HEALTH AND SAFETY PLAN
PRE-REMEDIAL SITE ASSESSMENT ACTIVITIES
RARITAN BAY SLAG SITE
OLD BRIDGE AND SAYREVILLE, NEW JERSEY

Prepared for:

U.S. Environmental Protection Agency
Region 2
Edison, NJ 08837

Prepared By:

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The signatures below indicate that the individuals have read and understood this Health and Safety Plan.

NAME	SIGNATURE	AFFILIATION	DATE
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SECTION II - GENERAL

2.0 Introduction

This section of the Site Health and Safety Plan (HASP) document defines general applicability and general responsibilities with respect to compliance with Health and Safety programs for the pre-remedial field activities to be conducted as part of the Raritan Bay Slag Site (RBS) by Weston Solutions, Inc. (WESTON).

The purpose of this HASP is to define the requirements and designate protocols to be followed at the RBS Site during investigation and remediation activities. Applicability extends to all Govemment employees, contractors, subcontractors and visitors.

All personnel on site, contractors and subcontractors included, shall be informed of the site emergency response procedures and any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards and defines protective measures planned for the site.

This plan must be reviewed and an agreement to comply with the requirements must be signed by all personnel prior to entering the exclusion zone or contamination reduction zone.

During development of this plan, consideration was given to current safety standards as defined by EPA/OSHA/NIOSH, health effects and standards for known contaminants, and procedures designed to account for the potential for exposure to unknown substances. Specifically, the following reference sources have been consulted:

- OSHA 29 CFR 1910.120 and EPA 40 CFR 311
- U.S. EPA, OERR ERT Standard Operating Safety Guides
- NIOSH/OSHA/USCG/EPA Occupational Health and Safety Guidelines
- (ACGIH) Threshold Limit Values

All visitors entering the contamination reduction zone and exclusion zone at the site will be required to read and verify compliance with the provisions of this HASP. In addition, visitors will be expected to comply with relevant OSHA requirements such as medical monitoring, training and respiratory protection (if applicable). Visitors will also be expected to provide their own protective equipment.

In the event that a visitor does not adhere to the provisions of the HASP, he/she will be requested to leave the work area. All non-conformance incidents will be recorded in the site logbook.

2.1 Proposed Site Activities

WESTON will collect soil, sediment, and surface water samples from the beach and park area of the site. Other activities will include photo documentation and recording of site features using Global Positioning System (GPS) technology. Air monitoring, using a personal data-RAM, will be performed. During previous tleld events, personal air sampling was conducted and no airborne lead or arsenic was detected. Therefore, no additional personal samples will be collected unless indicated by air monitoring results.

2.2 Emergency Telephone Numbers:

24-Hour National Response Center	1-800- 424-8802
24 Hour CHEMTREC	1-800-424-9300
24-Hour Agency on Toxic Substances & Disease Registry	404- 639-0615
24 Hour WESTON Medical Emergency Service	1-800- 847-4678
TSCA Hotline	202-554-1404(Weekdays)
Bureau of Alcohol, Tobacco&Firearms (Explosives)	1-800- 800-3855(Weekdays)
National Pesticide Information Service	1-800-858-7378(7 Days)
Superfund/RCRA Hotline	1-800-424-9346(Weekdays)
CMA Chemical Referral Center	1-800- 262-8200
National Poison Control Center	1-800- 942-5969
U.S. DOT	202-366-0656 (Day) 202- 426-2075 (Hotline)
NIOSH - Health Hazard Evaluation	513-841-4382(Weekdays)
OSHA - Health Response Team	801-487-0521(Weekdays)

2.3 WESTON Contacts:

WESTON Program Manager	W. Scott Butterfield, CHMM 205 Campus Dr. Edison, NJ 08837 (732) 417-5828 (W) (609) 883-3199 (H) (732) 586-6047 (Cell)
WESTON Health and Safety Officer	Alanna Garrison (732) 417-5893 (W) (732) 814-5111 (Cell)
North East Division Safety Manager	Ted Blackbum (603) 656-5442 (W) (603) 860-4457 (Cell)
Corporate Health and Safety Director	Owen Douglass 610-701-3720 (W)
PM / Site Health and Safety Officer	Dan Gaughan (732) 417-5869 (W) (732) 406-8640 (Cell)
WESTON's Medical Director	Dr. Peter Greaney 800-455-6155

SECTION III - HEALTH AND SAFETY PERSONNEL

3.0 Health and Safety Personnel Responsibilities

The WESTON Project Manager (PM), the WESTON Program Manager, and WESTON Health and Safety Officer, and all WESTON representatives share responsibilities for formulating and enforcing health and safety requirements and implementing the HASP.

3.1 WESTON Project Manager

The WESTON PM has the overall responsibility for the project and to assure that the goals of the site assessment project are attained in a manner consistent with the HASP requirements. The PM will coordinate with the designated Site HSO and the WESTON contract HSO to assure that the goals of the PA, SI, SIP, ESI, IA, or other site activity are completed in a manner consistent with the HASP.

3.2 WESTON Corporate Health and Safety Director (CHSD)

WESTON's Health and Safety Supervisor is responsible for establishing health and safety policies and procedures, and for the overall administration of the corporation's health and safety program.

3.3 WESTON Health and Safety Officer (HSO)

The WESTON HSO shall be responsible for overseeing development of the HASP and shall ensure that the HASP complies with all federal, state and local health and safety requirements. The HSO provides technical and administrative support for the WESTON Health and Safety Program.

3.4 Designated Site HSO

The designated Site HSO has total responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made conceming adequate protection programs. Therefore, it is vital that personnel assigned as HSO be experienced and meet the additional training requiretnents specified by OSHA in 29 CFR 1910.120.

SECTION IV - SITE HISTORY AND PHYSICAL DESCRIPTION

4.0 Location

The RBS Site consists of two locations along the Raritan Bay where slag was deposited approximately 40 years ago. One location is the seawall situated in Laurence Harbor at the base of the Old Bridge Waterfront Park and the other is the jetty and adjoining waterfront area on the westem edge of the Cheesequake Creek inlet in Sayreville (Figure 1).

4.1 Description

The RBS Site (CERCLIS ID No. NJN000206276) is approximately 1.3 miles in length and consists of the Laurence Harbor seawall in Old Bridge Waterfront Park and portions of the area in and around the Cheesequake Creek inlet, both located on Raritan Bay. During the replacement of a sewer line, fill and battery casings were observed in the Margaret's Creek area, which is located east of the Laurence Harbor seawall. The Margaret's Creek area was proposed for acquisition by the State of New Jersey under the Green Acres Program in 2006. During a preliminary assessment phase of the Green Acres review process, historical aerial photos revealed the filling of approximately 20 acres of that area by 1974. Further investigation by the New Jersey Department of Environmental Protection (NJDEP) found slag deposits along the seawall at the Old Bridge Waterfront Park. The NJDEP referred the seawall and the area around the Cheesequake Creek inlet to EPA for a removal action, while maintaining control of the Margaret's Creek Site.

In September 1972, the NJDEP was advised by a local environmental commission member that lead-bearing waste material was being disposed of along the Laurence Harbor beachfront on Raritan Bay. Also by letter to NJDEP dated December 7, 1972, NL Industries, Inc. (NL) acknowledged that "slag which consists of non-recoverable low yield metallic waste from blast fumace and blast fumace rubble are disposed of by Liberty Trucking Company at their property in Madison Township, Route 35, New Jersey." The Liberty Trucking Company property was located in the Margaret's Creek area. Madison Township is now known as Old Bridge Township. NL used battery plates from lead/acid storage batteries as the principal feed material for the blast fumace at its plant in Perth Amboy.

4.2 Regulatory History

On December 13, 2006, the NJDEP conducted a limited site investigation at the Margaret's Creek Site to visually characterize fill material via excavation of test pits. Waste materials were evident in numerous locations across the surface of the site, including large quantities of what appeared to be shredded automotive battery casings and refractory brick and slag. On March 14, 2007, the NJDEP collected soil samples at the Margaret's Creek Site. Lead was detected at concentrations ranging from 701 to 146,000 parts per million (ppm).

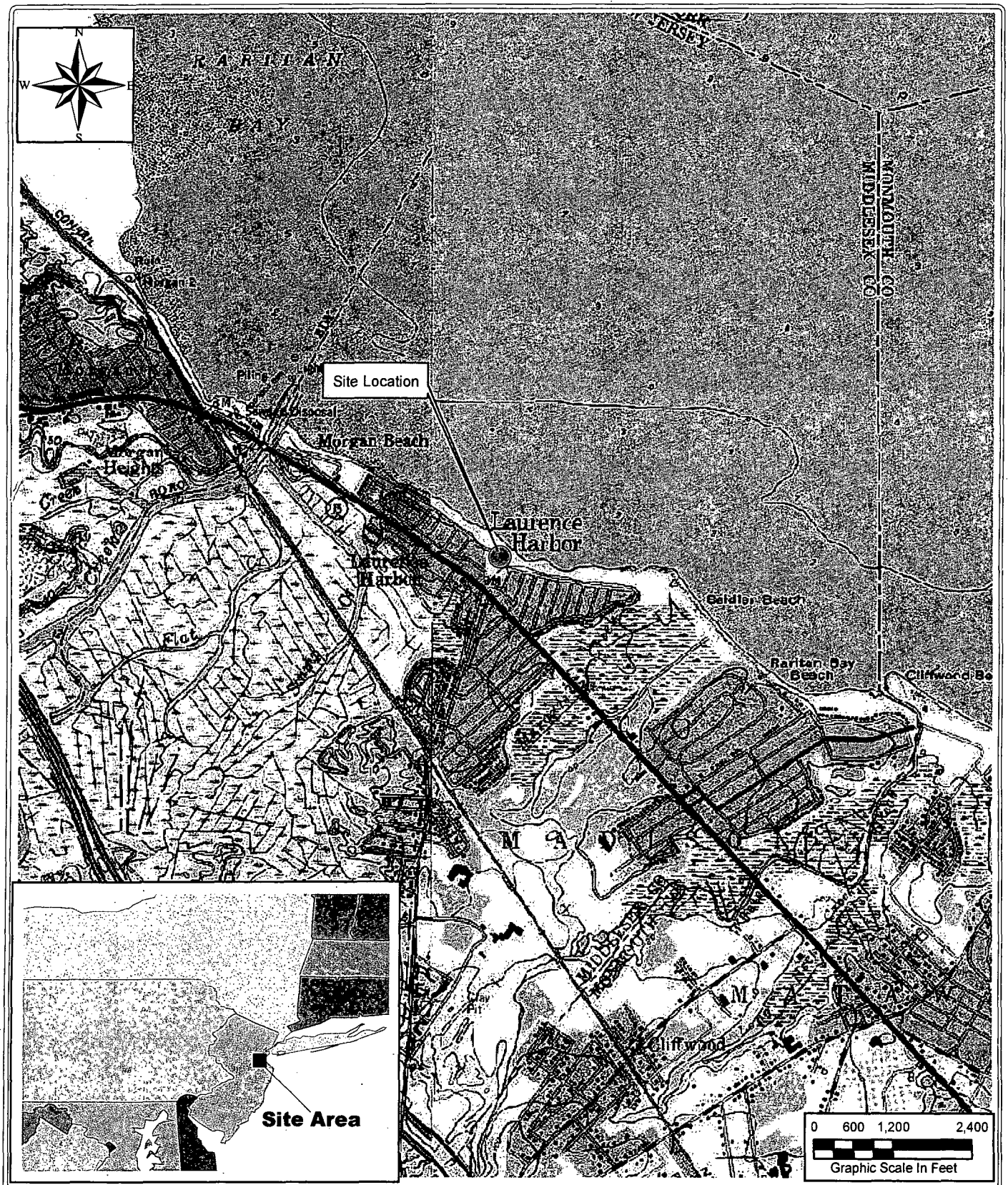
On May 23, 2007, NJDEP conducted further soil sampling at the Margaret's Creek Site and the Laurence Harbor seawall. Antimony was detected at concentrations above state criteria, ranging from 17.8 ppm to 12,900 ppm. Arsenic was detected at concentrations ranging from

23.6 ppm to 3,350 ppm. Copper was detected at concentrations ranging from 4.2 ppm to 3,590 ppm. Lead was detected at concentrations ranging from 647 ppm to 142,000 ppm.

On July 24, 2007, NJDEP conducted another round of soil sampling in a preliminary attempt to identify the boundary of contaminated soils in public areas. Thirty-one locations were sampled from the 0-6 inch depth interval in the park area including an expanse of beach east of the footbridge over Margaret's Creek. Analysis of samples collected from the RBS Site indicated antimony at concentrations ranging from 0.42 ppm to 20.2 ppm. Arsenic was detected at concentrations ranging from 1.3 ppm to 24.5 ppm. Copper was detected at concentrations ranging from 3.5 ppm to 44 ppm. Lead was detected at concentrations ranging from 3.1 ppm to 545 ppm.

FIGURE 1

Study Area Location Map



LEGEND:

Site Location

National Geographic TOPO! U.S. Geologic Survey (USGS). 7.5 Minute Series (Topographic) Quadrangles: Keyport, NJ, 1977 and South Amboy, NJ, 1995.

TITLE:

Site Location Map
Raritan Bay Slag
Laurence Harbor, NJ

PROJECT: Raritan Bay Slag

CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: August 2008

FIGURE #: 1

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SECTION V - SITE-RELATED INCIDENTS, COMPLAINTS, AND ACTIONS

5.0 General

The RBS Site consists of two locations along the Raritan Bay where slag was deposited approximately 40 years ago. One location is the seawall situated in Laurence Harbor at the base of the Old Bridge Waterfront Park and the other is the jetty and adjoining waterfront area on the westem edge of the Cheesequake Creek inlet in Sayreville. Previous sampling by the NJDEP at the Laurence Harbor seawall has revealed the presence of elevated levels of lead, arsenic, antimony, and copper.

SECTION VI - CHEMICAL CONTAMINANTS DATA

6.0 Introduction

This section outlines the potential chemical hazards which workers may be exposed to during work on this project. This is a representative list of known and suspected hazardous substances at this site. Other chemicals may be present at the site which have not yet been identified. Unless a material is identified by a valid label, it shall be considered as unknown, and handled as such.

6.1 Chemical Data Information

Contaminant/ Source (cone.)	PEL/TLV/IDLH/ Routes of Exposure	Symptoms of Exposure	First Aid Procedures
Antimony	OSHA PEL – 0.5 mg/m^3 ACGIH TLV - 0.5 mg/m^3 IDLH - 50 mg/m^3 Routes of Exposure –The substance can be absorbed into the body by inhalation of its aerosol.	Mechanical irritation to the eyes, dermatitis, pneumoconiosis	fresh air; remove contaminated clothes; rinse skin, eyes, mouth; remove contact lenses; Medical Attention
Arsenic	OSHA PEL – 0.01 mg/m^3 ACGIH TLV - 0.01 mg/m^3 IDLH - 5 mg/m^3 Routes of Exposure –The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.	Irritation to the eyes, skin, respiratory tract, gastrointestinal tract, cardiovascular system, central nervous system, kidneys, possible death	fresh air; remove contaminated clothes; rinse skin, eyes, mouth; remove contact lenses; Medical Attention
Copper	OSHA PEL – 1.0 mg/m^3 ACGIH TLV - 0.2 mg/m^3 IDLH - 100 mg/m^3 Routes of Exposure –The substance can be absorbed into the body by inhalation and absorption.	Metal fume fever, skin sensitization	fresh air; remove contaminated clothes; rinse skin, eyes, mouth; remove contact lenses; Medical Attention
Lead	OSHA PEL – 0.05 mg/m^3 ACGIH TLV - 0.05 mg/m^3 IDLH - 100 mg/m^3 Routes of Exposure – The substance can be absorbed into the body by inhalation and absorption.	Long term exposure symptoms such as effects to the blood bone marrow and central nervous system, are more likely than short term exposure	fresh air; remove contaminated clothes; rinse skin, eyes, mouth; remove contact lenses; Medical Attention

Previous sampling by NJDEP at the Laurence Harbor seawall indicated concentrations of antimony as high as 12,900 ppm, arsenic as high as 3,350 ppm, copper as high as 3,590 ppm, and lead as high as 146,000 ppm.

6.2 Characteristics

Identify and attach Material Safety Data Sheets (MSDSs) in Appendix A for all known or suspected chemical hazards. In Appendix B, also include MSDSs for chemicals utilized in conducting site assessment sampling activities.

Hazardous Substance	
see attached chemical safety cards	(*) State _____ pH ___ FP ___ UEL ___ Auto.Ig ___ BP___ MP ___ Incompatible with - _____ _____ Sp.Gr ___ Vap.D ___ IP ___ Vap.P ____ H_2O Sol. ____ Other _____,_____

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* E = Explosive, F = Flammable, C = Corrosive, R = Reactive, W = Water-reactive, O = Oxidizer, Ra = Radioactive. State = normal physical state at site.

6.3 Sources

The source currently being evaluated is soil, sediment, and surface water possibly contaminated by slag from a possible former blast fumace.

SECTION VII - HAZARD ASSESSMENT

7.0 General

This HASP defines the hazards and methods (engineering and administrative controls as well as personal protective equipment) to protect personnel from those hazards identified in the background information. The evaluation of hazards is based upon the knowledge of site background information and anticipated risks posed by the specific operation.

The following subsections describe each task/operation in terms of the specific associated hazards. In addition, the protective measures to be implemented during completion of those operations are also identified.

7.1 Task-Specific Risk Analysis

Sampling and Reconnaissance

WESTON will conduct soil, sediment and surface water sampling in a marine environment. Other activities will include photo documentation and recording of site features using GPS technology.

Sampling Hazard	Engineering Control	Administrative Control	Personal Protective Equipment	Weston FLD #
PHYSICAL				
Slip/trip/fall	Identify and field mark hazards	Use buddy system	Safety boots	11, 12
Heat Stress	Limit exposure to elements through use of tent or shielding; use of sunscreen	Schedule rest breaks accordingly to prevent overexposure to elements; Use buddy system to monitor	Light clothing	05
Inclement weather	Limit exposure to elements through use of tent or shielding	Schedule rest breaks accordingly to prevent overexposure to elements	Overboots; rain gear	02
Rough terrain	Identify and field mark hazards	Use buddy system	Safety boots	11
Site security	N/A	Use buddy system at all times; inform local authorities of site activities prior to commencement of investigation	N/A	14
Remote area	N/A	Use buddy system at all times; maintain contact with field team lead through use of telephone or radio	N/A	2, 11, 14

Wet Feet	Limit exposure to elements through use of tent or shielding.	Schedule rest breaks accordingly to prevent overexposure to elements	Overboots	02
Working near water	Flotation devices shall be present at site.	Use buddy system at all times; maintain contact with field team lead through use of telephone or radio	Personal Flotation Devices (PFDs) shall be present and readily accessible.	19
CHEMICAL				
Control of Exposure to Lead	Cordon off work area to prevent unauthorized access	Ensure employees are enrolled in medical monitoring program; ensure on-site employees receive lead and arsenic awareness training; current fit test	Long sleeve shirts and pants; gloves; chemical-resistant boot covers; respirator as necessary	46, 59
Control of Exposure to Arsenic	Cordon off work area to prevent unauthorized access	Ensure employees are enrolled in medical monitoring program; ensure on-site employees receive lead and arsenic awareness training; current fit test	Long sleeve shirts and pants; gloves; chemical-resistant boot covers; respirator as necessary	59
Control of Exposure to Antimony	Cordon off work area to prevent unauthorized access	Ensure employees are enrolled in medical monitoring program; ensure on-site employees receive lead and arsenic awareness training; current fit test	Long sleeve shirts and pants; gloves; chemical-resistant boot covers; respirator as necessary	59
Control of Exposure to Copper	Cordon off work area to prevent unauthorized access	Ensure employees are enrolled in medical monitoring program; ensure on-site employees receive lead and arsenic awareness training; current fit test	Long sleeve shirts and pants; gloves; chemical-resistant boot covers; respirator as necessary	59
BIOLOGICAL				
Insects	Remain safe distance from suspected hazards	Use buddy system/self-check to monitor for exposure	Long sleeve shirts and pants; netting; insect repellant	43
Poisonous plants	Remain safe distance from suspected hazards	Use buddy system/self-check to monitor for exposure	Long sleeve shirts and pants	43
Animals	Remain safe distance from suspected hazards	Adhere strictly to avoidance policy	N/A	43
RADIOLOGICAL				
Sunlight	Limit exposure to elements through use of tent or shielding	Use buddy system to monitor; SHSC to ensure use of proper work uniform and sunscreen as necessary	Proper work uniform	5

Note: All eating, drinking, smoking, application of cosmetics is prohibited in hot zone. Hand washing facilities must be made available in contamination reduction zone.

SECTION VIII - TRAINING AND MEDICAL REQUIREMENTS

8.0 Training and Medical Requirements

The following sections outline the training and medical surveillance requirements that must be met prior to individuals working on any known or suspected hazardous waste site.

8.1 Personnel Training Requirements

Consistent with the OSHA 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response, all site personnel are required to be trained in accordance with the standard. At a minimum all personnel are required to be trained to recognize the on-site hazards, the provisions of this HASP, and the responsible personnel.

8.1.1 Pre-assignment and Annual Refresher Training

Prior to arrival on site, each employer will be responsible for certifying that his/her employees meet the requirements of pre-assignment training, consistent with OSHA 29 CFR 1910.120 paragraph (e)(3). The employer should be able to provide a document certifying that each general site worker has received 40 hours of off-site instruction, as well as a minimum of 3 days actual field experience under the direct supervision of a trained, experienced supervisor. Workers who are on site only occasionally to perform a specific limited task and who are unlikely to be exposed to hazardous substances over their PELs, are required to have a minimum of 24 hours of instruction off site and a minimum of 8 hours of supervised field experience. If an individual employee has work experience and/or training that is equivalent to that provided in the initial training, an employer may waive the 40-hour training so long as that equivalent experience is documented or certified. All personnel must also receive 8 hours of refresher training annually.

8.1.2 Site Supervisors Training

Consistent with OSHA 29 CFR 1910.120 paragraph (e)(8), individuals designated as site supervisors require an additional 8 hours of training.

8.1.3 Training and Briefing Topics

All site individuals will receive a pre-entry briefing by a qualified person. Topics to be discussed will be based on anticipated site hazards. All personnel shall be required to read and understand the requirements of the HASP prior to working on the project and will sign the HASP to indicate this has been completed. All site individuals will receive arsenic and lead awareness training prior to start of site activities in accordance with 29CFR1926.62 and 29CFR1926.1018.

8.2 Medical Surveillance Requirements

Medical monitoring programs are designed to track the physical condition of employees on a regular basis, as well as survey pre-employment or baseline conditions prior to potential exposures. The medical surveillance program is a part of each employers Health and Safety program.

8.2.1 Baseline or Pre-assignment Monitoring

Prior to being assigned to a hazardous or a potentially hazardous activity involving exposure to toxic materials, the employee must receive a pre-assignment or baseline physical. The contents of the physical are to be determined by the employer's medical consultant. As suggested by NIOSH/OSHA/USCG/EPA's Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities, the minimum medical monitoring requirements for work at the site are as follows:

- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
- Chest X-ray (every 3 years).
- EKG.
- Eye examination and visual acuity.
- Audiometry.
- Urinalysis.
- Blood chemistry and heavy metals toxicology.

The pre-assignment physical should categorize employees as fit-for-duty and able to wear respiratory protection.

8.2.2 Periodic Monitoring

In addition to a baseline physical, all employees require a periodic physical within the last 12 months unless the advising physician believes a shorter interval is appropriate. The employer's medical consultant should prescribe an adequate medical which fulfills OSHA 29 CFR 1910.120 requirements. The pre-assignment medical outiined above may be applicable.

All personnel working in contaminated or potentially contaminated areas at the site must be able to verify currency (within 12 months) with respect to medical monitoring and training.

8.2.3 Site Specific Medical Monitoring

For activities at the RBS site, all WESTON employees will be required to undergo standard medical monitoring and training requirements. Previous air sampling for lead and arsenic indicated no airborne potential for exposure to these contaminants

above each substance's specific OSHA Action Level. Therefore, routine air sampling (and blood lead testing) are not required to be implemented for sampling. Heat Stress will be specifically monitored on the site, see Section 11.7 for specific information.

After completion of on-site activities, all persomel will be required to undergo additional blood lead/zinc protoporphyrin monitoring to evaluate for potential lead exposure.

8.2.4 Exposure/Injury/Medical Support

As a follow up to an injury or possible exposure above established exposure limits, all employees are entitled to and encouraged to seek medical attention and physical testing.

Depending upon the type of exposure, it is critical to perfonn follow-up testing within 24 to 48 hours. It will be up to the employer's medical consultant to advise the type of test required to accurately monitor for exposure effects.

8.2.5 Exit Physical

At termination of employment or reassignment to an activity or location which does not represent a risk of exposure to hazardous substances, an employee shall require an exit physical. If his/her last physical was within the last 6 months, the advising medical consultant has the right to determine adequacy and necessity of the exit exam.

SECTION IX - ZONES, PERSONAL PROTECTION, AND COMMUNICATION

9.0 Site Zones

The three general work zones established at the Site are the Exclusion Zone, Contamination Reduction Zone, and Support Zone. A site map identifying the work zones will not generally be included in the HASP. The work zones will be determined in the field in accordance with HASP guidelines and marked out by the Site Manager prior to commencement of work activities.

9.1 Exclusion Zone

The Exclusion Zone (EZ) is defined as the area where contamination is either known or likely to be present, or because of activity, will provide a potential to cause harm to persomel. Entry into the Exclusion Zone requires the use of personnel protective equipment.

9.2 Contamination Reduction Zone

The Contamination Reduction Zone (CRZ) is the area where personnel conduct personal and equipment decontamination. It is essentially a buffer zone between contaminated areas and clean areas. Activities to be conducted in this zone will require personal protection as defined in the decontamination plan.

9.3 Support Zone

The Support Zone is situated in clean areas where the chance to encounter hazardous materials or conditions is minimal. Personal protective equipment is therefore not required.

9.4 Personal Protection

This section describes the general requirements of the EPA-designated Levels of Protection (A-D), and the specific levels of protection required for each task at the Site.

9.4.1 Levels of Protection

Personnel wear protective equipment when assessment activities involve known or suspected atmospheric contamination vapors, gases, or particulates; or the potential for direct contact with skin-affecting substances exists. Full facepiece respirators protect lungs, gastrointestinal tract, and eyes against airbome toxicant. Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments and/or handling/sampling unknown materials.

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

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

Modifications of these levels are permitted, and routinely employed during site work activities to maximize efficiency. For example, Level C respiratory protection and Level D skin protection may be required for a given task. Likewise the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact.

The Level of Protection selection is based upon the following:

- Type and measured concentration of the chemical substance in the ambient atmosphere and its toxicity.
- Potential for exposure to substances in air, liquids, or other direct contact with material due to work being conducted.
- Knowledge of chemicals on site, along with properties such as toxicity, route of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are unknown, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better identified.

9.4.2 Level A Personnel Protective Equipment:

- Supplied-air respirator approved by the Mine Safety and Health Administration (MSHA) and National Institute for Occupational Safety and Health (NIOSH). Respirators may be positive pressure-demand, self-contained breathing apparatus (SCBA), or positive pressure-demand, airline respirator (with escape bottle for Immediately Dangerous to Life and Health (IDLH) or potential for IDLH atmosphere)
- Fully encapsulating chemical-resistant suit
- Coveralls
- Long cotton underwear
- Gloves (inner)

- o Boots, chemical-resistant, steel toe and shank (depending on suit construction, wom over or under suit boot)
- o Hard hat (under suit)
- o Disposable gloves and boot covers (wom over fully encapsulating suit)
- o Cooling unit
- o 2-way radio communications (intrinsically safe)

9.4.3 Level B Personnel Protective Equipment:

- o Supplied-air respirator (MSHA/NIOSH approved). Respirators may be positive pressure-demand, self-contained breathing apparatus (SCBA), or positive pressure-demand, airline respirator (with escape bottle for IDLH or potential for IDLH atmosphere)
- o Chemical-resistant clothing (overalls and long-sleeved jacket; hooded, one or two-piece chemical-splash suit; disposable chemical-resistant, one-piece suits)
- o Long cotton underwear
- o Coveralls
- o Gloves (outer), chemical-resistant
- o Gloves (inner), chemical-resistant
- o Boots (outer), chemical-resistant, steel toe and shank
- o Boot covers (outer), chemical-resistant (disposable)
- o Hard hat (face shield)
- o 2-way radio communications (intrinsically safe)

9.4.4 Level C Personnel Protective Equipment:

- o Air-purifying respirator, full-face, cartridge-equipped (MSHA/NIOSH approved)
- o Chemical-resistant clothing (coveralls; hooded, one-piece or two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls)
- o Coveralls
- o Long cotton underwear
- o Gloves (outer), chemical-resistant
- o Gloves (inner), chemical-resistant
- o Boots (outer), chemical-resistant, steel toe and shank
- o Boot covers (outer), chemical-resistant (disposable)
- o Hard hat (face shield)
- o 2-way radio communications (intrinsically safe)

9.4.5 Level D Personnel Protective Equipment:

- o Coveralls/long sleeves
- o Gloves
- o Boots/shoes, leather or chemical-resistant, steel toed

- o Safety glasses
- o Hard hat

9.4.6 Reassessment of Protection Program

The Level of Protection provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or findings of investigations. Changes in the level of protection shall be approved only by the SAT HSO and/or the Site HSO.

When a significant change in site conditions occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

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

9.4.7 Respiratory Protection

- o All employees whose jobs may require the use of respiratory protection will be certified medically fit to use a respirator before being fit tested and issued a respirator.

- o All employees whose jobs may require the use of respiratory protection will be certified annually as medically fit to use a respirator.

- o Only employees who have successfully completed respiratory protection training shall be allowed to use respiratory protection. Respiratory protection training includes how to wear and maintain respirators properly, the proper use and limitations of respirators, and familiarization with respirators to be used at the job.

- o Employees will be fit tested using OSHA-approved fit testing protocols before being issued any respirator and annually thereafter. Subcontractors shall provide certificate of respirator fit test completed within the last 12 months for each employee required to use respiratory protection on site.

- o If an employee has difficulty in breathing during the fit test or during use, he shall be evaluated medically to determine if he can wear a respirator safely while performing assigned tasks.

- No employee shall be assigned to tasks requiring the use of respirators if, based upon the most recent examination, a physician determines that the health or safety of the employee will be impaired by respirator use.

- Contact lenses shall not be worn while using any type of respiratory protection.

- Facial hair that might interfere with a good facepiece seal or proper operation of the respirator is prohibited.

- An employee will be issued only those respirators for which he/she has been successfully fit tested.

- Only properly cleaned, maintained, National Institute of Occupational Safety and Health (NIOSH)-approved respirators shall be used on site.

- Selection of respirators, as well as any decisions regarding upgrading of downgrading of respiratory protection, will be made by the Site HSO and/or SAT HSO.

- Air purifying respirators (APRs) will not be used in heavily contaminated atmospheres where the protection factor is likely to be exceeded. The nature and concentration range of the contamination must be known before an APR may be selected for use.

- Used APR cartridges shall be replaced at the end of each shift or sooner if the user notices break-through or increased breathing resistance. PAPR cartridges will be changed when flow falls below 4 cfm through the cartridge.

- Positive and negative pressure tests shall be performed each time the respirator is donned.

- Air-supplied respirators shall be assembled according to manufacturer's specifications. Hose length, couplings, valves, regulators, manifolds and all accessories shall meet ANSI and the manufacturer's requirements.

- Respirators shall be cleaned and sanitized before and after use.

- Respirators shall be inspected during cleaning. Worn or deteriorated parts shall be replaced.

- The SAT HSO shall review the respiratory protection program regularly to ensure employees are properly wearing and maintaining their respirators and that the respirator protection is adequately protecting the employees.

9.4.8 Task Specific PPE Requirements

TASK	LEVEL OF PROTECTION	SPECIFIC MATERIALS
Sampling, Sample Preservation	D	Inner Glove - N/A Outer Glove - Nitrile Inner Boot - Steel toe shoes or steel toe overboots Outer Boot – Body Covering - Safety Glasses, long sleeves as necessary Respirator/Cartridge - N/A PFD as necessary

9.5 Communications

Successful communications between field teams and contact with personnel in the support zone are essential, as is communication with off-site agencies such as police and fire. The following communications systems will be available during activities at the Site (check all systems that apply):

X	Intrinsically Safe Radio			
___	Compressed Air Horn			
___	Public Telephone	(location	)(number -	)
___	Site Telephone	(location	)(number -	)
X	Portable Telephone	(location PM	)(732-406-8640)	

All on-site personnel shall be familiar with the meanings of the following hand signals:

Hand Signal	Definition
Hands clutching throat	Out of air/cannot breathe
Hands on top of head	Needs assistance
Thumbs up	OK/I am all right/I understand
Thumbs down	No/negative
Arms waving upright	Send backup support
Grip partners wrist	Exit area immediately

9.6 Identification of Nearest Medical Assistance

As part of the site control program, the Site PM must post the identification and location of the nearest medical facilities where response personnel can receive assistance in the event of an emergency. Medical facilities typically include area hospitals, emergency clinics, on-call physicians, medical specialists, or emergency, ambulance, fire, and police services. Information on the nearest medical facility for this site can be found in Section 14.7.

If there is no medical facility in close proximity to the site, at least one individual on site must be trained to render first aid in the event of an emergency. The following individual(s) on site are certified to perform first aid:

NAME	FIRST AID/CPR EXPIRATION DATE
Dan Gaughan	November 15, 2011/ November 15, 2011
Kelli Lucarino	November 15, 2011/ November 15, 2011
Julissa Morales	November 15, 2011/ November 15, 2011
Scott Snyder	November 15, 2011/ November 15, 2011
Laura Holloway	February 5, 2010/February 9, 2009

SECTION X - MONITORING PROCEDURES

10.0 Air Monitoring and Action Levels

According to 29 CFR 1910.120(h), air monitoring shall be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the appropriate level of employee protection needed on site.

10.1 Routine Air Monitoring Requirement

The following are the routine air monitoring requirements:

- Upon initial entry, representative air monitoring shall be conducted to identify IDLH conditions, exposure above OSHA-PELs, or other published exposure levels including exposure to radiation, flammable atmospheres, and/or oxygen deficient atmospheres;
- When the possibility of an IDLH condition or flammable atmosphere has developed;
- When work begins on a different portion of the site;
- Contaminants other than those previously identified are being handled;
- A different type of operation is initiated;
- Employees are handling leaking drums or containers or working in areas with obvious liquid contamination;
- Continuously during confined space work; and
- At the end of daily site operations.

Air monitoring will consist at a minimum of the criteria listed below. All air monitoring data will be documented and will be available in the WESTON site file for review. Air monitoring instruments will be calibrated and maintained in accordance with the manufacturers' specifications.

10.2 Site-Specific Air Monitoring Requirements

Instrument	Compounds to Detect	Frequency	Comments/ Action Level
Data RAM (PDR-1000)	**Particulates**	**Continuous**	**>0.156 mg/m^3 particulate concentration sustained in breathing zone as measured by the PDR-1000- suspend operations and consult HSO/PM**

SECTION XI - SAFETY CONSIDERATIONS

11.0 Introduction

The following is a brief description of various safety conditions that workers can expect to encounter in the field. It is not comprehensive. Refer to Section 7.1 for a task-specific hazard analysis for the RBS site and refer to the attached Weston field ops in Appendix F for complete procedures.

11.0 Lighting

Work areas must have adequate lighting for employees to see to work and identify hazards (5 footcandles minimum - comparable to a single 75 or 100 watt bulb). Personnel should carry flashlights in all normally dark areas for use in the event of a power failure. Applicable OSHA standards for lighting, 29 CFR 1910.120(m) shall apply.

11.1 Electrical Power

All electrical power must have a ground fault circuit interrupter as part of the circuit. All equipment must be suitable and approved for the class of hazard. Applicable OSHA standards for electrical, 29 CFR 1926 Subpart K, shall apply.

11.2 Eye Wash Protection

All operations involving the potential for eye injury, splash, etc., must have approved eye wash units locally available as per 29 CFR 1910.151(c).

11.3 Fire Protection/Fire Prevention

Operations involving the potential for fire hazards shall be conducted in a manner as to minimize the risk. Non-sparking tools and fire extinguishers shall be used or available as appropriate. Sources of ignition shall be removed. When necessary, explosion-proof instruments and/or bonding and grounding will be used to prevent fire or explosion.

11.4 Utilities

Overhead and underground utility hazards shall be identified and/or inspected prior to conducting operations involving potential contact.

11.5 Slips, Trips, and Falls

Caution will be used to reduce general physical hazards. Where there is a fall potential, it will be guarded or posted to prevent employee use.

11.6 Heat Stress

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. Heat stress disorders include: heat rash, heat cramps, heat exhaustion, and heat stroke.

Heat stress can be prevented by assuring an adequate work/rest schedule. It is recommended that workers break a minimum 10 to 15 minutes for every 2 hours when temperature exceeds 72.5 degrees F and protective clothing is wom. More frequent breaks are necessary as the temperatures and level of protection are increased.

A work/rest schedule can be calculated based on heat stress monitoring results. Monitoring consists of taking the radial pulse of a worker for 30 seconds immediately after exiting the work area.

If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If the heart rate still exceeds 110 beats per minute at the next rest period, increase the following rest period by one-third. The initial rest period should be at least 5 minutes.

11.7 Cold Stress

The RBS sampling event will be conducted in the middle April; therefore cold stress is not an anticipated risk. However due to the close proximity of work being conducted near water, if clothing becomes wet, changing clothes can help prevent hypothermia.

11.8 Noise

Hearing protection is required for workers working around noise sources where the noise level is greater than 85 dBA (time weighted average).

SECTION XII - STANDARD SAFE WORK PRACTICES

12.0 General

The following items are requirements to protect the health and safety of workers and will be discussed in the safety briefing prior to initiating work on the site:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of contamination is prohibited in the exclusion zone and contamination reduction zone.

- Hands and face must be washed upon leaving the exclusion zone and before eating, drinking, chewing gum, tobacco, smoking, or other activities which may result in ingestion of contamination.

- A buddy system will be used. Hand signals will be established to maintain communication. Due to the size of the Site, hand-held radios will be used for communication.

