HEALTH AND SAFETY PLAN

FOR THE

AIR NATIONAL GUARD READINESS CENTER

Prepared by

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FEBRUARY 1995

Prepared for the
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This document is a generic health and safety plan which can be used as a resource for all Installation Restoration Program field efforts for the Air National Guard. Site Speafic documents will be produced for each ANG delivery order utilizing sections from this document, as well as, site specific data.

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TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

APPENDICES

LIST OF FIGURES

LIST OF TABLES

ACRONYM LIST

ACGIH	American Conference of Governmental Industrial Hygiene
ANGRC	Air National Guard Readiness Center
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
CGI	Combustible Gas Indicator
CPR	cardiopulmonary resuscitation
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
FEV_1	forced expiratory volume - 1 second
FID	flame ionization detector
FVC	forced vital capacity
HASP	Health and Safety Plan
HSO	Health and Safety Officer
IARC	International Agency for Research on Cancer
IDLH	immediately dangerous to life and health
IRP	Installation Restoration Program
LEL	lower explosive limit
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NGB	National Guard Bureau
NIOSH	National Institute of Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEER	PEER Consultants, P.C.
PEL	permissible exposure limit
PEOMS	PEER Environmental and Occupational Medicine Services
PID	photoionization detector
PPE	personal protective equipment
ppmv	parts per million volume
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
REL	recommended exposure limit
SCBA	Self-Contained Breathing Apparatus
SHSO	Site Health and Safety Officer
SOP	Standard Operating Procedure
TLV	Threshold Limit Value
UST	underground storage tank

HEALTH AND SAFETY PLAN

FOR THE

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1.0 INTRODUCTION

1.1 Description

The Defense Environmental Restoration Program (DERP) was established in its current form in fiscal year 1984. A major portion of the DERP is the Installation Restoration Program (IRP), where potential contamination at Department of Defense (DoD) installations and formerly owned or used properties is investigated and, as necessary, site cleanups are conducted. This program is managed by the Office of the Secretary of Defense. Each individual defense component (Army, Defense Logistics Agency, Air Force, Navy) is responsible for program implementation. The Air National Guard IRP is a centrally managed program with oversight and management provided by the Air National Guard Readiness Center (ANGRC).

While this plan is primarily intended for use at Air National Guard IRP sites, it is applicable at sites or installations involved with other ANGRC issues such as Resource Conservation and Recovery Act (RCRA) investigations, compliance activities, and underground storage tank (UST) investigations and corrective actions.

The purpose of the programmatic Health and Safety Plan (HASP) is to establish requirements for protecting the health and safety of all assigned personnel working on the PEER ANGRC IRP as well as to RCRA compliance and UST activities. The HASP is meant to be guidance to be used in developing and implementing a site-specific HASP for each Delivery Order under this program. Appendix A provides minimum requirements and additional guidance regarding the development of site-specific HASPs.

1.2 Philosophy

PEER is committed to limiting hazardous substance exposures to their employees and subcontractors. Personnel working on Delivery Orders under this program will be informed of known and potential hazards associated with the work to be performed, and in turn be able to apply required safety precautions.

Because of the difficulties associated with quantifying the potential hazards at many sites, a conservative approach will be used for protection of the workers, members of the general public, and the environment.

Maintaining a safe and healthful work environment is the responsibility of all team members. Through a comprehensive training program, team members will be informed of hazard potentials, proper use of personal protective equipment (PPE), applicable procedural requirements, and their responsibilities for maintaining safe

working environments. All personnel (including PEER subcontractors) are required to adhere to all safety requirements.

1.3 Regulatory Requirements, Standards, and Guidelines

PEER is committed to be in compliance with applicable Occupational Safety and Health Administration (OSHA) regulations [specifically, Title 29, Code of Federal Regulations (CFR), 1910: Occupational Safety and Health Standards]. Where 29 CFR 1910 does not provide an exposure guideline for a particular chemical substance or physical agent, PEER has adopted exposure guidelines listed in relevant American Conference of Governmental Industrial Hygienists (ACGIH) publications [specifically, Threshold Limit Values (TLVs) for Chemical Substances an Physical Agents and Biological Exposure Indices, most current edition]. If 29 CFR 1910 and the ACGIH TLVs do not provide exposure guidelines for a particular chemical, then the National Institute of Occupational Safety and Health (NIOSH) recommended exposure limits (RELs) will be considered.

This HASP, coupled with site-specific HASPs, will meet requirements for work set forth in 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response."

Table 1.1 provides a summary of 29 CFR 1910 by subpart. This table can be a valuable tool in locating specific requirements. Other guidance applicable to safe operations that will be considered when appropriate include the National Fire Protection Association (NFPA) codes and local fire codes.

TABLE 1.1. SUMMARY OF 29 CFR 1910		
SUBPART	SUBPART TITLE	SUBPART SUMMARY
A	General	Provides a general overview of purpose, scope, definitions, and administrational guidelines.
B	Adoption and Extension of Established Federal Standards	Adopts and extends existing safety and health standards that were in force prior to 29 CFR Part 1910 (04/28/71). These centered around the shipping industry.
C	General Safety and Health Provisions	Deals with the employees right to their exposure and medical records.
D	Walking-Working Surfaces	Provides the standards for the construction and maintenance of walking-working surfaces. These include stairways, aisles, platforms, handrails, and ladders.
E	Means of Egress	Provides the standards for getting out of structures. It specifies widths of aisles, numbers of exits/building, etc.
F	Powered Platforms, Manlifts,and Vehicle Mounted Work Platforms	The same as Subpart D except that it covers powered and movable surfaces.
G	Occupational Health and Environmental Control	Governs the work being performed where occupational hazards exist that may require ventilation for hazard abatement, noise exposures, and ionizing radiation exposures.
H	Hazardous Materials	Deals with the requirements for the use of hazardous materials in the workplace.
I	Personal Protective Equipment	Provides the requirements for the selection and use of personal protective equipment.
J	General Environmental Controls	Governs general environmental controls such as sanitation, temporary labor camps, marking of physical hazards, lockout/tag out, biological hazards, and accident prevention signage.
K	Medical and First Aid	Covers employer medical and first aid responsibilities.
L	Fire Protection	Provides for fire protection. Includes standards for fire brigades, extinguishers, alarms, sprinklers, hose systems, and detectors.
M	Compressed Gas and Compressed Air Equipment	Governs safety systems related to compressed gas delivery systems.
N	Materials Handling and Storage	Governs materials handling and storage when using cranes, trains, helicopters, slings, and industrial trucks.
O	Machinery and Machine Guarding	Provides the standards for fixed machinery guarding safety systems.
P	Hand and Portable Powered Tools and Other Hand-Held Equipment	Provides the standards for hand-held and portable tool safety systems.
Q	Welding Cutting and Brazing	Covers welding brazing and cutting operations. It includes fire protection, signage, and safety systems.
R	Special Industries	Covers the pulp, paper, and paper board industry. These include operational standards and milling equipment safety.
S	Electrical	Provides electrical safety standards for electrical systems, safety related work practices, maintenance requirements and special equipment.
T	Commercial Driving Operations	Covers commercial diving operations. It includes various diving procedures and safety systems.
U-Y	Reserved	Reserved Subpart
Z	Toxic and Hazardous Substances	Contains Table Z which lists exposure limit standards for air contaminants, include Permissible Exposure Limits (PEL's), Short-Term Exposure Limits (STELs), Time Weighted Averages (TWAs), and ceiling limits. The appendix contains sampling and analytical methods for selected contaminants.

2.0 ORGANIZATION

2.1 Organizational Structure

The organizational structure for this program includes a strong and visible commitment to the health and safety of those personnel assigned to this program. Figure 2.1 presents the organizational structure for this program.

As the program progresses, it may be necessary to modify some organizational aspects of the program, such as personnel responsibilities and authorities, so that individual Delivery Orders can be performed as efficiently and safely as possible. Any changes to the overall organizational structure will be recorded in the appropriate parts of the site-specific HASPs that are developed for individual Delivery Orders and will be effectively communicated to all parties involved.

2.2 Responsibilities

In general, supervisory personnel are directly responsible for the health and safety of individuals under their direction by ensuring that HASP provisions are adhered to and that all operations are performed with the utmost regard for the health and safety of all personnel involved. Supervisors are required to instill positive attitudes in their staff toward health and safety, and to ensure that all employees are properly trained in the safe performance of their assignment, provided with appropriate health and safety equipment, medically qualified, and are made aware of any potential hazards associated with the work.

