLOYEE to hospital
3. Follow guidance from Corporate H&S as required during time at hospital
4. Work with ENTACT management to determine restricted work, light duty release, etc. as appropriate
5. Coordinate Incident Investigation activities with ENTACT Supervisor and ARCADIS Construction Resident

The ARCADIS ExxonMobil H&S Manager will:

1. Notify ARCADIS ExxonMobil PIC
2. Notify Frank Serrapere of ExxonMobil
3. Assist with Incident Investigation and Reporting Requirements

**Second Tier Subcontractor Illness & Injury Management Procedures
(IIMP) for ExxonMobil Environmental Services Company Projects**

SCENARIO #1: Employee suffering a Minor First Aid (small cuts, blisters, bruises, aches, pains resulting from work)

ENTACT SITE SUPERVISOR will:

1. Stop Work
2. Provide first aid or, request a trained responder
3. Notify ARCADIS Construction Superintendant
4. Contact WorkCare (WC) at **1-800-445-6155** with employee to review symptoms.
5. Comply with WC instructions regarding first aid or transport to occupational health clinic.
6. Drive employee to clinic if required (For anything beyond a very minor scratch/sting bite, the ARCADIS Onsite CONSTRUCTION SUPERINTENDENT will accompany the employee to the clinic).
7. Collect a copy of any written documentation provided by medical provider prior to leaving clinic.

ARCADIS CONSTRUCTION RESIDENT will:

1. Stop Work
2. Provide first aid or, request a trained
3. Notify ARCADIS Construction Superintendant (CS) of status/updates

The ARCADIS CONSTRUCTION SUPERINTENDANT will:

14. Contact Greg Ertel at 585.303.0633
15. Resource incident investigation; validate whether or not the EMPLOYEE needs to be transported to occupational health clinic
16. Check on EMPLOYEE status to verify treatment and ability to work.

Scenario # 2: Subcontractor Employee suffering an Injury possibly requiring Medical Treatment (Deeper cuts, strains/sprains, possible chemical exposure)

The ENTACT SITE SUPERVISOR will:

1. Stop Work
2. Secure the area
3. Administer first aid or, call for a trained responder
4. Notify the ARCADIS Construction Superintendant (CS)
5. Contact WorkCare (WC) at **1-800-445-6155** with employee to review symptoms.
6. Comply with WC instructions regarding first aid or transport to occupational health clinic.
7. Drive employee to clinic if required (For anything beyond a very minor scratch/sting bite, the ARCADIS Onsite CONSTRUCTION SUPERINTENDENT will drive or accompany the employee to the clinic).
8. Drive EMPLOYEE to the Concentra Urgent Care, 4115 Dorchester Rd. #100, Charleston - (843) 554-6737 and stay for the duration of treatment
9. Provide EMPLOYEE with "HAZCOM Letter" and "Questions to Ask Your Doctor" upon arrival at the clinic. Be sure that EMPLOYEE provides HAZCOM Letter to the treating physician.
10. Begin incident investigation

The ARCADIS CONSTRUCTION RESIDENT will:

1. Stop Work
2. Secure the area
3. Administer first aid or, call for a trained responder
4. Notify the ARCADIS Construction Superintendant (CS)
5. Have ENTACT Site Supervisor drive EMPLOYEE to Concentra Urgent Care, 4115 Dorchester Rd. #100, Charleston - (843) 554-6737 and stay for the duration of treatment
6. Begin incident investigation

The ENTACT H&S Supervisor will:

Remain on site and begin incident investigation

The ARCADIS CONSTRUCTION SUPERINTENDANT (CS) will:

1. Stop Work
2. Validate that a trained responder has reported to incident location
3. Contact ARCADIS Project Manager and, Greg Ertel at 585. 303.0633
4. Accompany the EMPLOYEE to the Concentra Urgent Care, 4115 Dorchester Rd. #100, Charleston - (843) 554-6737
5. Check EMPLOYEE status upon return to site to verify treatment and ability to work.