- During site operations, each worker will consider himself as a safety backup to his partner. Off-site personnel provide emergency assistance. All personnel will be aware of dangerous situations that may develop.

- Visual contact will be maintained between buddies on site when performing hazardous duties.

- No personnel will be admitted to the site without the proper safety equipment, training, and medical surveillance certification.

- All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy will be immediately dismissed from the site.

- Proper decontamination procedures must be followed before leaving the site.

SECTION XIII - DECONTAMINATION PROCEDURES

13.0 Decontamination Plan

Any site where hazardous waste cleanup operations occur must have a plan that outiines decontamination procedures. These procedures must be made available to employees and must be implemented before anyone enters areas on-site where there is suspected contamination. The plan must ensure that chosen decontamination methods are effective for the specific hazardous substances present, and that the methods themselves do not pose any health or safety hazards.

The Site HSO will be responsible for monitoring the decontamination procedures. Monitoring will include reviewing the decontamination procedures to ensure that they are adequate for removal of the site contaminants, and ensuring that proper decontamination procedures are being followed.

13.1 Personnel Decontamination

All personnel leaving the contaminated area of a site (the Exclusion Zone) must be decontaminated to remove any harmful chemicals or infectious organisms that may have adhered to them. The procedures given are for the maximum and minimum amount of decontamination used for each level of protection.

The maximum decontamination procedures for all levels of protection consist of specific activities at 19 stations. Each station emphasizes an important aspect of decontamination. Decontamination lines are site-specific and vary depending on the types of contamination and work activities conducted on-site.

13.2 Equipment Decontamination

Sampling equipment will be decontaminated in accordance with procedures as defined in the sampling plan. The sequence of decontamination steps required for non-sampling equipment can be found in the Sampling Plan.

13.3 Disposition of Decontamination Wastes

Investigation-derived wastes generated during the site inspection will be disposed of in accordance with OERR Directive 9345.3-02, Management of Investigation-Derived Wastes During Site Inspections (May 1991), or most recent directive regarding disposal of such wastes.

SECTION XIV - EMERGENCY PLAN

14.0 Emergency Response/Contingency Plan

This section describes contingencies and emergency planning procedures to be implemented at the site. This plan is compatible with local, state and federal disaster and emergency management plans as appropriate.

14.1 Pre-Emergency Planning

During the site briefings held prior to field work, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. Section 7.1 identifies the hazardous conditions associated with specific site activities. The plan will be reviewed by the SAT HSO and revised if necessary. This will ensure that the plan is adequate and consistent with prevailing site conditions.

14.2 Personnel Roles and Lines of Authority

The WESTON PM has primary responsibility for responding to and correcting emergency situations if safely possible. This includes taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area. He/she is additionally responsible for ensuring that appropriate authorities are notified and follow-up reports completed. The HSO may be called upon to act on the behalf of the WESTON PM, and will direct responses to any medical emergency.

14.3 Site Security

During any emergency situation it is important that site security and control are maintained. The WESTON PM will be responsible for ensuring that no individuals are allowed to enter the site or be put in any danger due to the nature of the emergency situation on the site.

14.4 Emergency Recognition/Prevention

Personnel will be familiar with techniques of hazard recognition from pre-assignment training and site-specific briefings. The HSO is responsible for ensuring that prevention devices or equipment are available to personnel. The following presents a list of potential hazards and prevention/control measures:

HAZARD	PREVENTION/CONTROL	LOCATION
Fire/Explosion	Fire Extinguisher Alarm System Fire Inspections	Mobile Command Post (Box Truck)
Spill	Berms/Dikes Sorbent Materials	To Be Determined

	Foams	
Air Release	Water Spray Foam Alarm System Evacuation Routes	To Be Determined

The locations of the equipment will be discussed during the site specific briefing and periodically during the project.

14.5 Evacuation Routes/Procedures

In the event of an emergency which necessitates an evacuation of the site, the following alarm procedures will be implemented:

Evacuation alarm notification should be made using three short blasts on the air hom, supplemented by the use of hand-held radios. All personnel should evacuate to a location upwind of any activities. Ensure that a predetermined location is identified off site in case of an emergency, so that all personnel can be accounted for. The predetermined location will be identified during the daily safety meeting.

Personnel will be expected to proceed to the closest exit with your buddy, and mobilize to the safe distance area associated with the evacuation route. Personnel will remain at that area until the re-entry alarm is sounded or an authorized individual provides further instructions.

14.6 Safe Distances and Places of Refuge

No single recommendation can be made for evacuation or safe distances because of the wide variety of emergencies which could occur. Safe distances can only be determined at the time of an emergency based on a combination of site and incident-specific criteria. However, the following measures are established to serve as general guidelines.

In the event of minor hazardous materials releases (small spills of low toxicity), WESTON team members in the affected area will report initially to the contamination reduction zone. Small spills or leaks (generally less than 55 gallons) will require initial evacuation of at least 50 feet in all directions to allow for cleanup and to prevent exposure. After initial assessment of the extent of the release and potential hazards, the WESTON PM or his/her designee will determine the specific boundaries for evacuation. Appropriate steps such as caution tape, rope, traffic cones, barricades, or personal monitors will be used to delineate and secure the boundaries.

In the event of a major hazardous material release (large spills of high toxicity/greater than 55 gallons), field team members will be evacuated from the building/site. The team will assemble at the entrance to the site for a head count by the WESTON PM and fo await further instruction.

If an incident may threaten the health or safety of the surrounding community, the WESTON PM, or his/her designee will inform the proper agencies so that the public can be informed Places of refuge will be established prior to the commencement of activities. These areas must be identified for the following incident:

- Chemical release
- Fire/explosion
- Power loss
- Medical emergency
- Hazardous weather

In general, evacuation will be made to the mobile command post, unless the emergency coordinator determines otherwise. It is the responsibility of the emergency coordinator to determine when it is necessary to evacuate personnel to off-site locations.

In the event of an emergency evacuation, all the employees will gather at the entrance to the site until a head count establishes that all are present and accounted for. No one is to leave the site without notifying the emergency coordinator.

14.7 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the HSO and notify the appropriate emergency organization. In the event of a fire or spill, the site supervisor will notify the appropriate local, state, and federal agencies. A Route To Hospital Map follows (Figure 2).

Organization	Contact	Telephone
Ambulance:	Laurence Harbor First Aid	732-566-1763 or 911
Police:	Old Bridge Police	732-721-5600 or 911
Fire:	Laurence Harbor Fire Company	732-970-6542 or 911

Hospital
Bayshore Community Hospital
727 North Beers Street
Holmdel, New Jersey 07733

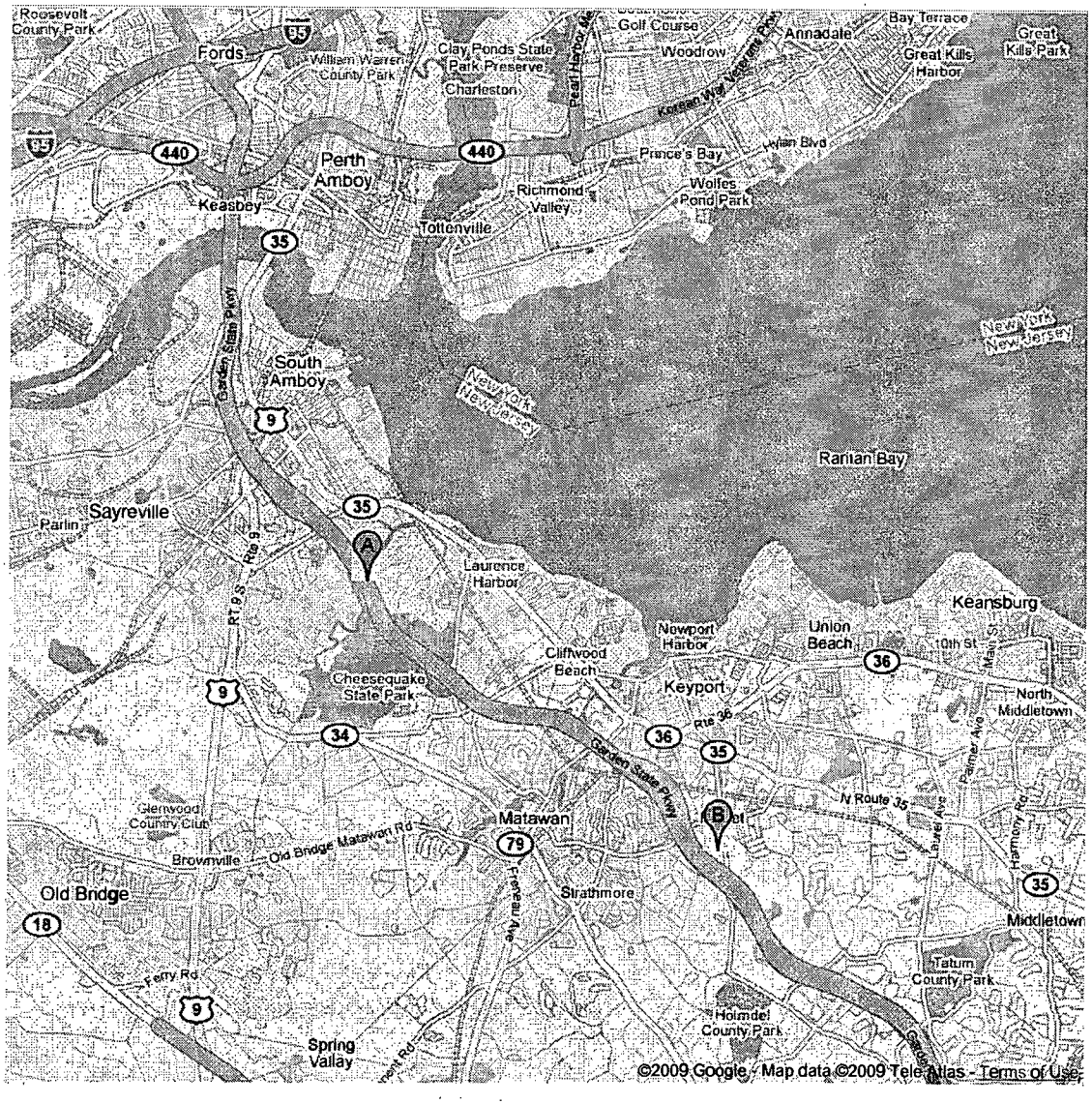
Directions to Hospital: Head south on Rt. 35 about 3.3 miles and make a right onto Beers St. The Hospital is approximately 1.5 miles down Beers Street.

FIGURE 2
Route to Hospital Map

Google Maps

Directions to Bayshore Community Hospital

727 N Beers St, Holmdel, NJ 07733 - (732) 739-5900
13.5 mi – about 20 **mins**



A Cheesequake Creek

1.	Head northwest on **Garden State Pkwy N** Toll road About 4 mins	go 3.4 ml total 3.4 mi
2.	Take exit 125 toward **NJ-35/Sayreville/S Amboy** Toll road	go 0.3 ml total 3.6 mi
3.	**Keep left** at the fork, follow signs for **CHEVALIER Ave** Toll road	go 128 ft total 3.7 mi
4.	Turn **left** at **Chevalier Ave** About 1 min	go 486 ft total 3.8 mi
5.	Turn **left** to merge onto **Garden State Pkwy S** Toll road About 8 mins	go 7.5 mi total 11.3 mi
6.	Take exit 117 to merge onto **NJ-36** toward **Keyport/NJ-35/Hazlet** Partial toll road About 1 min	go 0.7 mi total 11.9 mi
7.	**Slight right** at **Clark St**	go 0.2 mi total 12.2 mi
8.	Turn **right** at **Beers St** About 4 mins	go 1.1 mi total 13.3 mi
9.	Turn **left**	go 0.2 ml total 13.5 mi
10.	Turn **left** Destination will be on the left	go 276 ft total 13.5 mi

B Bayshore Community Hospital
727 **N Beers St**, Holmdel, **NJ** 07733 - (732) 739-5900

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

14.8 Emergency Medical Treatment Procedures

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the PM.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site. This information is included in Table 3.1. Any vehicle used to transport contaminated persomel will be treated and cleaned as necessary.

14.9 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the PM or designated altemate will advise the fire commander of the location, nature, and identification of the hazardous materials on site.

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

- o Use fire fighting equipment available on site to control or extinguish the fire; and,
- o Remove or isolate flammable or other hazardous materials which may contribute to the fire.

14.10 Spill or Leak

In the event of a spill or a leak, site persomel will:

- o Inform their supervisor immediately;
- o Locate the source of the spillage and stop the flow if it can be done safely; and,
- o Begin containment and recovery of the spilled materials if safely possible.

14.11 Emergency Equipment/Facilities

The following is a list of potentially available emergency equipment on site:

- o First aid kit
- o Fire extinguisher
- o Stretcher
- o Sife telephone
- o Solvent material
- o Spill kits
- o Emergency SCBAs

- o Eye wash
- o Emergency shower
- o Two-way radio
- o Overpacks
- o Berm materials

14.12 Site Topography, Layout and Weather Conditions

Prior to work beginning at a site it is important to note particulars about that site that might be important during an emergency situation. In particular, it is important to note specifics about the site topography, the layout of the site and any special weather conditions that are known or are expected to occur. This information should then be used to ensure that emergency response planning has taken into account site-specific requirements.

Site Topography - The site is situated in Laurence Harbor and Sayreville, New Jersey, which is part of the Raritan Bay. The site consists of sandy beach areas and tidal areas.

Layout - the site being investigated under this health and safety plan consists of metal contamination witch no source(s) has been identified; therefore, there is no site layout description.

Weather Conditions - Weather conditions are expected to be typical of the New Jersey coastal area in September – sunny with temperatures averaging in the upper to mid 70's °F.

14.13 Accident Report

For all occupational injuries, accident, and/or illness that occurs on site, an Employee Incident Report must be filled out and given to the WESTON HSO.

SECTION XV - MEDICAL DATA SHEET/FIELD TEAM REVIEW

15.0 Field Team Data

Name	40-Hour Training	8-Hour Refresher *	Supervisor Training	First Aid/ CPR *	Fit Test *	Medical*
Kelli Lucarino	10/15/2001	5/16/2009	-	11/15/2011	11/14/2009	4/9/2010
Dan Gaughan	4/6/2001	10/13/2009	5/1/2002	11/15/2011	10/14/2009	1/12/2010
Scott Snyder	9/10/1999	1/23/2010	12/22/99	11/15/2011	1/7/2009	8/28/2009
Julissa Morales	9/14/06	10/13/09	-	11/15/2011	2/10/2010	8/7/2009
Laura Holloway	10/11/2005	9/11/2009	-	2/5/2010	12/9/2009	7/21/2009
Eric Hazard	3/6/09	-	-	-	-	3/12/09

* Expires

APPENDIX A

CHEMICAL DATA SHEETS

International Chemical Safety Cards

ANTIMONY

ICSC: 0775

Antimony black
Antimony regulus
Stibium
Sb
Atomic mass: 121.8

ICSC # 0775
CAS # 7440-36-0
RTECS # CC4025000
UN # 2871
October 12, 2006 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible under specific conditions. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames. NO contact with oxidants, halogens, acid(s).	water spray, foam, powder, carbon dioxide
EXPLOSION	Finely dispersed particles form explosive mixtures in air. Risk of fire and explosion on contact with .	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION	Cough. (See Ingestion).	Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles, or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Vomiting. Diarrhoea.	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention if you feel unwell.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: P2 filter respirator for harmful particles. Sweep spilled substance into scalable containers; if appropriate, moisten first to prevent dusting.	Separated from oxidants , acids, halogens , food and feedstuffs.	Do not transport with food and feedstuffs. UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0775

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ANTIMONY

ICSC: 0775

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** SILVER-WHITE, LUSTROUS, HARD, BRITTLE LUMPS OR DARK GRAY POWDER **PHYSICAL DANGERS:** Dust explosion possible if in powder or granular form, mixed with air. **CHEMICAL DANGERS:** On combustion, forms toxic fumes (antimony oxides; see ICSC 0012). Reacts violently with oxidants, , causing fire and explosion hazard. On contact with acids may emit toxic gas (stibine; see ICSC 0776). **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 0.5 mg/m³ as TWA (ACGIH 2006). MAK: Carcinogen category: 2; Germ cell mutagen group: 3B (DFG 2006). **OSHA PEL***: TWA 0.5 mg/m³ *Note: The PEL also applies to other antimony compounds (as Sb). **NIOSH REL***: TWA 0.5 mg/m³ *Note: The REL also applies to other antimony compounds (as Sb). **NIOSH IDLH**: 50 mg/m³ (as Sb) See: 7440360	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol. **INHALATION RISK:** A harmful concentration of airborne particles can be reached quickly when dispersed. **EFFECTS OF SHORT-TERM EXPOSURE:** May cause mechanical irritation to the eyes. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis, especially when exposed to fumes. The substance may have effects on the lungs , resulting in pneumoconiosis.
PHYSICAL PROPERTIES	Boiling point: 1635 °C Melting point: 630 °C Density: 6.7 g/cm³	Solubility in water: none
ENVIRONMENTAL DATA		

NOTES

Other boiling points: 1325°C, 1440°C, 1587 °C, 1750°C. The recommendations on this card apply only to metallic antimony. See ICSC 0012 antimony trioxide, ICSC 1224 antimony trichloride, ICSC 0220 antimony pentafluoride and ICSC 0776 antimony trihydride.

Transport Emergency Card: TEC (R)-61GT5-III

ADDITIONAL INFORMATION

ICSC: 0775 **ANTIMONY**

International Chemical Safety Cards

ARSENIC

ICSC: 0013

Grey arsenic
As
Atomic mass: 74.9

ICSC # 0013
CAS # 7440-38-2
RTECS # CG0525000
UN # 1558
EC # 033-001-00-X
October 18, 1999 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames. NO contact with strong oxidizers. NO contact with hot surfaces.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Risk of fire and explosion is slight when exposed to hot surfaces or flames in the form of fine powder or dust.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Cough. Sore throat. Shortness of breath. Weakness. See Ingestion.	Closed system and ventilation.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness.	Face shield or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Diarrhoea. Nausea. Vomiting. Burning sensation in the throat and chest. Shock or collapse. Unconsciousness.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Chemical protection suit including self-contained	Separated from strong oxidants, acids, halogens, food and feedstuffs. Well closed.	Do not transport with food and feedstuffs. Marine pollutant. T symbol

breathing apparatus. Do NOT let this chemical enter the environment.	N symbol R: 23/25-50/53 S: 1/2-20/21-28-45-60-61 UN Hazard Class: 6.1 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0013

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ARSENIC

ICSC: 0013

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
ODOURLESS, BRITTLE, GREY, METALLIC-LOOKING CRYSTALS.

PHYSICAL DANGERS:

CHEMICAL DANGERS:
Upon heating, toxic fumes are formed. Reacts violently with strong oxidants and halogens, causing fire and explosion hazard. Reacts with acids to produce toxic arsine gas (see: ICSC 0222).

OCCUPATIONAL EXPOSURE LIMITS:
OSHA PEL: 1910.1018 TWA 0.010 mg/m^3
NIOSH REL: Ca C 0.002 mg/m^3 15-minute See Appendix A
NIOSH IDLH: Ca 5 mg/m^3 (as As) See: 7440382
TLV: 0.01 mg/m^3 as TWA; A1 (confirmed human carcinogen); BEI issued; (ACGIH 2004).
MAK:
Carcinogen category: 1; Germ cell mutagen group: 3A;
(DFG 2004).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly, when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes , the skin and the respiratory tract. The substance may cause effects on the gastrointestinal tract , cardiovascular system , central nervous system and kidneys , resulting in severe gastroenteritis, loss of fluid, and electrolytes, cardiac disorders , shock , convulsions and kidney impairment . Exposure above the OEL may result in death. The effects may be delayed. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the mucous membranes, skin, peripheral nervous system , liver and bone marrow , resulting in pigmentation disorders, hyperkeratosis, perforation of nasal septum, neuropathy, liver impairment , anaemia . This substance is carcinogenic to humans. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Subhmation point: 613°C
Density: 5.7 g/cm^3

Solubility in water:
none

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms. It is strongly advised that this substance does not enter the environment.

NOTES

The substance is combustible but no flash point is available in literature. Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home. Refer also to cards for specific arsenic compounds, e.g., Arsenic pentoxide (ICSC 0377), Arsenic trichloride (ICSC 0221), Arsenic trioxide (ICSC 0378), Arsine (ICSC 0222). Card has been partly updated in October 2004. See sections Occupational Exposure Limits, EU classification, Emergency Response.Card has been partly updated in October 2005 in section Effects of long-term or repeated exposure.

Transport Emergency Card: TEC (R)-61GT5-II

ADDITIONAL INFORMATION

ICSC: 0013 **ARSENIC**

International Chemical Safety Cards

COPPER

ICSC: 0240

Cu
Atomic mass: 63.5
(powder)

ICSC # 0240
CAS # 7440-50-8
RTECS # GL5325000
September 24, 1993 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	**NO** open flames.	Special powder, dry sand, **NO** other agents.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
•**INHALATION**	Cough. Headache. Shortness of breath. Sore throat.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•**EYES**	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers. Carefully collect remainder. Then remove to safe place. (Extra personal protection: P2 filter respirator for harmful particles).	Separated from - See Chemical Dangers.	

SEE IMPORTANT INFORMATION ON BACK

International Chemical Safety Cards

COPPER

ICSC: 0240

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** **RED POWDER, TURNS GREEN ON EXPOSURE TO MOIST AIR.** **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxides and azides. Reacts with strong oxidants like chlorates, bromates and iodates, causing explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** **TLV**: (Fume) 0.2 mg/m³; **TLV**: (Dusts & mists as Cu) 1 mg/m³ (**ACGIH** 2007). **MAK**: 0.1 mg/m³ (Inhalable fraction) Peak limitation category: II(2) Pregnancy risk group: C (**DFG** 2007). **OSHA PEL***: TWA 1 mg/m^3 *Note: The **PEL** also applies to other copper compounds (as Cu) except copper fume. **NIOSH REL***: TWA 1 mg/m^3 *Note: The **REL** also applies to other copper compounds (as Cu) except Copper fume. **NIOSH IDLH**: 100 mg/m^3 (as Cu) See: 7440508	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation and by ingestion. **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed. **EFFECTS OF SHORT-TERM EXPOSURE:** Inhalation of fumes may cause metal fume fever. See Notes. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact may cause skin sensitization.
PHYSICAL PROPERTIES	Boiling point: 2595°C Melting point: 1083°C Relative density (water = 1): 8.9	Solubility in water: none
ENVIRONMENTAL DATA		

NOTES

The symptoms of metal fume fever do not become manifest until several hours.

Card has been partially updated in January 2008: see Occupational Exposure Limits.

International Chemical Safety Cards

LEAD

ICSC: 0052

Lead metal
Plumbum
Pb
(powder)

ICSC # 0052
CAS # 7439-92-1
RTECS # OF7525000
August 10, 2002 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		in case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	PREVENT DISPERSION OF DUST! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. Personal protection: P3 filter respirator for toxic particles.	Separated from food and feedstuffs and incompatible materials . See Chemical Dangers.	

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0052

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

LEAD

ICSC: 0052

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
BLUISH-WHITE OR SILVERY-GREY SOLID IN VARIOUS FORMS. TURNS TARNISHED ON EXPOSURE TO AIR.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
On heating, toxic fumes are formed. Reacts with oxidants. Reacts with hot concentrated nitric acid, boiling concentrated hydrochloric acid and sulfuric acid. Attacked by pure water and by weak organic acids in the presence of oxygen.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.05 mg/m³ as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued; (ACGIH 2004).
MAK:
Carcinogen category: 2; Germ cell mutagen group: 3A;
(DFG 2006).
EU OEL: as TWA 0.15 mg/m³; (EU 2002).
OSHA PEL*: 1910.1025 TWA 0.050 mg/m^3 See Appendix C *Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.
NIOSH REL*: TWA 0.050 mg/m^3 See Appendix C *Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.
NIOSH IDLH: 100 mg/m^3 (as Pb) See: 7439921

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the blood , bone marrow , central nervous system , peripheral nervous system and kidneys , resulting in anaemia, encephalopathy (e.g., convulsions), peripheral nerve disease, abdominal cramps and kidney impairment. Causes toxicity to human reproduction or development. This substance is probably carcinogenic to humans. fast track change Oct 06 - IARC 2A.

PHYSICAL PROPERTIES

Boiling point: 1740°C
Melting point: 327.5°C
Density: 11.34 g/cm³
Solubility in water: none

ENVIRONMENTAL DATA

Bioaccumulation of this chemical may occur in plants and in mammals. It is strongly advised that this substance does not enter the environment.

NOTES

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home. Card has been partly updated in April 2005. See section Occupational Exposure Limits. Card has been partly updated in October 2006: see section Occupational Exposure Limits, Effects Long Tem Exposure.

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

APPENDIX B

CHEMICAL DATA SHEETS (SAMPLE PRESERVATION AND DECONTAMINATION)

International Chemical Safety Cards

NITRIC ACID

ICSC: 0183

Concentrated Nitric Acid (70%)
HNO_3
Molecular mass: 63.0

ICSC # 0183
CAS # 7697-37-2
RTECS # QU5775000
UN # 2031
EC # 007-004-00-1
October 10, 2006 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible but enhances combustion of other substances. Gives off irritating or toxic fumes (or gases) in a fire. Heating will cause rise in pressure with risk of bursting.	NO contact with flammable substances. NO contact with combustibles or organic chemicals.	In case of fire in the surroundings: NO foam .
EXPLOSION	Risk of fire and explosion on contact with many common organic compounds.		In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Burning sensation. Cough. Laboured breathing. Shortness of breath. Sore throat. Symptoms may be delayed (see Notes).	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer immediately for medical attention.
•SKIN	Serious skin burns. Pain. Yellow discolouration.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.
•EYES	Redness. Pain. Burns .	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water (remove contact lenses if easily possible). Refer immediately for medical attention.
•INGESTION	Sore throat. Abdominal pain. Burning sensation in the throat and chest. Shock or collapse. Vomiting. corrosive; 20109000	Do not eat, drink, or smoke during work.	Do NOT induce vomiting. Give one or two glasses of water to drink. Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Collect leaking liquid in sealable	Separated from combustible and reducing substances,bases, organics food and feedstuffs. Cool. Dry. Keep in a well-ventilated room.	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs.

containers. Cautiously neutralize remainder with sodium carbonate. Then wash away with plenty of water. Do NOT absorb in saw-dust or other combustible absorbents.

Note: B
O symbol
C symbol
R: 8-35
S: 1/2-23-26-36-45
UN Hazard Class: 8
UN Subsidiary Risks: 5.1
UN Packing Group: I
Signal: Danger
Corr-Skull-Health haz
May be corrosive to metals
Fatal if swallowed
Causes severe skin burns and eye damage
Causes damage to respiratory tract if inhaled
Causes damage to digestive tract if swallowed
Causes damage to respiratory tract and teeth through prolonged or repeated exposure if inhaled

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0183

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

NITRIC ACID

ICSC: 0183

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PHYSICAL STATE; APPEARANCE:
COLOURLESS TO YELLOW LIQUID , WITH PUNGENT ODOUR.

PHYSICAL DANGERS:

CHEMICAL DANGERS:
The substance decomposes on warming producing nitrogen oxides. The substance is a strong oxidant and reacts violently with combustible and reducing materials, e.g., turpentine, charcoal, alcohol. The substance is a strong acid, it reacts violently with bases and is corrosive to metals .

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 2 ppm as TWA, 4 ppm as STEL; (ACGIH 2006).
MAK: 1ib (not established but data is available) (DFG 2008).
OSHA PEL†: TWA 2 ppm (5 mg/m^3)
NIOSH REL: TWA 2 ppm (5 mg/m^3) ST 4 ppm (10 mg/m^3)
NIOSH IDLH: 25 ppm See: 7697372

ROUTES OF EXPOSURE:
Serious local effects by all routes of exposure.

INHALATION RISK:
A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is corrosive to the eyes, the skin and the respiratory tract. Corrosive on ingestion. Inhalation may cause lung oedema (see Notes). The effects may be delayed (See Notes).

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Lungs may be affected by repeated or prolonged exposure to the vapour. The substance may have effects on the teeth , resulting in teeth erosion.

T

A

PHYSICAL PROPERTIES	Boiling point: 121°C Melting point: -41.6°C Relative density (water = 1): 1.4 Solubility in water: miscible	Vapour pressure, kPa at 20°C: 6.4 Relative vapour density (air = 1): 2.2 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.07 Octanol/water partition coefficient as log Pow: -0.21
ENVIRONMENTAL DATA		

NOTES

Depending on the degree of exposure, periodic medical examination is suggested. The symptoms of lung oedema do not become manifest until a few hours or even a few days have passed and they are aggravated by physical effort.

Transport Emergency Card: TEC (R)-80S2031-I
NFPA Code: H 4; F 0; R 0; OX

ADDITIONAL INFORMATION

ICSC: 0183 NITRIC ACID

APPENDIX C

INCIDENT REPORT / SAFETY SOLUTIONS FORMS

NOTIFICATION OF INCIDENT—INITIAL REPORT

The NOI form should be utilized to report ALL incidents. Incidents include: employee accidents, injuries, auto accidents, property damage/loss, information /data breaches, security concerns, subcontractor injuries/accidents/events, OR other liability situations or circumstances that could give rise to a claim. The NOI form is intended to be a preliminary summary (due within 24 hours/one business day) reporting what is immediately known of an event or situation. After a NOI report is released, and the appropriate resources within the organization are notified, an investigation should be initiated.

For SECURITY INCIDENTS. Initial notice and distribution via email limited to William Irwin, Corporate Security Manager, and Susan Hipp-Ludwick, Corporate Risk Manager. If incident is related to information /computer data concerns also include Joe Paquet, IS Technical Director in initial distribution.

SECTION 1: SECURITY INCIDENT SUMMARY (PROCEED TO ITEM #1 BELOW)

☐ THEFT ☐ VANDALISM ☐ THREAT / ASSAULT ☐ COMPUTERS ☐ OTHER

For SAFETY-RELATED INCIDENTS/ACCIDENTS involving an employee(s) or subcontractor. Submit written report via email to Susan Hipp-Ludwick and Matthew Dillon in Risk Management, and ... Owen Douglass of Corporate EH&S, the Direct Supervisor of the involved employee(s), the Safety Officer, the Client Service Manager (CSM), and the Division EH&S Manager. Distribution of safety related incidents should also include: Pat McCann, President; Alan Solow, COO; Ray Griffin, Senior VP of HR; the appropriate Division Manager(s), and involved employee if such person is not the person completing the NOI. Others may be added to the distribution as designated by a division, business team, profit center or project management.

OTHER INCIDENTS, including environmental and/or incidents that may give rise to a claim are to be reported in writing, and sent by email to Susan Hipp-Ludwick and Matt Dillon in the Risk Management, and appropriate project team members, profit center, and division/business line management within 24 hours. include Owen Douglass in distribution of environmental incidents.

SECTION I: INCIDENT SUMMARY

☐ INJURY / ILLNESS ☐ AUTO ☐ SUBCONTRACTOR ☐ ENVIRONMENTAL ☐ OTHER (e.g. property loss; or circumstance that could give rise to a claim)

---

1. DATE / TIME /LOCATION OF INCIDENT (Project, Office, or Other location. Include WO#):

2. EMPLOYEE(S) / INDIVIDUAL(S) INVOLVED or WITNESS TO INCIDENT / EVENT:

   JOB TITLE / ROLE: DIV./ PROFIT CENTER / ORG. UNIT

3. DIRECT SUPERVISOR / AND OFFICE MANAGER OR PROJECT MANAGER (Whomever is Appropriate):

4. DIVISION / LOCAL SAFETY OFFICER (if applicable):

5. DESCRIPTION OF INCIDENT / POTENTIAL LIABILITY EXPOSURE/EVENT AND RESULTING INJURY / DAMAGES:

6. WERE AUTHORITIES CONTACTED (police, government)? IF YES, IDENTIFY (i.e., agency name, case number, etc).

SECTION II: INJURY/IES

7. TREATING PHYSICIAN NAME, HOSPITAL, if Applicable:

8. CAN PERSONNEL RETURN TO WORK? RESTRICTIONS, IF KNOWN :

SECTION III: IF VEHICLE OR EQUIPMENT INVOLVED

9: EQUIPMENT / VEHICLE INFORMATION (Year / Make / Model): VIN:

OWNED ☐ RENTED ☐ ALLOWANCE ☐ PERSONALLY OWNED VEHICLE ☐

FOR ADDITIONAL INFORMATION, CONTACT (Name and Phone Number):

This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected as follow-up investigation is conducted.

Investigative reports *and/or* other documentation will often *be necessary* supplemental *information supporting* initial NOI *report.*

Questions can be directed to Susan Hipp-Ludwick at 610.701.3046

APPENDIX D

OSHA POSTER

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Job Safety and Health

It's the law!

OSHA

Occupational Safety and Health Administration
U.S. Department of Labor

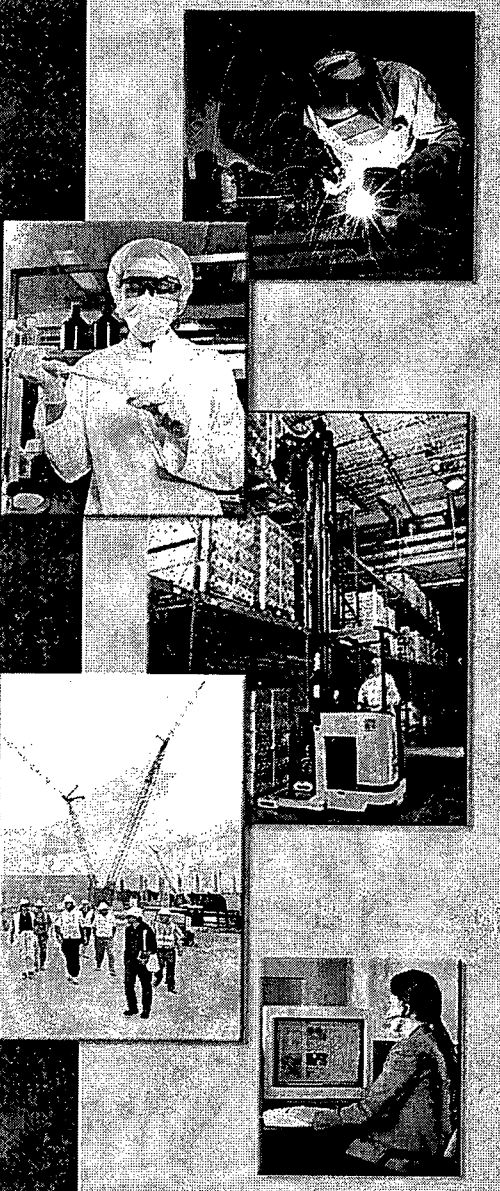
EMPLOYEES:

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in that inspection.
- You can file a complaint with OSHA within 30 days of retaliation or discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have the right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violations.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records and records of your exposures to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.
- You must comply with all occupational safety and health standards issued under the *OSH Act* that apply to your own actions and conduct on the job.

EMPLOYERS:

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the *OSH Act*.

This free poster available from OSHA –
The Best Resource for Safety and Health



Free assistance in identifying and correcting hazards or complying with standards is available to employers, without citation or penalty, through OSHA-supported consultation programs in each state.

1-800-321-OSHA
www.osha.gov

OSHA 3185-12-05R

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APPENDIX E

FIELD AUDIT FORM

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BBS - BEST PRACTICES EHS FIELD REVIEW

Site Name: _____ WO #: _____

Location: _____ Date: _____ Fieid Activities Began: _____

Name of Designated, Qualified Field Safety Officer On-Site: _____

DESCRIPTION OF FIELD ACTIVITIES: Check one

☐ Drilling/Soil Sampling ☐ Groundwater Sampling ☐ Air Sampling ☐ IH Sampling
☐ Test Pits/Trenching ☐ UST Removal ☐ Remediation ☐ Vertical Construction
☐ Demolition ☐ Fuels ☐ MEC\UXO\DMM ☐ Recon
☐ Other: _____

BEHAVIOR-BASED SAFETY (BBS) PROGRAM ELEMENTS

Item No.	Yes	No	Element
1			All WESTON personnel on-site have received BBS orientation.
2			Weston's "Safety Vision" has been communicated to all project team members.
3a			Project has SMART safety goals. ☐ Field activities ☐ Vehicle safety ☐ Other — If yes, list:
3b			SMART goals are documented and communicated to field team, including contractors.
4			The client has a BBS program to which Weston must adhere.
5			Baseline safety data exists for the scheduled work tasks/activities.
6			Targeted behaviors are identified for observation during the field audit. — If yes, list:
7			Health and Safety Plan (HASP) posted on-site and orientation given to each person.
8			Initial HASP meeting held and documented before work began.
9			Daily EHS briefings identify the day's tasks and related potential unsafe behaviors.
10			Daily EHS briefings are interactive.
11			Daily EHS Meetings are conducted by: ☐ SM ☐ FSO ☐ Other (Identify): _____
12			Site personnel are provided with additional training or support to complete tasks safely.
13			Question and answer time is available to all site personnel.
14			A formal observation program is in place (client-specific). Observations are documented. If yes, observations are performed by: _____
15			An informal observation program is in place. Observations are documented. If yes, observations are performed by: _____ Type: ☐ Targeted behavior checklist – corporate ☐ Site-specific ☐ Observed actively caring behaviors
16			Feedback mechanisms are in place. — If yes, identify mechanisms:
17			The field team leader or designee recognizes and corrects unsafe behaviors in the field.
18			The field team leader shows commitment to the Actively Caring concept and encouragement of Actively Caring behaviors among team members.
19a			The Short Service Employee (SSE) Policy is followed for anyone with Weston for 6 months or less or in current position for 6 months or less.