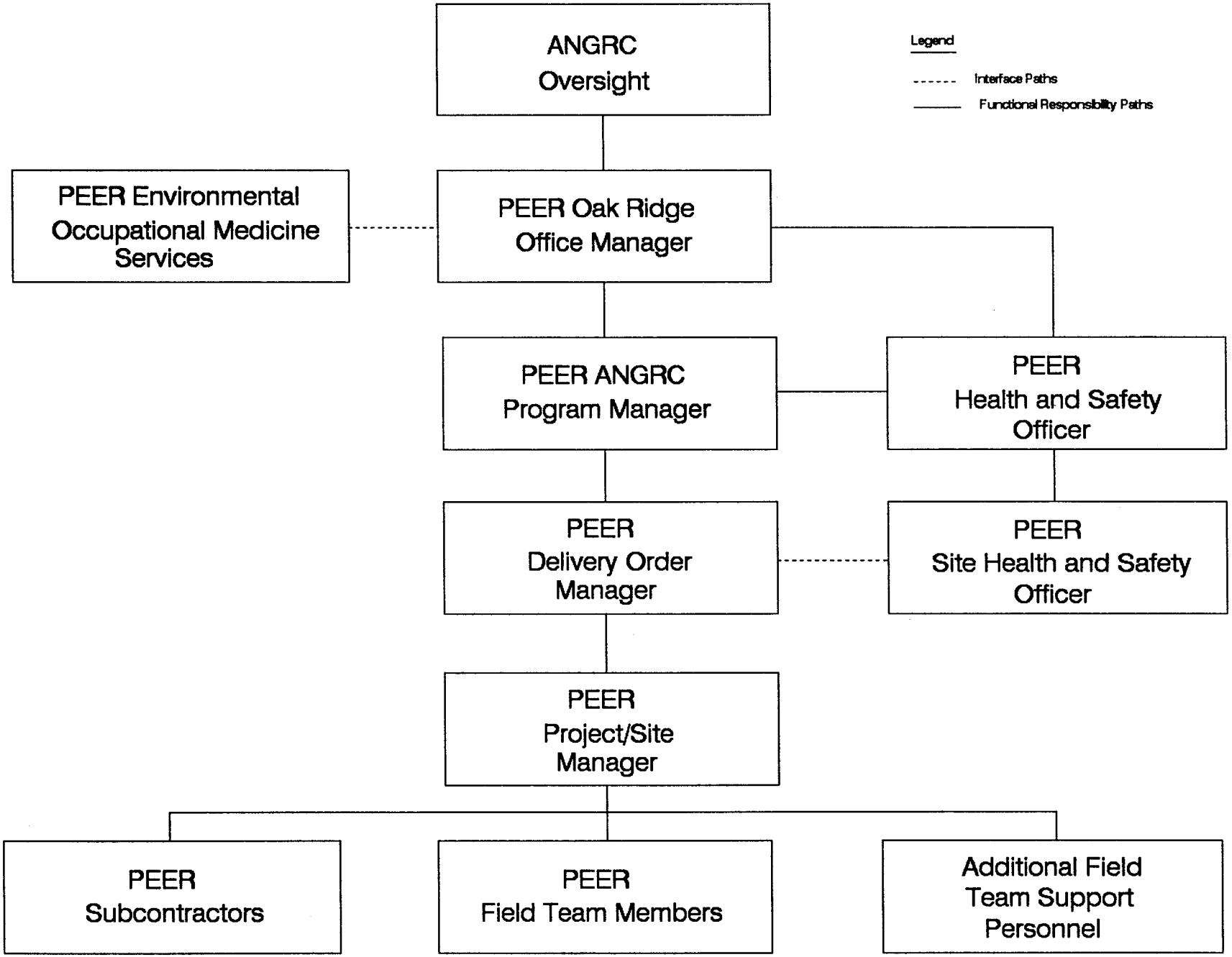

Figure 2.1 Organizational Structure Chart for ANGRC IRP

Field Team Members likewise have a responsibility for the prevention of accidents by following all the health and safety procedures necessary to perform the assigned work without injury. All Field Team Members are required to adhere to the provisions of the HASP.

The specific health and safety responsibilities of key personnel are outlined below.

2.2.1 PEER Program Management

The final Health and Safety authority for this program lies with the PEER Oak Ridge Office Manager. Overall (programmatic) health and safety management is delegated to the PEER Health and Safety Officer (HSO). The PEER Program Manager is responsible for ensuring that this HASP and all site-specific HASPs have been effectively implemented. The PEER Program Manager shall resolve issues that cannot be resolved by the PEER HSO.

2.2.2 PEER Health and Safety Officer

The PEER HSO shall be responsible in a direct line relationship to the PEER Program Manager with respect to technical and management issues, and to the PEER Oak Ridge Office Manager with respect to policy issues and implementation of its HASP. The PEER HSO shall have the following responsibilities:

- Gathering and dissemination of information in accordance with the provisions of this plan.

- Making decisions necessary for the implementation of the guidelines contained in this plan.

- Ensuring that all health records are maintained and updated.

- Training of staff as necessary.

- Coordinating with PEER subcontractor health and safety personnel.

- Review and approval of all site-specific HASPs for compliance with HASP provisions.

2.2.3 PEER Site Health and Safety Officer

In order to provide the most cost-effective and safe site operations, a Site Health and Safety Officer (SHSO) will be assigned to each site. The SHSO will be named by the PEER Program Manager. Unless a determination is made that the activities associated with a particular work assignment warrant the use of a full time Health and Safety professional, the SHSO will be selected from the personnel assigned to the field team.

The SHSO is responsible for implementation of the HASP and the site-specific HASP on the site that he/she is assigned to. The SHSO will ensure compliance with all health and safety requirements. The SHSO shall have the following responsibilities:

- selects protective clothing and equipment types;
- periodically inspects protective clothing and equipment;
- monitors protective clothing and equipment storage practices;
- coordinates entry and exit at designated control points;
- coordinates site health and safety program activities with the HSO;
- confirms each team member's suitability for work based on a physician's recommendation;
- helps monitor the team members for signs of stress, such as cold exposure, heat stress, and fatigue;
- helps monitor for on-site hazards and changing conditions;
- participates in the preparation and implementation of the site-specific HASP;
- conducts periodic inspections to determine if the site-specific HASP is being followed;
- knows emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department; and
- coordinates emergency medical care.

If the SHSO determines that site conditions have become unsafe, or that HASP or site-specific HASP requirements are not being met, and that a serious threat to human health and safety exists, the SHSO shall suspend site operations until the problem is resolved.

2.2.4 PEER Project/Site Manager

The PEER Project/Site Manager is directly responsible for ensuring that all requirements of the HASP and the site-specific HASP are adhered to on the specific site that he/she is assigned to, and that all PEER Field Team Members, PEER Field Support Personnel, and PEER subcontractors exercise their particular duties safely.

2.2.5 Other Field Personnel

PEER Field Team Members, PEER Field Team Support Personnel, and PEER subcontractors are individually responsible for safely completing on-site tasks, complying with the HASP and the site-specific HASP. Prior to the start of field activities, all field personnel will read, understand, and sign a log indicating that they have read and will comply with the requirements of the HASP. In addition, each individual working on-site must notify the SHSO or their supervisor of any unsafe acts or conditions of which they are aware.

2.2.6 PEER Environmental and Occupational Medicine Services

PEER Environmental and Occupational Medicine Services (PEOMS) is responsible for establishing physical examination protocols for PEER employees based on information provided by the HSO. Periodic monitoring programs will be established as needed to perform respirator fit testing and physiological testing. PEOMS will medically clear individuals for work prior to assignment of a field team and periodically thereafter.

3.0 MEDICAL SURVEILLANCE PROGRAM

The PEER ANGRC IRP medical surveillance program will meet, at a minimum, the requirements specified in OSHA 29 CFR 1910.120. Employees to be included in the program include (1) employees who are, or may be, exposed to hazardous substances or health hazards above the permissible exposure limit or published exposure limit for more than 30 days a year; (2) employees working in activities that fall under the scope of 29 CFR 1910.120 who wear a respirator for 30 or more days a year as required by 29 CFR 1910.134; and (3) employees who are injured due to overexposure from a emergency incident or who show symptoms of illness that may have resulted from exposure to hazardous substances in the course of their work.

Periodic physical examinations will be offered to each employee who will be assigned to the field, with the type and frequency of those examinations related to the age of

the employee and the potential for exposure. These shall be given before assignment to the field (baseline physical) and at least every 2 years thereafter. The extent and frequency of reevaluations will be determined by the consulting physician and based upon the potential types of exposure (hazardous waste, radiation, mixed waste, petroleum contamination, asbestos, or other hazards). A termination health review will be performed on all employees terminating employment who have worked in the field or who are being reassigned to a work location not covered by such a medical surveillance program. Additional physical examinations may be required in response to emergency incidents, or for individuals experiencing symptoms of illness that may have resulted from occupational exposure to hazardous substances.

4.0 RESPIRATORY PROTECTION PROGRAM

An effective respiratory protection program is essential to this program and will be implemented in accordance with OSHA regulations 29 CFR 1910.134 and 29 CFR 1910.120. Because the majority of the tasks to be performed under this program will be related to field investigations (for which engineering controls are not generally feasible), a respiratory protection program will be implemented to maintain airborne contaminants at acceptable levels. Appendix B presents the respiratory protection program to be implemented during this program.

5.0 HAZARD COMMUNICATION

The PEER ANGRC IRP Hazard Communication Program will conform to 29 CFR 1910.1200. The program will provide for the evaluation of all hazardous substances used on PEER job sites. Information concerning these hazards will be communicated to all program employees who may be exposed or use hazardous substances on the job. Appendix C presents the hazard communication program to be implemented during this program. Required elements shall be implemented on a site-by-site basis through the site-specific HASP.

6.0 TRAINING

The training for this program shall conform to the requirements of 29 CFR 1910.120. Personnel may not engage in hazardous waste site field activities until they have been trained to conduct those activities commensurate with the degree of associated hazards.

- Initial Training

  For workers on-site occasionally who are unlikely to be exposed over the PEL, OSHA requires that workers receive a minimum of 24 hours of training off-site, and a minimum of 1 day actual field experience under the direct supervision of

a trained, experienced supervisor. However, it is PEER's practice that all employees working in the field meet the more stringent requirement for workers at the treatment, storage, or disposal facilities or engaged in hazardous substance removal for a minimum of 40 hours of training off-site prior to job assignment, and 3 days of actual field experience under the direct supervision of a trained and experienced supervisor. Supervisory personnel receive this same training, plus an additional 8 hours of specialized training on the management of hazardous waste site operations.

- Refresher Training

All assigned personnel shall receive 8 hours of refresher training annually of the same content as that of the 40-hour initial training.

- Additional Training

Additional training, such as cardiopulmonary resuscitation (CPR) and first aid, will be given to assigned personnel based on the HSO's evaluation of the potential hazards and training needs on a site-specific basis.

- Daily Tailgate Health and Safety Training

To maintain a high level of health and safety awareness on the part of all field team members, daily tailgate health and safety training sessions shall be conducted on-site by the SHSO during operational periods. The topics of such training sessions should be pertinent to the work being performed on the site.

7.0 HAZARD EVALUATION

7.1 Overview

Chemical, physical, or radiological hazards that may be encountered during this program must be identified, and the health and safety requirements necessary to protect on-site personnel, the public, and the environment shall be determined. Before field activities begin for each Delivery Order, the SHSO will ensure that the potential hazards have been identified and that protective measures and/or work limitations are in place and documented.

7.2 Chemical Hazards

Chemical hazards to the field team exist when liquid, solid samples, or vapors from the investigation sites contact human tissues. Chemical hazards could include volatile or

semivolatile organics, asbestos, heavy metals, herbicides/pesticides, chlorinated organics or others. Each potential chemical hazard will be evaluated in the site-specific HASP, to identify the health and safety hazards of the particular contaminants (i.e., is the contaminant carcinogenic, an irritant, an asphyxiant, etc?) the potential routes of human exposure (inhalation, ingestion, dermal absorption, etc.), the appropriate exposure limits, monitoring requirements and other appropriate protection measures.

7.3 Physical Hazards

The field team can be exposed to a number of physical hazards during this program. Physical hazards that may be encountered include:

- fire and explosion;
- animals and insects;
- existing objects and terrain, personal protective equipment (PPE), and field equipment;
- electricity;
- heat stress;
- cold exposure; and
- noise.

The site-specific HASP will evaluate potential hazards anticipated to be encountered, and identify appropriate protective measures.

Each of these hazards is described more fully in the following sections.