The ARCADIS ExxonMobil H&S Manager will:

1. Notify ARCADIS ExxonMobil PIC
2. Notify Frank Serrapere of ExxonMobil

Scenario #3: Emergency Situation (broken limbs, amputation, significant loss of blood, loss of consciousness, heat injuries, chest pain, etc.)

The employee discovering the incident will call for assistance and begin first aid if properly trained

The ENTACT Site Supervisor will:

1. Call 911
2. Stop Work
3. Notify a trained responder to report to incident location
4. Secure the site
5. Contact ARCADIS CS
6. Travel to hospital with EMPLOYEE
7. Notify next of kin as required
8. Contact ENTACT Corporate from hospital to provide incident information

The ENTACT H&S MANAGER will:

1. Go to front gate, meet ambulance and lead to injured employee
2. Assist with securing the scene
3. Work with ARCADIS CONSTRUCTION RESIDENT to begin incident investigation

The ARCADIS CONSTRUCTION RESIDENT will:

1. Stop Work
2. Secure the area
3. Administer first aid or, call for a trained responder
4. Notify the ARCADIS Construction Superintendant (CS)
5. Have ENTACT Site Supervisor drive EMPLOYEE to Concentra Urgent Care, 4115 Dorchester Rd. #100, Charleston - (843) 554-6737 and stay for the duration of treatment
6. Begin incident investigation

The ARCADIS CONSTRUCTION SUPERINTENDANT (CS) will:

1. Contact Greg Ertel at 585.303.0633
2. Accompany EMPLOYEE to hospital
3. Follow guidance from Corporate H&S as required during time at hospital
4. Work with ENTACT management to determine restricted work, light duty release, etc. as appropriate
5. Coordinate Incident Investigation activities with ENTACT Supervisor and ARCADIS Construction Resident

The ARCADIS ExxonMobil H&S Manager will:

1. Notify ARCADIS ExxonMobil PIC
2. Notify Frank Serrapere of ExxonMobil
3. Assist with Incident Investigation and Reporting Requirements

Attachment 4

WorkCare Incident Guidance

QUESTIONS TO CONSIDER ASKING YOUR DOCTOR DURING A CLINIC VISIT

- Q: In general, how long does it take for this type of injury to heal?**
- Q: If my symptoms worsen, what should I do? When should I contact you?**
- Q: Can I return to full duty if I feel up to it before my next appointment?**
- Q: If I participate in a specific activity, will it cause me further harm?**
- Q: What will happen if I don't respond to the treatment?**
- Q: Would an over-the-counter medication work for me?**
- Q: Do I have to take the medication if I don't want to?**
- Q: How often should the medication be taken (only when I have pain or around the clock every 6-8 hours)?**
- Q: Could I experience any complications if I don't take the medication?**
- Q: Does the medication have side effects?**

ARCADIS

Attachment 2

**ARCADIS - Memo to Treating
Medical Professional**

ARCADIS - Memo to Treating Medical Professional

The individual you are about to examine is an employee of ARCADIS. Our employee is in the ARCADIS medical surveillance program and oriented to the environmental contaminant(s) of record at the [_____] site; the applicable contaminant(s) and potential route(s) of exposure are listed below.

We have selected your clinic based on a pre-job review with our medical management company WorkCare. During your medical evaluation, please consider the following:

- Our goal is to keep our employees working to the best of their ability if at all possible and, as such, have light duty work available. We will work with you to ensure that the work fits within your recommended guidelines and with the employee in regard to required follow-up examinations.
 - Please tell us what the employee can physically do; and,
 - If you have any questions regarding the employee's work, an ARCADIS supervisor is available in the waiting area to discuss items such as job description, available light duty, and follow up visits.
- Our employees operate heavy equipment and may not be able to fully perform their job functions if prescribed medications that prohibit such activity. When medically possible and appropriate, please consider the use of over-the-counter medications that will not impair job function.
- Whenever medically possible and appropriate, please keep OSHA Recordability guidelines in mind when making treatment recommendations.

Applicable Contaminant	Potential Route of exposure

Material Safety Data Sheets for the above contaminants are attached, as applicable.