Item No.	Yes	No	Element
19b			A mentor is assigned to the SSE.
19c			The SSE is designated through use of: _____ (e.g., specific colored hat, badge/sticker)
19d			Site team consists of minimum number of SSEs.
Comments/Additional Information – Best Practices Observed:			

CERTIFICATION OF PERSONNEL

Item No.	Yes	No	Element
1a			Site is subject to HAZWOPER Regulations
1b			If yes, all personnel on-site have current HAZWOPER training.
1c			If (1a) is yes, all personnel on-site have current HAZWOPER medical.
2			Site requires respirator use. If yes, all personnel on site are: ☐ medically qualified for respirator use ☐ trained for respirator use ☐ fit-tested for respirators to be used
3a			Site/client requires other standard specific medical certification. If yes, specify requirement(s):
3b			Site/client requires substance-specific medical. If yes, list substance(s):
3c			Site/client requires drug and alcohol testing.
3d			Physical capability medical required. If yes, indicate type: ☐ General physical capability ☐ Equipment/vehicle operation ☐ Other: _____
4			Site requires special supervisor training and/or certification. If yes, check requirement: ☐ HAZWOPER supervisor training ☐ Construction 30 hour course ☐ Construction site manager's safety course ☐ Asbestos abatement ☐ Lead Abatement ☐ Competent person. List type(s): ☐ Qualified person. List type(s):
Comments/Additional Information:			

MEDICAL AND FIRST AID

Item No.	Yes	No	Element
1			First-aid kits accessible and identified.
2			Emergency eye/safety washes available. ☐ ANSI compliance required.
3			First-aid kits and eyewash capabilities inspected weekly and documented (for site projects greater than 1 week in duration).
4			At least two first-aid/CPR-trained persons are on-site at all times when working.
Comments/Additional Information:			

BBS - BEST PRACTICES EHS FIELD REVIEW

EMERGENCY ACTION PLANS

Item No.	Yes	No	Element
1			Emergency Action Plan (EAP) posted on-site.
2			EAP orientation provided.
3			Emergency telephone numbers posted.
4			Emergency routes posted. ☐ Map ☐ Written Directions.
5			Emergency plan and signals reviewed with all persons.
Comments/Additional Information:			

HAZARD COMMUNICATION

Item No.	Yes	No	Element
1			A site-specific HAZCOM Plan is in effect and up to date.
2			A chemical inventory and MSDSs are available. Where?
3			Employees trained in the HAZCOM Plan and chemical hazards.
4			100% comphance with HAZCOM observed.
5			Coaching on HAZCOM observed.
Comments/Additional Information:			

PERSONAL PROTECTION

Item No.	Yes	No	Element
1			PPE Plan has been verified by a Qualified person.
2			All PPE meets applicable ANSI/OSHA/EPA criteria.
3			Hard hat, eye, hearing, foot and other PPE areas are defmed and signs in place.
4			Levels of protection (LOP) are established.
5			Site control zones (Exclusion, CRZ, Support) are indicated clearly.
6			All employees know their LOP scheme.
7			OSHA respirator program in place.
8			Employees fit tested: ☐ QLFT ☐ QNFT ☐ On-site ☐ Current
9			PPE inspected and checked before use.
10			PPE stored properly.
11			Defective equipment tagged out.
12			Sufficient quantities of equipment available.
13			Monitoring Instruments Plan in place and communicated.
14			Instruments maintained and calibrated.
15			Maintenance & Calibration logs up to date.
16			Flotation devices wom when working on or over water.
17			PPE use 100% safe.
18			PPE coaching observed.
Comments/Additional Information:			

BBS - BEST PRACTICES EHS FIELD REVIEW

DECONTAMINATION

Item No.	Yes	No	Element
1			Decontamination system set up on-site.
2			Decontamination system used according to safety plan.
3			Contamination reduction corridor clearly delineated in the CRZ.
4			Appropriate waste receptacles available for all waste.
5			Receptacles properly closed at end of day.
6			All decon liquids properly contained and disposed.
7			All wastes disposed of according to approved plan.
8			All personnel received decontamination training.
9			All reusable personal protective gear deconned and disinfected at least daily.
10			Decontamination process 100% followed.
11			Decontamination coaching observed.
Comments/Additional Information:			

HIGHWAY VEHICLE DRIVING

Item No.	Yes	No	Element
1			Highway vehicle driving addressed in HASP.
2			Highway vehicle driving regularly addressed in safety meetings.
3			Fatigue Management policy discussed with all site workers.
4			Hands-free cell phone use only.
5			All cell phone/radio use limited while driving.
6			100% safe driving observed.
7			Safe driving coaching observed.
8			Journey Management Plan in place.
Comments/Additional Information:			

WORKING AT ELEVATION

Item No.	Yes	No	Element
1			Ladders are used 100% safely.
2			Ladders used are appropriate for work performed.
3			Portable ladders are inspected before use.
4			Portable ladders are secured from falling.
5			Fixed ladders are inspected for structural integrity.
6			Coaching on ladder use observed.
7			Scaffolds are set up and dismantled under supervision of a competent person.
8			Scaffolding is inspected daily.
9			Scaffold inspections are documented.
10			All site personnel are trained to use scaffolding safely.
11			Scaffolding is used 100% safely.
12			Coaching on safe scaffold use observed.
13			Only qualified persons operate aerial or scissor lifts.

Item No.	Yes	No	Element
14			Personnel working at elevation in aerial or scissor lifts are protected from falling by fall limiting or arrest systems as required by regulation or manufacturers.
15			Aerial or scissor lifts are moved while workers are elevated only if permitted by manufacturers.
16			Travel routes for aerial or scissor lifts are inspected for impediments prior to moving.
17			Aerial and scissor lifts are inspected prior to each shift.
18			Aerial and scissor lifts are used 100% safely.
19			Coaching in safe use of aerial and scissor lifts observed.
20			The hierarchy of controls (elimination, substitution, engineering, administrative) is considered prior to performing work at elevation where reliance is placed on fall limiting or fall arresting system.
21			Fall prevention plans are developed by a competent person.
22			Horizontal hfelines are installed by qualified persons.
23			Fall prevention plans include plans for rescue.
24			Fall limiting and arrest equipment is inspected prior to use.
25			Fall limiting and arrest equipment is wom properly.
26			Anchor points are designed and used properly.
27			100% safe use of fall arrest and limiting systems.
28			Coaching is observed on use of fall arrest and limiting systems.
Comments/Additional Information:			

STRUCK-BY HAZARDS

Item No.	Yes	No	Element
1			Struck-by hazards are identified and addressed in the HASP.
2			Struck-by hazards are addressed in daily safety meetings.
3			High visibility vests are wom by all personnel working in areas were moving equipment is in use and along roadways.
4			A written Traffic Control Plan is implemented.
5			Operators and pedestrians are trained to gain eye contact before crossing vehicle travel ways.
6			Vehicles with blind spots are equipped with backup or motion alarms.
7			Quahfied spotters are provided for vehicle backing in congested areas.
8			Qualified flaggers are provided where vehicle traffic enters or crosses public roadways.
9			Signs meeting requirements of the MUTCD are used to alert roadway users impacted by vehicles entering, crossing or leaving public roadways.
10			Site speed limits are posted and followed.
11			Traffic routes are established and followed in congested areas.
12			100% safe operation is observed.
13			Coaching for traffic safety is observed.
14			Materials which can fall from above or be blown are secured.
15			Exclusion zones are established around operations which can expel material or objects at velocity.
16			Personnel are not permitted under loads.
17			Personnel are not permitted to cross under conveyors unless guarding is provided.
18			Taglines are used for positioning elevated loads.
19			Lifting equipment operators know not to fly loads over site personnel.

Item No.	Yes	No	Element
20			Exclusion zones are established around masonry walls under construction or being demolished.
21			Preformed walls or lift slab concrete is secured during placement.
22			Power tools designed to accommodate guards are equipped with functional guards.
23			When work is being performed overhead, tools not in use are secured or placed in holders.
24			The use of cranks on hand-powered winches or hoists is prohibited unless the hoists or winches are provided with positive self-locking dogs.
25			Hand wheels with exposed spokes, projecting pins, or knobs are not used.
26			Abrasive wheels are provided with safety guards.
27			Abrasive wheels for chop saws are chosen based on material to be cut.
28			Safety clips or retainers are installed and maintained on pneumatic impact tools to prevent dies and tools from being accidentally expelled from the barrel.
29			Safety lashings are provided at connections between tool and hose and at all quick makeup type connections.
30			Only qualified persons operate explosive-actuated tools.
31			Chain saws, torches or other power tools are not used to cut above shoulder height.
32			Powered nailers have a safety device on the muzzle to prevent the tool from ejecting fasteners unless the muzzle is in contact with the work surface.
33			Contact trip devices or triggers are not secured in an "on" position.
34			Workers using tools are positioned so work of one does not adversely affect others.
35			100% safe use of tools observed.
36			Coaching on tool use observed.
Comments/Additional Information:			

CAUGHT -IN HAZARDS

Item No.	Yes	No	Element
1			Caught-in hazards are identified and addressed in the HASP.
2			Caught-in hazards are addressed in daily safety meetings.
3			Pinch point, power drives, belts, etc. are guarded.
4			Lockout-tagout (LOTO) used when performing maintenance.
5			All site persomel trained in LOTO Program.
6			100% Safe LOTO procedures observed.
7			Coaching on LOTO observed.
8			A competent person for excavation is on-site when excavation is performed.
9			Utility check performed, reconfirmed and documented before excavation or drilling per FLD 34.
10			At least one utility cofnpetent person is on-site.
11			Competent person determines appropriate protection to prevent excavation cave in.
12			Guardrails or fences placed around excavations near walkways or roads.
13			Excavation locations lighted/or otherwise made visible at night.
14			Ladders or ramps are provided to access and exit trenches more than 4 feet deep and within 25 ft of any entrance.
15			All excavated material, personnel, and heavy equipment are at least 24-inches from the edge of all trenches.
16			100% safe utility mark, excavation, and trenching observed
17			Coaching on safe utility mark, excavation and trenching observed.

Item No.	Yes	No	Element
18			Confined space entry (CSE) permit procedure in place and communicated to all.
19			CSE permit procedure used: ☐ Pre-entry review ☐ Safety watch/attendant ☐ Safety watch protected same as entrants ☐ Retrieval system ☐ Appropriate rescue available ☐ Continuous monitoring for ___%O_2 ___%LEL & TOX: _____, _____, _____, _____
20			CSE employee training documented.
21			100% safe CSE observed.
22			Coaching on CSE observed.
Comments/Additional Information:			

ELECTRICAL

Item No.	Yes	No	Element
1			Warning signs indicate the presence and location of high voltage equipment, 250 V or greater.
2			Qualified persons only permitted to work within 10 feet of any exposed live electrical conductors.
3			Electrical equipment and wiring properly guarded.
4			Electrical lines, extension cords, and cables guarded and properly maintained.
5			Extension cords kept dry out of puddles and rain.
6			Damaged equipment tagged out.
7			GFCIs used as appropriate.
8			Extension cords are rated for hard or extra hard outdoor use.
9			Underground electrical lines located and indicated per FLD 34.
10a			Arc flash assessments are performed as required.
10b			PPE for arc flash is provided.
10c			PPE for arc flash is appropriate.
11			100% safe electrical work observed.
12			Coaching on safe electrical work observed.
Comments/Additional Information:			

WALKING AND WORKING SURFACES

Item No.	Yes	No	Element
1			Access ways, stairs, ramps, and ladders free of ice, mud, snow, or debris
2			Mobile offices/labs have fixed stairs and handrails.
3			Work areas kept free of debris and equipment.
4			Material in storage is protected from falling or collapse by effective stacking, blocking, cribbing, etc.
5			Walkways and aisles are kept clear.
6			Materials are not stored on scaffolds or runways in excess of normal placement or in excess of safe load limits.
7			Work areas and means of access are maintained safe and orderly.
8			Tools, materials, extension cords, hoses or debris do not cause tripping or other hazards.
9			Storage and construction-sites are kept free from the accumulation of combustible materials.

Item No.	Yes	No	Element
10			Waste materials and rubbish are placed in containers or, if appropriate, in piles.
11			Waste materials are disposed of in accord with applicable local, state, or federal requirements.
12			100% safe walking and working surfaces observed.
13			Coaching on safe walking and working surfaces observed.
Comments/Additional Information:			

MATERIAL HANDLING

Item No.	Yes	No	Element
1			Mechanical lifting is available and used whenever possible.
2			Employees are trained in and use safe lifting techniques.
3			Repetitive motion tasks are evaluated and addressed in the HASP.
4			Repetitive injury prevention is discussed during indoctrination.
5			Repetitive injury prevention is a regular topic at daily meetings.
6			100% material handling observed.
7			Coaching on safe material handling observed.
Comments/Additional Information:			

FIRE PREVENTION/PROTECTION

Item No.	Yes	No	Element
1a			Hot Work Checklists completed (FLD 36).
1b			If Hot Work Permit(s) required: ☐ Permit(s) up to date. ☐ Closed out permit(s) on file.
2			Smoking restricted to designated area.
3			Fire lanes established, clearly designated, and maintained.
4			Flammable/combustible liquid dispensing transfer systems grounded and bonded.
5			Proper flaminable materials storage used.
6a			Fire alarm established.
6b			Workers aware of established fire alarm
7			Fire extinguisher(s) appropriately located.
8			Fire extinguisher(s) appropriate for fire hazard potential.
9			Location and use of fire extinguisher(s) known by all personnel.
10			Fire extinguisher(s) checked before each shift.
11			Fire extinguisher(s) inspected monthly.
12			Fire extinguisher(s) inspected yearly.
13			Combustible materials segregated from ignition sources.
14			Incompatibles segregated.
15			100% fire prevention/protection observed.
16			Coaching on fire prevention/protection observed.
Comments/Additional Information:			

MOTOR VEHICLES/HEAVY EQUIPMENT

Item No.	Yes	No	Element
1			Highway driving safety addressed in HASP.
2			Drivers assigned to vehicles based on experience and training.
3			Constmction equipment inspected before each use. ☐ Inspections documented. ☐ Inspection documents on file.
4			Inspection issues identified are corrected.
5			Unsafe equipment tagged out and reported.
6			Certificates on site for operators of equipment requiring licenses or certifications.
7			All safety appliances/guards in place.
8			Equipment shut down for fueling.
9			Constmction equipment has back-up alarms or spotters are used if 360° visibility restricted.
10			Loads are secure before transport.
11			Roads and stmctures inspected for load capacity per vehicle weights.
12			A Traffic Control Plan is in effect.
13			100% safe vehicle and equipment operation observed.
14			Coaching on safe vehicle and equipment operation observed.
Comments/Additional Information:			

HAND AND POWER TOOLS

Item No.	Yes	No	Element
1			Guards and safety devices in place and used.
2			Tools inspected before each use.
3			Tools tagged out, if defective.
4			Eye protection areas identified and protection worn.
5			Non-sparking tools available.
6			Coaching on safe tool operation observed.
Comments/Additional Information:			

WELDING AND CUTTING

Item No.	Yes	No	Element
1			Only qualified welders permitted.
2			Hot work permitting system in use.
3			Fire watch provided.
4			Equipment inspected before use.
5			Welding equipment properly grounded.
6			Appropriate PPE wom: ☐ Proper hehnets and shields (mcluding proper tint for UV protection) ☐ Leathers or other protection from sparks/slag
7			Air sampling/monitoring is perfonned to assess toxic fume exposure.
8			Adjacent workers protected from welding flash.
9			Oxidizers and fuel cylinders separated by 20 feet or ½ hour fue wall in storage.

Item No.	Yes	No	Element
10			Fuel cylinders secured in upright position.
11			Fire extinguishers present at all welding and cutting operations.
12			100%safe welding and cutting operations observed.
13			Coaching on welding and cutting observed.
Comments/Additional Information:			

ENVIRONMENTAL PROTECTION AND SUSTAINABILITY PLAN (EPSP)

Item No.	Yes	No	Element
1			Environmental Protection and Sustainability Plan posted.
2			EPSP reviewed as part of site indoctrination.
3			EPSP Checklist used to review Environmental Compliance.
4			100% environmental comphance observed.
5			Coaching on environmental compliance observed.
Comments/Additional Information:			

MISCELLANEOUS

Item No.	Yes	No	Element
1			Overhead hazards are noted, communicated to all, and labeled as needed.
2			For large constmction projects, EHS Inspection (Checklist is used).
3			Copies of contracts with client and sub-contractors are on-site, WESTON's role regarding site health and safety responsibilities are clear in these, and site manager(s) understands.
4			Sub-contractors have received approved copies of their safety plan or have signified their intent to conform to Weston's safety plan.
5			Site managers understand their responsibilities for sub-contractors' conformance with all OSHA and other health and safety requirements
6			Site managers know what to do in the event of an OSHA/agency inspection
7			If warranted based on audit observations, a feedback session was provided to affected employees.
8			
9			
10			
Comments/Additional Information:			

COMMENTS/FEEDBACK PROVIDED:

EHS ANALYSIS ENVIRONMENTAL COMPLIANCE CHECKLIST
WESTON FIELD OPERATIONS

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EHS ANALYSIS CHECKLIST-WESTON FIELD OPERATIONS

This form is to be completed prior to task implementation (and modified during implementation if significant changes occur) to verify that hazards have been identified and that appropriate prptection is determined and utilized. This form is additionally to be used as a daily and as necessary training tool. This form (or a copy of same) is to be posted for workers to observe and then filed upon completion of task.

Environmental Compliance Considerations:

	Generation of Hazardous Waste*		
	Generation of Investigation Derived Waste*		
	Treatment, Storage, or Disposal of Hazardous Waste*		→ Containers: dated, labeled, closed, full, stored less than 90 days
	Contingency to prevent or contain hazardous materials or oil spills or discharges to drains, body of water, soil*		→ Risk of explosion or catastrophic release due to chemical storage or processing involving reactivity, flammables, solvents or explosives
	Disturbing of Asbestos Containing Materials (ACM)*		→Training & Licensing for Asbestos Remediation Activities
	Application of Pesticides or Herbicides*		
	Work on Above or Under-ground Storage Tanks*		
	Transportation, Storage or Disposal of Radioactive Material*		→Training & Licensing for Use of Radioactive Materials/Sources
	Activities producing or generating Air Emissions (or fugitive "fence-line" emissions) requiring either monitoring and/or permit*		
	Excavations, Drilling, Probing or other activities that could impact underground utilities, pipelines, sewer or treatment systems.		
	Shipment of Hazardous Waste off-site* Shipment of Samples in accordance with DOT/IATA		→Waste Identification & Manifesting - Marking, Placarding, Labeling

* = Environmental Compliance/Waste Management Plan Required

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APPENDIX F

WESTON FIELD OPS

FLD 02 INCLEMENT WEATHER

Hot weather (ambient temperatures over 70°F), cold weather (ambient temperatures below 40°F), rain, snow, ice, and lightning are examples of inclement weather that may be hazardous or add risk to work activities. Extremes of heat, cold, and humidity, as well as rain, snow, and ice, can adversely affect monitoring instrument response and reliability, respiratory protection performance, and chemical protective clothing materials.

RELATED FLDs AND OP

FLD 05 – Heat Stress Prevention and Monitoring
FLD 06 – Cold Stress
OP 05-03-008 – Inclement Weather & Business Disruption Policy

PROCEDURE

The potential for exacerbating the impact of physical hazards must be considered for tasks that expose personnel to inclement weather. Risk assessment and hazards analysis should be accomplished during the planning stages of a project for the most likely inclement weather conditions that may be encountered, i.e., rain and lightning in late spring, summer, and early fall, or lightning prone areas; cold, snow, and ice in winter. The Field Safety Officer (FSO) must determine the proper safety procedures and recommend them to the site manager. Each worker must evaluate the risk associated with his/her work and be actively alert to these hazards. Managers and workers must be familiar with the requirements of FLD 05 and FLD 06.

A pre-site activity risk assessment must be completed when inclement weather occurs. Weather conditions that affect instruments and personal protective equipment (PPE) function must be conveyed to site workers who should monitor function and integrity of PPE and be alert to changing weather conditions. A decision must be made on the proper safety procedures to use if work must continue, or to stop work if the risk is too great. The appropriate Safety Professional must be notified of all instances of the need to stop work for safety reasons, including inclement weather.

Heat

Hot, dry weather increases risk of soil drying, erosion, and dust dispersion, which may present or increase risk of exposure and environmental impact from toxic hazards. Hot weather will increase pressure on closed containers and the rate of volatilization, thereby potentially increasing the risk of exposure to toxic, flammable, or explosive atmospheres.

Prevention and Protective Measures

Employees must be protected from airborne contaminants using engineering controls such as wetting dry soil to prevent particle dispersion, and providing local ventilation to reduce volatile air contaminants to safe levels, or if engineering controls are infeasible, using prescribed PPE. Wind shifts and velocity should be measured where change may result in dispersion of airborne contaminants into the work area.

Rain, Wet Weather, and High Humidity

Wet conditions resulting from rain and wet weather increase slipping and fripping hazards, braking distances of vehicles, the potential for vehicle skidding, or difficulties in handling powered devices such as augers and drills. Rain fills holes, obscures trip and fall hazards, and increases risk of electrical shock

when working with electrical equipment. Changes in soil conditions caused by rain can impact trenching and excavating activities, creating the potential for quicksand formation, wall collapse, and cave-in. Vehicles become stuck in mud, and tools and personnel can slip on wet surfaces. Rain and wet conditions may decrease visibility (especially for personnel wearing respiratory protection) and limit the effectiveness of certain direct-reading instruments (e.g., photoionization detectors [PIDs]).

Feet that become wet and are allowed to remain wet can lead to serious problems under both heat and cold conditions. Activities that may result in wet feet include extended work in chemical protective clothing and wading in water/liquid during biological assessments. Trench foot, paddy foot, and immersion foot are terms associated with foot ailments resulting from feet being wet for long periods of time. All have similar symptoms and effects. Initial symptoms include edema (swelling), tingling, itching, and severe pain. These may be followed by more severe symptoms including blistering, death of skin tissue, and ulceration. (NOTE: The following Preventive and Protective Measures also apply to Cold, Snow, and Ice.)

Preventive and Protective Measures

Walkways, stairs, ladders, elevated workplaces, and scaffold platforms must be kept free of mud, ice, and snow. Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials.

Vehicles used in rain or cold weather must have working windshield wipers and defrosters, and windows must be kept clear of obstruction.

Drivers must observe traffic laws, including maintaining speed within limits safe for weather conditions, and wearing seat belts at all times. Note that this may mean operating below the posted speed limit.

When walking, workers should use a walking stick or probe to test footing ahead where there is standing water, snow, or ice to protect the walker against stepping into potholes or onto puncture hazards, buried containers, or other potential strueturally unsound surfaces.

Prior to using vehicles or equipment in off-road work, workers should walk the work area or intended travelway when puddles or snow may obscure potholes, puncture hazards, or buried containers, or other potential strueturally unsound surfaces.

Project managers should arrange to have winches, come-alongs, or other mechanical assistance available when vehicles are used in areas where there is increased risk of getting stuck. Cable or rope and mechanical equipment used for pulling stuck vehicles must be designed for the purpose, of sufficient capacity for the load, and be inspected regularly and before use to ensure safety. Manually pushing stuck vehicles is to be avoided.

Prevention methods are required when work is performed in wet conditions or when conditions result in sweating, causing the feet to become and remain wet. Proper hygiene is critical. Workers must dry their feet and change socks regularly to avoid conditions associated with wet feet. Use of foot talc or powder can additionally assist in prevention of this type of condition.

Cold, Snow, and Ice

Cold weather affects vehicle operation by increasing difficulty in starting and braking. Ice, frost, and snow can accumulate on windows and reduce vision. Cold, wet weather can cause icing of roadways,

driveways, parking areas, general work places, ladders, stairs, and platforms. Ice is not always as obvious to see as snow or rain, and requires special attention, especially when driving or walking.

Snow and ice increase the risk of accidents such as slipping when walking, climbing steps and ladders, or working at elevation, and the risk of accidents when driving vehicles or operating heavy equipment. Heavy snow and ice storms may cause electric lines to sag or break, and the use of electrical equipment in snow increases the risk of electric shock. Snow can hide potholes and mud, which can result in vehicles getting stuck or persons falling when stepping into hidden holes. Snow also may cover water, dmms or other containers, sharp metal objects, debris, or other objects that can cause falls or punctures.

Preventive and Protective Measures

WESTON personnel are cautioned against operating motor vehicles such as cars or tmcks on ice under any circumstances. If traveling in icy conditions, WESTON personnel should follow all public service advisories that curtail driving activities.

Persomel performing activities that require working oyer ice should be aware of minimal ice thickness safety guidelines as follows:

- 4-inch minimum: activities such as walking or skating.
- 6-inch minimum: activities such as snowmobiling or the use of equipment with the same weight and cross-sectional area as a snowmobile.

Personnel should always be aware that these measurement guidelines are under ideal conditions and that snow cover, conditions on rivers, ponds, or lakes with active currents, and other environmental factors impact the safety of working on ice. Clear ice typically is the strongest, while ice that appears cloudy or honeycombed (contains entrained air) is not as stmeturally strong. Measurements made by drilling or cutting through the ice should be made every few feet to verify safe conditions. Provisions for rescue (e.g., ladders or long poles and effective communications) must be available at the work site.

Lightning

Lightning represents a hazard of electrical shock that is increased when working in flat open spaces, elevated work places, or near tall stmctures or equipment such as stacks, radio towers, and drill rigs. Lightning has caused chemical storage tank fires and grass or forest fires. Static charges associated with nearby electrical storms can increase risk of fire or explosion when working around flammable materials, and can adversely affect monitoring instmments.

Lightning is the most dangerous and frequently encountered weather hazard people experience each year. Lightning affects all regions. Florida, Michigan, Pennsylvania, North Carolina, New York, Ohio, Texas, Tennessee, Georgia, and Colorado have the most lightning deaths and injuries.

Preventive and Protective Measures

Prior to working in areas or beginning projects when or where there is an increased potential for lightning striking personnel, steps must be taken to predict the occurrence of lightning strikes. Recommendations include:

- Check with client management to determine if there are any pattems or noted conditions that can help predict lightning or if there are stmctures that are prone to lightning strikes. Arrange for

client notification when there is increased potential for lightning activities. Ensure that clients include WESTON workers in lightning contingency plans.

- Monitor weather reports.
- Note weather changes and conditions that produce lightning.
- Stop work in open areas, around drill rigs or other stmctures that may attract lightning, on or in water and in elevated work places when lightning strikes are sighted or thunder is heard near a work site.
- Ensure all personnel are provided with safe areas of refuge. Prevent personnel from standing in open areas, under lone trees, or under drill rigs.
- Observe the "30-30" Rule. If you see lightning and thunder is heard within 30 seconds (approximately 6 miles), seek shelter. If you hear thunder, but did not see the lightning, you can assume that lightning is within 6 miles and you should seek shelter. Remain in the sheltered location for 30 minutes following the last lightning strike.
- Use a hand held static potential meter (lightning detection device) to monitor the potential difference between a cloud and the ground. When the measured potential is greater than 2 kV/m, there is a potential for a lightning strike – seek shelter.

High Wind and Tornado Safety

High Winds

Many constmction workers have died due to wind-related accidents and injuries. A ladder that seems secure under normal circumstances can become unstable during windy conditions and cause you to fall. Scaffolding that is improperly secured can rip free during strong winds and kill bystanders. The risk of injury for constmction workers increases during strong winds. Keep in mind that changing weather conditions can affect your daily work tasks, and make sure you have a game plan to prevent proper damage and personal injury.

Stay Informed: With today's modem technology available at the touch of a button, you should keep up to date with the latest local weather reports. Visit weatherbug.com or weather.gov to stay informed in case of wind wamings, watches, and advisories. Larger projects may have their own weather station on site to provide instant weather data. Use daily hazard assessments to determine if working conditions have changed or will change throughout the day.

Be Prepared: When you know the weather will be windy, secure loose building materials, scaffolding and fencing that could be picked up or torn loose by strong winds and thrown onto surrounding streets, structures, vehicles, or bystanders.

Know the Limits of Your Equipment: When operating any equipment, take time to read the operator's manual and become familiar with the wind specifications. Many crane manufacturers have high-wind guidelines to prevent you from operating a crane in unsafe weather. You should also check safety equipment such as fall protection to determine if it is adequate for windy conditions.

Know the Terminology

Severe Thunderstorm Watch

A Severe Thunderstorm Watch means that strong thunderstorms capable of producing winds of 58 mph or higher and/or hail 3/4 inches in diameter or larger are possible. If you are in the area of a Severe Thunderstorm Watch, you should be prepared to take shelter from thunderstorms. Severe Thunderstorm Watches are generally issued for 6-hour periods.

Severe Thunderstorm Warning

A Severe Thunderstorm Waming means that thunderstorms capable of strong winds and/or large hail are occurring or could form at any time. If you are in the area of a severe thunderstorm, you should take shelter indoors immediately, avoid windows, and be prepared for high winds and hail. Severe Thunderstorm Wamings are generally in effect for an hour or less.

High Wind Watch

A High Wind Watch is issued when sustained winds exceeding 40 mph and/or frequent gusts over 60 mph are likely to develop in the next 24 to 48 hours. For summit areas, high wind watches are issued when sustained winds are expected to exceed 45 mph and/or frequently gust over 60 mph. If you are in an area for which a High Wind Watch has been issued you should secure loose objects outdoors that may blow about and avoid outdoor activity that exposes you to high winds.

High Wind Warning

A High Wind Waming is issued when sustained winds exceeding 40 mph and/or frequent gusts over 60 mph are occurring or imminent. For summit areas, wamings are issued for winds exceeding 45 mph and/or frequently gusting over 60 mph. Wind wamings may issued up to 24 hours ahead of the onset of high winds and remain in effect for 6 to 12 hours. If you are in an area where a high wind waming is in effect you should avoid activities that expose you to high winds. Loose objects may be blown around. Tree limbs may break and fall. Power lines may be blown down.

Wind Advisory

A Wind Advisory is issued when sustained winds of 30 to 39 mph and/or frequent gusts to 50 mph or greater are occurring or imminent. Wind advisories may be in effect for 6 to 12 hours. If you are in an area where a wind advisory is in effect you should secure loose objects that may be blown about outdoors and limit activity that may expose you to high winds.

Work Safely: If you will be working on a windy day, you should be alert and protected. Wear eye protection to prevent dust and other particles from entering or striking your eyes. Keep your hard hat on at all times to prevent injuries from falling or flying objects. The likelihood of falls from heights is greatly increased by strong winds. Wear the necessary PPE to ensure your safety.

To avoid flying debris and to minimize damage during high winds:

- Shut down outdoor activities involving work at elevation on ladders, scaffolding, aerial lifts, etc.; handling large tarps and plastic sheeting when wind speeds exceed 25 mph; including work with radioactive materials and highly toxic materials that could be dispersed by the winds.
- At 13 - 18 mph wind will raise dust. Follow the dust action level.

- Move mobile items stored outside to indoor storage.
- Secure any items that cannot be moved inside.
- Be careful opening exterior doors.
- Be cautious about downed power lines, tree limbs, and debris on roads.
- Be alert for animals who have escaped from farms and zoos.

Stay Away from Power Lines: High winds can cause tree limbs to fall on power lines resulting in electrocution hazards or loss of power. Your best bet is to keep your distance.

Tomados

What is a TORNADO?

A tomado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm or as a result of severe weather associated with hurricanes. A funnel cloud is formed as cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tomado results from high wind velocity and wind blown debris.

Tornado Safety

When a tomado approaches, you have only a brief amount of time to make life-or-death decisions. Advance planning and quick response are the keys to surviving a tomado.

Purchase a NOAA Weather Alert radio with an alert feature. When tuned to the proper frequency, these weather radios remain silent until a weather emergency occurs. Once they pick up the alarm tone, they will begin broadcasting emergency weather information so that citizens can protect themselves and their property. Some models of the NOAA weather radio incorporate the Specific Area Message Encoder technology, allowing users to target only those wamings that affect their immediate geographic area.

Conduct tomado drills. Designate an area to serve as your safe area, and practice having team members assemble there in response to a mock tomado waming.

Emergency Communications Plan. Develop an emergency communications plan in case team members are separated from one another when a tomado waming goes into effect. Designate an emergency coordinator. Instmct everyone to contact this coordinator in a weather emergency for instmctions on what to do during the storm and where to reassemble after the emergency has passed. Design contingency plans to be consistent with client contingency plans. When possible use client waming and alerting systems and confirm that team members have access to shelters and know how to get to them.

Know the Difference between a Tornado Watch and a Tornado Warning

Tomado Watch: Issued by the National Weather Service when tomadoes are possible in your area. You should remain alert for approaching storms. Remind family members of where the safe areas are within your home, and carefully monitor radio or television reports for further developments.

Tomado Waming: Indicates that a tomado has been sighted in your area, or is indicated on weather radar. You should proceed to safe shelter immediately.

When A Tornado Warning Goes In Effect, Put Your Safety Plans In Action.

In Your Automobile: Motor vehicles are easily overtumed by tomado winds. Leave your vehicle and seek shelter in a sturdy building. As a last resort, seek shelter in a ditch or culvert. Do not try to outmn or outmaneuver a tomado! Use the time to seek appropriate shelter outside your vehicle.

Office Buildings, Hotels, and Shopping Centers: Take shelter in an interior hallway on a lower floor. A closet, bathroom or other small room with short, stout walls will give some protection from collapse and flying debris. Otherwise, get under heavy fumiture and stay away from windows. Many tomado deaths have occurred in large buildings due to the collapse of a roof or wide span wall. A comer area, away from a window, is safer than the middle of a wide span wall.

Out In Open Country: When severe weather approaches, seek inside shelter immediately. The chances of encountering falling trees, downed power lines and lightning are far greater than encountering a tomado itself. If a tomado approaches, lie flat in the nearest depression, such as a culvert or ditch, and cover your head with your arms.

BE ALERT TO CHANGING WEATHER CONDITIONS

HAVE AN EMERGENCY WEATHER PLAN IN PLACE

REHEARSE YOUR CONTINGENCY PLANS PERIODICALLY

KNOW WHERE TO GO WHEN A TORNADO THREATENS.

FLD 05 HEAT STRESS PREVENTION AND MONITORING

Heat stress may occur at any time work is performed at elevated temperatures. If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur such as fatigue, irritability, anxiety, and decreased concentration or dexterity, and possibly death. Because heat stress is one of the most common and potentially serious illnesses at field sites, regular monitoring and other preventive measures are vital to ensure worker safety. Wearing chemical protective clothing often decreases natural body heat loss (cooling) and increases the risk of heat stress.

Employees who are taking prescription or over-the-counter medications should consult with their personal physician prior to working in high-temperature environments to see if their medication would impair their ability to handle heat stress.

REFERENCES

OSHA 29 CFR 1910 and 1926

RELATED FLDs

FLD 02 – Inclement Weather
FLD 03 – Hot Processes – Steam, Low Temperature Thermal Treatment Unit, and Transportable Incinerator
FLD 08 – Confined Space Entry Program
FLD 36 – Welding/Cutting/Burning
FLD 37 – Pressure Washers/Sandblasting

PROCEDURE

Heat Stress Symptoms and Treatment

Heat Rash

Heat rash, also known as prickly heat, may occur in hot and humid environments where sweat is not easily removed trom the surface of the skin by evaporation and is aggravated by chafing clothes. When extensive or complicated by infection, heat rash can be so uncomfortable that it inhibits sleep and impairs a worker's performance.

Symptoms – Mild red rash, especially in areas of the body that come into contact with protective gear.

Treatment – Decrease amount of time spent working in protective gear and provide body powder to help absorb moisture and decrease chafing. Heat rash can be prevented by showering, resting in a cool place, and allowing the skin to dry.

Heat Cramps

Heat cramps are caused by inadequate electrolyte intake. The individual may be receiving adequate water; however, if not combined with an adequate supply of electrolytes, the blood can thin to the point where it seeps into the active muscle tissue, causing cramping.

Symptoms – Acute painful spasms of voluntary muscles, most notably the abdomen and extremities.

Treatment – Move the victim to a cool area and loosen clothing. Have the victim drink I to 2 cups of lightly salted water or diluted commercial electrolyte solution (e.g., Gatorade, Quench) immediately, and then every 20 minutes thereafter until symptoms subside. Electrolyte supplements can enhance recovery however, it is best to double the amount of water required by the dry mix package directions or add water to the liquid form.

Heat Exhaustion

Heat exhaustion is a state of weakness or exhaustion caused by the loss of fluids from the body. The condition is much less dangerous than heat stroke, but it nonetheless must be treated.

Symptoms – Pale, clammy, and moist skin, profuse perspiring, and extreme weakness. Body temperature is normal, pulse is weak and rapid, and breathing is shallow. The person may have a headache, may vomit, may feel dizzy, and may be irritable or confused.

Treatment – Move the victim to a cool, air-conditioned or temperature-controlled area, loosen clothing, place in a position with the head lower than the feet (shock prevention), and allow the victim to rest. Consult a physician. Have the victim drink 1 to 2 cups of water immediately, and every 20 minutes thereafter until symptoms subside. Seek medical attention at the advice of the consulting physician.

Heat Stroke

Heat stroke is an acute and dangerous reaction to heat stress caused by a failure of the body's heat regulating mechanisms (i.e., the individual's temperature control system [sweating] stops working correcdy). Body temperature rises so high that brain damage and death may result if the person is not cooled quickly.

Symptoms – Red, hot, dry skin (although the person may have been sweating earlier); nausea, dizziness, confusion, extremely high body temperature, rapid respiratory and pulse rate, seizures or convulsions, unconsciousness or coma.

Treatment – Immediately call for emergency medical assistance. Remove the victim from the source of heat and cool the victim quickly. If the body temperature is not brought down quickly, permanent brain damage or death may result. Soak the victim in cool (not cold) water, sponge the body with cool water, or pour water on the body to reduce the temperature to a safe level (less than 102°F). Monitor the victim's vital signs. If possible, have the victim drink cool water. Do not give the victim coffee, tea, or alcoholic beverages.

Recognition and Risk Assessment

In the planning stages of a project, the potential for heat stress disorders must be considered as a physical hazard in the site-specific Health and Safety Plan (HASP). Risk assessment can be accomplished in the development stages of a project by listing in the HASP the most likely heat stress disorders that may occur. The Field Safety Officer (FSO) must make decisions on the proper safety procedures and recommend them to the site manager. Each worker must evaluate the risk associated with his or her work and be actively alert to these hazards. Any site worker may stop work if safety procedures are not followed or the risk is too great. In addition, all site personnel must be aware of these symptoms in both themselves and their co-workers.