7.3.1 Fire and Explosion

There are many potential causes of explosions and fires at hazardous waste sites. The most likely cause would be the introduction of an ignition source (such as from welding operations or open flame heaters) into an explosive or flammable environment. Intense heat, open flame, smoke inhalation, flying objects, and the release of toxic chemicals into the environment can result. Drilling operations may encounter flammable fuels from underground storage tanks or fuel spills. Field Team Members will be briefed by the site SHSO regarding the use of flammable liquids and heaters, and about precautionary measures to be taken when using them.

7.3.2 Animals and Insects

The Field Team Members will be made aware that site activities may disturb the local wildlife and insect population. Some animals and insects can and will bite if disturbed. Avoidance is the best solution to this potential problem. Field Team Members will be

briefed by the SHSO regarding the potential for encountering wildlife and insects and appropriate first aid measures, should they be necessary.

7.3.3 Existing Objects and Terrain, PPE, and Field Equipment

Hazardous waste sites may contain numerous safety hazards, including existing hazardous objects and terrain, high work areas, lifting heavy objects, moving equipment, vehicular traffic, and PPE.

Existing Objects or Terrain

Existing objects and terrain can present safety hazards in the form of holes and ditches; precariously positioned objects (e.g., drums, boards) that may fall; sharp objects, such as nails, metal shards, and broken glass; slippery surfaces; steep grades; and uneven terrain.

Some safety hazards are a function of the work itself, such as working on high objects as drill rig masts, lifting heavy objects (e.g., drill rods, augers, and well casing), and moving heavy equipment.

High Work Areas

During the course of any drilling activities, workers may have to service equipment by climbing the mast of the drill rigs. When such work must be performed, the individual will be required to wear a safety harness, and the work will be overseen by the subcontractor supervisor and a PEER representative, normally the SHSO.

Lifting Heavy Objects

Field Team Members may be exposed to injury caused by lifting heavy objects. Drilling operations often involve manual movement of heavy drilling casing, auger flights, and various other pieces of equipment. All Field Team Members will be cautioned against lifting objects that are too heavy for one person. Mechanical and hydraulic assists will be used whenever possible to minimize lifting dangers. Useful guidelines for lifting include:

- if possible, lift with your legs rather than your back, but always maintain a stable, comfortable posture;

- lift heavy objects slowly and deliberately, not with a grab and jerk motion; and

- avoid turning while lifting; turn when you are erect, if necessary.

Moving Machinery

The Field Team Members may be subject to lacerations and contusions (cuts and bruises), particularly during drilling activities due to the moving machinery and other physical objects. This hazard will be minimized by wearing protective clothing, hard hats, steel-toed boots; by using mechanical assists whenever possible; and through team member experience and careful planning of frequently repeated operations.

Vehicular Traffic

Some field work may be located in areas where unavoidable conflicts with current vehicular traffic patterns (including airplane taxiways) will occur. In areas where vehicular traffic may be impacted, all work will be coordinated with Base personnel. Special precautions may be taken to prevent vehicles from encroaching on the work areas. Specifically, traffic cones and barriers constructed of barrels and/or pylons and barrier rope will be used to route traffic around the work areas.

PPE

PPE can restrict visibility and movement. This increases the risk of falling over, striking, or being struck by objects. PPE can also elevate the risk of heat stress. Wearing of PPE also reduces workers' ability to move freely and to hear directions and noise that might indicate a hazard. This hazard will be compensated for by greater visual attention by workers and performance of inherently hazardous procedures more slowly.

7.3.4 Electricity

Overhead power lines, downed electrical wires, and buried cables all pose a danger of shock or electrocution if workers contact or sever them during site operations or come close enough to the wires for arcing to occur. Electrical equipment used on-site may also pose a hazard to workers. Careful observation for overhead electrical hazards will be performed before raising masts on drill rigs or using cranes. The local utilities will be contacted and permits obtained from Civil Engineering for underground clearances before drilling or excavating operations. Requirements for work permits and clearances for operations near power lines will be adhered to. Grounding wires and cables and grounded extension cords and control of water on walking and working surfaces will be used to reduce electrical hazards.

7.3.5 Heat Stress

During this program, workers may be required to wear protective clothing which insulates the body. A heat hazard may exist if workers wear protective clothing in temperatures over 65°F. Physiological monitoring will be undertaken as appropriate which will include the monitoring of heart rate, body temperature, and body water (weight) loss to preclude excessive heat stress (ACGIH 1991).

7.3.6 Cold Exposure

Some of the work may be accomplished during winter months, and cold temperatures, coupled with strong winds, can be expected, in addition to snow. Adequate protective clothing to ensure warmth will be necessary, but extra care must be taken while working in this environment because heavy clothing impairs movement and hearing and ice or snow can create slippery conditions in the work area. Observation of coworkers' facial extremities (ears and nose) is required for signs of frostbite (whitening of the skin surface).

7.3.7 Noise

The Field Team Members may be exposed to excessive noise levels from drilling equipment and other noise sources during this program. Hearing protection (ear

plugs and/or ear muffs) will be necessary while performing drilling operations and while working near aircraft operating areas.

7.4 Preliminary Site Evaluation

Prior to commencement of work at any site, an evaluation of the potential hazards associated with the site is undertaken. This evaluation consists of a summarization of available data concerning existing site conditions. The following information will be collected in the preliminary evaluation performed by the HSO or SHSO:

- location and approximate size of the site;
- description of the response activity and/or the job task to be performed;
- duration of the planned field activity;
- site topography;
- site accessibility by air and roads;
- pathways for hazardous substance dispersion;
- present status, location, and capabilities of emergency response teams that would provide assistance to on-site field teams at the time of an emergency; and
- hazardous substances and health hazards involved or expected at the site and their chemical and physical properties.

7.5 Initial Site Entry and Characterization

An initial site characterization is conducted if the available information is insufficient to adequately describe conditions on-site, or if there is any evidence of explosion hazards, oxygen deficiency, toxic chemical vapors, radiation hazard, or any other conditions at the site that may adversely affect health or safety of field personnel.

The objective of an initial site characterization is to evaluate, through the use of direct reading instrumentation and observation, the presence of conditions which could pose potential safety and health hazards to field personnel. The initial site characterization is undertaken by the SHSO.

The SHSO prepares for actual site entry at a staging area upwind of the site which is judged to represent a clean area. This location is used for donning protective equipment, zeroing the instruments, gathering background readings, and preparing for the survey.

The level of protection required for the initial site entry and characterization is determined based upon the substances known to be present on-site, and the degree of contamination indicated by the preliminary site evaluation. When contamination is anticipated; and in the absence of specific information regarding on-site hazards, Level

B with an escape self-contained breathing apparatus (SCBA) rated for at least 5 minutes is considered an adequate level of protection.

The entire site, including bulk storage vessels, confined spaces, waste lagoons, drum storage areas and other points of interest, is surveyed. Locations where equipment readings exceed background are appropriately recorded for later transcription and interpretation.

Sufficient data should be obtained during the initial site characterization to determine levels of protection, establish site work zones, and to select candidate areas for more thorough qualitative and quantitative studies. However, monitoring instrumentation should not be the sole criteria for determining levels of protection since these instruments have limitations and vary in relative sensitivity to different chemicals/compounds. Criteria that should be considered when determining levels of protection and health and safety issues for a particular site are, but are not limited to the following:

- site history, especially waste disposal;
- instrumentation readings with consideration for their limitations;
- the potential for rapid increases in air contaminant concentrations pressurized vessels, etc.;

- visual observations (i.e., stained or discolored) soils, dusty conditions, etc.;
- the presence or absence of standing liquids; and
- odors.

8.0 PERSONAL PROTECTIVE EQUIPMENT

8.1 Levels of Protection

Team members shall wear protective equipment when site activities involve known or suspected atmospheric contamination; when vapors, gas or particulates may be generated by those activities; or when direct contact with skin-affecting substances may occur. Air purifying respirators (full- or half-face) protect the lungs and the gastrointestinal tract against airborne contaminants. Full face respirators also provide chemical and physical protection for the eyes. Chemical-resistant clothing protects the skin from contact with skin destructive and substances which are readily absorbed. Good personal hygiene limits or prevents ingestion of substances.

Equipment to protect team members against contact with known or suspected hazardous substances has been divided into four categories based on the degree of protection afforded:

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

Level B: Worn when the highest level of respiratory protection is needed, but a lesser level of skin protection is needed.

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

Level D: Worn only as a work uniform and not on any site with respiratory or skin hazards. Provides minimal protection against chemical hazards and basic industrial safety equipment.

Levels of protection may be modified during site activities to minimize fatigue and to maximize efficiency. Table 8.1 identifies the standard components of each level of protection.

8.2 Selection of Personal Protective Equipment (PPE)

The levels of protection for this program are selected based on the following factors:

- Potential for exposure to hazardous substances in air, splashes of liquids, or other direct contact with substances due to site activities.

- Prior knowledge of hazardous substance disposal and properties of the substance such as toxicity, route of exposure, and potential contact with team members.

- Type and measured concentration of the hazardous substance in the ambient atmosphere and its toxicity.

29 CFR 1910.120 describes the types of hazards for which levels A, B, C, and D protection are appropriate as outlined in Table 8.2. Mandatory Level D requirements for PEER employees includes work clothes or coveralls, safety glasses, steel-toed boots, outer gloves, and a hard hat.

8.3 Provisions for Upgrading Levels of Protection

For sites where volatile or semivolatile organics are a potential concern, upgrading from Level D PPE to Level C PPE will be required if photoionization detector (PID) readings are in excess of 5 parts per million volume (ppmv) above background levels in the breathing zone or as specified in the site-specific HASP. If PID readings are in excess of 10 ppmv above background levels for longer than 15 minutes, the Exclusion

Table 8.1. Level of Protection Requirements

Personal Protective Equipment Item	Levels of Protection			
	A	B	C	D
Work Clothes or Coveralls	R	R	R	R
Chemical Resistant Coveralls, Hooded, Disposable	O	R	R	O
Chemical Protective Suit, Totally Encapsulating	R	-	-	-
Gloves, Cotton Inner	O	O	O	O
Gloves, Chemical Resistant Inner	R	R	R	O
Gloves, Chemical Resistant Outer	R	R	R	O
Work Boots, Steel Toe and Shank	R	R	R	R
Boot Covers, Chemical Resistant Outer	O	O	O	O
Safety Glasses or Goggles	R	R	R	R
Face Shield	-	O	O	O
Hard Hat	R	R	R	R
Respirator, Air Purifying	-	-	R	-
SCBA	R	R	-	-
Respirator, Escape Type	-	-	O	-

R - Required for this level of protection.
O - Optional, as applicable.