- Decontamination of the employee was/was not performed prior to arrival at your facility.
- Decontamination of the employee was not applicable.

Thank you for providing care to our employee.

Supervisor Signature

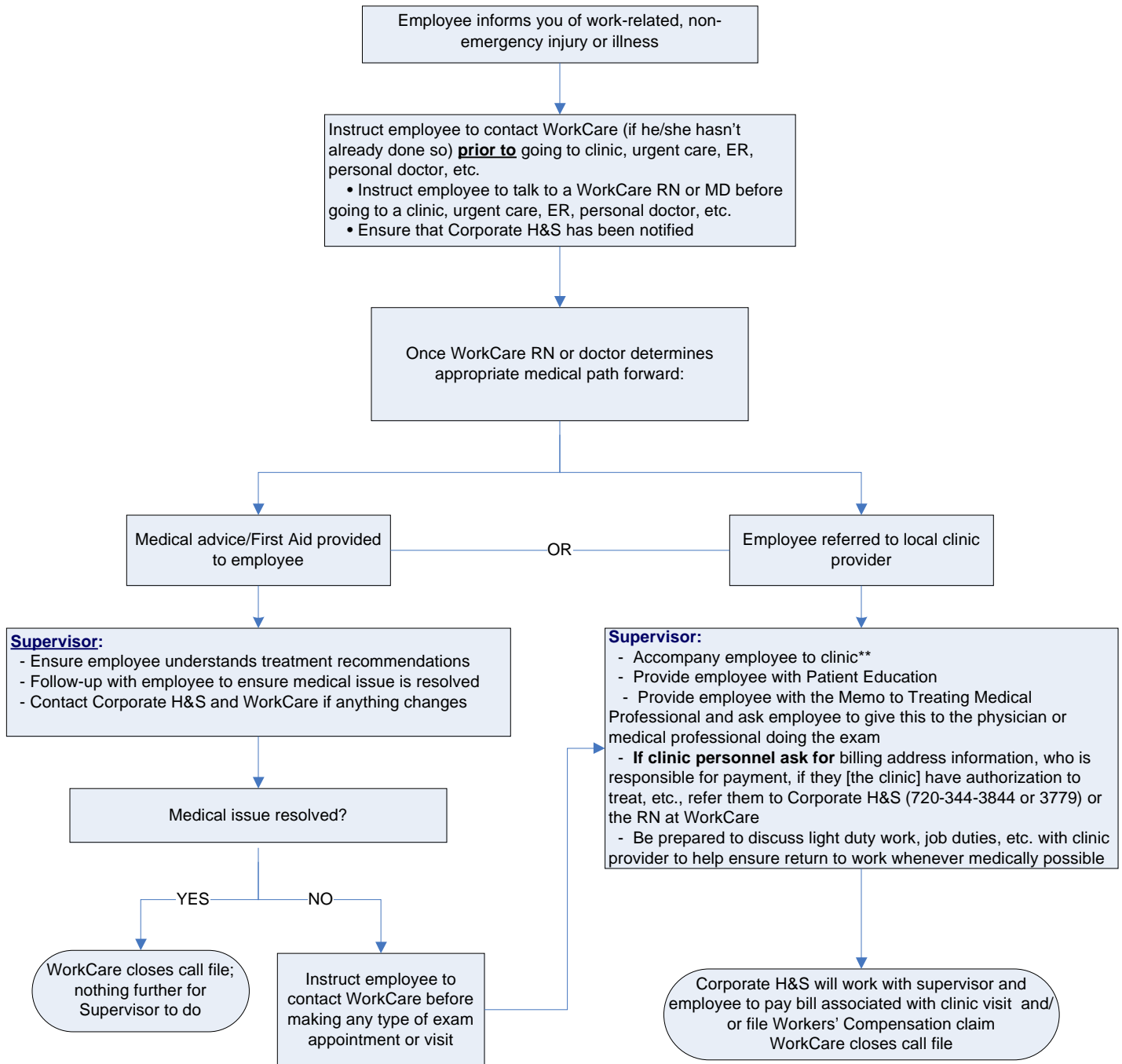
Date

Attachment 3

**WorkCare Incident
Intervention®
for Non-Emergency
Injuries/Illnesses**

– Supervisor Information

WorkCare Incident Intervention®
24/7 Toll Free Number: 800-455-6155 or 888-449-7787
For Non-Emergency Injuries/Illnesses
Supervisor Information