Prevention and Protection Programs

Heat stress is affected by several interacting factors including, but not limited to, age, obesity, physical condition, substance abuse, level of personal protective equipment (PPE) worn, and environmental conditions (temperature, shade, and humidity). Site workers must learn to recognize and treat the various forms of heat stress. The following recommendations should be followed to prevent heat stress:

- The most important measure to prevent heat-related illness is adequate fluid intake. Workers should drink 1/2 to 1 quarts of liquids per hour in high heat conditions. Most of this liquid should be water. Under heavy work and heat conditions, the body may lose up to 2 gallons of fluids per day. To prevent heat stress symptoms, the individual must ensure replacement of this fluid.
- Provide disposable cups that hold about 4 ounces, and water that is maintained at 50 to 60°F. Workers should drink 16 ounces of water before beginning work, and a cup or two at each break period.
- Provide a shaded area for rest breaks. Ensure that adequate shelter is available to protect personnel against heat and direct sunlight. When possible, shade the work area.
- Discourage the intake of caffeinated drinks during working hours.
- Monitor for signs of heat stress.
- Encourage workers to maintain a good diet during these periods. In most cases, a balanced diet and lighfly salted foods should help maintain the body's electrolyte balance. Bananas are especially good for maintaining the body's potassium level.
- If utilizing commercial electrolyte mixes, double the amount of water called for in the package directions. Indications are that "full-strength" preparations taken under high heat stress conditions may actually decrease the body's electrolytes.
- Acclimate workers to site work conditions by slowly increasing workloads (i.e., do not begin work activities with extremely demanding tasks).
- Rotate shifts of workers who are required to wear impervious clothing in hot weather.
- Encourage workers to wear lightweight, light-colored, loose-fitting clothing.
- In extremely hot weather, conduct field activities in the early morning and evening.
- Provide cooling devices to aid natural body heat regulation. These devices, however, add weight and their use should be balanced against worker efficiency. An example of a cooling aid is long cotton underwear, which acts as a wick to absorb moisture and protect the skin from direct contact with heat-absorbing protective clothing.
- Good hygienic standards must be maintained by frequent showering and changes of clothing.
- Clothing should be permitted to dry during rest periods.
- Whenever working in the sun, provide employees with sunscreen with both UVA and UVB protection.
- Persons who notice skin problems should immediately consult medical personnel.

Heat Stress Monitoring and Work Cycle Management

When strenuous field activities are part of on-going site work conducted in hot weather, the following guidelines should be used to monitor the body's physiological response to heat, and to manage the work cycle, even if workers are not wearing impervious clothing. These procedures should be instituted when the temperature exceeds 70°F and the tasks/risk analysis indicates an increased risk of heat stress

problems. Consult the HASP and a safety professional (e.g., Division EHS Manager, FSO) if questions arise as to the need for specific heat stress monitoring. In all cases, the site personnel must be aware of the signs and symptoms of heat stress and provide adequate rest breaks and proper aid as necessary.

Measure Heart Rate – Heart rate should be measured by the radial pulse for 30 seconds as early as possible in the rest period. The heart rate at the beginning of the rest period should not exceed 110 beats per minute. If the heart rate is higher, the next work period should be shortened by 33%, while the length of the rest period stays the same. If the pulse rate still exceeds 110 beats per minute at the beginning of the next rest period, the following work cycle should be further shortened by 33%. The procedure is continued until the rate is maintained below 110 beats per minute.

Measure Body Temperature – When ambient temperatures are over 90°F, body temperatures should be measured with a clinical thermometer as early as possible in the rest period. If the oral temperature exceeds 99.6°F (br 1 degree change from baseline) at the beginning of the rest period, the following work cycle should be shortened by 33%. The procedure is continued until the body temperature is maintained below 99.6°F (or 1 degree change from baseline). Under no circumstances should a worker be allowed to work if their oral temperature exceeds 100.6°F.

Measure Body Water Loss – Body water loss greater than 1.5% of total body weight is indicative of a heat stress condition. Body weight is measured before PPE is donned and after the PPE is removed following a work cycle. Body water loss can be measured with an ordinary bathroom scale; however, the scale must be sensitive to one-half pounds increments. A worker is required to drink additional fluids and rest if their body water loss is greater than 1.5%.

NOTE: For purposes of this operating practice, a break is defined as a 15-minute period and/or until an individual's vital signs are within prescribed guidelines.

A physiological monitoring schedule is determined by following the steps below:

- Measure the air temperature with a standard thermometer.
- Estimate the fraction of sunshine by judging what percent the sun is out (refer to Table 1).
- Calculate the adjusted temperature based on the following formula:

  Adjusted Temperature = Actual Temperature + 13 X (where X = sunshine fraction from Table 1)
- Using Table 2, determine the physiological monitoring schedule for fit and acclimated workers for the calculated adjusted temperature.

The length of work period is govemed by frequency of physiological monitoring (Table 2). The length of the rest period is govemed by physiological parameters (heart rate and oral temperature).

Table **1.** Percent Sunshine Factors
Heat Stress Prevention and Monitoring

Percent Sunshine (%)	Cloud Cover	Sunshine fraction
100	No cloud cover	1.0
50	50% cloud cover	0.5
0	Full cloud cover	0.0

Table 2. **Physiological Monitoring Schedule**
Heat Stress Prevention and Monitoring

Adjusted Temperature	**Level D** (Permeable clothing)	Level C, B, or A (Nonpermeable clothing)
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°F (30.8° - 32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5° - 87.5°F (28.1° - 32.2°C)	After each 90 minutes of work	After each 60 minutes of work
77.5° - 82.5°F (25.3° - 28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5° - 77.5°F (22.5° - 25.3°C)	After each 150 minutes of work	After each 120 minutes of work

Example: Site personnel anticipate wearing level C (impermeable clothing) during site activities. The air temperature is 80°F and there are no clouds in the sky (100% sunshine). The adjusted temperature is calculated in the following manner:

Adjusted Temperature (Adj T °F) = Actual Temperature (Amb T °F) + (13 x sunshine fraction)
Adj T °F = 80°F + (13 x 1.0)
Adj T °F = 93°F

Using Table 2, the pulse rate, oral temperature and body water loss monitoring would be conducted after each 15 minutes of work. The adjusted temperature may need to be redetermined if the percent sunshine and ambient temperature changes drastically during site work.

If an individual's heart rate exceeds 110 beats per minute at the beginning of the rest period, that individual will continue to rest until his or her heart rate drops to baseline; the next work period is then decreased by 33%.

FLD 11 ROUGH TERRAIN/ATV USE

RELATED FLDs

FLD 02 – Inclement Weather
FLD 05 – Heat Stress Prevention and Monitoring
FLD 06 – Cold Stress
FLD 22 – Heavy Equipment Operation
FLD 47 – Clearing, Grubbing, and Logging Operations
FLD 57 – Motor Vehicle Safety

HAZARD

Physical hazards associated with rough terrain include vehicle accidents, heavy equipment incidents, failing, slipping, and tripping.

Driving vehicles on uneven surfaces creates a possibility of the vehicle rolling, getting stuck in mud or ditches, or of an accident due to flat tires or striking obstacles and other vehicles.

When working on foot, step inclines and heavy or downed vegetation can hide holes or breaks in the terrain, increasing the risk of slips, trips, and falls.

RECOGNITION AND RISK ASSESSMENT

Rough terrain complicates work activities and adds to or increases risk. In the planning stages of a project, rough terrain must be considered as a physical hazard and identified in the site-specific health and safety plan (HASP). Risk assessment is usually accomplished from site history information (i.e., site topography) and on site by the Field Safety Officer (FSO).

HAZARD PREVENTION AND PROTECTION PROGRAMS

Safety on Foot

Personnel working on rough terrain should maintain a high level of physical conditioning due to increased body stress and exertion.

The site crew should be alert and observe terrain while walking to minimize slips, trips, and falls.

Boots should be ankle high or higher to provide additional support and stability.

Work will be completed in adequate natural light or sufficient illumination will be maintained.

Site personnel will conduct an initial walkover and the "buddy system" will be implemented.

Emergency communications such as a cell phone or two-way radio should be carried at all times.

Personnel should be aware of potential hazards and ensure the availability of first-aid supplies and knowledge of the location of the nearest medical assistance.

VEHICLE SAFETY

Vehicle drivers and passengers will wear seatbelts at all times.

Hazards can be prevented by ensuring regular maintenance is performed on vehicles and all safety features are working. Have brakes and wheel bearings of vehicles used off road or in four wheel drive inspected at increased frequency (suggest inspections at twice the manufacturer's recommended frequency).

In order to minimize accidents, site surveillance on foot may be required to ensure clear driving paths.

Minimize side hill travel. Travel straight up and down hills whenever possible. Passengers will not be allowed when side hill travel is required.

Take into account loads or superstructure of vehicles which raise the center of gravity and increase risk of tipping.

Cross streams, small logs or other passable (there is adequate clearance of the undercarriage) obstructions at right angles.

Four wheel drive vehicles should be used if terrain conditions are wet, frozen, broken, or otherwise deemed unsafe for two wheel drive vehicles by the FSO. Use of vehicles off-road will be specifically addressed in the HASP and personnel operating vehicles will be checked for proficiency.

- Before moving a vehicle in the field, first walk the route of travel, inspecting for depressions, stumps, gullies, ruts, and similar obstacles.
- Always check the brakes of a vehicle before traveling, particularly on rough, uneven, or hilly ground.
- Check the complete drive train of a carrier at least weekly for loose or damaged bolts, nuts, studs, shafts, and mountings.
- Engage the all wheel drive when traveling off highway on hilly terrain.
- Increase tire pressures before traveling in hilly terrain (do not exceed rated tire pressure).
- Use the assistance of someone on the ground as a guide when lateral or overhead clearance is close.
- After the vehicle/equipment has been moved to a new site, set all brakes and/or locks. When grades are steep, block the wheels.

Definitions

Class I, All-terrain vehicle (ATV): A motorized off-highway vehicle, 50 in. (127 cm) or less in width, having dry weight of 800 lbs (362.9 kg) or less, and traveling on three or more low pressure tires (10 lbs [4.5 kg] psi or less), with a seat designed to be straddled by the operator.

Class I, Category G, ATV: An ATV intended for general recreational and utility use.

Class I, Category U, ATV: An ATV intended primarily for utility use.

Class II, ATV: A motorized off-highway vehicle with a width which exceeds 50 in. (127 cm) or having a dry weight that exceeds 800 lbs (362.9 kg), traveling on four or more low-profile, low-pressure tires (10 lbs [4.5 kg] psi or less) and having a bench seat.

NOTE: Utility Vehicles are designed to perform off-road utility tasks such as passenger and cargo transportation and are addressed separately below. Examples are Rangers, Rhino, M-Gators, Gators, and Mules.

Rollover Protective Structure (ROPS). A cab or frame that provides a safe environment for the tractor operator in the event of a rollover.

ALL TERRAIN VEHICLES (ATVS)

Qualifications

ATV operators will have completed a nationally recognized accredited ATV training course (such as provided by the Specialty Vehicles Institute of America or in-house resources that have been certified as trainers by an accredited organization) prior to operation of the vehicle.

The operator must pass an operating skills test prior to being allowed to operate an ATV. Proof of completion of this training will be maintained.

Equipment

All ATVs shall be equipped with:

- An operable audible warning device (horn);
- Headlights (if it will be used during hours of darkness);
- Taillights; and
- Brake lights.
- Mufflers and spark arresters.

All Class II ATVs will be equipped with ROPS and seatbelts

Operation

Only Class I and Class II ATVs with four or more wheels may be used. Class III ATV's may not be used.

The manufacturer's recommended payload will not be exceeded at any time.

Gloves and an approved motorcycle helmet with full-face shield or goggles will be worn at all times while operating a Class I ATV.

An ATV will not be driven on public roadways except to cross the roadway, and it will only be driven on a public roadway at designated crossing points or with a road guard (no paved road use unless allowed by the manufacturer).

A copy of the operator's manual will be kept on the vehicle and protected from the elements (if practicable).

Tires shall be inflated to the pressures recommended by the manufacturer.

Passengers are prohibited on Class I ATVs.

UTILITY VEHICLES

Utility vehicles are defined as specialty Class II ATVs designed to perform off-road utility tasks such as passenger and cargo transportation. Examples are Rangers, Rhino, M-Gators, Gators, and Mules.

Utility vehicle operators shall be trained and familiar with the use of all controls; understand proper moving, stopping, turning and other operating characteristics of the vehicle. Operators must review all training materials provided by the manufacturer for the specific vehicles, and training should be in accordance with appropriate manufacturer recommendations. A copy of the operator's manual shall be kept on the vehicle at all times and protected from the elements. At a minimum, training should address:

- Basic riding tips from the manufacturer's published literature for each vehicle.
- Reading terrain.
- Climbing hilly terrain.
- Descending a hill.
- Traversing a slope.
- Riding through water.
- Cargo carriers and accessories.
- Loading and unloading.
- Troubleshooting.
- Proper preventative maintenance, (i.e., oil levels, tire pressure requirements and scheduled maintenance requirements according to the manufacturer's guidelines.).

Utility vehicles shall be equipped with:

- Operable audible warning device (horn).
- Headlights.
- Taillights.
- Brake lights.
- Seatbelts.
- ROPS.

Occupancy in utility vehicles is limited to manufacturer designated seating that has built-in seatbelts. Passengers may not ride in the vehicle's back cargo area unless the vehicle is otherwise equipped. Note: When used for emergency response, medical litters may be placed in the back cargo area but must be secured as described below.

The manufacturer's recommended load carrying capacity, personnel capacity, or maximum safe vehicle speed shall not be exceeded at any time.

Cargo items will be secured as necessary to prevent movement/tipping. All loads over fifty pounds (to include medical litters) must be securely strapped to cargo tie-downs in the rear and to the cargo shelf in the front.

Seatbelts will be worn by operators and passengers of specialty vehicles where installed by the manufacturer. Operators and passengers shall wear goggles at all times when a utility vehicle, not equipped with a windshield, is in motion.

Utility vehicles will not normally be driven on public roadways except to cross the roadway, and will only be driven on a public roadway at designated crossing points or with a road guard. Utility vehicles that are allowed to operate outside a controlled work area and/or on public roads will meet the minimum vehicle safety standards in accordance with 49 CFR 571.5, to include ROPs, seatbelts and placement of "Slow Moving Vehicle" emblems where required.

Manufacturer-installed safety equipment will be maintained in working order and used in compliance with the requirement of this regulation and in accordance with manufacturer's recommendations.

RULES

Observe the following practices to help prevent accidents:

- Do not misuse utility vehicles.
- Reduce speed and exercise extreme caution on slopes or on rough ground.
- Do not overload vehicle and avoid shifting loads. Reduce load when operating over rough or hilly terrain.
- Do not stop or start suddenly when going uphill or downhill. Be especially cautious when changing direction on slopes.
- Stay alert for holes, rocks, and other hidden hazards in the terrain.
- Keep away from drop-offs, ditches, embankments, as well as ponds and other bodies of water. The machine could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.
- Keep front wheels straight at crest of hill or going over bumps.
- When descending a hill, remove foot from accelerator and apply brakes to reduce speed and maintain control.

Transport Loads Safely

- Be sure load is evenly distributed.
- Do not load above the load guard.
- Securely anchor all loads in cargo box.
- Reduce cargo box capacity when operating on rough or hilly terrain.
- Use existing trails. Avoid terrain such as dangerous slopes and impassable swamps. Watch carefully for sharp bumps, holes, ruts, or obstacles.
- Look ahead at terrain. Know what is coming and be prepared to react. Be alert for hazards.
- Keep front wheels straight at the crest of a hill or going over bumps.
- Reduce speed according to trail, terrain, and visibility conditions.
- The passenger should always use the hand holds.

Climbing or Descending a Hill

- Always use the brakes when going down slopes, the utility vehicle can speed up (freewheel) going down a slope. Engine or clutch braking effect is minimal.
- Balance loads evenly and secure them. Braking could shift the load and affect vehicle stability.
- Sit on the center of the seat and keep both feet within the foot platform.
- Never drive past the limit of visibility. Slow down near the crest of a hill until getting a clear view of the other side.
- If the vehicle stops or loses power going up a hill, lock the park brake to hold the vehicle on slope. Maintain direction of travel and release the brake slowly. Back straight down hill slowly while maintaining control. Do not turn the vehicle sideways. The vehicle is more stable in a straight forward or rearward position.
- If the utility vehicle begins to tip, turn the front wheel downhill to gain control before proceeding.

Riding Through Water

- Avoid water whenever possible. If the drive belt becomes wet, slippage will occur and the vehicle will lose power.
- Never cross any body of water where the depth may be unknown to the operator. As an operational guideline, deep water is considered anything in excess of 152 mm (6 in.) in depth. Tires may float, making it difficuh to maintain control.
- Choose a course within the waterway where both banks have a gradual incline. Cross at a point known to be safe.
- Proceed at a slow steady speed to avoid submerged obstacles and slippery rocks.
- Avoid water crossings where the operation of a utility vehicle may cause damage to waterway beds or erode waterway shoreline.

FLD 12 HOUSEKEEPING

Hazards associated with poor housekeeping include but are not limited to slips, trips, falls, punctures, cuts, and fires. Good housekeeping is a critical element when working under all FLDs. Housekeeping inspection checklists are available on-line on the Weston Environmental, Health, and Safety (EHS) Portal site.

RECOGNITION AND RISK ASSESSMENT

Good housekeeping is an important element of incident prevention. Good housekeeping should be planned at the beginning of the job and carefully supervised and monitored through project completion.

Housekeeping requirements must be addressed in the planning stages of a project Health and Safety Plan (HASP). Risk assessment can be accomplished in the development stages of a project by listing in the site-specific HASP, good housekeeping requirements and the hazards associated with poor housekeeping (e.g., slips, trips and falls). The Field Safety Officer (FSO) must make decisions on the proper safety procedures and recommend them to the site manager. Each worker must evaluate the risk associated with his or her work and be actively alert to these hazards. Any site worker may stop work if safety procedures are not followed or the risk is too great.

PREVENTION AND PROTECTION

Incidents can be prevented or minimized by following the general guidelines described below:

1. Plan ahead. A materials storage area which has been planned is more orderly than one which has developed haphazardly.
2. Assign responsibilities. If the size of the job and work force merit, a person should be assigned specific responsibility for clean up. Ideally, each individual should pick up his or her work area and help keep the site neat.
3. Implement the program. Housekeeping must be part of the daily routine, with clean-up being a continuous procedure.

Incidents caused by poor housekeeping can also be prevented by adherence to the following rules.

Lunch areas should be kept clear of empty bottles, containers, and papers. Trash disposal cans should be provided. An effective means of preventing litter is the provision of suitable receptacles for hazardous waste as well as no hazardous waste.

Accumulation of flammable and combustible liquids on floors, walls, and other areas is prohibited. All spills of flammable and combustible liquids must be cleaned up immediately.

Combustible waste such as soiled rags and paper is to be stored in a safe place (e.g., covered metal container) and disposed of regularly.

Materials must be stacked and stored to prevent sliding or collapsing.

WESTON project managers and WESTON subcontractors should provide sufficient personnel and equipment to ensure compliance with all housekeeping requirements.

Work will not be allowed in areas that do not comply with the requirements of this FLD.

The FSO and WESTON subcontractors will inspect the work area daily for adequate housekeeping and record findings on the daily inspection report.

Adequate lighting should be provided in or around all work areas, passageways, stairs, ladders, and other areas used by personnel.

All stairways, passageways, gangways, decontamination lines, and accessways shall be kept free of materials, supplies, and obstructions at all times.

Loose or light material should not be stored or left on roofs or floors that are not enclosed, unless it is safely secured.

Tools, materials, extension cords, hoses, or debris are to be used, disposed of, and stored so as not to cause a tripping or other hazard.

Tools, materials, and equipment subject to displacement or falling should be adequately secured.

Empty bags that contained lime, cement, and other dust-producing materials should be removed periodically, as specified by the designated authority.

Protruding nails in scrap boards, planks, and timbers should be removed, hammered in, or bent over flush with the wood, unless placed in containers or trucks for removal.

Walkways, runways, and sidewalks should be kept clear of excavated material or other obstructions and no sidewalks should be underruined unless shored to carry a minimum live load of 125 pounds per square foot.

Containers should be provided for storing or carrying rivets, bolts, and drift pins, and secured against accidental displacement when aloft.

When rivet heads are knocked off or backed out, they should be prevented from falling.

Form and scrap lumber and debris should be cleared from work areas, passageways, and stairs in and around building storage yards and other structures.

All storage and construction sites should be kept free of the accumulation of combustible materials.

All materials should be maintained in neat stockpiles for ease of access. Aisles and walkways should be kept clear of loose materials and tools.

Areas prone to weeds and grass should be kept mowed. A standard procedure should be established for cleanup of such areas, as specified by the FSO.

Rubbish, brush, long grass, or other combustible material must be kept from areas where flammable and combustible liquids are stored, handled, or processed.

FLD 14 SITE SECURITY AND VIOLENCE-FREE WORKPLACE

RELATED FLDs

FLD39 – Illumination

PROCEDURE

When WESTON's responsibilities include site control or security as in WESTON Office locations, one aspect to be addressed in the Site Health and Safety Plan (HASP), Business Continuity Plan, and Emergency Action Plan is security, or maintaining control of access to the site. Contingency plans are required to deal with unauthorized entry. Inquisitive and/or hostile persons may interfere with the site activities or work effort, jeopardizing their safety, as well as the safety of the field team.

Recognition and Risk Assessment

In the planning stages of a project and safety plan, the potential for security problems must be considered as physical hazards in the site-specific HASP. Risk assessment can be accomplished in the development stages of a project by listing in the HASP the most likely security problems that may be encountered. The Field Site Officer (FSO) must make decisions on the proper safety procedures and recommend them to the site manager. Each worker must evaluate the risk associated with his or her work and be actively alert to these hazards. Any site worker may stop work if safety procedures are not followed or the risk is too great.

Entry to a site by unauthorized persons presents risks to the persons entering and to WESTON personnel who may have to interact with such individuals. In many cases, the unauthorized entry is accidental or unintentional; however, contingency plans must also include procedures for instances when unauthorized entry is deliberate or for purposes which could pose a threat to site personnel.

During the assessment of risk for each site, security problems must be identified. The contingency plan should identify ways to prevent and respond to security problems. Security problems may arise from the site neighborhood due to:

- Socio-economic factors
- Client/neighbor relations
- Client/labor relations
- Poor lighting
- Remoteness and size of site
- Value of equipment and materials
- Sampling equipment tampering

Prevention and Protection Program

Prevention programs are an integral portion of Business Continuity and Emergency Action Plans or Security Contingency Plans. An effective preventative measure is to inform all interested parties of the site activities. An attempt should be made to notify state and local police, the fire department, and any local/state government officials of the project's purpose and scope. This will allow those authorities to answer questions posed to them by local residents and the media by preparing statements on the project's purpose or by informing the public where to call for further information. This will alleviate the problem of work stoppage due to field personnel answering questions.

One must ensure that the client understands and approves of any information released. In most cases, the liaison should be between the client and the public.

The Security Contingency Plan must:

- Identify the person responsible for implementing the Contingency Plan
- Establish the safety of WESTON personnel as the first priority
- Be designed to minimize the potential for confrontation and to obtain security assistance as quickly as possible
- Assign the enforcement of security functions to properly trained and authorized or bonded agencies
- Establish a communication procedure for obtaining assistance
- Be communicated to site personnel

Security problem prevention measures include:

- Community relations programs
- Visible security precautions (e.g., fences, "keep out" signs)
- Locking doors that are unattended during working hours and all doors during non-working hours
- Carefully defined rules/requirements for authorizing site access
- Clearly delineated access points and barriers around work area
- Vigilance by all site personnel
- Adequate lighting
- Working in pairs or teams in sensitive areas
- Locking and storing equipment securely
- Using discretion in discussions and conversations when off-site
- Working to avoid confrontation

In short, security prevention includes not advertising activities or inviting intrusion. Telephone numbers and instmctions for obtaining security assistance must be clearly posted onsite.

Personnel onsite must always have access to communications. These communications may be to additional onsite personnel or, in certain situations, communications by team members to outside response agencies may be necessary.

Workplace Violence

Workplace violence has become an unfortunate concem for any employer and employee. Workplace violence has proven to have little regard for location or status of the workplace. The information provided in Appendix A is considered guidance for developing awareness and violence prevention programs. The key to preventing workplace violence is to develop an objective awareness of all aspects of our work environment including the people within it.

Terrorism

Terrorist events in recent years have added the need to ensure that Emergency Action Plans address bomb threats and precautions to reduce the potential for terrorist activities.

Bomb Threats

WESTON's association with environmental issues has led to past experiences where local elements have identified WESTON with regulators and have threatened violence against WESTON personnel or property. Precautions to be taken include those listed above under security problem prevention and the following:

- Ensure that site and office personnel are made aware when WESTON activities increase the potential for work place violence.
- Use care in discussing involvement in Department of Defense, Department of Energy or other politically or socially sensitive issues outside of work.
- Train persons receiving and handling mail and deliveries in what to look for as potential for inflicting violence on a WESTON person or workplace. Examples include:
  - Misspelled words
  - Handwritten addresses
  - Mail from foreign countries
  - Excessive tape or postage
  - Restrictive markings (e.g., Confidential)
  - No return address

Emergency Action Plans must identify procedures to be taken if suspicious packages are received.

APPENDIX A
WESTON SOLUTIONS, INC.
VIOLENCE-FREE WORKPLACE GUIDANCE

WESTON SOLUTIONS, INC.
VIOLENCE-FREE WORKPLACE GUIDANCE

1. PURPOSE

Weston Solutions, Inc. (WESTON) is committed to providing a safe workplace and high standards of health and safety for employees. Consistent with this commitment, the Company establishes this Violence-Free Workplace Guidance to define its zero-tolerance policy regarding workplace violence and to describe the programs that will support that policy.

2. POLICY

It is WESTON's policy that violence will not be tolerated from any WESTON employee whether at or away from any work area, activity, or function. All reasonable and legal steps will be taken by WESTON staff and managers in the performance of their daily work activities to ensure that harassing, intimidating, threatening, or assaulting behaviors are avoided or prevented, and if observed are appropriately addressed. Any such behavior by a WESTON employee will be investigated and disciplinary action will be swift and severe if violent behavior is verified.

This policy also applies to threats or acts of violence perpetrated on WESTON work sites by non-WESTON personnel. WESTON employees will report instances of such behavior to their supervisors, and supervisors will take appropriate actions to protect potential victims and report improper behavior to the authorities.

3. TRAINING

There are no regulatory requirements for training on the topic of preventing workplace violence, and this Guidance does not impose strict requirements for training employees on the topic. However, information regarding prevention of workplace violence will be disseminated as part of standard employee training sessions such as new employee indoctrination, management skills training, and refresher training for field staff In addition, short training sessions ("brown-bag" courses) will occasionally include the information in this Guidance and related topics such as protection against violent acts such as robbery, car-jacking, and road rage, identifying situations that increase the likelihood of violence, and recognizing warning signs that predict violent behavior.

Indicators that may signal the risk potential of violent episodes

The risk of workplace violence can be minimized by the careful observation of behavior. Specif c stress factors, behaviors, and personality traits have been associated, after the fact, with almost every incident of workplace violence. The presence of several of these indicators greatly increases the likelihood of violent actions. Most people will not just "snap". An escalating series of clues usually precedes an act of workplace violence. The risk of a violent outburst is greatiy increased when a combination of the following warning signs are ignored.

- Boundary crossing includes pushing the limits of acceptable workplace behavior and continual testing of established rules.
- Chemical dependence upon alcohol and/or drugs may agitate or create paranoia and aggressive behavior.
- Concentration problems such as difficulty recalling instructions, forgetfulness, repetition of errors, and staring into space indicate a troubled employee.

- Depression causes nearly one in seven sufferers to commit a violent act either upon themselves or others. Symptoms of depression include; despair, ambivalence, slowed work pace, continual sad or blank facial expressions, withdrawal, self-condemnation and self-destructive behavior, hopelessness, helplessness, inappropriate guilt/shame, and poor personal hygiene.
- History of violence, including domestic abuse, is the best predictor of violent behavior.
- Inconsistent work patterns and attendance problems include periods of very high and very low productivity as well as unexplained or improbable excuses for absences.
- Obsessive interest in weapons and violent incidents may be revealed in casual conversations. An obsession with an impending apocalypse, or destruction of the world, is also common among unstable individuals.
- Obsession with job may cause a deeper sense of loss in the case of a poor performance review or termination. These individuals may be loners, having little else of importance in their lives.
- Pathological "blamers" cannot take responsibility for their own actions. They will not admit wrongdoing, even for minor mistakes, always blaming other people, the organization, or the system.
- Personality disorders can resuh in antisocial behavior such as repeated fighting and domestic violence. These individuals have little remorse about wrongdoing and will find ways to justify their violent behavior. Mood shifts, inappropriate anger, skillful manipulation of others, and preoccupation with self are indicators of personality disorder.
- Personal stress can result in excessive personal phone calls, desk pounding or throwing of objects, crying, lapses in attention, and general frustration with the surrounding environment. Debt, separation, divorce, or the death of a relative can all cause excessive stress.
- A pattern of poor interpersonal relationships may result in belligerence, overreaction to criticism, and verbal harassment.
- Psychosis is a loss of contact with reality which may be manifested as paranoia, loss of association during conversations, flat facial expressions, extreme ambivalence, hallucinations, poor insight, talking to self, or bizarre delusions.
- Romantic obsession is a fixation upon and idealized romantic love for another person. Behavioral signs may include stalking, numerous phone calls, spying, and unwanted visits and gifts.
- Safety issues like recklessness and a sudden increase in accident rate reveal lapses in concentration and disregard for personal/coworker safety.
- Unusual/changed behavior includes verbal outbursts, inappropriate remarks, and threats such as "they'll regret this". A series of escalating threats is a particularly important indicator of the potential violent actions.
- Paranoia - inational thoughts of being "Set-up."

If an employee begins demonstrating any or a combination of the above indicators, it is important that management is informed and consults with the Manager of Human Resources to refer him or her to the Employee Assistance Program (EAP) or other counseling services as appropriate. It is imperative to respond in an empathic, caring and non-shaming manner, remembering that time is of the essence.

Oftentimes, violence in the workplace is committed by someone from outside a company. Therefore, when possible, it is important to have surveillance at the entrance of the office location or control using secured access. The following situations indicate a potential threat:

- The spouse or partner of an employee who is in an abusive relationship
- Rejected suitors, partners involved in divorce or separation procedures
- Ex-employees who have been fired or laid off
- Disgruntled customers
- Person committing armed robbery
- Persons involved in gang activities

Types of workplace violence and their characteristics

Workplace violence occurs in a variety of forms. These "types" are violence by strangers, violence by customers or clients, violence by co-workers, and violence by personal relationships. These types of workplace violence and their specific characteristics are described below:

Type 1: Violence by strangers -- involves verbal threats, threatening behavior or physical assaults by an assailant who has no legitimate business relationship to the workplace. The person enters the affected workplace to commit a robbery or criminal act. Violence by strangers is responsible for the majority of fatal injuries related to workplace violence nationally. Workplaces at risk of violence by strangers commonly include late-night retail establishments and taxi cabs.

Type 2: Violence by presumably affected parties -- involves verbal threats, threatening behavior or physical assaults by an assailant who either receives services from or is under the custodial supervision of the affected workplace or the victim. Assailants may have known or perceived claims against a client or stakeholder in a project or in the case of a labor dispute with WESTON or a subcontractor.

Type 3: Violence by co-workers -- involves verbal threats, threatening behavior or physical assaults by an assailant who has some employment related involvement with the workplace—a current or former employee, supervisor or manager, for example. Any workplace can be at risk of violence by a co-worker. In committing a threat or assault, the individual may be seeking revenge for what is perceived as unfair treatment. This type of violence accounts for a much smaller proportion of the fatal workplace injuries than violence by strangers.

Type 4: Violence by personal relations -- involves verbal threats, threatening behavior or physical assaults by an assailant who, in the workplace, confronts an individual with whom he or she has or had a personal relationship outside of work. Personal relations include a current or former spouse, lover, relative, friend or acquaintance. The assailant's actions are motivated by perceived difficulties in the relationship or by psycho-social factors that are specific to the assailant.

4. REQUIREMENTS

Violent behavior is considered indicative of personality characteristics that WESTON chooses to avoid in new hires and employees. As a result, WESTON may not hire individuals who have been convicted of violent activities. WESTON managers will verify the result of any background checks, references, or referrals and will carefully weigh any evidence of past violent actions in their consideration of candidates for hire.

WESTON will train its managers to recognize violent actions and tendencies, and requires that they investigate and respond in a timely and appropriate manner to any reported acts of violence by an employee. Managers shall consult with the Headquarters Managers of Human Resources and Environmental Health and Safety as necessary to determine an appropriate course of action. In addition, managers will be trained to recognize potentially inflammatory situations and handle them in ways that will not encourage violent behavior.

Employees are prohibited from bringing weapons that are clearly not required for the performance of work duties, such as firearms, onto work premises, including parking lots. WESTON reserves the right to inspect and search any item on the company's premises, including personal vehicles that are present in parking lots at any company work site. Employees may not consider any personal item brought to the workplace as exempt from search and inspection procedures.

Former employees and off-duty employees are prohibited from entering WESTON work areas unless required in the course of normal business activities and approved by a WESTON manager.

Disciplinary actions for workplace violence may range from counseling an employee to immediate termination of employment with WESTON. The latter may be enacted in cases of flagrant acts of physical violence and other cases warranting such action as determined by the Managers of Human Resources and Corporate Environmental Health and Safety.

Employees are encouraged to report any concerns or observations including threats, harassment, physical attacks, and domestic problems that may affect work performance to their supervisors. Supervisors will take appropriate measures to address violent acts by workers and to prepare for potential consequences at work that may result from domestic problems reported by employees.

Emergency action plans as part of each office's business continuity must address workplace security and actions to avoid and react to workplace violence.

FLD 19 WORKING OVER OR NEAR WATER

RELATED FLDs

FLD02 – Inclement Weather
FLD05 – Heat Stress Prevention and Monitoring
FLD06 – Cold Stress
FLD18 – Operation and Use of Boats
FLD22 – Heavy Equipment Operation
FLD23 – Cranes, Rigging, and Slings
FLD24 – Aerial Lifts/Manlifts
FLD25– Working at Elevation/Fall Protection

RECOGNITION AND HAZARD ASSESSMENT

Hazards associated with working around water include drowning, frostbite, hypothermia, and/or injury from falling into the water. Heat stress hazards may also be present. Carelessness, horseplay, or other unsafe acts could cause injury to personnel working over or near water. There are also hazards associated with unfrained personnel operating equipment. Lack of personal protective equipment (PPE) or misuse of PPE could result in injury or death.

Proper precautions should be taken at all times when personnel are working over or near water. Whenever there is a body of water in close proximity to a work location, the proper safety procedures should be implemented. Requirements for equipment or procedures will be based on an evaluation of work tasks, drowning, and injury potential.

New field team members should be thoroughly indoctrinated in safe work practices pertinent to the work to which they are assigned.

PREVENTION AND PROTECTION PROGRAM

When working over or near water where there is potential for drowning, engineering controls such as installation of guardrails, toeboards, and other PPE such as safety line systems, shall be used to prevent personnel from falling into the water. In addition, flotation devices must be worn and other lifesaving devices must be present. Personal flotation devices (PFDs) should be designed to float unconscious or helpless persons face up.

Safety Nets

Safety nets must be provided when workplaces are more than 25 feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.

- Where safety net protection is required, operations shall not be undertaken until the net is in place and has been tested.
- Nets shall extend 8 feet beyond the edge of the work surface where employees are exposed and shall be installed as close under the work surface as practical, but in no case more than 25 feet below such work surface. Nets shall be hung with sufficient clearance to prevent user's contact with the surfaces or stmctures below. Such clearances shall be determined by impact load testing.
- It is intended that only one level of nets be required for bridge construction.

Personnel should be discouraged from jumping to or from any craft which is not secured, and from jumping between craft when a gangplank should be used.

Fall protection should be provided when working over or near water where there is a potential for falling or slipping into the water.

In areas subject to tidal flow or rising water levels, the Field Safety Officer (FSO) will monitor the water level to ensure that employees will not be frapped between a work area and the water level.

Life Saving Equipment

Equipment and procedures will conform to U.S. Coast Guard (USCG) and/or Occupational Safety and Health Administration (OSHA) requirements and applicable local regulations.

Personnel working over or near water shall be provided with USCG-approved PFDs (life jackets or buoyant work vests), which shall be wom whenever there is potential drowning hazard. PFDs should be designed to float unconscious or helpless persons face up.

Prior to and after each use, PFDs and life preservers shall be inspected for defects which would alter their strength or buoyancy (e.g., rips, tears, holes). All defective units shall be removed from the site and replaced. At no times will defective units be used.

USCG-approved life rings (rope attachment not required) and ring buoys (rope attachment required) should have attached at least 90 feet of 3/8-inch solid braid polypropylene rope or equal. The life rings or ring buoys shall be readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet. One ring buoy or life ring shall be provided on each lifesaving skiff.

Lights conforming to 16 CFR 161.012 will be required whenever there is a potential need for life rings to be used after dark. Lights on life rings are required only in locations where adequate general lighting (e.g., floodlights) is not provided.

In locations where waters are rough or swift, or where manually-operated boats are not practical, a power boat suitable for the waters shall be provided and equipped for lifesaving.

The maximum number of passengers and weight that can safely be transported shall be posted on all launches, motorboats, and skiffs. This number shall not be exceeded and in no case shall the number of passengers (including crew) exceed the number of PFDs aboard. Outboard motors and skiffs shall meet the minimum flotation requirements of the USCG. A certification tag affixed to the hull is satisfactory evidence of compliance. An efficient whistle or signal device shall be provided on all powered vessels to give signals required by the navigation mles applicable to the waters on which the vessel is operated.

Any vessel, except those easily boarded from the water, shall provide at least one portable or permanent ladder of sufficient length to rescue a person overboard.

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- The mesh size of nets shall not exceed 6 inches by 6 inches. All new nets shall meet accepted performance standards of 17,500 foot-pounds minimum impact resistance, as determined and certified by the manufacturer, and shall bear a label of proof test. Edge ropes shall provide a minimum breaking strength of 5,000 pounds.