Table 8.2. Level of Protection Selection Guidance

Level of Protection	This level of protection should be used when:
A	• The hazardous substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on either the measured [or potential for] high concentration of atmospheric vapors, gases,or particulates; or involve a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of substances that are harmful to skin or capable of being absorbed through the skin; • Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible; or • Operations are being conducted in confined, poorly ventilated areas, and the absence of conditions requiring Level A have not yet been determined.
B	• The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection; • The atmosphere contains less than 19.5 percent oxygen; or • The presence of incompletely identified vapors or gases is indicated by a direct-reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin. Note: This involves atmospheres with immediately dangerous to life or health (IDLH) concentrations of specific substances that present severe inhalation hazards and that do not represent a severe skin hazard; or that do not meet the criteria for use of air-purifying respirators.
C	• The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect or be absorbed through any exposed skin; • The types of air contaminants have been identified, concentrations measured, and an air-purifying respirator is available that can remove the contaminants; and • All criteria for the use of air-purifying respirators are met.
D	• The atmosphere contains no known hazard; and • Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

Source: Occupational Safety and Health Guidance for Hazardous Waste Site Activities, 1985.

Zone will be evacuated until the vapor levels have subsided. If elevated organic vapor levels do not dissipate, the SHSO will determine a course of action that will allow safe operations.

If combustible gas indicator (CGI) readings exceed 10 percent of the lower explosive limit (LEL), caution will be exercised in continuing site activities. Monitoring will be continuous while levels are between 10 and 25 percent LEL. If CGI readings approach 25 percent LEL or if smoke or flame is observed at any time near the active site, personnel will be withdrawn immediately. Before resuming site work, the SHSO will develop safe work practice procedures for continuing operations.

Other conditions for upgrading levels of PPE, or for upgrading from Level C PPE to Level B or A PPE will be considered on a site-specific basis. Known scenarios will be provided for in site-specific HASPs.

9.0 INSTRUMENTATION AND MONITORING

The SHSO may utilize a variety of direct reading instrumentation to monitor for the presence of organic vapors, inorganic vapors, respirable dust, total ionizing radiation, and oxygen-deficient/explosive atmospheres. This information is used to develop or modify the site-specific HASP. The instrumentation used during site monitoring may include the equipment listed in Table 9.1.

Table 9.1. Health and Safety Monitoring Equipment Types

Instrument	Hazard
Combustible Gas Indicator (CGI)/O^2 Meter	Explosive and Oxygen-Deficient Atmospheres
Portable Photoionization Detector (PID)	Toxic Atmospheres/Volatile Organics
Portable Flame Ionization Detector (FID)	Toxic Atmospheres/Volatile Organics
Radiation Survey Meter	Radiological Contaminants
Personal Sampling Pumps/Collection Media	Various Applications
Respirable Dust Monitor	Respirable Dusts
Diffusion Badges	Volatile Organics
Colorimetric Detector Tubes	Volatile Organics
Passive Alarms	Various Applications

Air monitoring should encompass oxygen deficient atmospheres, explosive atmospheres, and chemical or radiological contamination as defined in the site-specific HASP.

Once site activities have started, an air monitoring program will be implemented in accordance with the site-specific HASP. At a minimum, this monitoring should be conducted when:

- work begins on a different portion of the site;
- contaminants other than those previously identified are being handled;
- intrusive activities are being conducted;
- a different type of operation is initiated (e.g., tank sampling as opposed to well drilling); and
- employees are handling leaking containers or working in areas with obvious liquid contamination (e.g., a spill area or a lagoon).

10.0 DECONTAMINATION

10.1 Overview

A decontamination plan will be developed in the site-specific HASP, and a decontamination area will be set up prior to team members entering areas where the potential for exposure to hazardous substances exists to ensure that:

- appropriate methods of decontamination have been chosen for the activities being performed;

- the number of and layout of decontamination stations is adequate for the activities being performed;

- the proper decontamination equipment and supplies are on-site when work commences;

- procedures have been developed to prevent the spread of contamination to clean areas;

- worker exposure to contaminated PPE is minimized during doffing procedures; and

- proper disposal methods for contaminated clothing have been developed.

10.2 Preventative Measures

Minimizing contact with hazardous substances is the primary method of preventing contamination, and should be the first step in the decontamination planning process. Minimizing contact with hazardous substances can be done by:

- developing work practices that minimize contact with hazardous substances;

- protecting monitoring and sampling equipment by bagging it or using strippable coatings;

- isolating the source of potential contamination with plastic sheeting or overpacks in the case of drums;

- having team members wear disposable outer garments and use disposable equipment when possible; and

- developing procedures that will maximize team member protection and minimize the potential for contamination.

10.3 Personnel Decontamination

Establishment of health and safety decontamination procedures for personnel and equipment is necessary to control contamination of areas outside the restricted zones, and to protect field and emergency response personnel.

In general, proper donning and doffing of PPE will preclude the use of personnel decontamination except for emergency situations. The site-specific HASP will address personnel decontamination needs as they pertain to the work being performed.

The procedures for decontaminating personnel leaving the contaminated area are shown for the C and D levels of protection in Table 10.1. Each station emphasizes an important aspect of decontamination. When establishing a decontamination line, each aspect should be incorporated separately or combined with other aspects into a procedure with fewer steps if appropriate.

Decontamination lines are site specific since they are dependent upon the types of contamination and the type of work activities on site. A cooling station is sometimes necessary within the decontamination line during hot weather. When the decontamination line is no longer required, all investigation-derived wastes including contaminated wash and rinse solutions and contaminated articles must be contained and disposed of in compliance with the project plans and with state and federal regulations.

The A and B levels of protection are not expected to be required for field work under this contract. If field work conditions indicate that these levels of protection may be needed, the site-specific HASP will provide the necessary decontamination procedures for these levels of protection.

In emergencies, lifesaving care will be instituted immediately without considering decontamination. Outer garments can be removed if they do not cause delay or interfere with treatment or aggravate medical problems. Respiratory equipment must

Table 10.1. Minimum Decontamination Measures for Level C and D Protection

Station Number	Function	Description
		LEVEL C
Station 1	Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool down station may be set up within this area.
Station 2	Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer boots, outer gloves and splash suit with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3	Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4	Canister or Mask Change	If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.
Station 5	Boot, Gloves and Outer Garment Removal	Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic.
Station 6	Face Piece Removal	Facepiece is removed. Avoid touching face with fingers. Facepiece deposited on plastic sheet.
Station 7	Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.
		LEVEL D
Station 1	Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool down station may be set up within this area.
Station 2	Boot Decontamination	If visible dirt is present on boots, remove with a course scrub brush.
Station 3	Glove Removal	Remove gloves and place in designated waste container.
Station 4	Coverall Removal	Remove outer coveralls, if used.
Station 5	Field Wash	Hands and face are thoroughly washed.

Source: Field Standard Operating Procedures for the Decontamination of Response Personnel (EPA, 1985).

always be removed. Chemical-resistant clothing can be cut away. If the outer contaminated garments cannot be removed, the victim should be wrapped in plastic, rubber, or cloth to help prevent contamination of transporting vehicles or medical problems. Outer garments can then be removed at the medical facility. On-site personnel should accompany contaminated victims to the medical facility to advise on matters involving contamination.

10.4 Equipment Decontamination

Equipment decontamination must also be planned for on a site-by-site basis. Methods of physical as well as chemical decontamination may be necessary to decontaminate equipment items such as drill rigs, vehicles, monitoring instruments, and sampling equipment. For larger equipment items, provisions should be made for decontamination wastes that may be of significant volume.

11.0 SITE CONTROL MEASURES

Based on the expected levels of contamination and work activity, two or three work zones will be established at each site. Site entry will be strictly controlled to minimize the number of personnel on-site consistent with effective operations. Unnecessary personnel will be excluded, and visitors will be required to have clearance from the facility contact before being allowed access to the investigation sites.

Three work zones will be required for Level C work:

- Exclusion Zone: the contaminated zone.

- Contaminant Reduction Zone: the zone where personnel and equipment in contact with the Exclusion Zone will be decontaminated and prepared for entry into the Support Zone and off-site.

- Support Zone: the uncontaminated area where workers should not be exposed to hazardous conditions.

Level D work activities will require only an Exclusion Zone and a Support Zone. Boundaries between the zones will be marked conspicuously with barrier ropes, and access between the zones will be strictly controlled. The following sections describe each of the work zones noted above.

11.1 Exclusion Zone

The Exclusion Zone includes that area of the work site where active drilling and sampling activities will be undertaken. Workers in this zone may be subject to contact with hazardous gases, liquids, and solids during drilling and sampling operations, and to physical hazards associated with the drilling and sampling operations, such as contact with heavy drill pipes and flying materials while drilling with high pressure air.

The minimum number of personnel necessary to safely perform drilling and sampling operations will be allowed in the Exclusion Zone.

11.2 Contaminant Reduction Zone

The Contaminant Reduction Zone will consist of areas set up for decontamination of personnel and equipment that have been in contact with the Exclusion Zone. It is anticipated that necessary personnel decontamination will take place near the drilling site; and that equipment will receive preliminary decontamination in this zone to remove loose soil. Additional equipment decontamination, including steam cleaning, will be performed in a separate Decontamination Zone.

11.3 Support Zone

The Support Zone will consist of the area within the safety perimeter around the drilling site but outside the Decontamination Zones and will include an area for staging vehicles and equipment during site operations.

12.0 EMERGENCY PLANNING

The nature of work at hazardous waste sites makes emergencies a continual possibility, no matter how infrequently they may occur. Emergencies happen quickly and unexpectedly and require immediate response. The following sections describe

the procedures to be used during emergency situations; equipment that will be available on-site for emergency situations; and the agencies, facilities, and off-site personnel who will be notified in case of emergency.

12.1 Site-Specific Emergency Response Plan

When an emergency occurs, decisive action is required. Personnel must be ready to act immediately to respond and rescue, if necessary. In order to handle emergencies effectively, planning is essential. An emergency response plan shall be developed as part of the site-specific HASP and will include the following elements:

- personnel roles, lines of authority, training requirements, and communication methods;
- site maps, security and control, evacuation routes, and decontamination station locations;
- medical and first aid treatment options;
- emergency equipment descriptions and locations;
- emergency procedures;
- recordkeeping requirements; and
- reporting responsibilities.

12.2 Emergency Procedures

12.2.1 Personnel Injury in the Exclusion Zone

Upon notification of injury in the Exclusion Zone, on-site personnel trained in first aid/CPR will initiate first response treatment of the injured person. The Field Team Leader or the SHSO will evaluate the nature and extent of the injury. The affected person will be decontaminated to the extent possible, in keeping with the requirements of Section 10.3, before movement to the Support Zone. If necessary, contact will be made with facility emergency personnel for emergency transportation and medical aid.