** If unable to accompany employee, send a designee. If that is not possible, send Memo to Treating Medical Professional with employee along with appropriate office/cell number - ensure you are available for calls from clinic

Attachment 4

**WorkCare Incident
Intervention®
for Non-Emergency
Injuries/Illnesses
Frequently Asked Questions**

– Supervisor

WORKCARE INCIDENT INTERVENTION® FOR NON-EMERGENCY INJURIES/ILLNESSES

FREQUENTLY ASKED QUESTIONS - SUPERVISOR

24/7 TOLL FREE NUMBER: 800-455-6155/888-449-7787

Q: What is WorkCare Incident Intervention®?

A: 24/7 telephonic access to board-certified physicians and RNs at the time of a non-emergency work-related injury or illness. These clinicians provide guidance on the evaluation of symptoms, follow best practices to minimize the injury/illness, recommend appropriate first aid, follow up until the medical issue is resolved and, as necessary, arrange for in-person medical evaluation or treatment.

Q: When to use WorkCare?

A: ARACDIS policy requires that all non-emergency work-related injury/illness be called in to WorkCare prior to clinic, personal physician, emergency room, or urgent care visit. Instruct employee accordingly.

Q: How is WorkCare contacted?

A: Call toll free at 800-455-6155 or 888- 449-7787; available 24/7.

Q: What happens after the employee calls?

A: The intake coordinator will direct the call to a physician or RN (after hours, directed to an MD who will call the employee back within 30 minutes)

- The clinician will identify who they are (RN or MD), assess the situation, and provide first aid recommendations, if appropriate, or will refer employee to a local clinic provider.
- If no clinic visit is needed, WorkCare will follow up with employee until the medical issue is resolved and keep the ARACDIS point of contact updated on information pertaining to the injury or illness.
- If a referral is made to a clinic provider, WorkCare will contact the clinic to provide information on what has been done so far and work with that provider on a treatment plan.

Q: Who else should I contact?

A: Notify Corporate H&S at 720-344-3844.

Q: What is my role if no clinic visit is recommended?

A:

- Ensure employee understands WorkCare treatment recommendations.
- Follow-up with employee to ensure their medical issue is resolved.
- Contact Corporate H&S and WorkCare if anything changes.

Q: What is my role if a clinic referral is made?

A:

- Accompany employee to clinic or send designee.
- Provide employee with Memo to Treating Medical Professional and instruct employee to give Memo to physician in exam room.
- If clinic personnel ask for billing address information, who is responsible for payment, if they [the clinic] have authorization to treat, etc., refer them to Corporate H&S (720-344-3844 or 3779) or the RN at WorkCare.
- Be prepared to discuss light duty work, job duties, etc. with clinic provider to help ensure return to work whenever medically possible.

Q: What if the employee doesn't agree with the WorkCare clinician's advice?

A: Instruct the employee to contact Corporate H&S prior to going to a clinic, urgent care, ER, or personal physician; if it's after hours, the employee can decide to proceed to an urgent care/ER if he/she feels it cannot wait.

Q: Who are the WorkCare physicians?