General Safety Precautions

Work shall be halted when significant wave action exists.

All general safety precautions will be adhered to when working over or near water to prevent accidents caused from careless behavior or horseplay.

Only personnel who are trained in the operation of marine equipment (e.g., boats, barges) will be allowed to operate the equipment.

Ramps for vehicle or personnel access to or between barges shall be of adequate strength, provided with guard rails, well-maintained and properly secured. For personnel access, a safe walkway may be substituted for the ramp. All access routes and passageways shall be kept free of ice, snow, grease, mud, and other obstmctions. Nonslip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways, particularly on the weather side of all doorways opening on deck.

Guardrails, bulwarks, or taut cable guardlines shall be provided for deck openings, elevated surfaces, and similar locations where persons may fall or slip. They shall be at least 42 inches high and have an intermediate rail.

If a Jacob's ladder is used, it will be of the double-rung or flat-tread type. It will be well-maintained and properly secured. The ladder will either hang without slack from its lashings or be pulled up entirely. When the upper end of the access-way rests on or is flush with the top of the bulwark (side of the ship above the upper deck), steps, properly secured and equipped with at least one hand rail approximately 33 inches in height, shall be provided between the top of the bulwark and the deck.

Obstmctions will not be laid on or across gangways. The access-way will be adequately illuminated for its full length. All attempts will be made to place the access-way in a position that the load will not pass over personnel.

Any obstmction in a passageway that restricts normal passage shall be posted with warning signs or distinctively marked. Employees shall not be permitted to pass fore and aft, over or around the deck loads unless there is a safe passage. Decks and other working surfaces will be maintained in a safe condition and adequate safe walkways will be maintained for passage around the deck. All deck fittings and other obstmctions that present stumbling hazards shall be painted yellow or marked with yellow trim.

Personnel will not walk along the sides of covered barges with coamings (raised frame to keep out water) more than 5 feet high unless there is a 3-foot clear walkway, a grab rail, or a taut handline.

Unless railings or other suitable protection exists, all personnel will use suitable protection against falling and/or drowning.

First-aid supplies should be aboard all lifesaving craft (or readily accessible) and arrangements for ambulance service should be made as location changes.

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FLD 43A ANIMALS

Animals represent hazards because of their poisons or venoms, size and aggressiveness, diseases transmitted, or the insects they may carry.

Feral Animals

Landfills and abandoned buildings often attract stray or abandoned dogs. These animals often become pack-oriented, very aggressive, and represent serious risk of harm to unprotected workers.

Workers entering abandoned buildings should be alert for such animals and avoid approaching them since this may provoke aggressive behavior. Avoidance and protection protocols include watching for animal dens, using good housekeeping, and using repellents.

Dangerous Wild Animals

Work in remote areas inhabited by wild animals that have been known to cause injury and kill human beings, requires that companies working in these areas carefully plan for wildlife encounters. This FLD outlines actions that, when properly implemented, should provide a high degree of protection for WESTON employees and wildlife.

See Wildlife Hazard Recognition and Protection Procedure (Attached).

Venomous Snakes and Lizards

Venomous Shakes

Venomous snakes are common around the world. The major variables are the likelihood of encounter and the snake that is likely to be encountered. Encounters with snakes may be caused by moving containers, reaching into holes, or just walking through high grass, swampy areas, or rocks. Do not attempt to catch any snakes.

Symptom of venomous snake bites:

- Bloody wound discharge, blurred vision, buming, convulsions, diarrhea, dizziness, excessive sweating, fainting, fang marks in the skin, fever, increased thirst, local tissue death, loss of muscle coordination, nausea and vomiting, numbness and tingling, rapid pulse, severe pain, skin discoloration, swelling at the site of the bite, weakness.

Venom from venomous snakes and lizards can be divided into three types of toxins, however, there are some indications that snake venom may have more than one toxin and characteristics may change as a snake ages. The three types of toxins and their effects are:

Hemotoxins destroy blood cells and affect the circulatory system. The site of the bite rapidly becomes swollen, discolored, and painful. This is usually accompanied by swelling, discoloration, and pain progressing toward the heart.

Neurotoxins affect the nervous system and symptoms vary from foggy vision, dizziness, and other comparatively mild symptoms to rigid or flaccid paralysis, shortness of breath, weakness or paralysis of the lower limbs, double vision, inability to speak or swallow, drooping eyelids, and involuntary tremors of the facial muscles. Death can occur in as little as ten minutes, usually due to abrupt cessation of respiration.
Myotoxins destroy cells and cause muscle necrosis.

In the US, with the exception of the coral snakes which tend to have neuron-toxic venom, most venomous snakes have been categorized as having hemotoxic venom (in some areas Mojave rattlesnakes are found to have neuron-toxic venom). There is some indication that some species of rattlesnakes have both hemotoxic and neuron-toxic venom. It is also reported that venom of younger snakes may be more neuron-toxic

There are many are highly venomous snakes worldwide, some are deadly and most can be deadly without proper care.

Lizards

There are two lizards recognized as venomous, the Gila monster and the Mexican Beaded Lizard. Venom of the Gila monster is considered to be neuron-toxic and that of the Mexican Beaded Lizard is considered to be hemo-toxic.

Geographical Listing of Venomous Snakes and Lizards

Following is a list of poisonous snakes and lizards by geographic area. This list is extensive but may not be all inclusive. In planning for work around the world, also contact local agencies to determine whether there may be additional venomous snakes or lizards.

North America (including Mexico)

Copperheads (Broad-banded, Northern, Osage, Southern, Trans-Pecos)
Rattlesnakes (Banded rock, Black-tailed, Canebrake, Diamondback [eastern and western], Massasauga (eastern and westem), Mojave, Mottled rock, Pacific (northem and southern), Pigmy (southeastern and western), Prairie, Red diamond, Ridge-nosed, Sidewinder, Speckled, Tiger, Timber, Twin-spotted)
Coral Snake (Arizona, Eastern, Texas, Western (red bands touching yellow "bad fellow")
Cottonmouth or water moccasin (Eastern, Florida, Western)

North America - Lizards

Gila Monster

Central and South America – Venomous Snakes

Bushmaster, Eyelash Pit Viper, Fer-de-lance, Jumping Viper, Tropical Rattlesnake

Central and South America – Venomous Lizards

Mexican Beaded Lizard

Europe

Common Adder, Long-Nosed Adder, Pallas Viper, Ursini Viper

Venomous Snakes of Africa and Asia

Boomslang, Bush Viper, Common Cobra, Egyptian Cobra, Gaboon Viper, Green Mamba, Green Tree Pit Viper, Habu Pit Viper, Horned Desert Viper, King Cobra, Krait, Levant Viper, Malayan Pit Viper, McMahon's Viper, Mole Viper or Burrowing Viper, Palestinian Viper, Puff Adder, Rhinoceros Viper or River Jack, Russel's Viper, Sand Viper, Saw-Scaled Viper, Wagler's Pit Viper or Temple Viper,

Australasia

Australian Copperhead, Death Adder, Taipan, Tiger Snake,

Poisonous Sea Snakes

Banded Sea Snake, Yellow-bellied Sea Snake

Prevention of Bites

Key factors to working safely in areas where snakes or lizards may be encountered include:

- Be alert
- Use care when reaching into or moving containers
- Use sticks or long-handled tools when reaching where you cannot see
- Be familiar with the habits and habitats of snakes in the vicinity of an incident or site
- In areas or activities where encounters with snakes are likely, wear sturdy leather or rubber work boots and snake chaps
- Do not attempt to catch snakes unless required and qualified

A snake bite warrants medical attention after administration of proper first-aid procedures. It is important to contact local medical facilities to determine where anti-venoms are located.

First-Aid

1. Keep the person calm. Restrict movement, and keep the affected area below heart level to reduce the flow of venom.

2. Remove any rings or constricting items because the affected area may swell. Create a loose splint to help restrict movement of the area.

3. If the area of the bite begins to swell and change color, the snake was probably venomous.

4. Monitor the person's vital signs -- temperature, pulse, rate of breathing, and blood pressure if possible. If there are signs of shock (such as paleness), lay the person flat, raise the feet about a foot, and cover the person with a blanket.

5. Get medical help immediately.

6. Try to photograph or identify the snake. Do not waste time hunting for the snake, and do not risk another bite. Be careful of the head of a dead snake. A snake can actually bite for up to an hour after it is dead (from a reflex).

- DO NOT allow the person to become over-exerted. If necessary, carry the person to safety.
- DO NOT apply a tourniquet.
- DO NOT apply cold compresses to a snake bite.
- DO NOT cut into a snake bite with a knife or razor.
- DO NOT try to suction the venom by mouth.
- DO NOT give stimulants or pain medications unless instructed to do so by a doctor.
- DO NOT give the person anything by mouth.
- DO NOT raise the site of the bite above the level of the person's heart
- Transport the victim to medical attention immediately

Animal Borne Diseases

Rabies

Animal borne diseases include rabies (generally found in dogs, skunks, raccoons, bats, and foxes). Rabies varies from area to area as do the animals most likely to be rabid.

Questions and Answers about Rabies

Q. What is Rabies and how is it transmitted?

A. Rabies is a viral infection most often transmitted by bites of animals infected with the virus.

Q. What animals are most likely to be infected?

A. Skunks, raccoons, foxes, and bats are wild animals most frequently found to be infected with rabies; however, any warm blooded animal can be infected. Squirrels, groundhogs, horses, cattle, and rabbits have been tested positive for rabies. Dogs and cats are frequently rabies-infected if not immunized.

Q. How can you tell if an animal is rabies-infected?

A. Rabies infection is not always apparent. Signs to look for in wild animals are over-aggressiveness or passivity. Spotting animals which are normally nocturnal (active at night) during the day and being able to approach them would be an example of unusual behavior. Finding a bat alive and on the ground is abnormal. The best precaution, however, is to observe wild animals from a safe distance, even if they are injured. Avoid dogs and cats that you do not know.

Q. What should you do if bitten by an animal you suspect is infected with rabies?

A. As quickly as possible, wash the bite area with soap and water, then disinfect with 70% alcohol and seek medical attention for follow-up. Try to capture the animal. Avoid being bitten again or contacting the mouth or any saliva of the animal. Keep the animal under surveillance and call the police for assistance to capture it. Have the animal tested.

A dead animal believed to be infected should be preserved and tested for rabies. Health departments are often sources where information can be found regarding testing.

Q. Is there a cure for rabies?

A. Rabies is preventable, even after being bitten, if treatment is begun soon enough. Getting prompt medical attention and confirming the rabies infection of an animal are very important. Rabies is not curable once symptoms or signs of rabies appear.

There are vaccines available that should be considered if a work assignment involves trapping animals likely to carry rabies. Medical consultants must be involved in decisions to immunize workers against rabies.

Hantavirus

WESTON employees or contractors/subcontractors conducting field work in areas where there is evidence of a rodent population should be aware of an increased level of concern regarding the transmission of "Hantavirus"-associated diseases. Hantavirus is associated with rodents, especially the deer mouse (*Peromyscus maniculanis*) as a primary reservoir host. Hantavirus has resulted in several deaths in the U.S.

The Hantavirus can be transmitted by infected rodents through their saliva, urine, and feces. Human infection may occur when infected wastes are inhaled as a result of aerosols produced directly from the animals. They also may come from dried materials introduced into broken skin or onto mucous membranes. Infections in humans occur most in adults and are associated with activities that provide contact with infected rodents in rural/semi-rural areas. Hantavirus begins with one or more flu-like symptoms (i.e., fever, muscle aches, headache, and/or cough) and progresses rapidly to severe lung disease. Early diagnosis and treatment are vital.

Prevention

Personnel involved in work areas where rodents and the presence of the Hantavirus are known or suspected will need to take personal protective measures and to develop an expanded site safety plan.

Field personnel involved in trapping or contacting rodents or their waste products will need to wear respirators with high-efficiency particulate air (HEPA) filters, eye protection, Tyvek coveralls, chemical-resistant gloves, and disposable boot covers. Strict decontamination requirements are needed. Double-bag, label, and specific handling, packaging, shipping, storage, and analytical procedures are required to minimize the risks of exposure from collected mice. More detailed procedures can be obtained from WESTON Corporate Health and Safety.

For employees and facilities in rural/semi-rural areas, the following risk-reduction strategies are appropriate:

- Eliminate rodents and reduce availability of food sources and nesting sites used by rodents.
- Store trash/garbage in rodent-proof metal or thick plastic containers with tight lids.
- Cut all grass/underbrush in proximity to buildings.
- Prevent rodents from entering buildings (e.g., use steel wool, screen, etc., to eliminate openings).

Plague

Described under Insects (Fleas)

Anthrax

Anthrax is an acute infectious disease caused by the spore-forming bacterium *Bacillus anthracis*. Anthrax most commonly occurs in wild and domestic lower vertebrates (cattle, sheep, goats, camels, antelopes, and other herbivores), but it can also occur in humans when they are exposed to infected animals or tissue from infected animals.

Anthrax is most common in agricultural regions where it occurs in animals. These include South and Central America, Southem and Eastern Europe, Asia, Africa, the Caribbean, and the Middle East. When anthrax affects humans, it is usually due to an occupational exposure to infected animals or their products. Workers who are exposed to dead animals and animal products from other countries where anthrax is more common may become infected with *B. anthracis* (industrial anthrax). Anthrax in wild livestock has occurred in the U.S.

Anthrax infection can occur in three forms: cutaneous (skin), inhalation, and gastrointestinal. *B. anthracis* spores can live in the soil for many years, and humans can become infected with anthrax by handling products from infected animals or by inhaling anthrax spores from

contaminated animal products. Anthrax can also be spread by eating undercooked meat from infected animals. It is rare to find infected animals in the U.S.

Cutaneous: Most (about 95%) anthrax infections occur when the bacterium enters a cut or abrasion on the skin, such as when handling contaminated wool, hides, leather, or hair products (especially goat hair) of infected animals. Skin infection begins as a raised itchy bump that resembles an insect bite but within 1-2 days develops into a vesicle and then a painless ulcer, usually 1-3 cm in diameter, with a characteristic black necrotic (dying) area in the center. Lymph glands in the adjacent area may swell. About 20% of untreated cases of cutaneous anthrax will result in death. Deaths are rare with appropriate antimicrobial therapy.

Inhalation: Initial symptoms may resemble a common cold. After several days, the symptoms may progress to severe breathing problems and shock. Inhalation anthrax is usually fatal.

Intestinal: The intestinal disease form of anthrax may follow the consumption of contaminated meat and is characterized by an acute inflammation of the intestinal tract. Initial signs of nausea, loss of appetite, vomiting, and fever are followed by abdominal pain, vomiting of blood, and severe diarrhea. Intestinal anthrax results in death in 25% to 60% of cases.

Anthrax is not known to spread from one person to another person. Communicability is not a concern in managing or visiting patients with inhalation anthrax.

Prevention

In countries where anthrax is common and vaccination levels of animal herds are low, humans should avoid contact with livestock and animal products and avoid eating meat that has not been properly slaughtered and cooked. Also, an anthrax vaccine has been licensed for use in humans. The vaccine is reported to be 93% effective in protecting against anthrax.

Doctors can prescribe effective antibiotics. To be effective, treatment should be initiated early. If left untreated, the disease can be fatal.

Direct person-to-person spread of anthrax is extremely unlikely; however, a patient's clothing and body may be contaminated with anthrax spores. Effective decontamination of people can be accomplished by a thorough wash down with anti-microbe effective soap and water. Waste water should be treated with bleach or other anti-microbial agent. Effective decontamination of articles can be accomplished by boiling contaminated articles in water for 30 minutes or longer and using common disinfectants. Chlorine is effective in destroying spores and vegetative cells on surfaces. Burning the clothing is also effective. After decontamination, there is no need to immunize, treat, or isolate contacts of people ill with anthrax unless they also were also exposed to the same source of infection. Early antibiotic treatment of anthrax is essential–delay seriously lessens chances for survival. Treatment for anthrax infection and other bacterial infections includes large doses of intravenous and oral antibiotics, such as fluoroquinolones, like ciprofloxacin (cipro), doxycycline, erythromycin, vancomycin, or penicillin. In possible cases of inhalation anthrax exposure to unvaccinated personnel, early antibiotic prophylaxis treatment is crucial to prevent possible death.

No skin, especially if it has any wounds or scratches, should be exposed. Disposable personal protective equipment is preferable, but if not available, decontamination can be achieved by washing any exposed equipment in hot water, bleach and detergent. Disposable personal protective equipment and filters should be burned and buried. The size of Bacillus anthracis bacillii ranges from 0.5 μm to 5.0 μm. Anyone working with anthrax in a suspected or confirmed victim should wear respiratory equipment capable of filtering this size of particle or smaller. The U.S. National Institute for Occupational Safety and Health (NIOSH) and Mine Safety and Health Administration (MSHA) approved high efficiency-respirator, such as a half-face disposable respirator with a HEPA filter, is recommended. All possibly contaminated bedding or clothing should be isolated in double plastic bags and treated as possible bio-hazard waste. Dead victims that are opened and not burned provide an ideal source of anthrax spores; the victim should be sealed in an airtight body bag. Cremating victims is the preferred way of handling body disposal. No embalming or autopsy should be attempted without a fully equipped biohazard lab and trained and knowledgeable personnel.

Delays of only a few days may make the disease untreatable and treatment should be started even without symptoms if possible contamination or exposure is suspected. Animals with anthrax often just die without any apparent symptoms. Initial symptoms may resemble a common cold – sore throat, mild fever, muscle aches and malaise. After a few days, the symptoms may progress to severe breathing problems and shock and ultimately death. Death can occur from about two days to a month after exposure with deaths apparently peaking at about 8 days after exposure. [8] Antibiotic-resistant strains of anthrax are known.

Aerial spores can be trapped by a simple HEPA or P100 filter. Inhalation of anthrax spores can be prevented with a full-face mask using appropriate filtration. Unbroken skin can be decontaminated by washing with simple soap and water. All of these procedures do not kill the spores which are very hard to kill and require extensive treatment to eradicate them. Filters, clothes, etc. exposed to possible anthrax contaminated environments should be treated with chemicals or destroyed by fire to minimize the possibility of spreading the contamination.

In recent years there have been many attempts to develop new drugs against anthrax; but the existing supply still works fine if treatment is started soon enough.

Prevention can also be accomplished through early detection. In response to the U.S. Postal Service (USPS) anthrax attacks of October 2001, the USPS has installed BioDetection Systems (BDS) in their large-scale mail cancellation facilities. BDS response plans have been formulated by the USPS in conjunction with local responders including fire, police, hospitals, and public health. Employees of these facilities have been educated about anthrax, response actions and prophylactic medication. Because of the time delay inherent in getting final verification that anthrax has been used, prophylactic antibiotics for possibly exposed personnel should commence as soon as possible.

The ultimate in prevention is vaccination against infection but this has to be done well in advance of exposure.

Anthrax spores can survive for long periods of time in the environment after release. Methods for cleaning anthrax contaminated sites commonly use oxidizing agents such as peroxides, ethylene Oxide, Sandia Foam, chlorine dioxide (used in the Hart Senate office building), and liquid bleach products containing sodium hypochlorite. These agents slowly destroy bacterial spores. A bleach solution for treating hard surfaces has been approved by the EPA and can be prepared by mixing one part bleach (5.25%-6.00%) to one part white vinegar to eight parts water. Bleach and vinegar must not be combined together directly, rather some water must first be added to the bleach (e.g., two cups water to one cup of bleach), then vinegar (e.g., one cup), and then the rest of the water (e.g., six cups). The pH of the solution should be tested with a paper test strip; and treated surfaces must remain in contact with the bleach solution for 60 minutes (repeated applications will be necessary to keep the surfaces wet).

Chlorine dioxide has emerged as the preferred biocide against anthrax-contaminated sites, having been employed in the treatment of numerous government buildings over the past decade. Its chief drawback is the need for *in situ* processes to have the reactant on demand.

To speed the process, trace amounts of a non-toxic catalyst composed of iron and tetro-amido macrocyclic ligands are combined with sodium carbonate and bicarbonate and converted into a spray. The spray formula is applied to an infested area and is followed by another spray containing tertiary-butyl hydroperoxide

Using the catalyst method, a complete destruction of all anthrax spores takes 30 minutes. A standard catalyst-free spray destroys fewer than half the spores in the same amount of time. They can be heated, exposed to the harshest chemicals, and they do not easily die.

Brucellosis

Brucellosis, also called undulant fever or Malta fever, is a zoonosis (infectious disease transmitted from animals to humans) caused by bacteria of the genus *Brucella*. It is primarily a disease of domestic animals (goats, pigs, cattle, dogs, etc.) and humans and has a worldwide distribution.

Although brucellosis can be found worldwide, it is more common in countries that do not have good standardized and effective public health and domestic animal health programs. Areas currently listed as high risk are the Mediterranean Basin (Portugal, Spain, Southern France, Italy, Greece, Turkey, North Africa), South and Central America, Eastern Europe, Asia, Africa, the Caribbean, and the Middle East.

The disease is transmitted either through contaminated or untreated milk (and its derivates) or through direct contact with infected animals, which may include dogs, pigs, camels, and ruminants, primarily sheep, goats, cattle, and bison. This also includes contact with their carcasses.

Leftovers from parturition are also extremely rich in highly virulent brucellae. Brucellae, along with leptospira have the unique property of being able to penetrate through intact human skin, so infection by mere hand contact with infectious material is likely to occur.

The disease is now usually associated with the consumption of un-pasteurized milk and soft cheeses made from the milk of infected animals and with occupational exposure of veterinarians and slaughterhouse workers. Some vaccines used in livestock, most notably *B. abortus* strain 19 also cause disease in humans if accidentally injected. Problems with vaccine induced cases in the United States declined after the release of the RB-51 strain developed in the 1990s and the relaxation of laws requiring vaccination of cattle in many states.

The incubation period of brucellosis is, usually, of one to three weeks, but some rare instances may take several months to surface.

Brucellosis induces inconstant fevers, sweating, weakness, anemia, headaches, depression and muscular and bodily pain.

The symptoms are like those associated with many other febrile diseases, but with emphasis on muscular pain and sweating. The duration of the disease can vary from a few weeks to many months or even years. In first stage of the disease, septicaemia occurs and leads to the classic triad of undulant fevers, sweating (often with characteristic smell, likened to wet hay) and migratory arthralgia and myalgia.

Prevention

The main way of preventing brucellosis is by using fastidious hygiene in producing raw milk products, or by pasteurization of all milk that is to be ingested by human beings, either in its pure form or as a derivate, such as cheese.

Provide protection from skin contact when handling potentially infected animals.

Q fever

Q fever is caused by infection with *Coxiella burnetii*. This organism is uncommon but may be found in cattle, sheep, goats and other domestic mammals, including cats and dogs. The infection results from inhalation of contaminated particles in the air, and from contact with the vaginal mucus, milk, feces, urine or semen of infected animals. The incubation period is 9-40 days. It is considered possibly the most infectious disease in the world, as a human being can be infected by a single bacterium.

The most common manifestation is flu-like symptoms with abrupt onset of fever, malaise, profuse perspiration, severe headache, myalgia (muscle pain), joint pain, loss of appetite, upper respiratory problems, dry cough, pleuritic pain, chills, confusion and gastro-intestinal symptoms such as nausea, vomiting and diarrhea. The fever lasts approximately 7-14 days.

During the course, the disease can progress to an atypical pneumonia, which can result in a life threatening acute respiratory distress syndrome (ARDS), whereby such symptoms usually occur during the first 4-5 days of infection.

Less often the Q fever causes (granulomatous) hepatitis which becomes symptomatic with malaise, fever, liver enlargement (hepatomegaly), pain in the right upper quadrant of the abdomen and jaundice (icterus).

The chronic form of the Q fever is virtually identical with the inflammation of the inner lining of the heart (endocarditis), which can occur after months or decades following the infection. It is usually deadly if untreated. However, with appropriate treatment this lethality is around 10%.

The pathogenic agent is to be found everywhere except Antarctica and New Zealand. In Europe it appears as hepatitis rather than pneumonia as in the United States. The common way of infection is inhalation of contaminated dust, contact with contaminated milk, meat, wool and particularly birthing products. Ticks can transfer the pathogenic agent to other animals. Transfer between humans seems extremely rare and has so far been described in very few cases.

Prevention

Q fever is effectively prevented by intradermal vaccination with a vaccine composed of killed *Coxiella burnetii* organisms. Skin and blood tests should be done before vaccination to identify preexisting immunity; the reason is that vaccinating subjects who already have immunity can result in a severe local reaction. After a single dose of vaccine, protective immunity lasts for many years. Revaccination is not generally required. Annual screening is typically recommended.

Wear appropriate PPE when handling potentially infected animals or materials.

Leptospirosis

Leptospirosis is a bacterial disease that affects humans and animals. It is caused by bacteria of the genus *Leptospira*.

The time between a person's exposure to a contaminated source and becoming sick is 2 days to 4 weeks. Illness usually begins abruptly with fever and other symptoms. Leptospirosis may occur in two phases; after the first phase, with fever, chills, headache, muscle aches, vomiting, or diarrhea, the patient may recover for a time but become ill again. If a second phase occurs, it is more severe; the person may have kidney or liver failure or meningitis. This phase is also called Weil's disease.

The illness lasts from a few days to 3 weeks or longer. Without treatment, recovery may take several months. In rare cases death occurs.

Many of these symptoms can be mistaken for other diseases. Leptospirosis is confirmed by laboratory testing of a blood or urine sample.

Leptospira organisms have been found in cattle, pigs, horses, dogs, rodents, and wild animals. Humans become infected through contact with water, food, or soil containing waste from these infected animals. This may happen by consuming contaminated food or water or through skin

contact, especially with mucosal surfaces, such as the eyes or nose, or with broken skin. The disease is not known to be spread from person to person.

Leptospirosis occurs worldwide but is most common in temperate or tropical climates. It is an occupational hazard for many people who work outdoors or with animals, for example, farmers, sewer workers, veterinarians, fish workers, dairy farmers, or military personnel. It is a recreational hazard for campers or those who participate in outdoor sports in contaminated areas and has been associated with swimming, wading, and whitewater rafting in contaminated lakes and rivers. The incidence is also increasing among urban children.

The risk of acquiring leptospirosis can be greatly reduced by not swimming or wading in water that might be contaminated with animal urine.

Protective clothing or footwear should be worn by those exposed to contaminated water or soil because of their job or recreational activities.

Prevention

Avoid risky foods and drinks.

Buy it bottled or bring it to a rolling boil for 1 minute before drink it. Bottled carbonated water is safer than non-carbonated water.

Ask for drinks without ice unless the ice is made from bottled or boiled water. Avoid popsicles and flavored ices that may have been made with contaminated water.
Eat foods that have been thoroughly cooked and that are still hot and steaming

Avoid raw vegetables and fruits that cannot be peeled. Vegetables like lettuce are easily contaminated and are very hard to wash well. When eating raw fruit or vegetables that can be peeled, peel them yourself. (Wash your hands with soap first.) Do not eat the peelings.

Avoid foods and beverages from street vendors. It is difficult for food to be kept clean on the street, and many travelers get sick from food bought from street vendors.

Leptospirosis is treated with antibiotics, such as doxycycline or penicillin, which should be given early in the course of the disease. Intravenous antibiotics may be required for persons with more severe symptoms. Persons with symptoms suggestive of leptospirosis should contact a health care provider.

Machupo virus

Machupo virus, Bolivian hemorrhagic fever (**BHF**), also known as black typhus is a hemorrhagic fever and zoonotic infectious disease occurring in Bolivia. First identified in 1959, black typhus is caused by infection with machupo virus, a negative single-stranded RNA virus of the arenaviridae family. The infection has a slow onset with fever, malaise, headache and muscular pains. Petechiae (blood spots) on the upper body and bleeding from the nose and gums

are observed when the disease progresses to the hemorrhagic phase, usually within seven days of onset. The mortality rate is estimated at 5 to 30 percent.

The vector is the vesper mouse (*Calomys callosus*), a rodent indigenous to northern Bolivia. Infected animals are asymptomatic and shed virus in excretions, by which humans are infected. Evidence of person-to-person transmission of Machupo virus exists but is believed to be rare (Kilgore, et. al, 1995).

Measures to reduce contact between the vesper mouse and humans have effectively limited the number of outbreaks, with no cases identified between 1973 and 1994. A vaccine being developed for the genetically related Junín virus which causes Argentine hemorrhagic fever has shown evidence of cross-reactivity with Machupo virus and may be an effective prophylactic measure for people at high risk of infection.

Prevention

Appropriate PPE including respiratory protection for handling animals or when there is potential exposure to wastes from the animals.

Ebola

Ebola is both the common term used to describe a group of viruses belonging to genus Ebolavirus, family Filoviridae, and the common name for the disease which they cause, Ebola hemorrhagic fever. Ebola viruses are morphologically similar to the Marburg virus, also in the family Filoviridae, and share similar disease symptoms. Ebola has caused a number of serious and highly publicized outbreaks since its discovery.

It is known to be a zoonotic virus as it is currently devastating the populations of lowland gorillas in Central Africa. Despite considerable effort by the World Health Organization, no animal reservoir capable of sustaining the virus between outbreaks has been identified. However, it has been hypothesized that the most likely candidate is the fruit bat.

Ebola hemorrhagic fever is potentially lethal and encompasses a range of symptoms including fever, vomiting, diarrhea, generalized pain or malaise, and sometimes internal and external bleeding. Mortality rates are extremely high, with the human case-fatality rate ranging from 50% - 89%, according to viral subtype. [2] The cause of death is usually due to hypovolemic shock or organ failure.

Because Ebola is potentially lethal and since no approved vaccine or treatment is available, Ebola is classified as a biosafety level 4 agent, as well as a Category A bioterrorism agent by the Centers for Disease Control and Prevention.

Symptoms are varied and often appear suddenly. Initial symptoms include high fever (at least 38.8°C), severe headache, muscle joint, or abdominal pain, severe weakness and exhaustion, sore throat, nausea, and dizziness Before an outbreak is suspected, these early symptoms are easily

mistaken for malaria, typhoid fever, dysentery, influenza, or various bacterial infections, which are all far more common and less reliably fatal.

Ebola may progress to cause more serious symptoms, such as diarrhea, dark or bloody feces, vomiting blood, red eyes due to distention and hemorrhage of sclerotic arterioles, petechia, maculopapular rash, and purpura. Other secondary symptoms include hypotension (less than 90 mm Hg systolic /60 mm Hg diastolic), hypovolemia, tachycardia, organ damage (especially the kidneys, spleen, and liver) as a result of disseminated systemic necrosis, and protinuria. The interior bleeding is caused by a chemical reaction between the virus and the platelets which creates a chemical that will cut cell sized holes into the capillary walls.

Among humans, the virus is transmitted by direct contact with infected body fluids, or to a lesser extent, skin or mucus membrane contact. The incubation period can be anywhere from 2 to 21 days, but is generally between 5 and 10 days.

Although airborne transmission between monkeys has been demonstrated by an accidental outbreak in a laboratory located in Virginia, USA, there is very limited evidence for human-to-human airborne transmission in any reported epidemics.

The infection of human cases with Ebola virus has been documented through the handling of infected chimpanzees, gorillas, and forest antelopes--both dead and alive--as was documented in Côte d'Ivoire, the Republic of Congo and Gabon. The transmission of the Ebola Reston strain through the handling of cynomolgus monkeys has also been reported.[7]

So far, all epidemics of Ebola have occurred in sub-optimal hospital conditions, where practices of basic hygiene and sanitation are often either luxuries or unknown to caretakers and where disposable needles and autoclaves are unavailable or too expensive. In modern hospitals with disposable needles and knowledge of basic hygiene and barrier nursing techniques, Ebola rarely spreads on such a large scale.

Prevention

Prevention methods include good hygiene in medical settings and awareness of the virus in travel areas. There is no known effective vaccine for humans.

Prevention efforts should concentrate on avoiding contact with host or vector species. Travelers should not visit locations where an outbreak is occurring. Contact with rodents should be avoided. Minimize exposure to arthropod bites by using permethrin-impregnated bed nets and insect repellents.

Strict compliance with infection control precautions (i.e., use of disposable gloves, face shields, and disposable gowns to prevent direct contact with body fluids and splashes to mucous membranes when caring for patients or handling clinical specimens; appropriate use and disposal of sharp instruments; hand washing and use of disinfectants) is recommended to avoid health care-associated infections.

Contact with dead primates should be avoided.

Marburg Virus

The Marburg virus is the causative agent of Marburg hemorrhagic fever. Both the disease and virus are related to Ebola and originate in Uganda and Eastern Congo. The zoonosis is of unknown origin, but fruit bats are suspected. In the spring of 2005, there was an outbreak in Angola.

Because many of the signs and symptoms of Marburg hemorrhagic fever are similar to those of other infectious diseases, such as malaria or typhoid, diagnosis of the disease can be difficult, especially if only a single case is involved.

The disease is spread through bodily fluids, including blood, excrement, saliva, and vomit.

Early symptoms are often non-specific, and usually include fever, headache and myalgia after an incubation period of 3-9 days. After five days, a macropapular rash is often present on the trunk. Later-stage Marburg infection is acute and can include jaundice, pancreatitis, weight loss, delirium and neuropsychiatric symptoms, hemorrhaging, hypovolemic shock and multi-organ dysfunction with liver failure most common.
Accounts of external hemorrhaging from bodily orifices are in fact rare. Time course varies but symptoms usually last for one to three weeks until the disease either resolves or kills the infected host. The fatality rate is between 23-90%.

Prevention

Prevention methods include good hygiene in medical settings and awareness of the virus in travel areas. There is no known effective vaccine for humans.

Prevention efforts should concentrate on avoiding contact with host or vector species. Travelers should not visit locations where an outbreak is occurring. Contact with rodents should be avoided. Minimize exposure to arthropod bites by using permethrin-impregnated bed nets and insect repellents.

Strict compliance with infection control precautions (i.e., use of disposable gloves, face shields, and disposable gowns to prevent direct contact with body fluids and splashes to mucous membranes when caring for patients or handling clinical specimens; appropriate use and disposal of sharp instruments; hand washing and use of disinfectants) is recommended to avoid health care-associated infections.

Contact with dead primates should be avoided.

Rift Valley Fever.

Rift Valley Fever (RVF) is a viral Zoonosis affects primarily domestic livestock, but can be passed to humans) causing fever. It is spread by the bite of infected mosquitoes. The disease is caused by the RVF virus, a member of the genus *Phlebovirus* (family *Bunyaviridae*).

The disease was first reported in Kenya around 1915and has since been reported across sub-Saharan Africa. There have been outbreaks in Egypt in 1977-78, Saudi Arabia and Yemen..

In humans the virus can cause several different syndromes. Usually sufferers have either no symptoms or only a mild illness with fever, headache, myalgia and liver abnormalifies. In a small percentage of cases (< 2%) the illness can progress to hemorrhagic fever syndrome, meningoencephalitis inflammation of the brain), or affecting the eye. Patients who become ill usually experience fever, generalized weakness, back pain, dizziness, and weight loss at the onset of the illness. Typically, patients recover within 2-7 days after onset.

The vast majority of human infections resuh from direct or indirect contact with the biood or organs of infected animals. The virus can be transmitted to humans through the handling of animal tissue during slaughtering or butchering, assisting with animal births, conducting veterinary procedures, or from the disposal of carcasses or fetuses. Certain occupational groups such as herders, farmers, slaughterhouse workers and veterinarians are therefore at higher risk of infection. The virus infects humans through inoculation, for example via a wound from an infected knife or through contact with broken skin, or through inhalation of aerosols produced during the slaughter of infected animals. The aerosol mode of transmission has also led to infection in laboratory workers.

There is some evidence that humans may also become infected with RVF by ingesting the unpasteurized or uncooked milk of infected animals.

Human infections have also resulted from the bites of infected mosquitoes, most commonly the Aedes mosquito.

Transmission of RVF virus by hematophagous (blood-feeding) flies is also possible.

To date, no human-to-human transmission of RVF has been documented, and no transmission of RVF to health care workers has been reported when standard infection control precautions have been put in place.

There has been no evidence of outbreaks of RVF in urban areas.

Mild form of **RVF** in humans

The incubation period (interval from infection to onset of symptoms) for RVF varies from two to six days.

Those infected either experience no detectable symptoms or develop a mild form of the disease characterized by a feverish syndrome with sudden onset of flu-like fever, muscle pain, joint pain and headache.

Some patients develop neck stiffness, sensitivity to light, loss of appetite and vomiting; in these patients the disease, in its early stages, may be mistaken for meningitis.

The symptoms of RVF usually last from four to seven days, after which time the immune response becomes detectable with the appearance of antibodies and the virus gradually disappears from the blood.

Severe form of **RVF** in humans

While most human cases are relatively mild, a small percentage of patients develop a much more severe form of the disease. This usually appears as one or more of three distinct syndromes: ocular (eye) disease (0.5-2% of patients), meningoencephalitis (less than 1%) or haemorrhagic fever (less than 1%).

Ocular form: In this form of the disease, the usual symptoms associated with the mild form of the disease are accompanied by retinal lesions. The onset of the lesions in the eyes is usually one to three weeks after appearance of the first symptoms. Patients usually report blurred or decreased vision. The disease may resolve itself with no lasting effects within 10 to 12 weeks. However, when the lesions occur in the macula, 50% of patients will experience a permanent loss of vision. Death in patients with only the ocular form of the disease is uncommon.

Meningoencephalitis form: The onset of the meningoencephalitis form of the disease usually occurs one to four weeks after the first symptoms of RVF appear. Clinical features include intense headache, loss of memory, hallucinations, confusion, disorientation, vertigo, convulsions, lethargy and coma. Neurological complications can appear later (> 60 days). The death rate in patients who experience only this form of the disease is low, although residual neurological deficit, which may be severe, is common.

Haemorrhagic fever form: The symptoms of this form of the disease appear two to four days after the onset of illness, and begin with evidence of severe liver impairment, such as jaundice. Subsequently signs of haemorrhage then appear such as vomiting blood, passing blood in the faeces, a purpuric rash or ecchymoses (caused by bleeding in the skin), bleeding from the nose or gums, menorrhagia and bleeding from venepuncture sites. The case-fatality ratio for patients developing the haemorrhagic form of the disease is high at approximately 50%. Death usually occurs three to six days after the onset of symptoms. The virus may be detectable in the blood for up to 10 days, in patients with the hemorrhagic icterus form of RVF.