If the injury or exposure is severe, field operations may be suspended until the cause of the injury or symptoms is determined and corrected.

12.2.2 Personnel Injury in the Support Zone

Upon notification of an injury in the Support Zone, the Field Team Leader, and the SHSO will assess the nature of the injury. The affected person will be decontaminated to the extent possible, in keeping with the requirements of Section 10.3, before movement from the Support Zone. If necessary, contact will be made with facility emergency personnel for emergency transportation and medical aid. If the injury or exposure is severe, field operations may be suspended until the cause of the injury or symptoms is determined and corrected.

12.2.3 Fire/Explosion

Upon notification of a fire or explosion that is not controllable with on-site fire protection equipment, the local Fire Department will be alerted, and all personnel will move upwind and to a safe distance from the involved area until the fire is extinguished and the site is rendered safe for re-entry.

12.2.4 Personal Protective Equipment Failure

If any site worker experiences a failure of protective equipment or if there is damage of one's protective equipment that affects the protection factor, that person and his/her buddy will immediately leave the Exclusion Zone. Reentry will not be permitted until the equipment has been repaired or replaced.

12.2.5 Other Equipment Failure

If any other on-site equipment fails to operate properly, the Project/Site Manager will be notified and will determine the effect of this failure on continuing operations. If the failure affects the safety of personnel or prevents completion of the site-specific SAP tasks, all personnel will leave the Exclusion Zone until the situation is evaluated and appropriate actions are taken.

12.2.6 Hand Signals

Hand signals and the buddy system will be used if an emergency situation should arise and normal communication becomes impossible or unsafe. The following hand signals will be used in an emergency:

- hand gripping throat -- out of air, cannot breathe;
- grip partner's wrist or both hands around waist -- leave area immediately;
- hands on top of head -- need assistance;
- thumbs up -- okay, I'm all right, I understand; and
- thumbs down -- no, negative.

12.2.7 Emergency Escape

In cases of life-threatening emergencies such as fire, explosion, or the release of potentially hazardous substances, personnel should leave the vicinity using the shortest possible route without regard for decontamination at that time (NFPA 1988). When the situation has stabilized, personnel will take necessary steps to decontaminate themselves, equipment, and other affected areas. Each site-specific HASP will include a map showing escape routes, assembly points, and the location of nearby medical facilities. Personnel evacuating an area shall stay at the assembly point until they are released by the SHSO or other appropriate project personnel.

12.2.8 Exclusion Zone Reentry

In all situations, when an on-site emergency results in evacuation of the Exclusion Zone, personnel will not reenter until:

- conditions resulting in the emergency have been corrected,
- hazards have been reassessed,
- the site-specific HASP has been reviewed and revised, and
- site personnel have been briefed on any changes in the site-specific HASP.

12.2.9 Emergency Reporting Requirements

As soon as possible following an accident or injury, the SHSO will be notified so the appropriate reporting procedures can be initiated. In the event that a contamination victim is to be transported to a medical facility, advance notification as to the type of contamination will be relayed to that facility. All accidents and injuries, regardless of how minor, will be reported and recorded in a field logbook by the Project/Site Manager.

Once notified, the SHSO will contact the emergency network contained in the site-specific HASP. These may include but are not limited to, the Base fire department,

Base medical facility (for ambulance service), and any other appropriate support organizations deemed appropriate by the SHSO.

12.3 Emergency Equipment

The following emergency equipment may be available on the site during field operations as specified in the site-specific HASP.

- Fire Extinguishers - Because of the potential threat of fire due to the presence of fuel for equipment operation, or solvents for decontamination operations, at least one 20-pound (minimum) type ABC fire extinguisher will be readily available throughout the investigation.

- First Aid Kit - An industrial first aid kit will be kept in the support area. In addition, it is desirable that at least two individuals at the investigation site be trained and certified in first aid and CPR (in case the individual injured is one who has had training).

- Eyewash - Portable eyewashes meeting the minimum requirements of American National Standards Institute (ANSI) Z358.1 and sufficient water for copious flushing will be readily available and at hand throughout the investigation. An eyewash unit will be kept near each site of current activity (e.g., at each borehole being drilled).

- Acid/Base Neutralizers - Adequate amounts of neutralizers will be maintained on-site for spills of small amounts of acids or bases used for sample preservation.

12.4 Communications

Emergency telephone numbers will be posted near the office telephone and in field vehicles and will be readily available to any of the Field Team Members. Emergency communication will be discussed in the safety training before initiation of site investigation activities. The location of the telephone closest to each investigation site will be identified to each member of the Field Team.

12.5 Personal Hygiene

A sufficient supply of clean potable water and hand soap will be provided at the site for the personal hygiene of Field Team Members.

13.0 STANDARD OPERATING PROCEDURES

13.1 General Site Procedures

It is anticipated that some periods of inclement weather (cold/hot temperatures, high winds, snow, heavy rainfall) may occur during the course of this program which will

prevent the Field Team Members from accomplishing their assigned activities for periods of time extending up to several days. The decision regarding whether to work on a particular day due to inclement weather will be made by the SHSO and Project/Site Manager in consultation with the subcontractor supervisor(s). Field Team Members are expected to have suitable clothing for working in cold, windy, and/or wet weather conditions.

The following are general safe work practices that will be adhered to on each Delivery Order:

- Smoking, eating, drinking, and chewing tobacco are prohibited in the Exclusion and Contamination Reduction Zones.

- Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling, leaning, or sitting on equipment or the ground.

- All Field Team Members will use all of their senses to alert themselves to potentially dangerous situations (e.g., the presence of irritating and/or nauseating odors).

- Prevent spillages to the extent possible and, if spillage occurs, contain it and immediately clean it up.

- Prevent splashing of contaminated materials.

- Field Team Members will familiarize themselves with the physical characteristics of the sites of investigation, including, but not limited to:

  - Wind direction
  - Accessibility to fellow workers, equipment, and vehicles
  - Communications at and near the site
  - Hot zones (areas of known or suspected contamination)
  - Site access
  - Nearest water sources
  - Nearest emergency assistance

13.2 Confined Spaces Entry Procedures

Entry into confined spaces might be performed during the course of this program. In accordance with 29 CFR 1910.146, a confined space is defined as a space large enough and so configured that a person can enter and perform assigned work; has limited or restricted means for entry and exit; and is not designed for continuous occupancy.

In developing plans for confined space entry, the following characteristics will be addressed in the site-specific HASP:

- an actual or potential hazardous atmosphere;
- the potential for engulfment by loose particulate matter;
- any internal configuration such that an entrant could be trapped by inwardly tapering walls or a floor which slopes or tapers to a smaller cross-section;
- any other recognized serious safety or health hazards;
- the potential for an oxygen-deficient (less than 19.5 percent) atmosphere.

The past and current usage of the confined space which may adversely affect the atmosphere of the confined space shall be reviewed and all hazards shall be identified for each confined space.

14.0 QUALITY ASSURANCE

14.1 Readiness Review

A readiness review shall be performed prior to mobilization to the field on each Delivery Order for this program and as often as necessary to ensure that additional work being performed is adequately covered in the controlling health and safety documents. The review is intended to confirm that effective health and safety provisions have been made to perform work safely in the field. An example readiness review checklist is presented in Figure 14.1.

Figure 14.1. Example Readiness Review Checklist

Review Item	Yes	No	Comments*
Is an approved site-specific health and safety plan in place?			
Have all field team members received required training with documentation?			
Have adequate procedures been developed to protect the health and safety of field team members?			
Have PPE items been procured for site mobilization?			
Have safety and fire protection equipment items been procured for site mobilization?			
Has a site-specific hazard communication program been developed?			
Have all field team members been medically cleared to wear respirators and work on a hazardous waste site with documentation?			
Have local (to the site) emergency response providers been adequately identified?			
Has an effective site communication system been developed?			

*A "no" response requires an explanation.

14.2 Surveillance/Audits

When deemed appropriate by the Program Manager or the HSO, surveillances or audits of field health and safety operations will be conducted. The quality assurance (QA) adequacy of these operations will be assessed against the controlling program and site-specific health and safety documents.

15.0 REFERENCES

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ADDITIONAL REFERENCES

The list of "Additional References" section provides references that may be useful in the development of site-specific health and safety plans, updating plans, or for further study into an existing work practice requiring modification. This list is not meant to be exhaustive. The use of other reference materials is encouraged.

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APPENDIX A

SITE-SPECIFIC HEALTH

AND SAFETY PLAN GUIDELINES

APPENDIX A

SITE-SPECIFIC HEALTH

AND SAFETY PLAN GUIDELINES

A site-specific Health and Safety Plan (HASP), which establishes policies and procedures to protect workers and the public from the potential hazards posed by site activities, must be developed before these activities commence. The site-specific HASP must provide measures to minimize accidents that may occur during normal daily site activities or during adverse conditions such as hot or cold weather.

Development of a site-specific HASP helps ensure that all health and safety aspects of site activities are thoroughly examined prior to commencing field work. The site-specific HASP should be modified as needed for every stage of site activities.

At a minimum, the plan should:

- Describe the site and the planned site activities.

- Name key personnel and alternates responsible for site health and safety.

- Describe the risks associated with each operation conducted.

- Confirm that personnel are adequately trained to perform their job responsibilities and to handle the specific hazardous situations they may encounter.

- Describe the protective clothing and equipment to be worn by personnel during various site operations.

- Describe any site-specific medical surveillance requirements.

- Describe the program for periodic air monitoring, personnel monitoring, and environmental sampling, as needed.

- Describe the actions to be taken to mitigate existing hazards (e.g., containment of contaminated substances) to make the work environment less hazardous.

- Define site control measures and include a site map.

- Establish decontamination procedures for personnel and equipment.

- Set forth the site's Standard Operating Procedures (SOPs). SOPs are those activities that can be standardized (such as decontamination and respirator fit testing), and where a checklist can be used.

- Set forth a contingency plan for safe and effective response to emergencies.

Attachment 1 provides an example site-specific HASP Outline, which may be used as a guide in the development of site-specific HASPs.

ATTACHMENT 1

SITE-SPECIFIC
HEALTH AND SAFETY PLAN

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDIX B

PEER

RESPIRATORY PROTECTION PROGRAM

RESPIRATORY PROTECTION PROGRAM

BY

PEER CONSULTANTS, P.C.

TABLE OF CONTENTS

LIST OF ATTACHMENTS

RESPIRATORY PROTECTION PROGRAM

1.0 PURPOSE

It is the policy of PEER to protect employees from exposure to airborne workplace contamination (radioactive, chemical, dusts, fumes, mists, vapors, or particulates) by using facilities and equipment that have all feasible safeguards incorporated into their design. When effective engineering controls are not feasible, or while they are being initiated, protection will be provided by the use of personal respiratory protective equipment (respirators). This document establishes an overall respiratory protection program and related SOPs.