A:

- Dr. Peter P. Greaney, President, Medical Director
- Dr. Robert C. Blink, Vice President, Medical Director
- Dr. Elaine A. Tonel, Assistant Medical Director
- Dr. John Paul Longphre, Associate Medical Director

If the injury or illness is an emergency, ensure emergency care is provided immediately

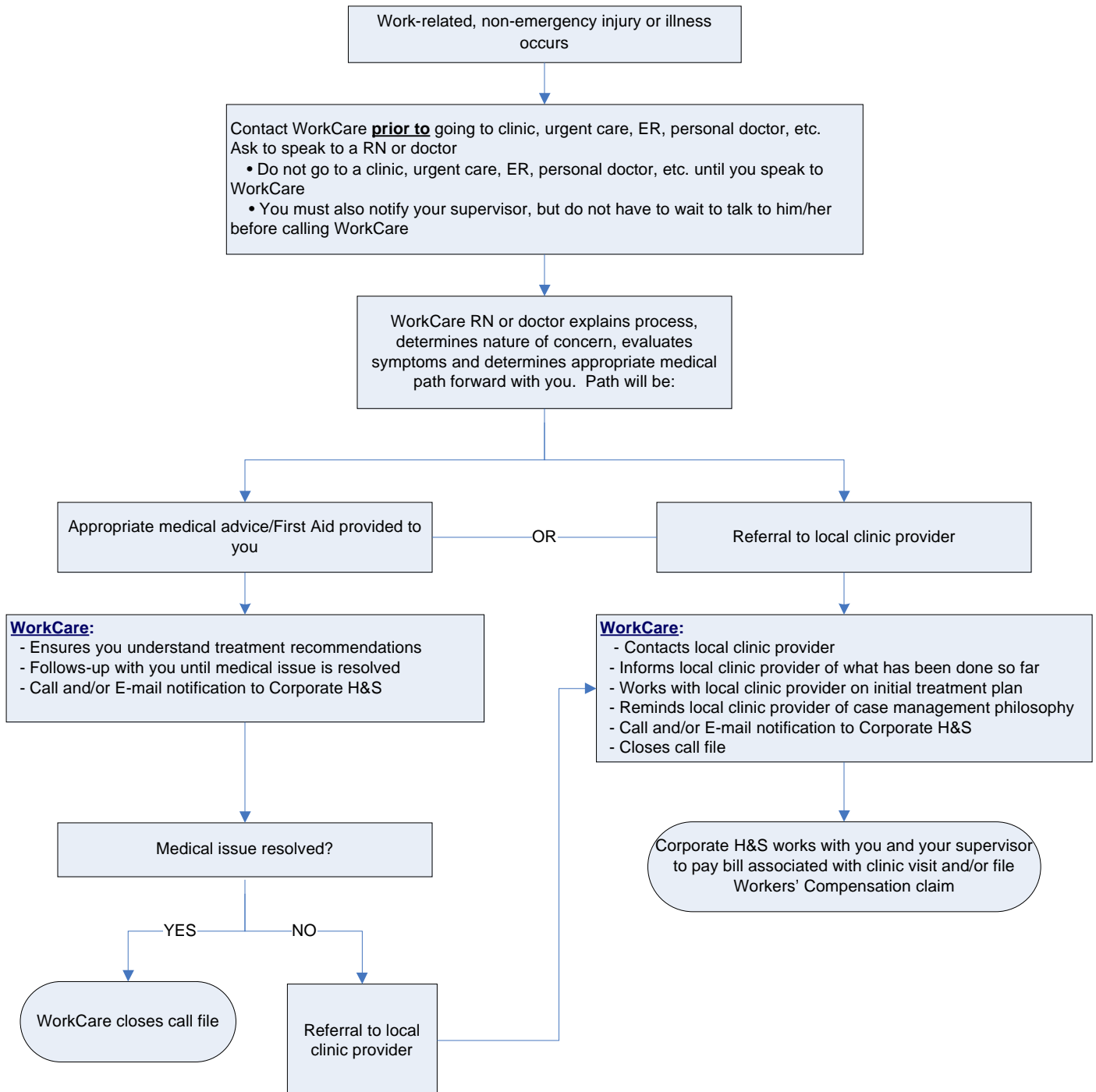
ARCADIS

Attachment 5

**WorkCare Incident
Intervention®
for Non-Emergency
Injuries/Illnesses**

– Employee Information

WorkCare Incident Intervention®
24/7 Toll Free Number: 800-455-6155 or 888-449-7787
For Non-Emergency Injuries/Illnesses
Employee Information



Attachment 6

**WorkCare Incident
Intervention®
for Non-Emergency
Injuries/Illnesses
Frequently Asked Questions**

– Employee

WORKCARE INCIDENT INTERVENTION® FOR NON-EMERGENCY INJURIES/ILLNESSES

FREQUENTLY ASKED QUESTIONS - EMPLOYEES

24/7 TOLL FREE NUMBER: 800-455-6155/888-449-7787

Q: What is WorkCare Incident Intervention®?