The total case fatality rate has varied widely between different epidemics but, overall, has been less than 1% in those documented. Most fatalities occur in patients who develop the haemorrhagic icterus form.

A person's chances of becoming infected can be reduced by taking measures to decrease contact with mosquitoes and other bloodsucking insects through the use of mosquito repellents and bednets. Avoiding exposure to blood or tissues of animals that may potentially be infected is an important protective measure for persons working with animals in RVF-endemic areas.

Prevention

Awareness and use of PPE, good hygiene and other avoidance practices used for other zoonotic diseases should be used.

Nipah and Hendra Viruses

Nipah virus is a newly recognized zoonotic virus. The virus was 'discovered' in 1999. It has caused disease in animals and in humans, through contact with infectious animals. The virus is named after the location where it was first detected in Malaysia.

Nipah is closely related to another newly recognized zoonotic virus (1994), called Hendra virus, named after the town where it first appeared in Australia. Both Nipah and Hendra are members of the virus family *Paramyxoviridae.* Although members of this group of viruses have only caused a few focal outbreaks, the biologic property of these viruses to infect a wide range of hosts and to produce a disease causing significant mortality in humans has made this emerging viral infection a public heath concern.

Natural Host

It is currently believed that certain species of fruit bats are the natural hosts of both Nipah and Hendra viruses. They are distributed across an area encompassing northern, eastern and south-eastern areas of Australia, Indonesia, Malaysia, the Philippines and some of the Pacific Islands. The bats appear to be susceptible to infection with these viruses, but do not themselves become ill. It is not known how the virus is transmitted from bats to animals.

Transmission

The mode of transmission from animal to animal, and from animal to human is uncertain, but appears to require close contact with contaminated tissue or body fluids from infected animals. Nipah antibodies have been detected in pigs, other domestic and wild animals. The role of species other than pigs in transmitting infection to other animals has not yet been determined.

It is unlikely that Nipah virus is easily transmitted to man, although previous outbreak reports suggest that Nipah virus is transmitted from animals to humans more readily than Hendra virus. Despite frequent contact between fruit bats and humans there is no serological evidence of human infection among bat carers. Pigs were the apparent source of infection among most human cases in the Malaysian outbreak of Nipah, but other sources, such as infected dogs and cats, cannot be excluded. Human-to-human transmission of Nipah virus has not been reported.

Clinical Features

Nipah Virus - The incubation period is between 4 and 18 days. In many cases the infection is mild or inapparent (sub-clinical). In symptomatic cases, the onset is usually with "influenza-like" symptoms, with high fever and muscle pains (myalgia). The disease may progress to

inflammation of the brain (encephalitis) with drowsiness, disorientation, convulsions and coma. Fifty percent of clinically apparent cases die.

Hendra Virus - respiratory illness with severe flu-like signs and symptoms

Protection

The risk of transmission of Nipah and virus from sick animals to humans is thought to be low, and transmission from person-to-person has not yet been documented, even in the context of a large outbreak. Therefore, the risk of transmission of Nipah virus to health care workers is thought to be low. However, transmission without percutaneous exposure (through a break in the skin barrier) is theoretically possible, as respiratory secretions contain the virus. This is why it has been categorized as a biohazardous agent that should be managed in a high-level biosecurity laboratory. It is recommended that close contact with body fluids and infected tissues be avoided if Nipah or hendra virus infection is suspected.

Bird and Bat Borne or Enhanced Diseases

See also under Molds and Fungus

Psittacosis

Psittacosis is a disease caused by a bacteria that is found in bird droppings and other secretions (often carried by pet birds). The bacteria is found worldwide.

Symptoms of psittacosis infection may include a low-grade fever that often becomes worse as the disease progresses, including anorexia, sore throat, light sensitivity, and a severe headache.

Ammonia and sodium hypochlorite based disinfectants are effective disinfectants for Psittacossis.

Where it is necessary to remove bat droppings from buildings prior to renovation or demolition it is prudent to assume infection and use the following precautions:

- Avoid areas that may harbor the bacteria, e.g., accumulations of bird or bat droppings.
- Areas known or suspected of being contaminated by *the organisms causing* Psittacosis such as bird roosts, attics, or even entire buildings that contain accumulations of bat or bird manure, should be posted with signs waming of the health risk. The building or area should be secured
- Before an activity is started that may disturb any material that might be contaminated by Psittacosis, workers should be informed in writing of the personal risk factors that increase an individual's chances of developing these diseases. Such a written communication should include a warning that individuals with weakened immune systems are at the greatest risk of developing severe forms of these diseases become infected. These people should seek advice from their health care provider about whether they should avoid exposure to materials that might be contaminated with these organisms.

The best way to prevent exposure is to avoid situations where material that might be contaminated can become aerosolized and subsequently inhaled. A brief inhalation exposure to highly contaminated dust may be all that is needed to cause infection and subsequent development of psittacosis. Therefore, work practices and dust control measures that eliminate or reduce dust generation during the removal of bat manure from a building will also reduce risks of infection and subsequent development of disease. For example, instead of shoveling or sweeping dry, dusty material, carefully wetting it with a water spray can reduce the amount of dust aerosolized during an activity. Adding a surfactant or wetting agent to the water might reduce further the amount of aerosolized dust.

Once the material is wetted, it can be collected in double, heavy-duty plastic bags, a 55-gallon drum, or some other secure container for immediate disposal. An alternative method is use of an

industrial vacuum cleaner with a high-efficiency filter to *bag* contaminated material. Truck-mounted or trailer-mounted vacuum systems are recommended for buildings with large accumulations of bat or bird manure. These high-volume systems can remove tons of contaminated material in a short period. Using long, large-diameter hoses, such a system can also remove contaminated material located several stories above its waste hopper. This advantage eliminates the risk of dust exposure that can happen when bags tear accidentally or containers break during their transfer to the ground.

The removal of all material that might be contaminated from a building and immediate waste disposal will eliminate any further risk that someone might be exposed to aerosolized spores. Air sampling, surface sampling, or the use of any other method intended to confirm that no infectious agents remain following removal of bat manure is unnecessary in most cases. However, before a removal activity is considered finished, the cleaned area should be inspected visually to ensure that no residual dust or debris remains.

Spraying 1:10 bleach to water mixture on droppings and allowing it to dry is also a recommended practice for the psittacosis organisms.

Because work practices and dust control measures to reduce worker exposures to these organisms have not been fully evaluated, using personal protective equipment is still necessary during some activities. During removal of an accumulation of bat or bird manure from an enclosed area such as an attic, dust control measures should be used, but wearing a NIOSH-approved respirator and other items of personal protective equipment is also recommended to reduce further the risk of exposure to the organisms that cause Psittacosis.

Treatment

Psittacosis is often hard to diagnoses and while a concern, it does not occur with great frequency. Knowledge of the symptoms and of potential exposure is important when seeking medical follow-up for potential exposure.

There are various medical treatments for psittacosis based on extent of infection. The sooner the disease is diagnosed and treatment is begun the more effective the treatment will be.

APPENDIX A
Dangerous Animals - Wildlife Hazard Recognition and Protection

GENERAL

Work in remote areas inhabited by wild animals that have been known to cause injury and kill human beings, requires that companies working in these areas carefully plan for wildlife encounters. This procedure outlines actions that when properly implemented should provide a high degree of protection for employees and wildlife.
These procedures apply to employees who prepare Health and Safety Plans or perform fieldwork in environments in which wild animals may be encountered. However, due to the unpredictable nature of wild animals this single document cannot possibly cover all potential risks or protective measures. Therefore, prior to entering remote areas inhabited by dangerous wildlife, contact local wildlife agencies to gather additional information concerning local risks and protective measures.

REFERENCES

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http://www.wa.gov/wdfw/wildlife.htm

ATTACHMENTS

Attachments 1 through 4 outline behavioral characteristics of and outline controls that will minimize human injury, loss of property, and unnecessary destruction of wildlife, while ensuring a safe work environment. Attachment 5 provides the Project Specific Exemption for Firearms request form.

RESPONSIBILITIES

The responsibilities of personnel involved in Wildlife Hazard Recognition and Protection are:

- The Corporate EHS Manager (EHS Manager) review and approval of site health and safety plans (HSP) that require the Project Specific Exemption for Firearms.
- Project Manager / Site Manager: In addition to the safety responsibilities described in the Safety Program Implementation Plan, the Project Manager (PM) or Site Manager (SM) are responsible for ensuring that the Health and Safety Plan (HSP) addresses hazards associated with wild animal encounters, as appropriate and ensuring that persons designated to carry firearms meet the criteria outlined in this procedure. Additionally, if other approvals are necessary for carrying firearms, the PM must ensure that adequate time is allotted for the approval process.

WILDLIFE AVOIDANCE AND BASIC PROTECTIVE MEASURES

The best protective measure is simply avoidance. Large numbers of humans present deterrence to wild animals; therefore, whenever possible teams in the field should work together in groups of four or more. Whenever practical, fieldwork should be scheduled around the seasonal cycles of wildlife in the area. When wild animal avoidance cannot be achieved through scheduling,

personnel involved in field activities in which encounters with wild animals niay result, will take the following steps and will be equipped and trained, as set forth below.

CLEAR THE AREA

Evaluate and control the area before entry by

- Determine areas of recent sightings through local Fish and Game, state troopers, etc.;
- Conduct a site observation from an off-site elevated point, if possible;
- Conduct a controlled walk through in the area by a trained observer;
- Arrange a briefing by a local specialist, e. g., Fish and Game, etc.; and
- Utilizing appropriate noisemakers.

BASIC EQUIPMENT

Employees entering an environment where encounters with wild animals are possible should be provided, as a minimum:

- Noisemakers, such as air horns, bells, etc.; and
- Bear spray of not less than 16-ounce capacity (with holster), equivalent to capsicum pepper (red pepper extract), which is capable of spraying at least 15 feet. (Notes: Normally cannot be transported in side aircraft passenger compartments and may be considered a hazardous material, check with airlines and hazardous material shippers for current information).

TRAINING

Prior to entering and / or working in areas inhabited by dangerous wildlife each employee should receive training as outlined in this procedure. At a minimum, training must include information related to:

- Wildlife present, habitat, behavior patterns, including when wild animals are most active, etc.
- Warning signs, such as tracks, bedding areas, scat, claw marks, offspring, paths, etc.,
- Avoidance measures
- Other hazards, precautions, and protective measures as outlined in the Attachments,
- (At the jobsite) spray demonstration and safety instructions which include locafion of and persons designated as "bear watch"

An outline of the training content should be reviewed and approved by the Divisional EHS manager and should be documented. A record of the training will be maintained at the job site, filed with the SSHSP and in the employee's training records.

SUPPLEMENTAL PROTECTION

In some areas it may be neeessary (or preferred) to employ professional hunting guide services where significant possibility of encounters with wildlife exist. The PM and DSM will evaluate the need for supplemental protecfion. In addition to Weston's standard minimum qualifications for subcontractors, prospecfive bear and wild animal protection contractors must be able to provide evidence of competency. This evidence shall include:

- Proof of firearm safety training and;
- Proficiency with firearms and;
- Should have three or more years experience providing similar services.

In addition to the above, project managers should review insurance coverage with the Risk Management office to determine whether or not additional insurances should be required.

FIREARMS USE BY WESTON PERSONNEL OR SUBCONTRACTOR EMPLOYEES

In some situations, the Project Manager (with approved exemption) and client agreement may authorize selected employees or subcontractor employees to carry firearms.
Employees designated to carry firearms must demonstrate proficiency in firearm safety marksmanship through successful completion of a firearm safety training class administered by a Fish and Game Department, a local firearm range instructor, or other approved trainer. Personnel designated to carry firearms must not have been convicted of a crime that has resulted in their loss of the privilege to bear arms; therefore, they must submit to a background check through the NCIC.
Training will be documented and records of training will be maintained on site. At a minimum training must include:

- Animal behavior,
- Firearm handling and safety,
- Demonstrated marksmanship skills, and
- Safe storage of firearms and ammunition.

FIREARMS AUTHORIZED FOR SITE USE

- Will not be carried with a round in the chamber until a dangerous encounter is eminent, such as when a bear has been sited in the immediate area, and
- Must be unloaded with a trigger lock installed when not actively being used for protection to prevent unauthorized persons from using the firearm.
- Will be stored in a locked cabinet when not required for use. Only persons qualified to use firearms will have keys to the cabinet.

Military installations require the approval of their security forces before allowing a firearm to be brought onto a military installafion. In addifion to base requirements, some clients (e.g. AFCEE) may require their approval. The PM must determine with sufficient lead-time whether firearm protection of employees from wild animals will be required. If such is determined to be necessary, the PM must submit a requests for authorization to the EHS Manager with sufficient lead-time to permit training and other steps required prior to departure for the field.
All firearms and firearm-carrying personnel shall be registered and approved by the EHS Manager in accordance with the project exemption. Copies of the approved exemption will be maintained in the supporting office. Incomplete requests for exemption will be returned to the project manager without action; therefore, thorough planning at the project level is required to ensure that the project schedule is not impacted.

APPROPRIATE FIREARMS

Advantages and disadvantages of the firearms are discussed in Attachment I. Firearms that are appropriate for protection against large animals include:

- A .30 caliber-magnum ("300 magnum") or larger rifle, or
- A 12-guage shotgun with rifled slugs.
- Other firearms, such as large bore handguns, will be considered on their individual merits.

AMMUNITION

The type of ammunition to be used is best determined through consultation with local fish and game agencies or professional guide services.

- The number of rounds and type of ammunition brought to job sites shall be registered with the on-site SSHO.
- When not in use, ammunition and firearms will be effectively secured/locked up in a vehicle, cabinet, etc.

PROTECTIVE MEASURES OF LAST RESORT

When non-lethal methods of deterrence have been used and / or immediate danger to an individual exists, the wild animal may have to be killed. During project planning consult local provisions of the Defense of Life or Property Regulation in your state. In Alaska, refer to 5 AAC 92.410. After contacting the appropriate fish and game agency, the SSO must submit an incident report to the Division EHS Manager. The individual who shot the animal will make the report. In the state of Alaska, the head and the hide must be salvaged and delivered the Alaska Department of Fish and Game.

VEHICLE SAFETY

Use extreme caution, particularly in darkness, when operating vehicles in areas where wild animals may be present. Collisions with large animals have been known to cause significant property damage and personal injuries to vehicle passengers, including fatalities.

ATTACHMENT 1

BEAR SAFETY – HAZARD RECOGNITION AND PRECAUTIONS

On occasion fieldwork may be conducted in a location where bears may be encountered. The following technical information, precautions, and guidelines for operations in which bears could be encountered is based on experience and conditions for field work in the state of Alaska. Bears are intelligent, wild animals and are potentially dangerous, and would rather be left alone. The more bears are understood the less they will be feared. This attachment is intended to provide information that will enable Weston to plan for bear encounters and to properly address face-to-face encounters.

Bear Life History

Although bears are creatures of habit, they are also intelligent, and each has its own personality. The way a bear reacts is often dictated by what it has learned from its mother, the experience it has had on its own, and the instincts nature has provided. Like other intelligent animals, we can make general statements about bears, but few people can accurately predict their behavior.

Bears have an incredible sense of smell, and seem to trust it more than any other sense. Hearing and sight are also important, but to a lesser degree. A bear's hearing is probably better than ours, but not as keen as a dog's hearing. Their sight is probably comparable to that of a human. Both black and brown bears have similar life styles, although they do not usually get along with each other. Where both species occur in the same area, black bears tend to favor forested habitats while brown bears favor open areas. Since the likelihood of encountering a polar bear is remote, this procedure addresses only black and brown bears. If the project site is in an area where polar bear encounters are a possibility, consult the fish and game department for assistance in planning for encounters.

Bears are opportunists, relying on their intelligence and their senses to find food. They use different habitats throughout the year, depending on the availability of food and other necessities. The area a bear covers in a given year is partially dependent on how far it has to go to satisfy these basic needs. In some areas, individual bears have home ranges of less than a square mile; in other areas ranges can encompass hundreds of square miles. Males usually range over larger areas than females.

In spring, bears begin coming out of hibernation. Males are usually the first bears to emerge, usually in April, and females with new cubs are usually the last, sometimes as late as late June. When bears emerge from their dens, they are lethargic for the first few days, frequently sleeping near their dens and not eating. When they do start eating, they seek carrion (dead moose, caribou, sea mammals, deer, etc.), roots, and emerging vegetation. In coastal areas, beaches become travel corridors as bears seek these foods. In early summer, bears eat new grasses and forage as they develop in higher elevations. Moose and caribou calves are also important foods where they are available. In coastal areas, salmon are the most important food from June through September. This period is one of the few times that bears are found in large groups, and it is the time that most people see bears. Bears often travel, eat, and sleep along streams for weeks at a time.

Other summer foods for bears include salmonberries, grasses, forbs, ground squirrels, and occasionally, adult moose and caribou. When bears kill or scavenge large prey, they commonly cover the portions they cannot eat with sticks and duff. A bear may remain near a food cache for days and it will defend it from intruders.
During the late summer and early fall, bears move inland and consume large amounts of blueberries, elderberries, soapberries, and other succulent fruits. As the seasons progress towards winter, a bear's diet becomes more varied. This is the time that bears are adding final deposits of fat before their long winter naps.

In October and November, bears move into their denning areas and begin preparing a suitable den. Black bears usually den in holes under large trees or rock outcrops, or in small natural cavities. Brown bears usually dig their dens in steep alpine areas. Dens are just large enough for the bears to squeeze into. Bears rarely eat, drink, urinate, or defecate while they are denning. They sleep deeply, but do not truly hibernate, and they can be awakened by loud noises or disturbances.

Cubs are born in the den, usually in January. Black bear cubs usually stay with their mothers for a year and a half, and brown bear cubs usually stay with their mothers for 2.5 to 3.5 years. Black bears are sexually mature at age 2 and brown bears are sexually mature at age 4 – 8. Mating season is in the spring (May or June) and both species are polygamous (multiple mates). Both black and brown bears can live for 25 – 30 years, although most live less than 20 years.

Bear and Human Interactions

Bears generally prefer to be left alone, but they share their homes with other creatures, including humans, who intrude on virtually every aspect of the bear's life. Bears are normally tolerant of these activities and generally find a secure way to avoid them. Humans can help bears make a graceful retreat and avoid many close encounters by letting them know we are coming. Walking in groups, talking, and wearing noise making devices, such as bear bells, all serve to warn a bear of your approach. When possible, avoid hiking and camping in areas where bears are common, such as bear trails through heavy brush or along salmon streams. Always keep an eye out for bears and bear signs. If you happen upon a dead animal, especially one that is covered with sticks and duff (a bear cache), immediately retreat the way you came, but do not run, and make a detour around the area. If you see a cub up a tree or a small bear walking alone, immediately retreat and detour around the area. Like all young animals, cubs wander away from their mothers, but females are furiously protective when they believe their cubs are threatened. Even if we do everything possible to avoid meeting a bear, sometimes bears come to us.

Bears are both intelligent and opportunistic, and they express these qualities through their curiosity. This curiosity frequently brings them into "human habitat." When this happens, we often feel vulnerable, and the bear is sometimes viewed as a threat or nuisance. In most cases, a curious bear will investigate a "human sign," perhaps test it out (chew on a raft, bite into some cans, etc.), and leave, never to return. If the bear was rewarded during his investigation by finding something to eat, it is hard to stop them from returning once they have had a food-reward. That is why we emphasize the importance of keeping

human food and garbage away from bears. When in bear country, always think about the way you store, cook, and dispose of your food. Never feed bears! This is both illegal and foolish. Food should be stored in airtight containers, preferably away from living and sleeping areas. Garbage should be thoroughly incinerated as soon as possible. Fish and game should be cleaned well away from camp, and clothing that smells of fish and game should be stored away from sleeping areas. Menstruating women should take extra precautions to keep themselves as clean as possible, and soiled tampons and pads should be treated as another form of organic garbage. Once a bear has obtained food from people, it may continue to frequent areas occupied by people. If a bear does not find food or garbage after the next few tries, it may give up and move back into a more natural feeding pattern. Occasionally, though, the bear will continue to seek human foods and can become a "problem bear." Some bears become bold enough to raid campsites and break into cabins to search for human food. Shooting bears in the rump with cracker shells, flares, rubber bullets, and birdshot are common methods of "aversive conditioning." These are also very dangerous techniques, because they may seriously injure a bear if not done properly and/or they may cause a bear to attack the shooter.

TYPES OF BEARS

The three most prevalent species of are bears are the black bear, the brown (grizzly) bear, and the polar bear. Each has a different life-style and somewhat different behavior pattem.

Black Bear Identification: Black bears are the smallest and most abundant of the bear species in Alaska. They are five to six feet long and stand about two to three feet high at the shoulders. They weigh from 200 to 500 pounds. While they are most commonly black, other color phases include brown (cinnamon), and, rarely, gray (blue), and white. Muzzles are usually brown. Black bears can be distinguished from brown bears by:

- Their head shape (a black bear's nose is straight in profile, a brown bear's is dished);
- Their claws (black bear's claws are curved and smaller, brown bears are relatively straight and longer);
- Their body shape (when standing, a black bear's rump seems to be higher than its shoulders; a brown bear's shoulders are usually higher than its rump); and
- By their ears (a black bear's ears are more prominent than a brown bear's ears). Range in Alaska Black bears live throughout Alaska, except on Kodiak Islands, the Alaska Peninsula, some islands, and the extreme northern and western portion of the state.

Typical Habitat: Black bears occupy a wide range of habitats, but seem to be most common in forested areas. Black bears are not uncommon in and around human settlements in Alaska.

Brown Bear Identification: Brown and grizzly bears are the same species. They can be over eight feet long and stand five feet high at the shoulder. Weights are typically 600 to 800 pounds, but can reach 1500 pounds. Colors range from blonde to dark brown. Coastal bears (referred to as brown bears) are the largest land carnivores and are usually medium-to-dark brown in color. Interior bears (referred to as grizzly bears) are smaller

and usually have light tips on their hair, giving them a grizzled appearance. A brown bear's muzzle is the same color as its body. Cubs frequently have a white collar around their neck and shoulders. The dished-face and large shoulder hump are distinguishing features of the brown bear.

Range in Alaska: Brown bears live throughout Alaska, except for the southern portion of the panhandle in southeastern Alaska, and on the Aleutians, and some other islands. Biologists estimate that there are from 30,000 and 45,000 brown bears in the state, and in most areas the numbers are stable. Highest densities occur on Admiralty Island, the Kodiak Islands, and the Alaska Peninsula.

Typical Habitat: Brown bears can, and do, use virtually every type of habitat. Although they are less common around human settlements than black bears, brown bears can live in close proximity to people. Polar Bear Identification

Polar Bear Identification: Polar bears are about the same size as coastal brown bears. Colors range from white to yellow. Black nose is prominent. Head shape is similar to that of a black bear, but their long tapering necks make polar bears' heads appear to be small in relation to their body size.

Range in Alaska: Polar bears are found in coastal Alaska and offshore waters from Bristol Bay to the Arctic. Ice conditions dictate local polar bear abundance.

Typical Habitat: Islands, coastlines, and waters near pack ice and ice floes, rarely occurring far inland, except for denning females, are typical habitat.

AVOIDING BEAR ENCOUNTERS WHEN

- The Bear sees you but you do not know the bear is around: The bear will likely avoid detection people and will simply move away when they sense a human.
- You see a bear and it does not know you are there: Move away slowly. Avoid intercepting the bear if it is walking. If possible, detour around the bear. If the bear is close to you, stand where you are or back away slowly. Do not act threateningly toward the bear, it may know you are there but it has chosen to ignore you as long as you are not a threat.
- You see the bear and the bear sees you: Do not act threateningly, but let the bear know you are human. Wave your arms slowly, talk in a calm voice, and walk away slowly in a lateral direction, keeping an eye on the bear. Unless you are very close to a car or a building, never run from bears. In a bear's world, when something runs it is an open invitation to chase it. Bears will chase a running object even if they have no previous intention of catching it. Bears can run as fast as a racehorse, so humans have little or ho chance of outrunning a bear.
- You see a bear; the bear sees you and stands oh its hind legs: This means that the bear is seeking more information. Bears stand on their hind legs to get a better look, or smell, at something they are uncertain of. It is your cue to help it figure out what you are. Help the bear by waving your arms slowly and talking to it. Standing is not a precursor to an attack. Bears do not attack on their hind legs. It is also important to remember that when a bear goes back down on all fours from a standing position, it may come towards you a few steps. This is normal, and probably not an aggressive act.

- The bear sees you, recognizes you as a human, but continues to come towards you slowly: This may mean several things, depending on the bear and the situation. It may mean that the bear does not see you as a threat, and just wants to get by you (especially if the bear is used to humans, as in a National Park); the bear wants to get food from you (if it has gotten food from people before); the bear wants to test your dominance (it views you as another bear); or may be stalking you as food (more common with black bear, but a rare occurrence). In all cases, your reaction should be to back off the trail very slowly, stand abreast if you are in a group, talk loudly, and/or use a noise-making device. If the bear continues to advance, you should stop. At this point, it is important to give the bear the message that if he continues to advance it will cost him. Continue to make loud noises and present a large visual image to the bear (standing abreast, open your coat). In bear language, bears assert themselves by showing their size. If an adult brown bear continues to come at you, climbing 20 feet or higher up a tree may also be an option if one is next to you (remember, never run from bears). Keep in mind, though, brown bear cubs and black bears can climb trees, and adult brown bears can reach 10 – 15 feet.
- The bear recognizes you as a human and acts nervous or aggressive: When bears are nervous or stressed they can be extremely dangerous. This is when it is important to try to understand what is going on in the bears mind. Nervous bears growl, woof, make popping sounds with their teeth, rock back and forth on their front legs, and often stand sideways to their opponent. A universal sign of a nervous bear is excessive salivation (sometimes it looks like they have white lips). When a bear shows any of these signs, stand where you are and talk in a calm voice. Do not try to imitate bear sounds, this may only serve to confuse and further agitate the bear. If you are in a group, stand abreast. If you have a firearm available, be prepared to use it.
- The bear charges: If all other signals fail, a bear will charge. Surprisingly, most bear charges are just another form of their language. The majority of these are "bluff charges," that is; the bear stops before making contact with their opponent. There are many different types of bluff charges ranging from a loping uncertain gait to a full-blown charge. If a bear charges, stand still. If you have a firearm, take appropriate action, but remember, if a bear is wounded, a bluff charge may immediately turn into a real charge as the bear's mind shifts from an offensive mode to a defensive mode.
- The bear attacks: When all else fails, a bear may attack. Attacks may be preceded by all of the behaviors previously described or they may be sudden. Seemingly unprovoked attacks are often the result of a bear being surprised (and feeling threatened), a bear defending its food cache, or a female defending her cubs. When a bear attacks, it typically runs with its body low to the ground, legs are stiff, ears are flattened, hair on the nape of the neck is up, and the bear moves in a fast, determined way. Front paws are often used to knock the opponent down and jaws are used to subdue it.

AFTER A BEAR ENCOUNTER

If a bear attacks you, your reaction depends on the type of bear that is attacking. If it is a black bear, fight vigorously, for your life may depend on it. Black bears have been known to view humans as prey, and if you struggle with the attacking black bear, it will probably go elsewhere for its meal.

Brown bears are a completely different story. Brown bears attack because they feel threatened, and they will continue to press the attack until the threat has been neutrahzed. If you fight and struggle, the bear will continue to fight, and a human has little or no chance to defeat a brown bear in battle. Lie on your face and stomach, place your hands behind your neck, and lie still when you are attacked. A brown bear will no longer see you as a threat and may stop the attack. Although it sounds foolish to play dead while being attacked by a bear, this has been proven to be the best way to survive a brown bear attack. It should be noted that if you fall down and play dead before a bear actually makes contact, the bear might come over to determine what is going on. Actual maulings by bears are very rare. Alaska has more bears than anywhere else in the world, and there are hundreds of thousands of people living, working, and playing in these bears' back yard. Yet, since 1900, there have only been an average of about two people per year mauled by bears in the state, and very few of those instances have resulted in death.

As a last resort, a bear may have to be shot. When this is the only option, it will likely be in a situation that has a sudden onset. Therefore, it is important that you are familiar and comfortable with whatever firearm you decide to carry. Remember that if you wound a bear, you make the situation worse. There is an on-going debate as to what is the best firearm to use for protection from bears. The following are a few of the pros and cons for some of the more popular firearms:

- Pistols: Convenient to carry, always with the person, can be used in close quarters during an attack, rapid-fire is possible. However, are dangerous to humans (accidents), much practice is needed to be proficient; may not be powerful enough to stop a large bear.
- Shotguns: Can be loaded with a variety of projectiles, effective at close range in brushy situations, rapid-fire is possible, easy to use. They are however inaccurate and ineffective at medium to long range, heavy to carry, potentially dangerous to humans, may not be powerful enough to stop a large bear.
- Rifles: Very powerful calibers are available, accurate at both close and long range. However, practice is required for accuracy in an emergency, range of bullet makes it dangerous to humans, heavy and awkward to carry, rapid fire is difficult with bolt action rifles.

There are different thoughts as to the best place to shoot a charging bear. In reality, a person usually has little time to contemplate shot placement in a true bear attack. If you have a choice, it is best to aim at the shoulder and chest area. Bear's skulls are thick and covered with large muscles, so headshots may not be effective. Once you have made the decision to shoot a bear, you have a responsibility to finish the job you have started. Keep firing until you are out of bullets or you are positive the bear is dead. A wounded bear can be dangerous to you and anyone else who comes into the area.

- Bear Sprays: Are easy to carry and use, little risk of permanent damage to bears and humans, effective in many situations. However, using a spray may change a false charge into a real charge, they are ineffective at ranges greater than 20 feet, ineffective in windy conditions, dangerous if accidentally discharged in a closed area such as an aircraft cockpit.

Regardless of the firearm you choose, it is imperative that you realize that the most effective tool you have against an attacking bear is your brain. Although bears are intelligent animals, we are smarter and can often think our way out of a bad situation if we try. We must never let the firearm we carry become a replacement for common sense.

LAWS CONCERNING BEAR/HUMAN INTERACTIONS IN ALASKA

There are two regulations governing bear and human interactions in Alaska. The first, ACC 92.230, prohibits feeding bears or leaving garbage that attracts them. The other, 5 ACC 92.410, sets guidelines for taking a bear in defense of your life or property (DLP). These DLP provisions specifically state that a bear cannot be killed legally if the problem is caused by the improper disposal of garbage or some other attractive nuisance, or if it is brought about by harassment or provocation of the animal or an unreasonable invasion of its habitat.

The regulation also defines what is considered "property." If a bear is killed under the DLP provisions, the hide and skull are the property of the state and must be turned over to Fish and Game as soon as possible. The person who shot the bear is also required to submit a written incident report within 15 days. (Obtain a paper copy of this attachment through Corporate Health, Safety, and Environment.).

ATTACHMENT 2

HAZARDS AND PRECAUTIONS – MOOSE, ELK, AND DEER

On occasion fieldwork may be conducted in a location where moose may be encountered. The following technical information, precautions, and guidelines for operations in which Moose, Elk, or Deer may be encountered is based on experience and conditions for field work in the state of Alaska. The more these species are understood, the easier it will be to avoid contact with them thus preventing injury to ourselves and to the animals. All big game species are unpredictable and can be dangerous under certain conditions. This attachment is intended to provide informafion that will enable Weston to plan for encounters and to properly address face-to-face encounters.

MOOSE

Moose are the world's largest members of the deer family. The Alaska race is the largest of all the moose. Moose are generally associated with northern forest in North America, Europe, and Russia. In Alaska, they occur in suitable habitat from the Stikine River in the Panhandle to the Colville River on the Arctic Slope, and as far south on the Alaska Peninsula as Herendeen bay. They are most abundant in recently burned areas that contain willow and birch shrubs, on timberline plateaus, and along the major rivers of South-central and interior Alaska. General Description

Moose are long-legged and heavy-bodied with a drooping nose, with a "bell" or dewlap under the chin, and a small tail. Their color ranges from golden brown to almost black, depending on the season and the age of the animal. The hair of newborn calves is generally red-brown, fading to a lighter rust color within a few weeks. Newborn calves weigh 28 to 35 pounds and within five months grow to over 300 pounds. Males in prime condition weigh from 1,200 to 1,600 pounds. Aduh females weigh 800 to 1,300 pounds. Only the bull has antlers.

Life History: Cow moose generally breed at 28 months, though some may breed as young as 16 months. Calves are born anytime from mid-May to early June. Cows give birth to twins 15 to 75 percent of the time, and triplets may occur once in every 1,000 births. The incidence of twinning is directly related to range conditions. A cow moose defends her newborn calf vigorously. Calves begin taking solid food a few days after birth. They are weaned in the fall at the time the mother is breeding again. The maternal bond is generally maintained until calves are 12 months old at which time the mother aggressively chases her offspring from the immediate area just before she gives birth. By late October, adult males have exhausted their summer accumulation of fat and their desire for female company. Once again, they begin feeding. Antlers are shed as early as November, but mostly in December and January.

Food Habits: During fall and winter, moose consume large quantities of willow, birch, and aspen twigs. In some areas, moose actually establish a "hedge" or browse line six to eight feet above the ground by clipping most of the terminal shoots of favored food species. Spring is the time of grazing as well as browsing. Horsetail, pond weeds, and grasses. During summer, moose feed on vegetation in shallow ponds, forbs, and leaves of birch, willow, and aspen.

Movement: Most moose make seasonal movements to calving, rutting, and wintering areas. They travel from only a few miles to as many as 60 miles during these transitions.

WORKING SAFELY AROUND MOOSE

Every year someone is injured by a moose and in some cases fatalities are caused by moose attacks. Most cases of moose attack are from cows defending their calves and they are well equipped to do so. Cow moose attack with their front feet and sharp hooves; they can kill wolves and in some cases drive grizzly bears away from their offspring. Bull moose attack with their massive antlers and can do great damage in a short amount of time. One should always be alert when working in moose country. If you encounter a moose, never approach too closely. Moose will generally declare their displeasure of your presence by lowering their ears and raising their hackles (the long hair on their neck and back). Immediately retreat if you see a moose displaying this behavior. If you are about to be attacked by a moose and there are trees present, stay behind the tree. A human can move around a tree faster than a moose can. Use common sense. Avoid contact with any wild animal. Most have the ability injure a human. Never play dead if attacked by a moose. Put something substantial between you and the moose.

ROOSEVELT ELK

Roosevelt Elk are larger, slightly darker in color, and have shorter, less symmetrical yet more massive antlers than the Rocky Mountain Elk found east of the Cascade Mountains in Canada and the United States.

General Description: Elk are members of the deer family and share many physical traits with deer, moose, and caribou. They are much larger than deer, but not as large as moose, which occur in Alaska. Distinguishing features include a large yellowish rump patch, a grayish to brownish body, and dark brown legs and neck. Unlike some members of the deer family, both sexes have upper canine teeth. The males have antlers, which in prime bull are very large, sweeping gracefully back over the shoulders with spikes pointing forward. Alaska elk antlers have a tendency toward crowning, the formation of the three points at the end of each antler. Elk shed their antlers during the winter each year and grow new ones the following summer. The soft growing antler is covered with velvet, which is scraped off by rubbing and jousting after the antlers harden in the fall. Bull elk on Afognak Island are estimated to weigh up to 1,300 pounds. Cow elk are similar in appearance to the bulls, but are smaller and have no antlers.

Life History: Elk calves are born in late May or early June when abundant food is available for the mother and the mild weather increases the calves' chances for survival. Birth usually occurs under the cover of dense spruce forest, hidden from predators and protected from the elements. Calves are born with protective coloration (light spotted areas on the back, which act as camouflage). A few days after giving birth, the mother joins other cow elk with calves. A single cow will often "baby-sit" with the calves while the remaining cows seek food. As summer progresses, elk bands move above timberline and feed on the alpine slopes where breezes keep biting insects at bay and young plants are highly nutritious. By July, the calves, although still nursing, begin feeding on succulent forbs.

Beginning in August, bands of elk congregate and form herds consisting of cows, calves, yearlings, and an occasional mature bull. Nearby, but separate from the heard mature bulls can be found. During September, the bulls join the main herds and mating activities (the rut) begin. Large herds are scenes of vigorous activity as mature bull challenge each other vocally, emitting a high-pitched whistle or bugle, an eerie but thrilling sound. Occasionally, pushing and shoving matches are initiated as the mature bull attempt to take advantage of the larger bull's preoccupation and run past them to win the favors of a female. By mid-October most breeding activities have ceased. Herds may begin to disperse into smaller bands as they move into wintering areas. Winter months are spent in lower valleys and in the dense spruce forest and small openings near the coastline searching for food.

Food: Elk are hardy animals whose large body size and herding tendencies require tremendous amounts of food. From late spring to early fall, with a wide variety of food available, elk are mainly grazers, using grasses, forbs, and other leafy vegetation. By late fall they become browsers, feeding on sprouts and branches of shrubs and trees.
Population: From the original eight transplanted animals, Afognak elk have expanded to about 1,200.

WORKING SAFELY AROUND ELK

Although elk are not as widely distributed as moose in Alaska, they are large and potentially dangerous when the bulls are in the rut and when you may be near cows with young calves. Follow the same precautions as set forth above for moose. Elk bulls have a tendency to be more aggressive during the rut (September & October) than either moose or deer, and caution should be used when working near bulls during this time of year. Aggressive cows with calves should be avoided as well, since they attack in the same manner as cow moose.

SITKA BLACK-TAILED DEER, MULE DEER, AND WHITE-TAILED DEER

The Sitka black-tailed deer is native to the wet coastal rain forest of Southeast Alaska and north coastal British Columbia. Transplants have expanded its range and established population now also exist near Yakutat, in Prince William Sound, as well as Kodiak, and Afognak, and Raspberry Islands.

General Description: The Sitka black tailed deer is smaller, stockier, and has a shorter face than other members of the black-tailed group. Fawns are born in early June and weigh six to eight pounds at birth. The average October live weight of adults is about 80 pounds for does and 120 pounds for bucks, although dressed weight bucks of over 200 pounds have been reported. The summer coat of reddish brown is replaced by dark brownish gray in winter. Antlers are dark brown with typical black tailed branching. Normal adult antler development is three points on each side. Average life span is about 10 years, but a few are known to have attained an age of at least 15.