2.0 SCOPE

This program establishes a mechanism whereby administration, record-keeping, selection, use, maintenance, cleaning, and storage of respiratory protective equipment shall be accomplished. Requirements for the qualification and approval of respirator wearers are also included. This program provides for the use of air purifying and air-line type supplied air respirators. This program makes no provisions for the use of SCBAs or the use of any respirator in an environment that may be oxygen deficient or immediately dangerous to life or health (IDLH). Revision of this program will be necessitated if either the use of SCBAs or oxygen-deficient/IDLH conditions are anticipated.

3.0. REFERENCES

29 CFR 1910.134 "Respiratory Protection"

ANSI Z88.2 - 1980 "Practices for Respiratory Protection"

ANSI Z88.6 - 1984 "Practices for Respiratory Protection - Respirator Use - Physical Qualification For Personnel"

ANSI Z86.1 - 1973 "Compressed Gas Association Commodity Specification for Air" (G-7.1, 1973)

ANSI Z48.1 - 1971, "Method of Marking Portable Compressed Gas Containers to Identify the Material Contained"

4.0. RESPONSIBILITY

The PEER HSO is responsible for administration of all facets of this program and has full authority to make necessary decisions to ensure success of this program. This authority includes supervising personnel and authorizing the purchase of equipment necessary to implement and operate the program. The HSO is responsible for ensuring development and maintenance of detailed written instructions covering each of the basic elements in this program. The PEER Office Manager's signature is required to authorize amendment of these instructions.

5.0. PROGRAM ELEMENTS

1. The HSO is responsible for development of detailed written SOPs governing the selection and use of respirators. Regulatory agencies, manufacturers' representatives, or other recognized authorities will be consulted as needed for questions regarding regulatory compliance or prudent practice. Only the HSO may recommend amendment of these procedures.

2. Respirators shall be selected on the basis of hazards to which the worker is or may be exposed. The considerations for respirator selection are presented in Attachment 1. The HSO shall determine respirator selection with assistance from a person with demonstrated knowledge of the potential hazards and the corresponding appropriate level of protective equipment. The rationale presented in the most currently issued revision of ANSI Z88.2, "Practices for Respiratory Protection," shall be used as the guidance document for the selection rationale.

3. The user shall be instructed, trained, and fit-tested in the proper use of respirators and their limitations at least annually. (Individuals working on asbestos projects will be fit-tested semi-annually.) A training outline representing the minimum of required training information is presented in Attachment 2. Training will provide the employee an opportunity to handle the respirator, have it fitted properly, test its facepiece-to-face

seal, wear it in ambient air for a familiarity period, and finally to wear it under fit testing conditions. Every respirator wearer will receive fitting instructions, including demonstrations and practice on how the respirator should be worn, how to adjust it, and how to determine if it fits properly.

4. PEERs preference of manufacturers is MSA, 3M, Wilson, and North, in that order. After successful fitting, two cards will be issued to the wearer which provide documentation of training and quantitative fit testing. These cards indicate the manufacturer, model, and size of facepiece; the NIOSH approval number; and the protection factors assigned for the respirators in which the employee was satisfactorily fitted. The cards also include the name and Social Security number of the wearer, as well as the signature of the technician performing the fit test/training. One card will be carried whenever respirators are worn. The second card will be retained for backup. The manufacturers, sizes, and models of respirators listed on the card are the only ones in which the wearer is approved.

5. Respirators shall not be worn when conditions prevent a good face seal, such as a growth of beard, sideburns, a skull cap that projects under the facepiece, temple pieces on glasses, or safety goggles with half-face respirators. Employees of PEER are not allowed to wear beards or significant beard stubble when required to use respiratory protection. Facial scars, significant weight changes, or factors such as dental

changes can seriously affect the fit of a facepiece and may require a new fit test to ensure respiratory protection. The importance of the employee's diligence in observing these factors will be stressed in the training program. To ensure proper facepiece fit upon each donning of a respirator, the fit will be checked by the wearer. This will be accomplished by performing positive and negative pressure checks as taught to the wearer in the annual respiratory protection training.

6. In cases when a respirator user must wear corrective lenses or other protective eyewear, care shall be taken to ensure that the facepiece seal is not broken. For cases in which full face respiratory protection is required for an employee needing corrective lenses, appropriate inserts shall be provided by PEER to allow the lenses to be worn inside the respirator without breaking the facepiece seal. Contact lenses shall not be worn by employees while wearing respiratory protection on-site.

7. Protective eyewear, such as welding shields, shall be worn in a manner as to not interfere with the facepiece seal. This can be accomplished by using equipment designed for this purpose, such as belt-mounted cartridge holders or welding faceshield attachments for the respirator facepieces.

8. When PEER personnel are assigned to a task that may require the use respirator, they will request through the HSO, or his designee, to have a

respirator issued. Prior to the issue of a respirator to anyone, the individual's Respirators Fit Certificate will be checked to ensure that the individual is qualified to wear the mask being issued.

9. Respirators will be regularly cleaned and disinfected. Those issued for exclusive use of one worker will be cleaned after each day's use, or more often if necessary. A cleaning and maintenance SOP is included as Attachment 3.

10. A clean, dry, and sanitary respirator storage area shall be provided and used when respirators are not in use. Chemical cartridges will be stored in airtight bags to prevent sorption of ambient substances. The location of the main respirator storage area is the office storage room. At job sites, respirators that are not being worn shall be stored in Ziploc plastic bags in a box designated exclusively for respirator storage.

11. Respirators used routinely will be inspected informally during cleaning. Worn or deteriorated parts will be replaced. A formal inspection using the inspection record and checklist presented in Attachment 4 will be conducted quarterly.

12. Appropriate surveillance of work area conditions and degree of employee exposure will be maintained. Such surveillance will be performed under the direction of the HSO.

13. There will be regular inspection and evaluation to determine the continued effectiveness of the program using the checklist contained in Attachment 5. This will be performed at least annually. The HSO or his designee will make inspections of all job sites where respirators are used to ensure compliance with the respiratory protection program.

14. Persons shall not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the protective equipment. The PEER occupational medicine provider will assist in this determination. Attachment 6 contains the minimal criteria that will be used by the physician to aid in such a determination. The physician's medical disposition statement will be kept in the PEER personnel file for each affected employee for at least 30 years. The respirator user's medical status will be reviewed periodically if he is to remain an approved respiratory protection wearer.

15. Only respirators that are certified by Mine Safety and Health Administration and the National Institute of Safety and Health (MSHA/NIOSH) will be selected and used by PEER employees.

16. In situations that call for supplied-air respirators, air-line type respirators will be used and additional requirements will be defined in the site-specific HASP.

17. No "mixing and matching" of different manufacturers' cartridges or replacement parts shall be allowed. For approval, respirators must use only the exact part specified by the manufacturer. In the case of air-line systems, this rule includes the facepiece and all associated parts to the air supply station. Respirator repair shall be performed only by persons knowledgeable in the brand of respirators used by PEER.

ATTACHMENT 1
RESPIRATOR SELECTION

I. The following questions shall be considered and addressed for each use of respiratory protection:

A. What is the nature of the hazard?

1. Are airborne radionuclides present?
2. What are the other contaminants present?
3. In what form are they (i.e., dust fume, mist, smoke, or gas)?
4. What are the chemical properties?
5. What are the physical properties?
6. What are the physiological properties?
7. Is more than one contaminant present?
8. What are the contaminant concentrations?
9. Is there a cartridge or canister approved for the contaminant?
10. What is the protection factor for the facepiece?
11. What protection factor does the respirator manufacturer recommend for the particular facepiece/cartridge combination?
12. Do established regulatory standards exist for the contaminant?
13. Is there a possibility of oxygen deficiency?
14. Are conditions subject to change?
15. Is there a possibility of IDLH conditions?
16. Is it feasible to engineer the contaminant out of the workplace air?

B. What is the location in which respirators are to be used?

1. How close is an area with safe respirable air (no respirator required)?

If supplied-air type:

2. Will hoses be an added safety concern?

3. How close is a respirator air station? How long will supply hoses have to be?
4. Is use of a portable oil-less compressor possible? If not, can a gasoline/diesel powered compressor be used safely?
5. Are enough employees available to post a monitor?

C. How long will respirators be worn and at what level of exertion will employees work?
1. Is heat stress a potential problem?
2. Can supplied-air or powered air-purifying respirators be used?
3. Will work be intermittent or continuous?
4. Is work rate light, medium, or heavy?

D. What are the physical characteristics, functional capabilities, and performance limitations of the respirators being considered?

II. Following is a chart of protection factors assigned by PEER for the respirators used:

RESPIRATOR PROTECTION FACTORS	
TYPE OF RESPIRATOR	**PROTECTION FACTOR (PF)**
Particulate-filter half-mask facepiece	10
Vapor- or gas-removing half-mask facepiece	10, or maximum use limit of cartridge or canister for vapor or gas, whichever is less
Combination particulate-filter and or gas-removing half-mask facepiece	10, or maximum use limit vapor of cartridge or canister for vapor or gas, whichever is less
Particulate-filter, full facepiece	100
Vapor- or gas-removing, full facepiece	100, or maximum use limit of cartridge or canister for vapor or gas, whichever is less
Combination particulate-filter and or gas-removing, full facepiece	100, or maximum use limit vapor- of cartridge or canister for vapor or gas, whichever is less
Powered particulate-filter	100
Powered vapor- or gas-removing	100
Powered combination particulate-filter and vapor- or gas-removing	100
Air-line, demand mode, half-mask facepiece	10
Air-line, demand mode, full facepiece	100
Air-line, continuous flow, any facepiece	100
Air-line, pressure demand, full facepiece	1000

NOTE: Wherever manufacturers' recommendations for PF are lower, such as for contaminants with poor warning properties, the lower PF shall be observed.