A: 24/7 telephonic access to board-certified physicians and RNs at the time of a non-emergency work-related injury or illness. These clinicians provide guidance on the evaluation of symptoms, follow best practices to minimize the injury/illness, recommend appropriate first aid, follow up until the medical issue is resolved and, as necessary, arrange for in-person medical evaluation or treatment.

Q: When to use WorkCare?

A: ARACDIS policy requires that all non-emergency work-related injury/illness be called in to WorkCare prior to clinic, personal physician, emergency room, or urgent care visit.

Q: How do I contact WorkCare?

A: Call toll free at 800-455-6155 or 888- 449-7787; available 24/7.

Q: What happens after I call?

A: The intake coordinator will direct the call to a physician or RN (after hours, directed to an MD who will call you back within 30 minutes)

- The clinician will identify who they are (RN or MD), assess the situation, and provides first aid recommendations if appropriate or will refer you to a local clinic provider.
- If no clinic visit is needed, WorkCare will follow up with you until the medical issue is resolved and keep the ARCADIS point of contact updated on information pertaining to the injury or illness.
- If a referral is made to a clinic provider, WorkCare will contact the clinic to provide information on what has been done so far and will work with that provider on a treatment plan.

Q: Who else should I contact?

A: Notify your supervisor as soon as possible after the injury or illness and prior to proceeding to a clinic, personal physician, emergency room, or urgent care.

Q: What if my condition worsens a few hours, a day, or days later?

A: A WorkCare clinician will be following up with you, but if you feel at any time that your condition has worsened or you have any concerns, call the WorkCare number so you can be connected with a WorkCare clinician.

Q: What if I don't agree with the WorkCare clinician and want to be seen by a local medical provider?

A: WorkCare clinicians cannot and will not tell you that you cannot go to a local medical provider. You must contact Corporate H&S (720-344-3844 or 3779) to discuss next steps.

Q: What if I don't agree with the WorkCare clinician's advice?

A: Contact Corporate H&S at 720-344-3844 or 3779 to discuss; if it's after hours, you will need to determine if you feel it cannot wait and, if so, proceed to an afterhours clinic or urgent care/ER.

Q: Who are the WorkCare physicians?

A:

- Dr. Peter P. Greaney, President, Medical Director
- Dr. Robert C. Blink, Vice President, Medical Director
- Dr. Elaine A. Tonel, Assistant Medical Director
- Dr. John Paul Longphre, Associate Medical Director

If the injury or illness is an emergency, seek emergency care immediately

Attachment 5

North Carolina Snakes



Don't Tread on Me...

From OpCo: ARCADIS US
31 August 2010

OK for External Distribution

North Carolina annually leads the nation in reports of poisonous snake bites. About 5,000 snake bites are reported in the state each year, compared with nearly 8,000 reported nationally.

Thirty-six different snake species exist in North Carolina, but only six are venomous: coral snake, copperhead, cottonmouth, and three types of rattlesnakes - the pygmy rattler, the eastern diamondback, and the timber rattler.

In order to promote a more peaceful coexistence with snakes,
take precautions...

- Educate your children concerning snakes in your area and strictly warn them against picking up snakes. Because of their body size, children are more at risk when bitten by venomous snakes.
- Do not pick up roadkill snakes as even a snake that has been run over by a car can still reflexively bite and inject venom.
- Be especially careful around fallen logs, rock piles, leaf piles, and caves, where snakes tend to hang out. If you have to work in this type of area, wear thick gloves, boots, and thick jeans as precautions.
- Be wary at night, as many of these snakes tend to be nocturnal hunters and lay low during the heat of the day.
- Don't assume that young snakes are safe to handle, as even the smallest baby snake can inflict a painful and dangerous bite.