Life History: Fawns are bom in late spring. After the winter snow pack recedes, deer disperse; migratory deer move to high elevation alpine/sub-alpine habitats while resident deer remain at lower elevations throughout the forest. Summer and early fall are periods

of active foraging as deer accumulate fat reserves, which will help them through the winter and early spring. With the first heavy frost, deer in the higher alpine and sub-alpine areas descend to the upper forest. The breeding season (or rut) peaks during late November. Breeding bucks spend little time foraging and by late November have used up much of their fat reserve. Does, however, generally enter December in prime condition. Does breed during their second year of life and continue producing fawns annually until they are 10 or 12 years of age. Reproductive success decreases rapidly beyond 10 to 12 years and by age 15, which is probably the maximum life expectancy, reproduction has essentially ceased. Prime age does (5 to 10 years) typically produce two fawns annually.

Throughout the rest of the winter and early spring, deer are generally restricted to uneven-aged old growth forest below 1,500 feet in elevation. The old growth forest provides optimal winter habitat because the high broken canopy intercept much snow but still provides enough light for the growth of forage plants used by deer. During winter, the distribution of deer at various elevations is influenced by changing snow depth. During extreme snow accumulations, many deer congregate in heavily timbered stands at lower elevations, and some may even move into the beach. Spring is a critical period for deer, and if winters are deep and persistent, many deer die of starvation. As snow melts in mid to late spring, deer begin to disperse, and by late spring and early summer they start rebuilding some of the fat reserves lost during winter.

Home Range: Summer and winter home range areas vary from 30 to 1,200 acres and average about 200 acres for radio-collared deer on Admiralty Island. Migratory deer have larger annual home ranges than resident deer. The average distance between summer and winter home ranges is five miles for migratory deer and half a mile for resident deer. Movement of deer between watersheds appears to be minimal during winter.

Food Habits: During summer, deer generally feed on herbaceous vegetation and the green leaves of shrubs. During winter, they are restricted to evergreen forbs and woody browse. When snow is not a problem, evergreen forbs such as bunchberry and trailing bramble are preferred. During periods of deep snow, woody browse such as blueberry, yellow cedar and hemlock, and arboreal lichens are used. Woody browse alone, however, is not an adequate diet and deer rapidly deplete their energy reserves when restricted to such forage.

Populations: Deer populations in Alaska are dynamic and fluctuate considerably with the severity of the winters. When winters are mild, deer numbers generally increase. Periodically, however, a severe winter will cause a major decline in the populafion. Deer have a high reproductive potential, and depressed populations normally recover rapidly. In some cases, however, predation may speed deer decline, as well as slow recovery to higher levels. The wolf, which occurs on the mainland and islands south of Frederick Sound, is considered the major predator of deer in Southeast Alaska. Both black and brown bears also prey on deer to some degree.

WORKING SAFELY AROUND DEER

The White-tailed deer found thought the eastern and westem part of the United States have been known to attack people on many occasions. It is unknown whether Black-tailed deer have made any such attacks, but it is possible for someone to be injured by an irate buck in the breeding season (late fall). Deer are well equipped to injure humans. They are very fast. Bucks have sharp antlers and can clear amazingly high obstacles with graceful, arching leaps. They can run with remarkable speed, even in dense cover, and have excellent camouflage. When working in areas populated with deer, whether it be White-tailed, Black-tailed, or Mule deer, it is just common sense not to approach any large wild animal too closely. It is unlikely that an attack from a deer would be fatal but it is possible and serious injury is likely.

ATTACHMENT 3

AMERICAN BISON AND FERAL WILD CATTLE – HAZARD RECOGNITION AND PRECAUTIONS

American Bison (Bison), which shaped the lifestyle of the plains Indians and figured prominently in American history before they were brought to near extinction, were transplanted to Alaska from Montana in 1928. While bison were the most common large land mammal in Alaska thousands of years ago, all of Alaska's wild bison came from 20 animals released near Delta Junction. Natural emigration and transplants have now created additional herds at Copper River, Chitina River, and Farewell. Small domestic herds are located at Healy, Kodiak Island, and on Provo Island. There were approximately 700 wild bison in the state in mid-1985.

General Description: The bison is the largest native land mammal in North America. A full-grown bull stands six feet at the shoulder, is up to 10 feet long, and can weigh more than a ton. Full-grown cows are smaller, but have been known to weigh over 1,200 pounds. A bison's head and forequarters are massive and seem out of proportion to the smaller hind parts. Bison have vertebrae, which begins just ahead of the hips and reaches its maximum height above the front shoulder. From above the shoulder, the hump drops almost straight down to the neck. The bison's horns curve upward. The horns of the bull are larger and heavier than the horns of the cow. As winter progresses, their coats change color and are much paler by spring. When the weather warms, the hair loosens and hangs in patches until it is completely shed and replaced with new hair by late spring. Hair on the chin resembles a goatee. Older animals tend to have more hair on their heads.

Life History: Most bison young are born in May, but calves are born from April to August or even later. Newly born calves have a reddish coat. They are able to stand when only 30 minutes old; within three hours of birth, they can run and kick their hind legs in the air. At about 6 days of age, calves start grazing. Their reddish-orange coat begins to darken at about 10 weeks, with the molt to dark brown complete about five weeks later. Cows are sexually mature at two years of age and give birth to single calves twice in three years. The gestation period is approximately 270 days. On rare occasions, a mostly white or even albino calf has been born in the Delta herd, but none has reached maturity. Bison in Alaska have been known to live to a relatively great age compared to other hoofed animals (ungulates). One tagged bull killed in the Copper River area was over 20 years old. Bison are migratory animals by nature. Alaska's wild bison do not remain in single herds, but scatter alone or in-groups ranging up to 50 animals or more. In the Delta Junction area, they move far up the Delta River in early spring to secluded meadows where they calve. Around August they travel back downstream, eventually moving on the Delta Junction Bison Range, and finally in late fall, onto farms where they remain throughout the winter. Here they sometimes cause damage to un-harvested crops. Alaska's other wild bison herds also have seasonal movement patterns. Bison move slowly while feeding and appear to be quite clumsy. This is pure deception, for when pursued, the bison is fleet of foot and has great endurance. A mature bull eventually captured at Delta Junction jumped a seven-foot log fence from a standing position.

Food Habits: Bison are grazing animals and in Alaska find only limited amounts of food along rivers, in recent burns, and sedge potholes. Their diet is made up mainly of various grasses and forbs like vetch, a favored summer food found on gravel bars. Sedges, silverberry, willow, and ground birch are also eaten.

Working Safely Around Bison: When working in areas where bison are present, follow the same precautions as stated above for other large potentially dangerous wild animal. Generally, where bison are present there also will be moose and Brown (Grizzly) bears sharing the same area. Partially due to the relatively sparse population, bison injure fewer people than Brown Bears or moose. Never approach bison and use caution when working near bison as they are unpredictable and can cover a lot of ground in a short amount of time. Bison can be found in timbered areas. If approached by a bison and you cannot make it to a vehicle, keep a large tree between you and the bison. You can move around the tree faster than the bison. If a single bison or heard of bison approach you or your crew, retreat to your vehicle and leave the area. Do not attempt to "drive" the bison from your area while in your vehicle. Bison have no respect for cars and could charge and damage your vehicle and the occupants. The best way to avoid contact is to use your head and give the bison the right of way.

FERAL OR WILD CATTLE

Feral or wild cattle are only found in a few remote locations in Alaska. A population exists on Sitkinak Island on the south end of Kodiak Island, Long Island, Harvester Island, and Chirikof Island. The same caution should be used when working in areas with a population of wild cattle that would be used when working around any of Alaska's dangerous wildlife. Never approach too closely and if they begin to approach you, clear the area as fast as possible. If you arrive at your work site and there are wild cattle close by, stay in you vehicle and remain there until they leave the area. If it is necessary to destroy a wild cow, you must notify the Department of Fish & Game. The same Defense of Life and Property (DLP) law that applies to big game species does not apply to wild domestic cattle, but you will be required to salvage the meat and make the report. Cattle reside on leased ground, and the owner of the leases must also be notified. It may also be necessary to compensate the landowner.

Wild Feral Cattle can be dangerous, and there are reports of injuries to people. Although they may look domestic cattle, they are wild and have no fear or respect for humans. Give them the right a way, use common sense, and maintain a safe distance when working where wild Feral Cattle inhabit the area.

ATTACHMENT 4

MOUNTAIN LIONS (COUGARS) – HAZARD RECOGNITION AND PRECAUTIONS

Mountain lions range throughout the Western United States and are the largest cat in North America, weighing considerably more than its cousins — the lynx, bobcat and domestic cat. Sleek and graceful, the cougar is a solitary and secretive animal rarely seen in the wild. However, in many areas humans are encroaching on wildlife habitat and cougar numbers are rebounding, the number of cougar sightings in suburban areas is on the rise

COUGAR COUNTRY

Cougars prefer rocky terrain, dense brush and semi-open forests. The other essential ingredient, of course, is deer and elk, the cougar's main prey. Traditionally, cougars were associated almost exclusively with deer and elk herds, but as cougar have expanded their range and adapted to semi-urban areas, smaller mammals like raccoons, coyotes and opossums supplement their diet.

Cougars are territorial animals and maintain home ranges of up to 100 square miles. The lions mark their territories with "scratch hills" or scrapes — leaves, grasses and dirt they rake together into small piles and urinate on. Most active at dawn and dusk, cougars are lone hunters designed for short bursts of speed. They prefer to ambush their prey and often drag their kills to secluded spots where they will eat it and then cover, or cache, the remains for later.

General Description: Cougar, mountain lion, puma, panther, and catamount are common names of this large predator. The cougar is a member of the cat family and have short faces, relatively small rounded ears, and retractable claws. An adult cougar's body length ranges from 42-54 inches with tails nearly 3 feet long (a third of the lion's total length). Adults range from 26-31 inches tall at the shoulder. Adult males can weigh up to 200 pounds, adult females up to 120 pounds. Cougars vary in color from reddish-brown to tawny to gray with a black tip on their tail. Kittens have black spots.

Range/Habitat: Cougars prefer rocky terrain, steep slopes and cliffs, rim rock, dense brush and semi-open forests — essentially the same general range as its prey species, the deer, elk, mountain goat and wild sheep. Over 20,000 cougars are thought to live in the Western United States.

Cougars are primarily crepuscular (active at dawn and dusk) and secretive animals. Adults, particularly the males, roam widely often covering a home range of 75-100 square miles. The lions are territorial and will "mark" their territories by urinating on scratch piles. They den in rock outcroppings, dense thickets and under uprooted trees.

Food: Cougars are carnivores, meaning they eat mainly meat. Their diet consists primarily of deer and elk. Mountain goat, wild sheep, moose, coyotes, porcupine, raccoons, beaver, hares, rodents, and occasionally, domestic animals all supplement their diet. Cougars will cache uneaten portions of their kill or cover it for later consumption, but will not eat spoiled meat, as bears will.

Life span: Cougars 8-12 years are considered old, yet they may live up to 20 years. Cougars breed for the first time between 2 and 3 years of age. They are polygamous, meaning individuals may breed with several different cougars. The bond between male and female is short-lived and the male cougar plays no role in raising the kittens. A female's gestation period is 88-97 days (about 3 months). The animals normally breed every other year and during no particular breeding season. Females usually give birth to two kittens, but litters may range from one to six kittens, and may be bom any month of the year. Newborns are 8-12 inches long and weigh less than a pound. Kittens remain with their mother for a year and a half.

COUGARS: CLOSE ENCOUNTERS

Cougar attacks on humans are extremely rare. In North America, fewer than 20 fatalities and 75 non-fatal attacks have been reported during the past 100 years. However, more cougar attacks have been reported in the western United States and Canada over the past 20 years than in the previous 80. In Washington, of the one fatality and five non-fatal attacks reported since 1924, four attacks have occurred during the 1990's. As cougar numbers increase in Washington and habitat dwindles, the more likely you are to encounter a lion. Young, newly independent cougars of 1 or 2 years of age, presumably having difficulty finding food for themselves, account for the majority of the cougar/human interactions reported in Washington.

IN COUGAR COUNTRY (ESPECIALLY WOODED FOOTHILLS):

- Keep pets indoors or in secure kennels at night for safety.
- If practical, bring farm animals into enclosed sheds or barns at night, especially during calving or lambing seasons.
- Do not leave pet food or food scraps outside.
- Store garbage in cans with tight-fitting lids so odors do not attract small mammals.
- When children are playing outdoors, closely supervise them and be sure they are indoors by dusk.
- Light walkways and remove any heavy vegetation or landscaping near the house.
- Avoid feeding wildlife or landscaping with shrubs and plants that deer prefer to eat. Remember, predators follow prey.

While recreating or working in cougar country you can avoid close encounters by taking the following precautions:

- Work or hike in small groups and make enough noise to prevent surprising a cougar. Avoid hiking alone.
- Keep small children close to the group, preferably in plain sight just ahead of you.
- Do not approach dead animals, especially recently killed or partially covered deer and elk.
- Be aware of your surroundings, particularly when hiking in dense cover or when sitting, crouching or lying down. Look for tracks, scratch piles, and partially covered droppings.

- Keep a clean camp. Reduce odors that may attract small mammals like raccoons, which in turn attract cougars. Store meat, other foods, pet food, and garbage in double plastic bags.
- Do not leave your pet tied at a campsite, which may also attract cougars. Better yet, leave "Rover" at home when camping or hiking.

WHEN AN ENCOUNTER OCCURS

If you do come face to face with a cougar, your actions can either help or hinder a quick retreat by the lion. Here are some tips.

- Stop, stand tall and don't run. Pick up small children immediately. Running and rapid movements may trigger an attack. Remember, a cougar's instinct is to chase.
- Face the cougar, talk to it firmly and slowly back away. Always leave the animal an escape route.
- Try to appear larger than the cougar by getting above it. (E.g., stepping up onto a stump). If wearing a jacket, hold it open to further increase your size.
- Do not take your eyes off the animal or turn your back. Do not crouch down or try to hide.
- Never approach the animal, especially if it is near a kill or with kittens. Never corner the animal or offer it food.
- If the animal does not flee and shows signs of aggression (crouches with ears back, teeth bared, hissing, tail twitching, and hind feet pumping in preparation to jump), be more assertive. Shout, wave your arms and throw rocks. The idea is to convince the cougar that you are not prey, but a potential danger.

If the cougar attacks, fight back aggressively and try to stay on your feet. Cougars have been driven away by people who have fought back using anything within reach, including sticks, rocks, shovels, backpacks, and clothing — even your bare hands. Generally, if you are aggressive enough, a cougar will flee, realizing it has made a mistake.

ATTACHMENT 5

PROJECT SPECIFIC EXEMPTION FOR FIREARMS

Weston Corporate policy (insert OP#) specifically prohibits firearms on Weston premises or project sites. However, in some remote locations firearms may be necessary to ensure a safe work environment. When the project manager has determined that firearms are necessary the Policy # ____ Project Specific Exemption for Firearms form (attached) must be completed and submitted with the SSHP. The Corporate EHS Manager (or designated representative in his absence) is authorized to grant a project specific exemption.

The project specific exemption applies only to projects where firearms are required and should be omitted when other controls are deemed appropriate. To obtain an exemption, complete the attached form and submit it along with the HSP to the Corporate EHS for approval.

Project Specific Exemption for Firearms

Project Name:	End Date:
Location:	Start Date:
Contract Number:	WO No.:

Wildlife Species of Concern:

Project Narrative (Brief description of the scope of work):

Justification (Brief narrative supporting firearm exemption):

The following named personnel have demonstrated proficiency in wildlife protection through training and experience (Attach copies of training documents), have voluntarily submitted to a check through the National Criminal Information Computer (NCIC) and have no convictions that prevent them from possessing firearms, have agreed to perform the duties as outlined in the HSP; therefore granted an exemption and permitted to possess firearms on the project site for the express purpose of wildlife protection.

Employee Name	SSAN	Company	Title	NCIC
				Pass / Fail
				Pass / Fail
				Pass / Fail
				Pass / Fail

This document grants an exception to Roy F. Weston, Inc.'s Policy # ____ and permits firearms on this project for the express purpose of protection from Wildlife. All persons either employed by or subcontracted to Weston must adhere to the requirements for safe handling of firearms and other restrictions as outlined by this Field Operating Procedure ____ and those that may be required by the client, airline companies, and any other concerned agencies or organizations. These restrictions must be stated in the HSP.

Approvals:

Title	Name (print or type)	Signature	Date	Approved
Project Manager				Yes / No
OU Manager				Yes / No
Safety Officer				Yes / No

Statement of Compliance: The above persons approving this document have reviewed the requirements of the project and agree that the possession and use of firearms is necessary to ensure that Weston is able to ensure a safe work environment on the stated project. Only those persons named herein shall be permitted to possess firearms.

Title	Name (print or type)	Signature	Date	Approved
Division EHS Manager				Yes / No
Corporate EHS Manager				Yes / No

The Division and Corporate safety managers have reviewed this request and hereby grant a project specific waiver.

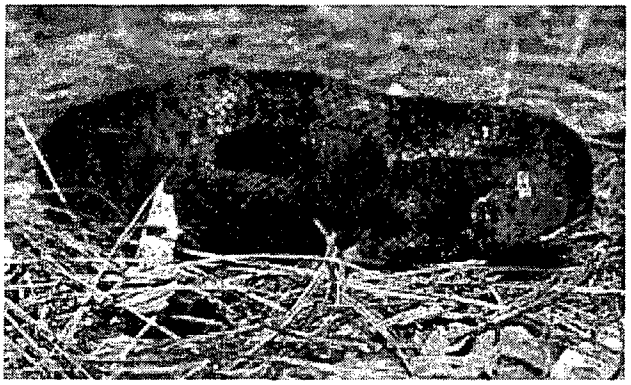
Approval Comments: (Write comments as appropriate)
This exemption does not permit or allow possession of firearms on or in vicinity of, the project location for any purpose other than protection from wildlife.

APPENDIX B - PICTURES OF POISONOUS SNAKES AND LIZARDZS

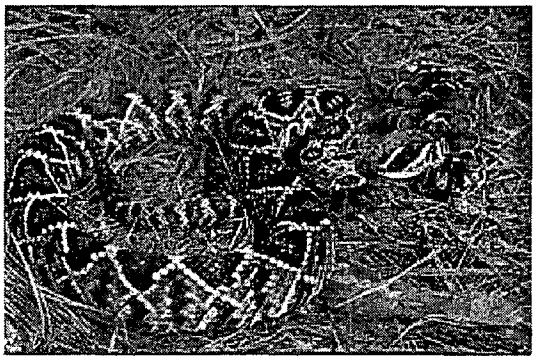
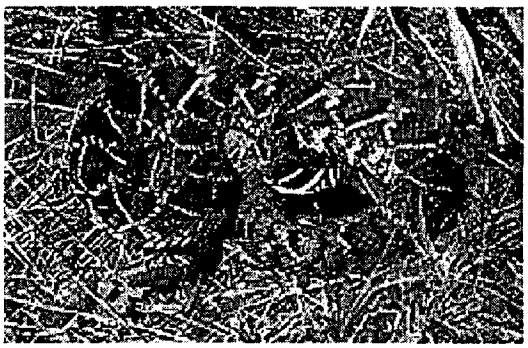
Americas

American copperhead

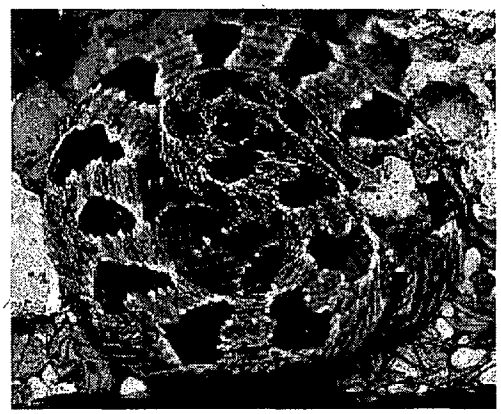
Coral Snakes – Western, Eastern and Texas – Southern US



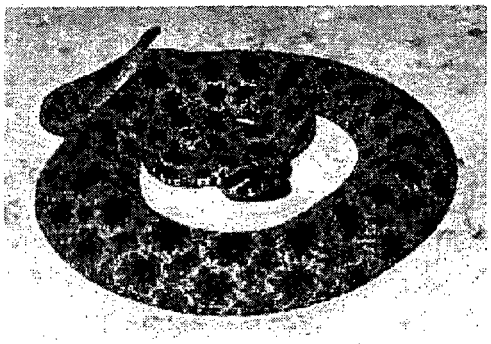

Cotton Mouth – East and Southeast US

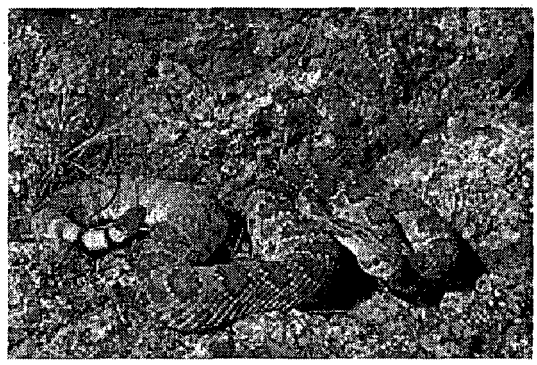
Eastern Diamondback Rattlesnake - Southeast US



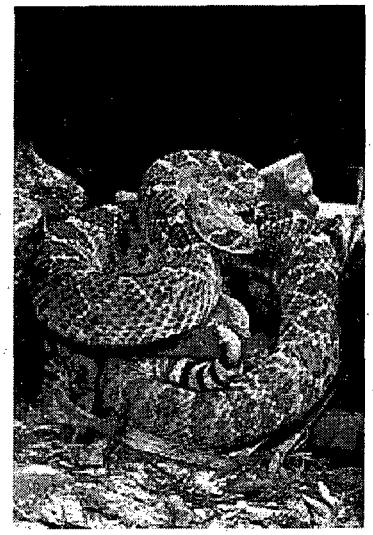

Timber Rattlesnake – Eastern US



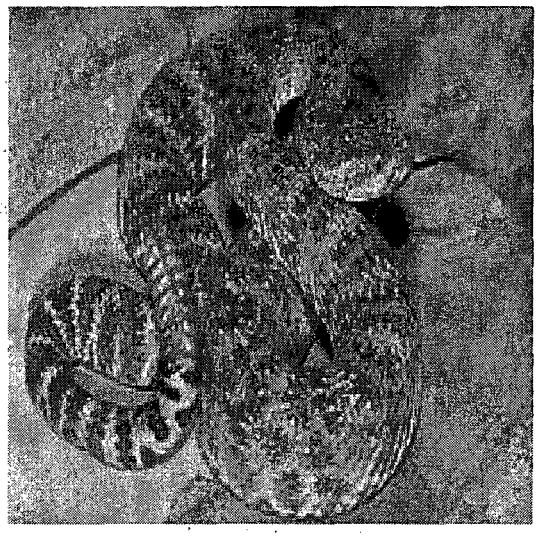
Dusky Pygmy Rattlesnake - SE US



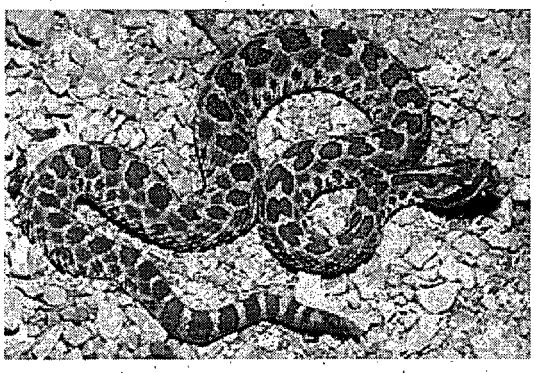
Mojave Rattlesnake – Southwest US Mexico



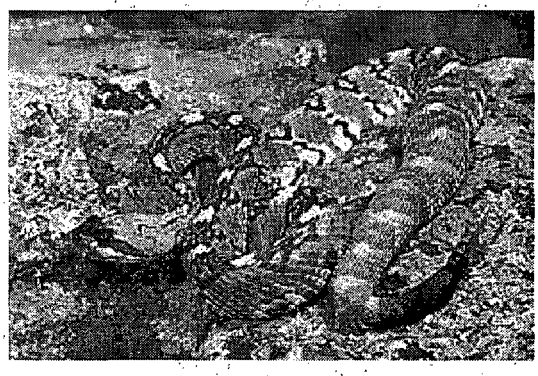
Western Diamondback Rattlesnake – SW US



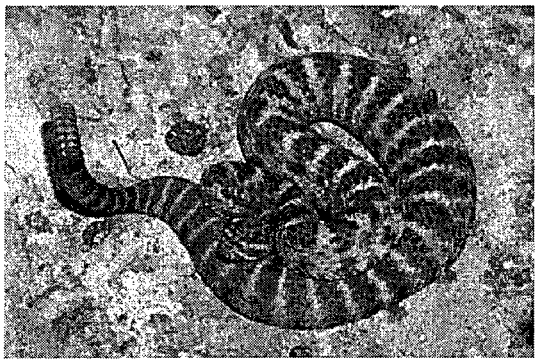
Speckled Rattlesnake - SW US



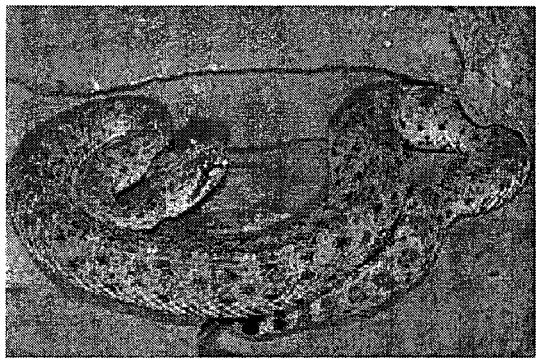
Massasaug – North and South Central US



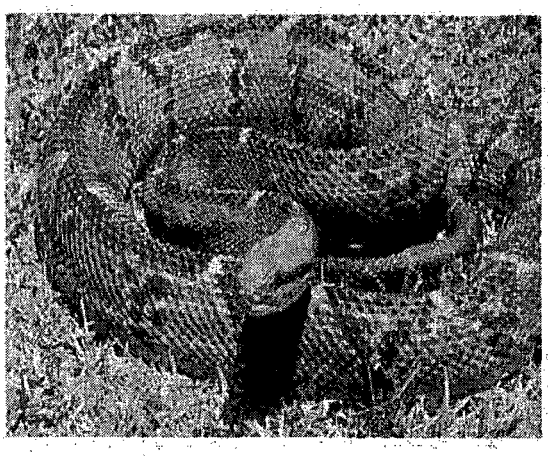
Black-tailed Rattlesnake – South Central US and Mexico



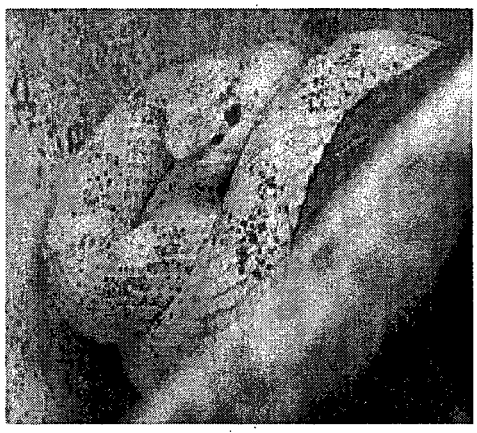
Tiger Rattlesnake – Southwest US and Mexico



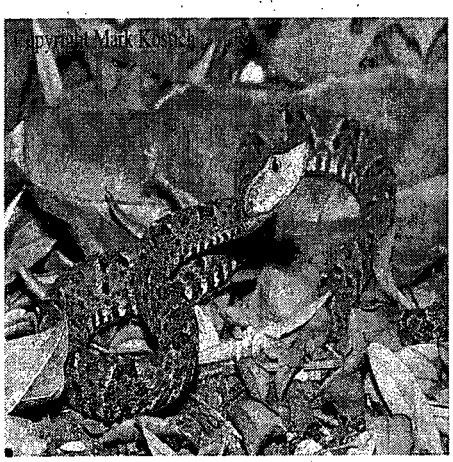
Sidewinder – Southwest US



Bush Master – Central and South America, Caribbean

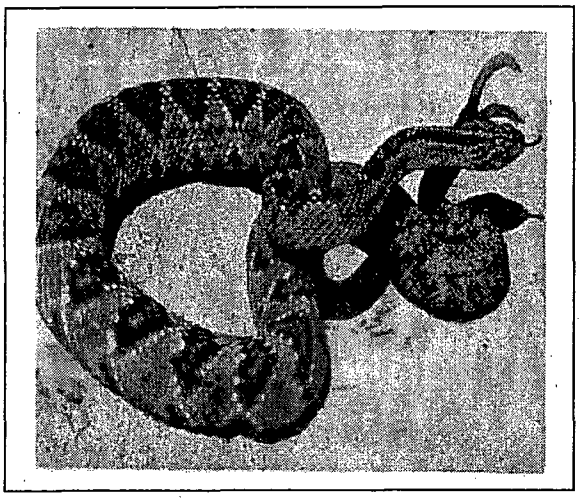


Eyelash Pit Viper



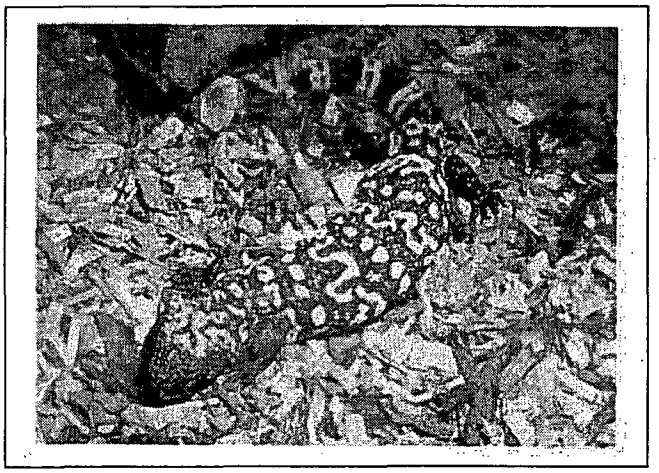
Fer-de-Lance – Central & South America

Jumping Viper – Central America

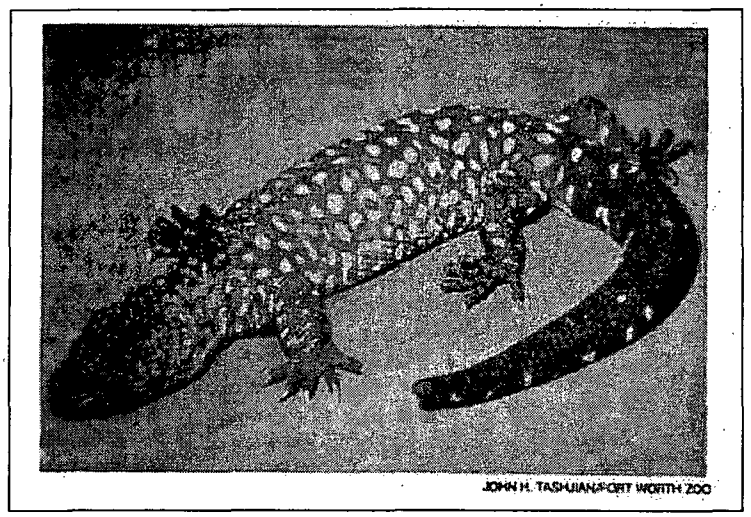


Tropical rattlesnake - Southern Mexico, Central America, and South America.

Lizards

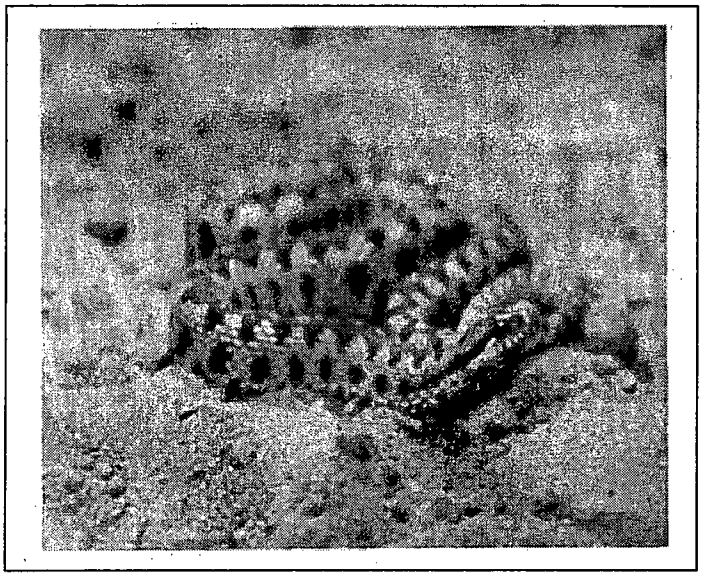


Gila Monster – SW US

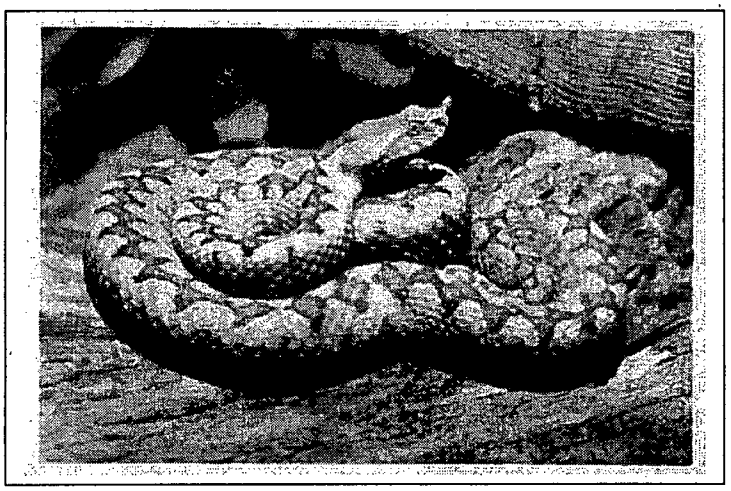


Mexican Bearded Lizard – Mexico and Central America

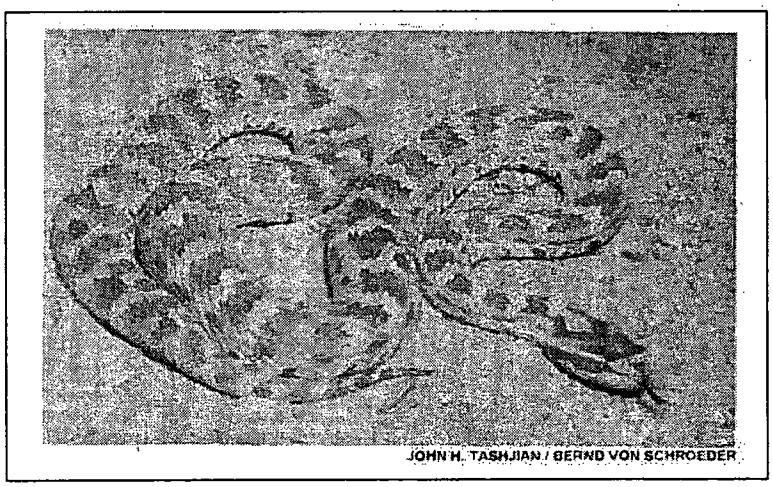
Europe



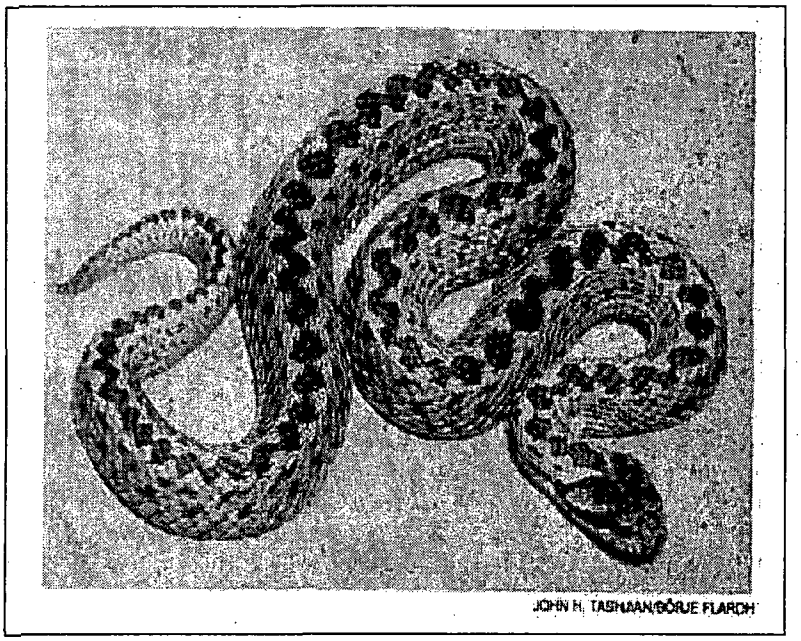
Common Adder - Throughout Europe



Long nosed Adder - Italy, Yugoslavia, northern Albania, and Romania



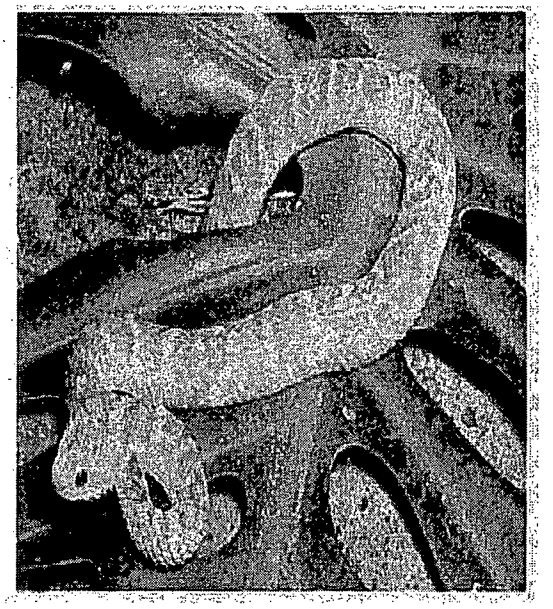
Pellas Viper - Throughout southeastern Europe.



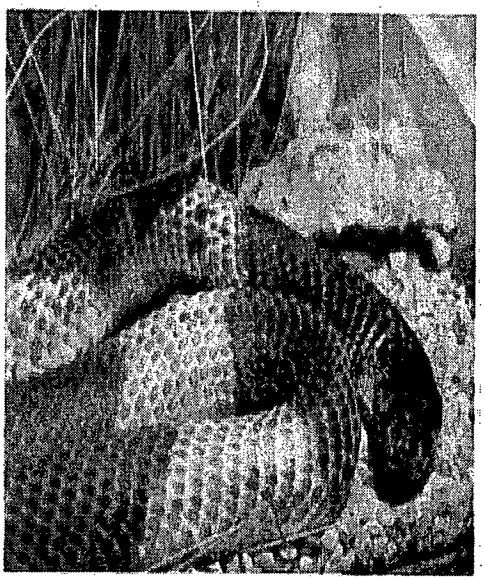
Ursini Viper - Most of Europe, Greece, Germany, Yugoslavia, France, Italy, Hungary, Romania, Bulgaria, and Albania.

Africa and Asia

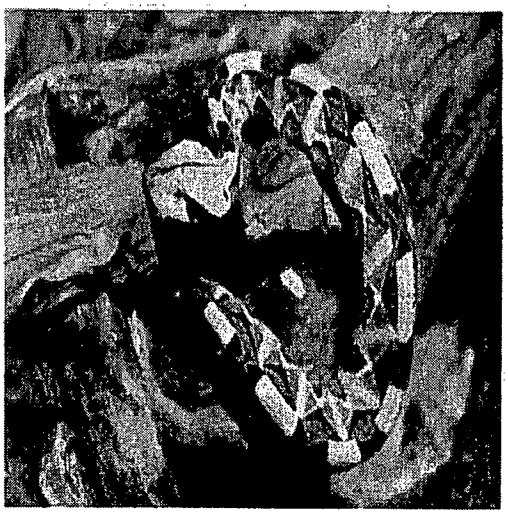
Boomslang - sub-Saharan Africa



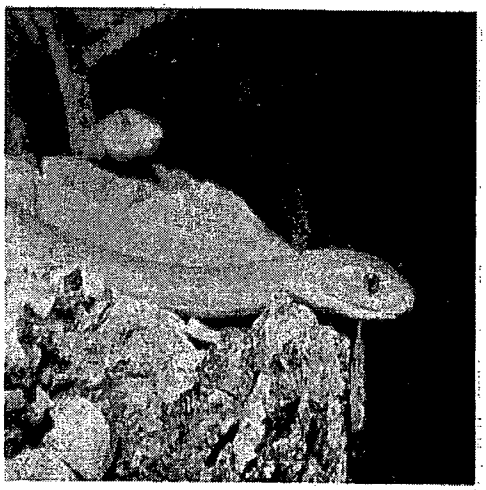
Bush Viper - Most of Africa, Angola, Cameroon, Uganda, Kenya, and Zaire



Africa, Iraq, Syria, and Saudi Arabia

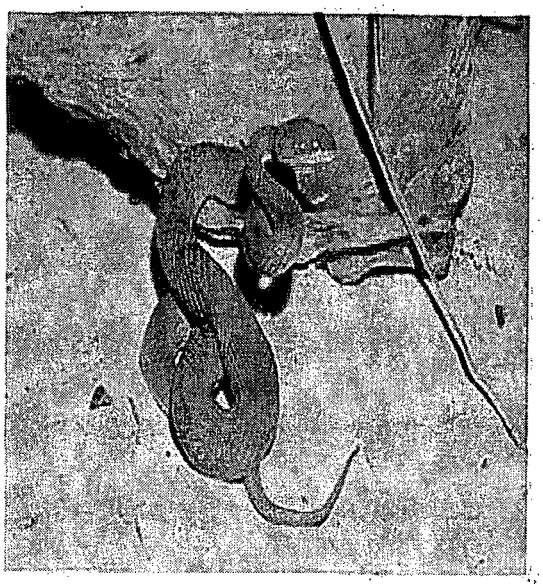


Gaboon viper - Most of Africa

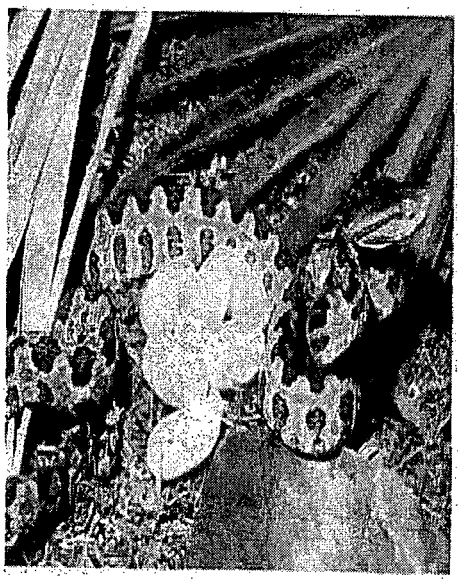


Green Mamba - Most of Africa.

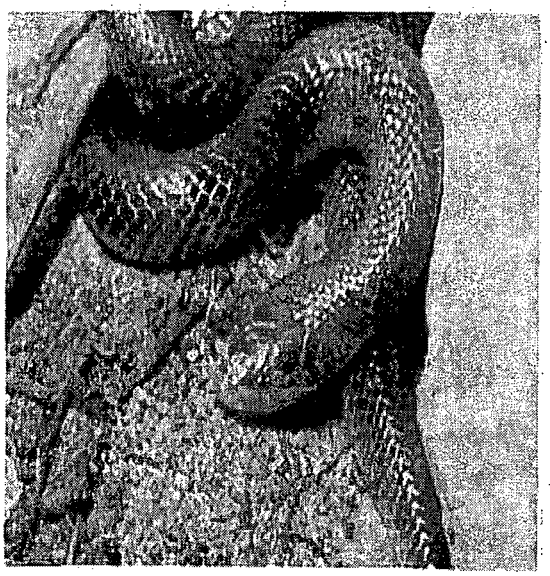
Rhinoceros viper or river jack – Equatorial Africa



Green Tree Pit Viper - India, Burma, Malaya, Thailand, Laos, Cambodia, Vietnam, China, Indonesia, and Formosa.

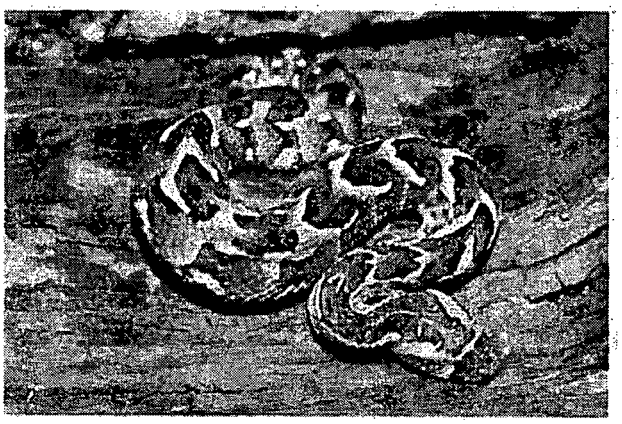


Habu pit viper - Okinawa and neighboring islands and Kyushu

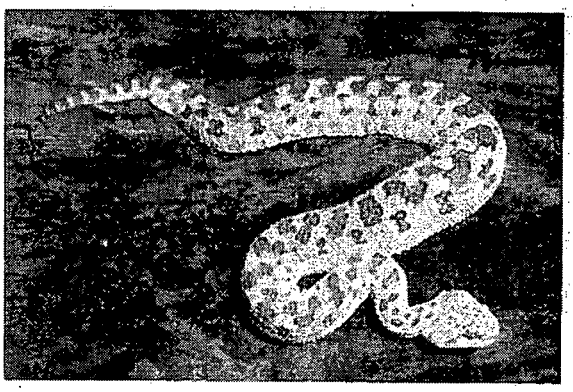


Mole or Burrowing Viper
Sudan, Ethiopia, Somaliland, Kenya, Tanganyika, Uganda, Cameroon, Niger, Congo, and Urundi.

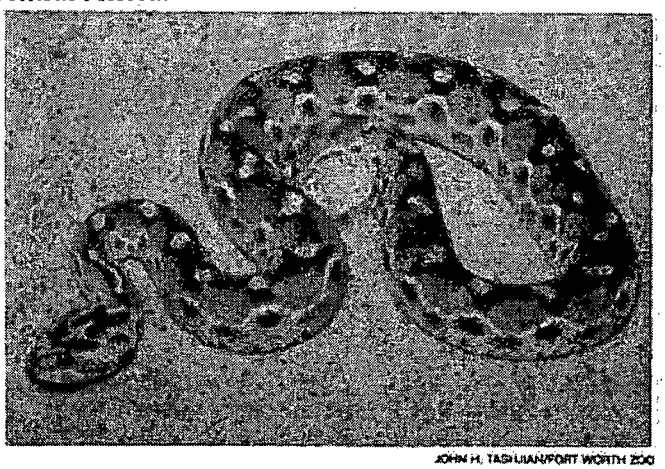
Middle East



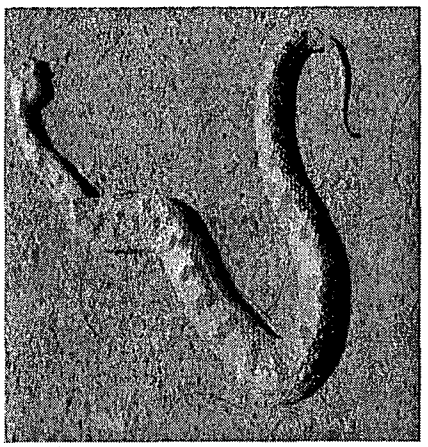
Puff Adder - Most of Africa, Saudi Arabia, Iraq, Lebanon, Israel, and Jordan

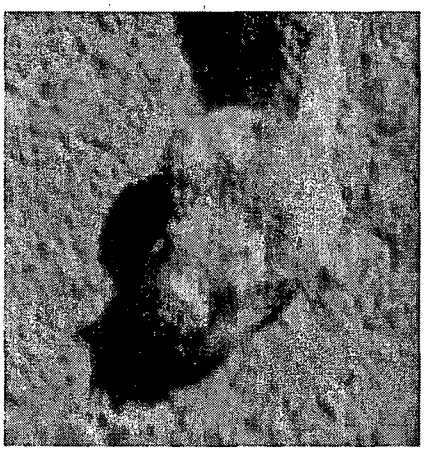


Sand Viper - Northern Sahara, Algeria, Egypt, Sudan, Nigeria, Chad, Somalia, and central Africa.

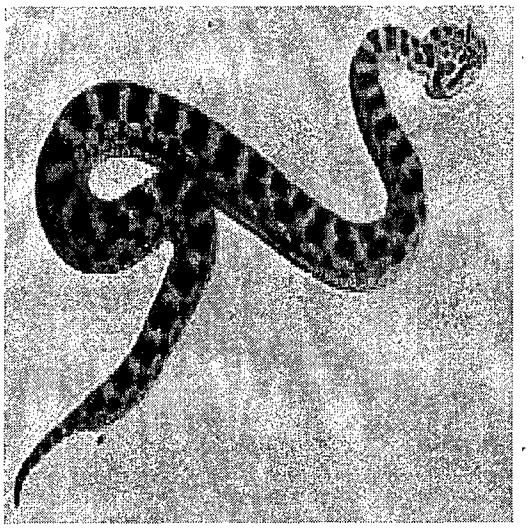


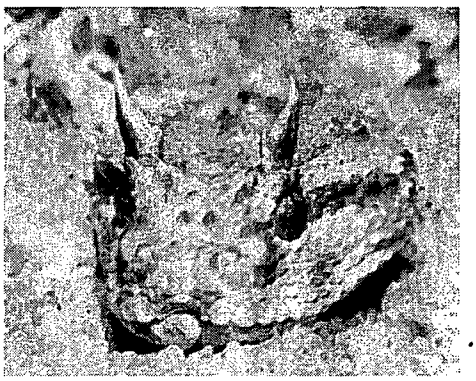
Saw Scaled Viper - Asia, Syria, India, Africa, Iraq, Iran, Saudi Arabia, Pakistan, Jordan, Lebanon, Sri Lanka, Algeria, Egypt, and Israel.





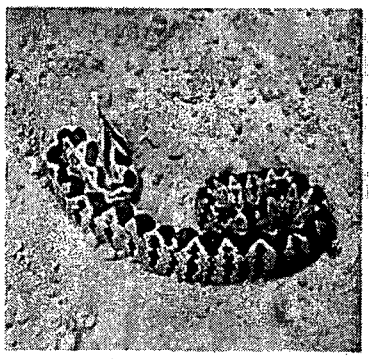
Field's horned viper, False Eye-horned viper - Middle East and as far east as Pakistan



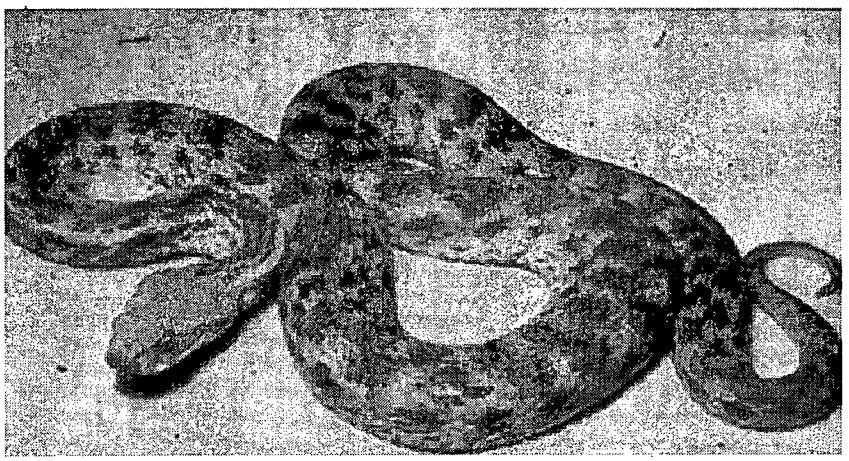


Horned Asp, (true) Desert Horned/Eye-Horn Viper,
desert horned sidewinder Northern Africa and parts of the Middle East.

Desert Cobra, Desert Black Snake

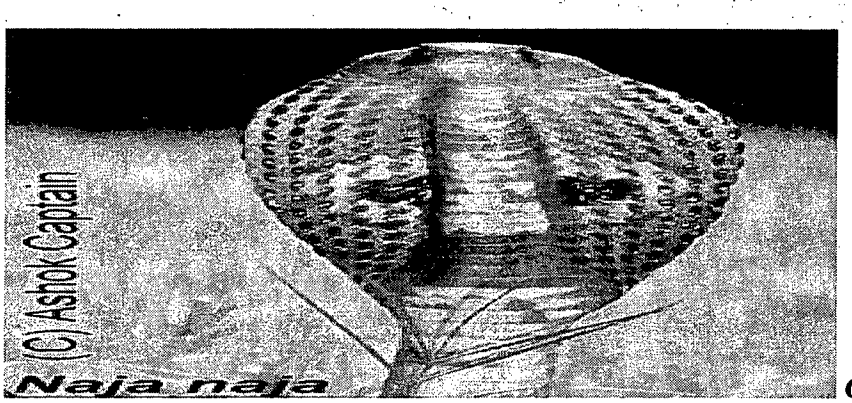


Palestinian Viper - Turkey, Syria, Palestine, Israel, Lebanon, and Jordan

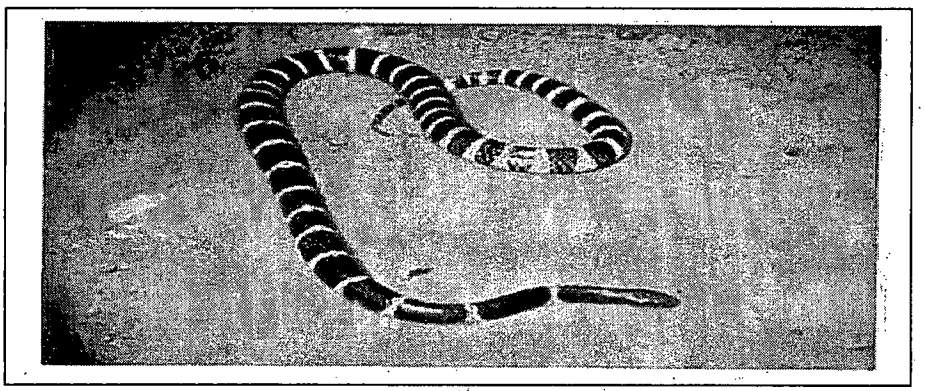


Levant viper or Levant adder, aka: desert or mountain adder, 'kufi' - Greece, Iraq, Syria, Lebanon, Turkey, Afghanistan, lower portion of the former USSR, and Saudi Arabia.

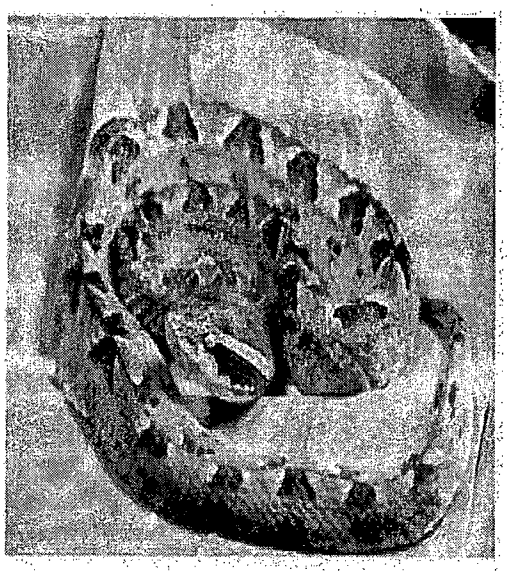
India



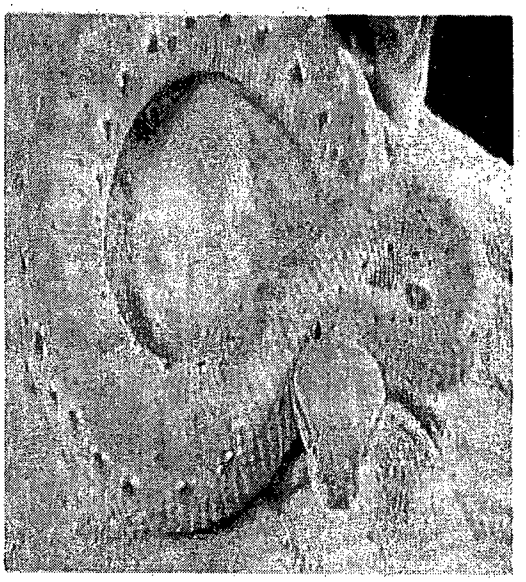
Cobra



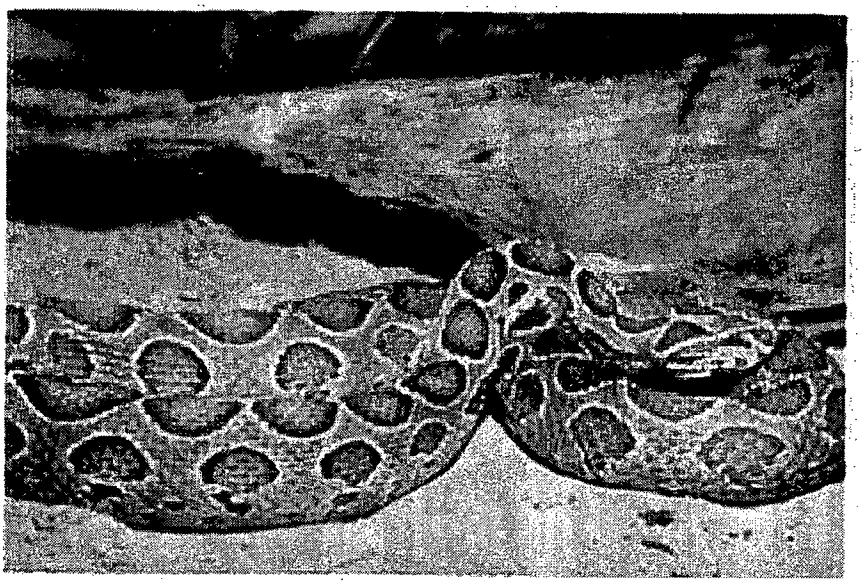
Common Krait - India, Sri Lanka, and Pakistan.



Malayan Pit Viper - Thailand, Laos, Cambodia, Java, Sumatra, Malaysia, Vietnam, Burma, and China



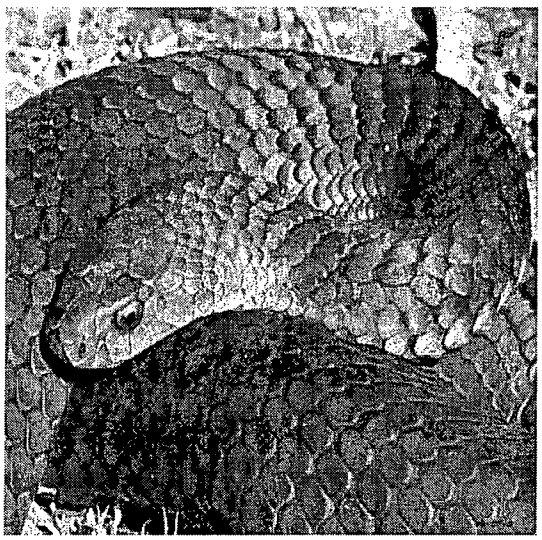
McMahon's Viper- West Pakistan and Afghanistan.

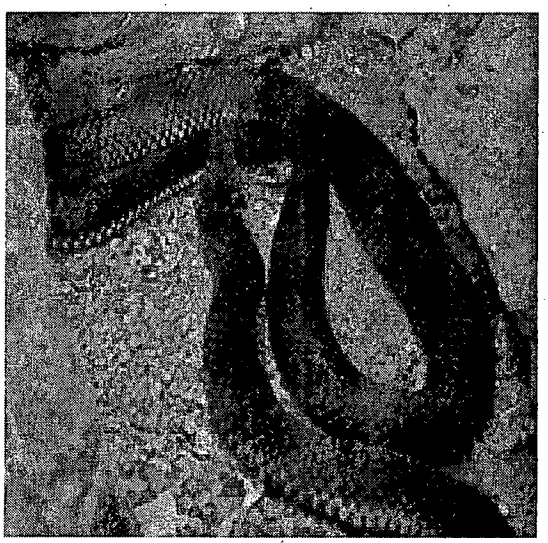


Russell's Viper - Sri Lanka, south China, India, Malaysian Peninsula, Java, Sumatra, Borneo, and surrounding islands.

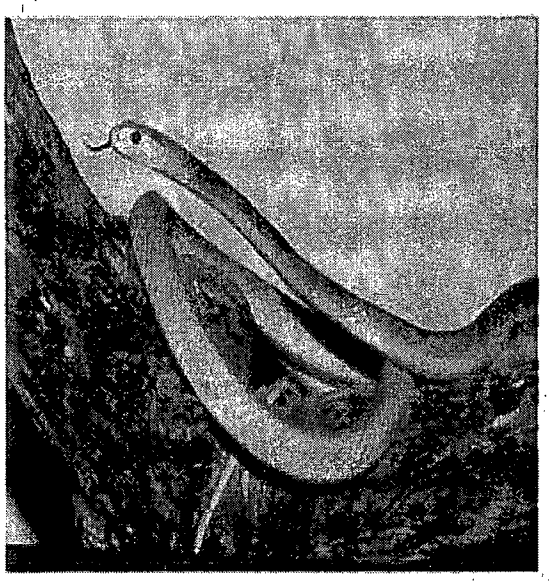
Wagler's pit viper or temple viper - Malaysian Peninsula and Archipelago, Indonesia, Borneo, the Philippines, and Ryuku Islands.

Australasia



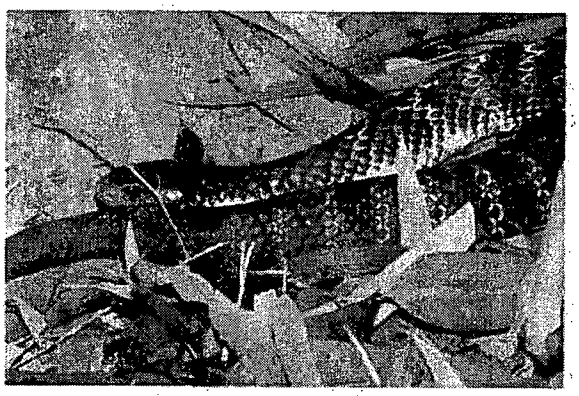


Australian Copperhead - Tasmania, South Australia, Queensland, and Kangaroo Island.



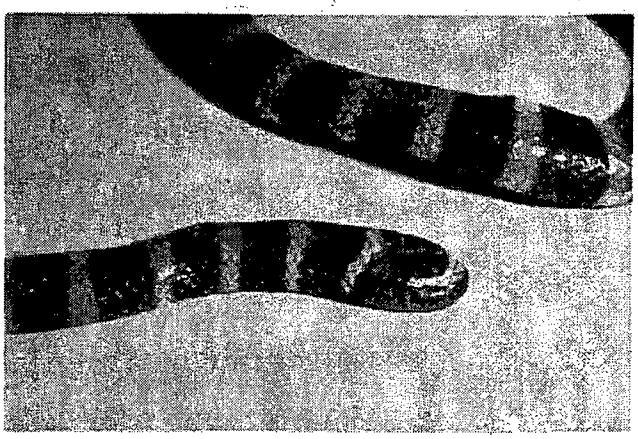
Death Adder Australia, New Guinea, and Moluccas

Taipan - Northern Australia and southern New Guinea

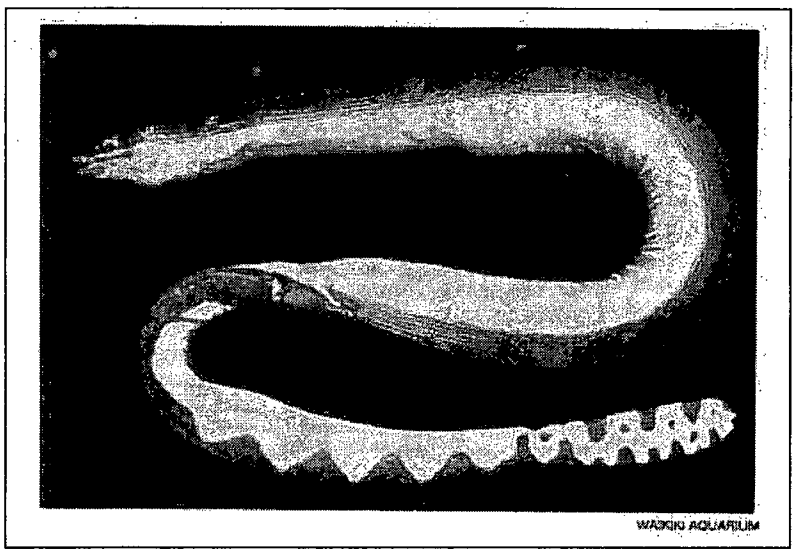


Tiger Snake - Australia, Tasmania, Bass Strait islands, and New Guinea.

Sea Snakes



Banded Sea Snake Coastal waters of New Guinea, Pacific islands, the Philippines, Southeast Asia, Sri Lanka, and Japan.



Yellow Bellied Sea Snake - Throughout the Pacific Ocean from many of the Pacific islands to Hawaii and to the coast of Costa Rica and Panama.

FLD 59 DECONTAMINATION

REFERENCES

Occupational Safety and Health Guidance Manual for Hazardous Wastes Site Activities - (Occupational Safety and Health Administration [OSHA], National Institute for Occupational Safety and Health [NIOSH], the U.S. Coast Guard, and the U.S. Environmental Protection Agency [EPA])

Site specific decontamination procedures for personnel and equipment are specified in each site-specific health and safety plan (SSHSP). Decontamination procedures are communicated to site workers during site safety and health orientation.

Standard operating procedures have been developed to minimize employee contact with hazardous substances or with equipment that has contacted hazardous substances. The standard procedures are based on the publication, *Occupational Safety and Health Guidance Manual for Hazardous Wastes Site Activities* (Guidance Manual). These procedures include but are not limited to:

- Adhere to the site control plan.
- Limit access to authorized and trained personnel.
- In unknown situations expose only those who need to be exposed for the duration they need to be exposed. In other words plan to use the minimum number of persons to accomplish the work in as little time as possible.
- Work in pairs. Use the buddy system to ensure proper personal protective equipment (PPE) donning, check on PPE integrity during entry, and assist with decontamination following entry.
- Use double layers to protect most likely points of contact (hands and feet). Then limit contact with potential contamination to the double protected areas (soles of feet and hands).
- Where possible, do not step in obvious contamination. Avoid puddles, discoloration or obvious chemical residue.
- Do not touch containers under pressure or leaking containers. Open containers under pressure remotely. Use remote sampling and handling opening techniques (e.g., drum grapplers, pneumatic impact wrenches).
- Seal sensitive handheld equipment, instruments, etc. in bags which can be easily removed while allowing the equipment to function.
- Wear disposable outer garments and use disposable equipment where appropriate.
- Cover equipment and tools with a strippable coating which can be removed during decontamination.
- Encase or cover the source of contaminants, e.g., with plastic sheeting or over-packs.
- Set mobile equipment with long reach attachments in clean areas and limit contact with contaminants to as little of the machine surface as possible.

PERSONNEL AND EQUIPMENT DECONTAMINATION

Only personnel who have completed the requisite training and medical exams/tests may enter the exclusion zone (EZ). Personnel decontamination facilities will be established on-site to ensure that personnel maintain a high degree of personal hygiene and minimize the possibility of exposure to chemical hazards. Personnel hygiene facilities will meet the requirements of 29 CFR 1910.120.

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

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

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

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

The use of tobacco products and eating or drinking will be prohibited except in a designated break area within the support zone (SZ).

Routine Equipment Decontamination

Unless otherwise stipulated in the SSHSP, any equipment or vehicle taken into the EZ must be assumed to be potentially contaminated and will be routinely inspected and decontaminated in the CRZ prior to leaving the site. It will be the responsibility of the Field Safety Officer (FSO) or designee to properly inspect and approve, for general cleanliness, all tools or hand operated equipment, and the frame and tires of all vehicles or heavy equipment leaving the CRZ. In order for vehicles and heavy equipment to pass inspection, they must be free of loose dirt or stabilized material on tailgates, axles, wheels, etc. Approval will be based on visual inspection of all exposed surfaces.

If necessary, WESTON will use an equipment decontamination pad located in the CRZ. This pad will be used to remove soil from all equipment leaving the work area. Decontamination procedures will consist of high-pressure water or steam cleaning of equipment to remove mud and/or dirt.

All equipment requiring maintenance or repair will be staged in the CRZ prior to servicing. Equipment wash water residue will be collected and disposed as either solid or hazardous waste based upon site conditions. Only clean water is to be used for decontamination of personnel, equipment, and vehicles.

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

PPE and Decontamination Procedures

As necessary, the Field Supervisor/Site Manager or FSO will designate personnel to assist the work party in the donning and doffing of PPE as they proceed in and out of the CRZ. Decontamination is accomplished to ensure the materials that personnel and equipment may have contacted in the EZ are removed in the CRZ before passing into the SZ.

Personnel decontamination

The following procedures are based on the Guidance Manual as standard guidance. The decontamination section of SSHSPs will be based on risk assessments and available information. Personnel decontamination plans may be more or less stringent based on contaminants of concern and potential for contamination.

Modified Level D

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

Level C/Level B

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

Emergency Decontamination

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

- Eyewash/shower if required
- First aid/Bloodbome pathogen (BBP) kit
- Plastic sheeting or disposable rescue blanket

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

All employees leaving a contaminated area will be appropriately decontaminated and all contaminated clothing and equipment leaving a contaminated area will be appropriately disposed of or decontaminated.

Decontamination procedures will be monitored by the FSO to determine their effectiveness. When such procedures are found to be ineffective, appropriate steps shall be taken to correct any deficiencies.

Decontamination shall be performed in geographical areas that will minimize the exposure of uncontaminated employees or equipment to contaminated employees or equipment.

All equipment and solvents used for decontamination will be decontaminated or disposed of properly.

Personal protective clothing and equipment will be decontaminated or handled as follows:

- Protective clothing and equipment will be decontaminated, cleaned, laundered, maintained or replaced as needed to maintain their effectiveness.
- Employees whose non-impermeable clothing becomes wetted with hazardous substances will immediately remove that clothing and proceed to shower. The clothing will be disposed of or decontaminated before it is removed from the work zone.

Unauthorized employees will not remove protective clothing or equipment from change rooms.

Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment will be informed of the potentially harmful effects of exposures to hazardous substances.

Where the decontamination procedure indicates a need for regular showers and change rooms outside of a contaminated area, they will be provided and meet the requirements of 29 CFR 1910.141. If temperature conditions prevent the effective use of water, then other effective means for cleansing will be provided and used.

Equipment Decontamination

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

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

Vehicles and Heavy Equipment

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

Disposal of Decontamination Wastes

All liquids and other decontamination waste will be collected and treated as contaminated waste and disposed of properly in accordance with the applicable regulations. The Level of Protection for personnel handling and decontaminating contaminated equipment will be established in the SSHSP. Equipment must be cleaned prior to demobilization. Wash waters and residues must be collected for treatment and/or proper disposal.

SITE-SPECIFIC HAZARD COMMUNICATION PROGRAM-FORM 28

Location-Specific Hazard Communication Program/Checklist

To ensure an understanding of and compliance with the Hazard Communication Standard, WESTON will use this checklist/document (or similar document) in conjunction with the WESTON Written Hazard Communication Program as a means of meeting site- or location-specific requirements.
While responsibility for activities within this document reference the WESTON Safety Officer (SO), it is the responsibility of all personnel to effect compliance. Responsibilities under various conditions can be found within the WESTON Written Hazard Communication Program.
To ensure that information about the dangers of all hazardous chemicals used by WESTON are known by all affected employees, the following Hazard Communication Program has been established. All affected personnel will participate in the Hazard Communication Program. This written program, as well as WESTON's Corporate Hazard Communication Program, will be available for review by any employee, employee representative, representative of OSHA, NIOSH, or any affected employer/employee on a multi-employer site.

- ☐ Site or other location name/address: Raritan Bay Slag Site - Old Bridge/Sayreville NJ
- ☐ Site/Project/Location Manager: Dan Gaughan
- ☐ Site/Location Safety Officer: Dan Gaughan
- ☐ List of chemicals compiled, format: ☒ HASP ☐ Other: _____
- ☐ Location of MSDS files: HASP
- ☐ Training conducted by: Name: _____ Date: _____
- ☐ Indicate format of training documentation: ☒ Field Log: ☒ Other: EHS Tracker
- ☐ Client briefing conducted regarding hazard communication: _____
- ☐ If multi-employer site (client, subcontractor, agency, etc.), indicate name of affected companies:

_____

- ☐ Other employer(s) notified of chemicals, labeling, and MSDS information: _____
- ☐ Has WESTON been notified of other employer's or client's hazard communication program(s), as necessary? ☐ Yes ☐ No

List of Hazardous Chemicals

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

Container Labeling

The WESTON SO will verify that all containers received from the chemical manufacturer, importer, or distributor for use on-site are clearly labeled.
The SO is responsible for ensuring that labels are placed where required and for comparing MSDSs and other information with label information to ensure correctness.

The SO is responsible for establishing and monitoring WESTON's MSDS program for the location. The SO will ensure that procedures are developed to obtain the necessary MSDSs and will review incoming MSDSs for new or significant health and safety information. He/she will see that any new information is passed on to the affected employees. If an MSDS is not received at the time of initial shipment, the SO will call the manufacturer and have an MSDS delivered for that product in accordance with the requirements of WESTON's Written Hazard Communication Program.

A log for, and copies of, MSDSs for all hazardous chemicals in use will be kept in the MSDS folder at a location known to all site workers. MSDSs will be readily available to all employees during each work shift. If an MSDS is not available, immediately contact the WESTON SO or the designated alternate. When a revised MSDS is received, the SO will immediately replace the old MSDS.

Employee Training and Information

The SO is responsible for the WESTON site-specific personnel training program. The SO will ensure that all program elements specified below are supplied to all affected employees.

At the time of initial assignment for employees to the work site, or whenever a new hazard is introduced into the work area, employees will attend a health and safety meeting or briefing that includes the information indicated below.

- Hazardous chemicals present at the work site.
- Physical and health risks of the hazardous chemicals.
- The signs and symptoms of overexposure.
- Procedures to follow if employees are overexposed to hazardous chemicals.
- Location of the MSDS file and Written Hazard Communication Program.
- How to determine the presence or release of hazardous chemicals in the employee's work area.
- How to read labels and review MSDSs to obtain hazard information.
- Steps WESTON has taken to reduce or prevent exposure to hazardous chemicals.
- How to reduce or prevent exposure to hazardous chemicals through the use of controls procedures, work practices, and personal protective equipment.
- Hazardous, nonroutine tasks to be performed (if any).
- Chemicals within unlabeled piping (if any).

Hazardous Nonroutine Tasks

When employees are required to perform hazardous nonroutine tasks, the affected employee(s) will be given information by the SO about the hazardous chemicals he or she may use during such activity. This information will include specific chemical hazards, protective and safety measures the employee can use, and steps WESTON is using to reduce the hazards. These steps include, but are not limited to, ventilation, respirators, presence of another employee, and emergency procedures.

Chemicals in Unlabeled Pipes

Work activities may be performed by employees in areas where chemicals are transferred through unlabeled pipes. Prior to starting work in these areas, the employee will contact the SO, at which time information as to the chemical(s) in the pipes, potential hazards of the chemicals or the process involved, and the safety precautions that should be taken will be determined and presented.

Multi-Employer Work Sites

It is the responsibility of the SO to provide other employers with information about hazardous chemicals imported by WESTON to which their employees may be exposed, along with suggested safety precautions. It is also the responsibility of the SO and the Site Manager to obtain information about hazardous chemicals used by other employers to which WESTON employees may be exposed. WESTON's chemical listing will be made available to other employers, as requested. MSDSs will be available for viewing, as necessary. The location, format, and/or procedures for accessing MSDS information must be relayed to affected employees.