ATTACHMENT 2

TRAINING OUTLINE

I. The Need for Respiratory Protection:

- A. Air purifying
- B. Atmosphere supplying

II. The Nature, Extent, and Effects of Respiratory Hazards in the Workplace:

- A. O_2 deficiency
- B. Particulates
  - 1. Fumes
  - 2. Dusts
  - 3. Mists
- C. Gases
  - 1. Irritants
  - 2. Anesthetics
  - 3. Asphyxiants
    - a. Chemical
    - b. Mechanical
  - 4. Systematic poisons

III. Selection of Respirators:

A. Considerations for selecting respirators

B. Protection factors

C. Types of masks

IV. Explanation of the Operation, Capabilities, and Limitations of the Respirator Selected:

A. Levels of protection

B. Limitations of air purifying

C. Warning properties, increased resistance

D. Limitations and requirements for supplied-air respirators

V. Explanation of Types of Engineering Controls and What is Being Done to Reduce/Eliminate the Need for Respiratory Protection

VI. Respirator Donning and Inspection Instruction:

A. Visual inspection

B. Donning procedures

C. Positive/negative pressure check

D. Warning

VII. Maintenance/Storage Instructions:

A. Location

B. Frequency

C. Procedures

VIII. Instruction in Emergency Procedures:

A. Escape only

B. SCBAs required for reentry by trained rescuer

NOTE: This procedure does not make provisions for SCBA use.

IX. Regulations Concerning Respirator Use:

A. OSHA 1910.134

B. Contaminant-specific standards

C. ANSI Z88.2 - 1980

D. ANSI Z86.1 - 1973

X. The Need to Inform Supervisor of Any Problems Experienced Related to Respirator Use

ATTACHMENT 3

CLEANING AND MAINTENANCE OF RESPIRATORS

I. DECONTAMINATION

A. Amount/Type of Contamination

Except in the case of radioactive contamination or other types of contamination not easily observed (such as PCBs), the amount of contamination on respirators shall be determined visually. If, on visual examination, a respirator appears grossly contaminated, a thorough decontamination is required. Gross substance remaining on the respirator for any extended period of time may degrade or permeate it. This likelihood increases with higher air concentrations and greater amounts of liquid contamination. Gross contamination also increases the probability of personnel contact. Swipe tests shall be used to determine if radioactive contamination is present in cases where the possibility exists. Swipe samples will be submitted to a subcontract analytical laboratory for analysis.

B. Responsibilities

PEER is not prepared to decontaminate radioactively contaminated respirators or respirators that are grossly contaminated with hazardous waste. The organization to which PEER is contracted is responsible for determining the extent of contamination present and the degree of decontamination necessary and, finally, for decontaminating the equipment. If the organization does not accept these responsibilities, the contaminated equipment shall be disposed of as hazardous waste. Certain parts of contaminated respirators, such as the harness assembly and straps, are difficult to decontaminate. If grossly contaminated, they may have to be discarded. Rubber components can be soaked in soap and water and scrubbed with a brush. Regulators shall be maintained according to manufacturers' recommendations.

II. HAND CLEANING/SANITIZING

The following procedure pertains to the hand washing of respirators. Either hand washing or machine washing (Section III of this attachment) is acceptable.

1. Remove the filters, cartridges, and canisters. If not contaminated or overloaded, wipe with a damp cloth and store in a sealed plastic bag for reuse. Discarding them after each day's use is preferable.

2. Remove, when necessary, the following components of respirators before cleaning and sanitizing:

   a. speaking diaphragms,

   b. valve assemblies, and

   c. any components recommended by the respirator manufacturers.

   Under normal use circumstances, it is not recommended to disassemble the respirator parts for cleaning. If the respirator needs parts replaced or if troubleshooting is needed for a malfunctioning respirator, disassembling will be necessary.

3. Fill a sink with enough hot water to submerge the respirator. Add appropriate amounts (as determined by the manufacturer's recommendations) of sanitizer or cleaner. Brands that clean and sanitize are available. Examples are MSA's Cleaner-Sanitizer (Part #34337) or American Optical Corporation's #101 Germicidal Detergent. Nondisinfecting types of detergents may be used. If normal detergents are used, Section IV, "Sanitizing" in this attachment must be followed.

4. Wash respirator assemblies in warm (120°F maximum temperature) cleaner-sanitizer solution. A stiff bristle (not wire) brush may be used to facilitate removal of dirt or other foreign substance.

5. Rinse respirators in clean, warm (120°F maximum temperature) water. Proceed with Section IV, "Sanitizing," if nondisinfecting detergent was used above. For one-step cleaner-sanitizer detergent use, proceed to step 6.

6. Drain all water and air dry the respirators.

7. Hand-wipe respirators, all parts, and all gasket and valve sealing surfaces with damp, lint-free cloth as needed to remove water residues and all foreign substances.

8. Inspect parts and replace any which are defective. This includes straps, lenses, gaskets, inhalation/exhalation valves, and yokes.

9. Reassemble parts on respirator and allow time for drying if necessary. Cartridges/canisters may rust if put into wet respirators.

10. Attach filters, cartridges, and canisters to respiratory inlet coverings.

11. Visually inspect and, where possible, test parts and respirator assemblies for proper function.

12. Place assembled respirators in Ziploc plastic bags and tape the bags with a tape, marking the date of cleaning.

13. Place respirators face down in storage cabinet, taking care to prevent misshaping respirator parts or facepiece by avoiding tightly packing them in the cabinet.

III. SANITIZING

If respirators are cleaned with nondisinfecting detergents, a separate sanitizing step is required. Such respirators shall be sanitized by immersion in a sanitizing solution of either 200 ppm of quartenary ammonium compound or 50 ppm chlorine bleach solution for 2 minutes. Respirators shall be rinsed thoroughly after sanitizing. Special care shall be taken in rinsing if quartenary ammonium compounds are used, as these tend not to break down as easily as chlorine, and may be more harmful to the respirator parts and/or irritating to the wearer's skin. The remainder of the sanitizing procedure shall be identical to steps 5 through 12 in Section II, "Hand Washing," of this Attachment.

ATTACHMENT 4

RESPIRATOR INSPECTION RECORD

1. TYPE _____ 2. NO. _____

3. DEFECTS FOUND:

A. Facepiece _____

B. Inhalation Valve _____

C. Exhalation Valve Assembly _____

D. Headbands _____

E. Cartridge Holder _____

F. Cartridge/Canister _____

G. Filter _____

H. Harness Assembly _____

I. Hose Assembly _____

J. Speaking Diaphragm _____

K. Gaskets _____

L. Connections _____

M. Other Defects _____

_____

_____

_____

Printed/Typed Name of Inspector: _____

Signature of Inspector: _____

Date of Inspection: _____

Findings Reported to: _____

Action Taken: _____

ATTACHMENT 5

RESPIRATOR PROGRAM EVALUATION CHECKLIST

In general, the respirator program should be evaluated for each job or at least annually, with program adjustments, as appropriate, made to reflect the evaluation results. Program function can be separated into administration and operation.

A. Program Administration

_____ (1) Is there a written policy which acknowledges employer responsibility for providing a safe and healthful workplace, and assigns program responsibility, accountability, and authority?

_____ (2) Is program responsibility vested in one individual who is knowledgeable and who can coordinate all aspects of the program at the job site?

_____ (3) Can feasible engineering controls or work practices eliminate the need for respirators?

_____ (4) Are there written procedures/statements covering the various aspects of the respirator program, including:

_____ designation of an administrator;
_____ respirator selection;
_____ purchase of MSHA/NIOSH-certified equipment;
_____ medical aspects of respirator usage;
_____ issuance of equipment;
_____ fitting;
_____ training;

_____ maintenance, storage and repair;

_____ inspection;

_____ use under special condition; and

_____ work area surveillance?

B. Program Operation

(1) Respiratory protection equipment selection

_____ Are work area conditions and worker exposures properly surveyed?

_____ Are respirators selected on the basis of hazards to which the worker is exposed?

_____ Are selections made by individuals knowledgeable of proper selection procedures?

_____ (2) Are only certified respirators purchased and used? Do they provide adequate protection for the specific hazard and concentration of the contaminant?

_____ (3) Has a medical evaluation of the prospective user been made to determine physical and psychological ability to wear the sealed respiratory protective equipment (within the past 12 months)?

_____ (4) Respiratory protective equipment fitting

_____ Are the users given the opportunity to try on several respirators to determine whether the respirator they will subsequently be wearing is the best fitting one?

_____ Is the user fit tested at appropriate intervals?

_____ Are those users who require corrective lenses correctly fitted?

_____ Is the facepiece-to-face seal tested in a test atmosphere?

_____ Are workers prohibited from wearing respirators in contaminated work areas when they have facial hair or other characteristics which may cause face seal leakage?

_____ (5) Respirator use in the work area

_____ Are respirators being worn correctly (i.e., head covering over respirator straps)?

_____ Are workers keeping respirators on all the time while in the work area?

_____ (6) Maintenance of respiratory protective equipment

Cleaning and Disinfecting

_____ Are respirators cleaned and disinfected after each use when different people use the same device, or as frequently as necessary for devices issued to individual users?

_____ Are proper methods of cleaning and disinfecting used?

Storage

_____ Are respirators stored in a manner so as to protect them from dust, sunlight, heat, excessive cold or moisture, or damaging chemicals?

_____ Are respirators stored properly in a storage facility so as to prevent them from deforming?

_____ Is storage in lockers and tool boxes permitted only if the respirator is in a carrying case or carton?

Inspection

_____ Are respirators inspected before and after each use and during cleaning?

_____ Are qualified individuals/users instructed in inspection techniques?

_____ Are SCBA-incorporating breathing gas containers inspected weekly for breathing gas pressure?

_____ Is a record kept of the inspection of "emergency use" respiratory protective equipment?

Repair

_____ Are replacement parts used in repair those of the manufacturer of the respirator?

_____ Are repairs made by manufacturers or manufacturer-trained individuals?

_____ (7) Special use conditions

_____ Is a procedure developed for equipment usage for entry into confined spaces?

_____ Are steps in place to ensure breathing air is Grade D or better when supplied-air respirators are in use?

_____ (8) Training

_____ Are users trained in proper respirator use, cleaning, and inspection?

_____ Are users trained in the basis for selection of respirators?

_____ Are users evaluated, using competency-based evaluation, before and after training?

DEFECTS FOUND:

A. Facepiece _____
B. Inhalation Valve _____
C. Exhalation Valve Assembly _____
D. Headbands _____
E. Cartridge Holder _____
F. Cartridge/Canister _____
G. Filter _____
H. Harness Assembly _____
I. Hose Assembly _____
J. Speaking Diaphragm _____
K. Gaskets _____
L. Connections _____

M. Other Defects _____

_____

_____

_____

Printed/Typed Name of Inspector: _____

Signature of Inspector: _____

Date of Inspection: _____

Findings Reported to: _____

Action Taken: _____

ATTACHMENT 6

MEDICAL CONSIDERATIONS FOR RESPIRATOR USE

I. SPIROMETRY

Forced vital capacity (FVC) and forced expiratory volume -1 second (FEV_1) measurements will be taken. If the FVC is less than 80 percent of normal, or if FEV_1 is less than 70 percent of normal, restrictions from negative-pressure respirator use shall be considered. Additionally, the ratio of FEV_1/FVC, as an indicator of obstructive disease, shall be considered. In the case of obstructive disease, FVC is often not reduced to the same extent as the FEV_1. However, it is appropriate to use FEV_1/FVC ratio alone because restrictive disease may not be detected. The physician is best able to determine the appropriate combination of measures to consider.

II. RESPIRATORY OR CIRCULATORY DISEASES

Evidence of significant restrictive or obstructive pulmonary disease or perfusion disorders shall be considered. Evidence of coronary artery disease or cerebral blood vessel disease shall also be considered. The prospective respirator user's history, clinical findings, x-ray (where indicated), and spirometry shall determine the assessment as to the degree of disability.

III. OTHER CONSIDERATIONS

Consideration shall be given as to fitness for respirator use if the prospective respirator user has any of the following:

- severe or progressive hypertension;
- epilepsy, grand mal, or petit mal;

- anemia, pernicious;
- diabetes, insipidus, or mellitus;
- punctured eardrum;
- pneumomediastinum gap;
- communication of sinus through upper jaw to oral cavity;
- breathing difficulty when wearing a respirator; or
- claustrophobia or anxiety when wearing a respirator.

APPENDIX C

PEER

HAZARD COMMUNICATION PROGRAM

HAZARD COMMUNICATION PROGRAM

BY

PEER CONSULTANTS, P.C.

TABLE OF CONTENTS

LIST OF ATTACHMENTS

HAZARD COMMUNICATION PROGRAM

1.0 PURPOSE

It is the policy of PEER to inform employees of the contents of 29 CFR 1910.1200 by compiling a hazardous chemicals list, using MSDSs, ensuring that containers are labeled, and by providing employees with training. This document establishes an overall hazard communication program which can be expanded to effectively cover any site at which PEER is tasked to perform.

2.0 SCOPE

This program applies to all work operations undertaken by PEER where an employee may be exposed to hazardous substances under normal working conditions or during an emergency situation. Expansion of this program will be necessary to fit site-specific job sites.

3.0 REFERENCE

1910.1200 "Hazard Communication."

4.0 RESPONSIBILITY

The PEER Office Manager is responsible for administration of all facets of this program and has full authority to make necessary decisions to ensure success of this program. This authority includes supervising personnel and authorizing the purchase of equipment necessary to implement and operate the program. The HSO is responsible for ensuring development and maintenance of a detailed written hazard communication program. The HSO's signature is required to authorize amendment of these instructions. It is understood that, for all affected employees, it is a condition of employment to abide by instructions set forth in the written hazard communication program document. Site-specific hazard communication guidance is provided is Attachment 1.

5.0 PROGRAM ELEMENTS

1. The PEER HSO is responsible for development of written hazard communication program. Regulatory agencies, manufacturers' representatives, or other recognized authorities will be consulted as needed for questions regarding regulatory compliance or prudent practice. Only the HSO may authorize amendment of these procedures.

2. The PEER HSO shall ensure that a list of all hazardous chemicals and related work practices on a given job site is developed and will be updated as necessary. Attachment 2 is a sample hazardous chemical inventory list form.

3. Employees who work with or are potentially exposed to hazardous chemicals will receive initial training on the Hazard Communication Standard and the safe use of hazardous chemicals by the PEER HSO. Jobsite safety sessions will also be used to review new developments in hazard communication, as well as the information present in the initial training. Attachment 3 provides topics to be included in the training.

4. The PEER HSO shall maintain a complete and accurate MSDS for each hazardous chemical used by PEER employees. Attachment 4 describes information required to be included on all MSDSs. Attachment 5 provides a checklist for use in evaluating incoming MSDSs.

5. The PEER HSO will ensure that all hazardous chemicals in the plant are properly labeled and updated, as necessary. Labels should list the chemical name and the appropriate National Fire Protection Association diamond hazard warnings, if chemicals are transferred from a labeled container.

6. Appropriate surveillance of work area conditions and degree of employee exposure to hazardous chemicals will be maintained. Such surveillance will be performed under the direction of the PEER HSO or by the company to whom PEER is a subcontractor.

7. There will be regular inspection and evaluation to determine the continued effectiveness of the program. This will be performed by job or at least annually. The HSO or his designee will make frequent inspections of all job sites where hazardous chemicals are used to ensure compliance with the hazard communication program.

ATTACHMENT 1

SITE-SPECIFIC HAZARD COMMUNICATION GUIDANCE

Written Hazard Communication Program

The HSO or designee will develop a site-specific hazard communication program as part of the site-specific HASP for each Delivery Order assigned during this period. This written program will be accessible to each assigned team member on-site.

MSDSs

The SHSO will maintain a file of all hazardous substances used on the job site, and is responsible for obtaining MSDSs on new substances to be used on-site.

Employee Information and Training Program

All assigned team members will be provided information and training on all hazardous substances used on the job site when they are assigned and each time a new substance is introduced for use on the site.

Hazardous Chemical Inventory

A current hazardous chemical inventory will be maintained on-site by the SHSO. This inventory will be accessible on-site.

Hazard Communication Records

Pertinent records including training session summaries, attendance rosters, and informational records will be maintained by the SHSO on-site.

ATTACHMENT 2

SAMPLE HAZARDOUS CHEMICAL INVENTORY

LIST FORM

Chemical Name	Operation Used For	MSDS on File	
		Yes	No

ATTACHMENT 3

HAZARD COMMUNICATION TRAINING TOPICS

- Summary of the standard and this written program.

- Chemical and physical properties of hazardous substances (e.g., flash point, reactivity) and methods that can be used to detect the presence or release of chemicals (including chemicals in unlabeled drums or pipes).

- Physical hazards of chemicals (e.g., potential for fire, explosion, etc.).

- Health hazards, including signs and symptoms of exposure, associated with exposure to chemicals and any medical condition known to be aggravated by exposure to the chemical.

- Procedures to protect against hazards (e.g., PPE required, proper use, and maintenance; work practices or methods to ensure proper use and handling of chemicals; and procedures for emergency response).

- Work procedures to follow to ensure protection when cleaning hazardous chemical spills and leaks.

- Where MSDSs are located, how to read and interpret the information on both labels and MSDSs, and how employees may obtain additional hazard information.

- Non-routine task precautions.

ATTACHMENT 4

MATERIAL SAFETY DATA SHEET

SUMMARY OF REQUIRED INFORMATION

Sections of an MSDS and Their Significance

OSHA specifies the information to be included on an MSDS, but does not prescribe the precise format for an MSDS. The MSDS must be in English and must include at least the following information.

Section I. Chemical Identity

- The chemical and common name(s) must be provided for single chemical substances.

- An identity on the MSDS must be cross-referenced to the identity found on the label.

Section II. Hazardous Ingredients

- For a hazardous chemical mixture that has been tested as a whole to determine its hazards, the chemical and common names of the ingredients that are

associated with the hazards, and the common name of the mixture must be listed.

- If the chemical is a mixture that has not been tested as a whole, the chemical and common names of all ingredients determined to be health hazards and comprising 1 percent or greater of the composition must be listed.

- Chemical and common names of carcinogens must be listed if they are present in the mixture at levels of 0.1 percent or greater.

- All components of a mixture that have been determined to present a physical hazard must be listed.

- Chemical and common names of all ingredients determined to be health hazards and comprising less than 1 percent (0.1 percent for carcinogens) of the mixture must also be listed if they can still exceed an established Permissible Exposure Limit (PEL) of Threshold Limit Value (TLV) or present a health risk to exposed employees in these concentrations.

Section III. Physical and Chemical Characteristics

- The physical and chemical characteristics of the hazardous substance must be listed. These include items such as boiling and freezing points, density, vapor pressure, specific gravity, solubility, volatility, and the product's general appearance and odor. These characteristics provide important information for designing safe and healthful work practices.

Section IV. Fire and Explosion Hazard Data

- The compound's potential for fire and explosion must be described. Also, the fire hazards of the chemical and the conditions under which it could ignite or explode must be identified. Recommended extinguishing agents and fire-fighting methods must be described.

Section V. Reactivity Data

- This section presents information about other chemicals and substances with which the chemical is incompatible, or with which it reacts. Information on any hazardous decomposition products, such as carbon monoxide, must be included.

Section VI. Health Hazards

- The acute and chronic health hazards of the chemical, together with signs and symptoms of exposure, must be listed. In addition, any medical conditions that are aggravated by exposure to the compound must be included. The specific types of chemical health hazards defined in the standard include carcinogens, corrosives, toxins, irritants, sensitizers, mutagens, teratogens, and effects on target organs (i.e., liver, kidney, nervous system, blood, lungs, mucous membranes, reproductive system, skin, eyes, etc.).

- The route of entry section describes the primary pathway by which the chemical enters the body. There are three principal routes of entry: inhalation, skin, and ingestion.

- This section of the MSDS supplies the OSHA PEL, the ACGIH TLV, and other exposure levels used or recommended by the chemical manufacturer.

- If the compound is listed as a carcinogen (cancer-causing agent) by OSHA, the National Toxicology Program (NTP), or the International Agency for Research on Cancer (IARC), this information must be indicated on the MSDS.

Section VII. Precautions for Safe Handling and Use

- The standard requires the preparer to describe the precautions for safe handling and use. These include recommended industrial hygiene practices, precautions to be taken during repair and maintenance of equipment, and procedures for cleaning up spills and leaks. Some manufacturers also use this section to include useful information not specifically required by the standard, such as EPA waste disposal methods and state and local requirements.

Section VIII. Control Measures

- The standard requires the preparer of the MSDS to list any generally applicable control measures. These include engineering controls, safe handling procedures, and PPE. Information is often included on the use of goggles, gloves, body suits, respirators, and face shields.

ATTACHMENT 5

MATERIAL SAFETY DATA SHEET

CHECKLIST

You must ensure that each MSDS contains the following information:		Yes	No
1.	Product or chemical identity used on the label		
2.	Manufacturer's name and address		
3.	Chemical and common names of each hazardous ingredient		
4.	Name, address, and phone number for hazard and emergency information		
5.	Preparation or revision date		
6.	The hazardous chemical's physical and chemical characteristics, such as vapor pressure and flashpoint		
7.	Physical hazards, including the potential for fire, explosion, and reactivity		
8.	Known health hazards		
9.	OSHA PEL, ACGIH TLV or other exposure limits		
10.	Emergency and first aid procedures		
11.	Whether OSHA, NTP or IARC lists the ingredient as a carcinogen		
12.	Precautions for safe handling and use		
13.	Control measures such as engineering controls, work practices, hygienic practices or personal protective equipment required		
14.	Primary routes of entry		
15.	Procedures for spills, leaks, and cleanup		