If bitten by a snake...

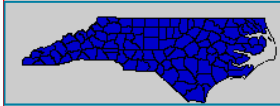
- Assume that any snake that bites you is venomous and seek medical attention immediately.
- Stay calm.
- Call 911 for an ambulance or have someone drive you to the hospital (do not attempt to drive yourself)
- While waiting for emergency assistance:
 - Wash the bite with soap and water.
 - Remove any rings, watches, bracelets, boots, or other restricting items from the bitten extremity.
 - Immobilize the bitten area and keep it lower than the heart.
 - Cover the area with a clean, cool compress or a moist dressing to minimize swelling and discomfort.
- Some don'ts:
 - Don't put ice or a cold-pack on the wound.
 - Don't try using a tourniquet to stop the flow of venom.
 - Don't cut the wound with a knife, etc., or try to suck out the venom.
 - Don't try to kill or catch the snake to bring it to the hospital for identification. If possible, take a photo of the snake. But know that the same anti-venom, if needed, will work for most snake bites in NC.

Please remember to respect snakes and their habitat by staying a safe distance away from them. Also, keep the warnings about snakes in perspective... remember that more Americans die each year from bee and wasp stings than from snake bites. Always be aware of your surroundings and stay safe.

Contributed by: Kathy McConnell - ARCADIS US, Cary, North Carolina office

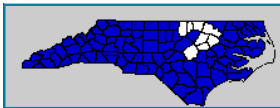
Poisonous Snakes in North Carolina

COPPERHEAD SNAKES



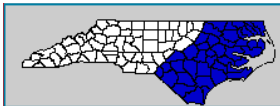
The majority (60+%) of snake bites in NC are from copperhead snakes, but their venom is relatively mild. A copperhead is a pit viper found across NC and has a classic copper color with darker hourglass shaped markings around its body. The copperhead's initial threat display is to strike.

RATTLESNAKES



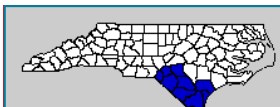
There are three types of rattlesnakes in NC: pygmy rattler, eastern diamondback, and timber rattler. They are all pit vipers living mostly in largely unpopulated areas, especially rocky hillsides, fields, woodland edges, and swamps throughout the state. Recognize a rattlesnake by a diamond shaped pattern along the length of the snake. There are 27 different species of rattlesnakes, however, and each has its own distinctive markings. They're active both day and night, but not when it's cold outside.

COTTONMOUTH SNAKES



A pit viper found in the southeastern part of the state, cottonmouth snakes (also called water moccasins) are semi-aquatic and are often found in or close to water, where their prey lives. Cottonmouths are more active at night and can be identified by a stripe along the side of the head. Its bite is more toxic than a copperhead snake's bite. Despite their open-mouth threat display, they are one of the more sedate venomous snakes.

CORAL SNAKES



Relatively rare in NC, coral snakes are not pit vipers, and do not have triangular shaped heads or cat's eye pupils. Distinguish the coral snake from the similarly colored, non-venomous king snake with the axiom: *Red next to black is safe for Jack; red next to yellow will kill any fellow.* Coral snake bites account for <1% of venomous snake bites in the U.S.

Attachment 6

Visitor Log Sheet

Visitor Acknowledgement and Acceptance of HASP Signature Form

By signing below, I waive, release and discharge the owner of the site and ARCADIS and their employees from any future claims for bodily and personal injuries which may result from my presence at, entering, or leaving the site and in any way arising from or related to any and all known and unknown conditions on the site.

[illegible]

ARCADIS



ENTACT

Attachment 7

Hazardous Materials Transportation
Form

Hazardous Materials Transportation Form

	Vehicle (place X in box)	Type (pick-up, car, box truck, etc.)
Personal		
Rental		
ARCADIS owned/leased		
Government owned		
Trailer		
Materials Transported	Quantity	Storage/Transport Container

List Trained Drivers:
