
USACE / NAVFAC / AFCESA UFGS-01351 (August 2004)

Preparing Activity: USACE Superseding
UFGS-01351A (August 2003)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 23 June 2005

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01351

SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST)

08/04

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 DESCRIPTION OF WORK
- 1.3 SUBMITTALS
- 1.4 REGULATORY REQUIREMENTS
- 1.5 PRECONSTRUCTION SAFETY CONFERENCE
- 1.6 ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN (APP/SSHP)
 - 1.6.1 Acceptance and Modifications
 - 1.6.2 Availability
- 1.7 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION
 - 1.7.1 Project/Site Conditions
 - 1.7.1.1 CERCLA Documents
 - 1.7.1.2 RCRA Documents
 - 1.7.1.3 UST Documents
 - 1.7.2 Ordnance and Explosives (OE)
- 1.8 TASK SPECIFIC HAZARDS, INITIAL PPE, HAZWOPER MEDICAL SURVEILLANCE AND TRAINING APPLICABILITY
- 1.9 STAFF ORGANIZATION, QUALIFICATION AND RESPONSIBILITIES
 - 1.9.1 Safety and Health Manager
 - 1.9.2 Additional Certified Health and Safety Support Personnel
 - 1.9.3 Site Safety and Health Officer
 - 1.9.4 Occupational Physician
 - 1.9.5 Persons Certified in First Aid and CPR
 - 1.9.6 Safety and Health Technicians
- 1.10 TRAINING
 - 1.10.1 General Hazardous Waste Operations Training
 - 1.10.2 Pre-entry Briefing
 - 1.10.3 Periodic Sessions
 - 1.10.4 Other Training
- 1.11 PERSONAL PROTECTIVE EQUIPMENT
 - 1.11.1 Site Specific PPE Program
 - 1.11.2 Levels of Protection
 - 1.11.2.1 Initial PPE Components
 - 1.11.3 PPE for Government Personnel
- 1.12 MEDICAL SURVEILLANCE PROGRAM

- 1.12.1 Frequency of Examinations
- 1.12.2 Content of Examinations
- 1.12.3 Physician's Written Opinion
- 1.12.4 Employee Certificates
- 1.12.5 Site Specific Medical Surveillance
- 1.13 EXPOSURE MONITORING/AIR SAMPLING PROGRAM
 - 1.13.1 Ionizing Radiation Sampling and Dosimetry
 - 1.13.1.1 Air Sampling and Dosimetry
 - 1.13.1.2 Evaluation
 - 1.13.1.3 Documentation
 - 1.13.1.4 Reporting
- 1.14 HEAT STRESS MONITORING AND MANAGEMENT
- 1.15 SPILL AND DISCHARGE CONTROL
- 1.16 MATERIALS TRANSFER SAFETY
- 1.18 DRUM AND CONTAINER HANDLING
- 1.19 CONFINED SPACE ENTRY PROCEDURES
- 1.19 HOT WORK
- 1.20 IGNITION SOURCES
- 1.21 FIRE PROTECTION AND PREVENTION
- 1.22 ELECTRICAL SAFETY
- 1.23 EXCAVATION AND TRENCH SAFETY
- 1.24 GUARDING OF MACHINERY AND EQUIPMENT
- 1.25 LOCKOUT/TAGOUT
- 1.26 FALL PROTECTION
- 1.27 HAZARD COMMUNICATION
- 1.28 ILLUMINATION
- 1.29 SANITATION
- 1.30 ENGINEERING CONTROLS
- 1.31 PROCESS SAFETY MANAGEMENT
- 1.32 SIGNS AND LABELS
- 1.33 WASTE DISPOSAL
- 1.34 TANK PURGING FOR PERMIT-REQUIRED CONFINED SPACE ENTRIES
- 1.35 TANK INERTING (NO ENTRY)
- 1.36 TANK ATMOSPHERE TESTING
 - 1.36.1 Monitoring to Ensure Purging
 - 1.36.2 Monitoring to Ensure Inerting
- 1.37 TANK LIFTING
- 1.38 TANK DEMOLITION
- 1.39 TANK CLEANING
- 1.40 SITE CONTROL MEASURES
 - 1.40.1 Work Zones
 - 1.40.2 Site Control Log
 - 1.40.3 Communication
 - 1.40.4 Site Security
- 1.41 PERSONAL HYGIENE AND DECONTAMINATION
 - 1.41.1 Decontamination Facilities
 - 1.41.2 Equipment Decontamination
 - 1.41.2.1 Facilities for Equipment and Personnel
 - 1.41.2.2 Procedures
- 1.42 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS
- 1.43 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES
- 1.44 CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGEMENT
- 1.45 INSPECTIONS
- 1.46 SAFETY AND HEALTH PHASE-OUT REPORT

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section Table of Contents --

USACE / NAVFAC / AFCESA UFGS-01351 (August 2004)

Preparing Activity: USACE Superseding
UFGS-01351A (August 2003)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 23 June 2005

SECTION 01351

SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST)
08/04

NOTE: This guide specification covers requirements for safety and health documents and procedures for hazardous waste site cleanup projects and underground storage tank (UST) removals.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

PART 1 GENERAL

NOTE: This guide specification covers requirements specified in 29 CFR 1910.120/29 CFR 1926.65 for safety and occupational health (SOH) at hazardous waste site cleanup projects. This guide specification is to be used, together with UFGS-01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS, to assure employee protection (and regulatory compliance) from all hazards, traditional hazards associated with all construction as well as the special chemical, physical, radiation and biological hazards that are associated with work on hazardous waste site cleanup projects.

1.1 REFERENCES

NOTE: Issue (date) of references included in
project specifications need not be more current than
provided by the latest guide specification. Use of
SpecsIntact automated reference checking is
recommended for projects based on older guide
specifications.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z358.1 (1998) Emergency Eyewash and Shower Equipment

AMERICAN PETROLEUM INSTITUTE (API)

API PUBL 2219 (1999) Safe Operation of Vacuum Trucks in Petroleum Service

API RP 1604 (1996; R 2001) Closure of Underground Petroleum Storage Tanks

API Std 2015 (2001) Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 85-115 (1985) Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2003) Safety -- Safety and Health Requirements

ER 385-1-95 (2003) Safety and Health Requirements for Ordnance and Explosives (OE) Operations

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

10 CFR 20 Standards for Protection Against Radiation

29 CFR 1904 Recording and Reporting Occupational Injuries and Illnesses

29 CFR 1910 Occupational Safety and Health Standards

29 CFR 1910.120 Hazardous Waste Operations and Emergency Response

29 CFR 1926 Safety and Health Regulations for Construction

29 CFR 1926.65	Hazardous Waste Operations and Emergency Response
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

1.2 DESCRIPTION OF WORK

This section requires contractors to implement practices and procedures for working safely and in compliance with OSHA and USACE regulation while performing cleanup activities on uncontrolled hazardous waste sites.

1.3 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for information only. When used, a designation following the

"G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Work Zones[; G][; G, [____]]

Drawings including initial work zone boundaries: Exclusion Zone (EZ), including restricted and regulated areas; Contamination Reduction Zone (CRZ); and Support Zone (SZ).

Decontamination Facilities[; G][; G, [____]]

Drawings showing the layout of the personnel and equipment decontamination [areas] [facilities].

SD-03 Product Data

Exposure Monitoring/Air Sampling Program

Personnel exposure monitoring/sampling results.

Site Control Log

Record of each entry and exit into the site, as specified.

Employee Certificates

A certificate for each worker performing cleanup operations with potential for contaminant-related occupational exposure signed by the safety and health manager and the occupational physician indicating the workers meet the training and medical surveillance requirements of this contract.

1.4 REGULATORY REQUIREMENTS

Work performed under this contract shall comply with EM 385-1-1, OSHA requirements in 29 CFR 1910 and 29 CFR 1926, especially OSHA's Standards 29 CFR 1926.65 and 29 CFR 1910.120 and state specific OSHA requirements where applicable. Matters of interpretation of standards shall be submitted to the Contracting Officer for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.5 PRECONSTRUCTION SAFETY CONFERENCE

NOTE: Specify safety and occupational health issues to be addressed in the preconstruction safety conference. Confer with the construction district's Safety and Occupational Health Office representatives to make this determination. If this conference is addressed in another specification section, reference the appropriate section.

A preconstruction safety conference shall be conducted prior to the start

of site activities and after submission of the contractor's APP/SSHP. The objective of the meeting will be to discuss health and safety concerns related to the impending work, discuss project health and safety organization and expectations, review and answer comments and concerns regarding the APP/SSHP or other health and safety concerns the contractor may have. The Contractor shall ensure that those individuals responsible for health and safety at the project level are available and attend this meeting.

1.6 ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN (APP/SSHP)

The Contractor shall develop and implement a Site Safety and Health Plan that shall be attached to the Accident Prevention Plan (APP) as an appendix (APP/SSHP). The APP/SSHP shall address all occupational safety and health hazards (traditional construction as well as contaminant-related hazards) associated with cleanup operations. The APP/SSHP shall cover each SSHP element in section 28.A.01 of EM 385-1-1 and each APP element in Appendix A of EM 385-1-1. There are overlapping elements in Section 28.A.01 and Appendix A of EM 385-1-1. SSHP appendix elements that overlap with APP elements need not be duplicated in the APP/SSHP provided each SOH issue receives adequate attention and is documented in the APP/SSHP. The APP/SSHP is a dynamic document, subject to change as project operations/execution change. The APP/SSHP will require modification to address changing and previously unidentified health and safety conditions. It is the Contractor's responsibility to ensure that the APP/SSHP is updated accordingly. Amendments to the APP/SSHP will be submitted to the COR as the APP/SSHP is updated. For long duration projects the APP/SSHP shall be resubmitted to the COR annually for review. The APP/SSHP will contain all updates.

1.6.1 Acceptance and Modifications

Prior to submittal, the APP/SSHP shall be signed and dated by the Safety and Health Manager and the Site Superintendent. The APP/SSHP shall be submitted for review [_____] days prior to the Preconstruction Safety Conference. Deficiencies in the APP/SSHP will be discussed at the preconstruction safety conference, and the APP/SSHP shall be revised to correct the deficiencies and resubmitted for acceptance. Onsite work shall not begin until the plan has been accepted. A copy of the written APP/SSHP shall be maintained onsite. Changes and modifications to the accepted APP/SSHP shall be made with the knowledge and concurrence of the Safety and Health Manager, the Site Superintendent, and the Contracting Officer. Should any unforeseen hazard become evident during the performance of the work, the Site Safety and Health Officer (SSHO) shall bring such hazard to the attention of the Safety and Health Manager, the Site Superintendent, and the Contracting Officer for resolution as soon as possible. In the interim, necessary action shall be taken to re-establish and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Disregard for the provisions of this specification or the accepted APP/SSHP shall be cause for stopping work until the matter has been rectified.

1.6.2 Availability

The APP/SSHP shall be made available in accordance with 29 CFR 1910.120, (b) (1) (v) and 29 CFR 1926.65, (b) (1) (v).

1.7 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

1.7.1 Project/Site Conditions

NOTE: Review all available site records and reports and direct the Contractor to the reports with the information which can be used to guide development of the APP/SSHP. These reports are likely to be: the Remedial Investigation/Feasibility Study (RI/FS); Record of Decision (ROD); Engineering Evaluation/Cost Analysis (EE/CA) and Action Memorandums for CERCLA projects; the RCRA Facility Investigation (RFI); Corrective Measures Study (CMS) and Statement of Basis for RCRA facility sites; and Site specific investigative documents for UST removals. There may also have been predesign studies performed which can be valuable sources of occupational safety and health information. Direct the Contractor where to find the documents if they are not incorporated into the design.

The Contractor shall refer to the following reports and information for the site description and contamination characterization. They are located at [____].

1.7.1.1 CERCLA Documents

[____].

1.7.1.2 RCRA Documents

[____].

1.7.1.3 UST Documents

[____].

1.7.2 Ordnance and Explosives (OE)

NOTE: Retain this paragraph if there is a possibility that Ordnance and Explosives (OE), explosive media or Chemical Agent Contaminated Media (CACM) may be discovered while performing hazardous waste site cleanup activities. The definitions for OE, explosive media and CACM are in ER 385-1-95.

The Contractor shall stop work and contact the Contracting Officer (CO) if ordnance and explosives (OE), explosive media or chemical agent contaminated media (CACM) are discovered during hazardous waste site cleanup activities. Work shall proceed after the CO gives permission and, according to ER 385-1-95 requirements.

1.8 TASK SPECIFIC HAZARDS, INITIAL PPE, HAZWOPER MEDICAL SURVEILLANCE AND TRAINING APPLICABILITY

NOTE: Evaluate and specify all the major tasks to be performed by the Contractor on the Task Hazard and Control Sheets at the end of this section.

Specify the following for each task:

1. 29 CFR 1910.120/29 CFR 1926.65 (HAZWOPER) Medical Surveillance and Training applicability.
2. Safety, chemical, physical and radiological hazards associated for each task.
3. Initial PPE and operational requirements to mitigate the hazards for each activity.

Task specific occupational hazards, task specific HAZWOPER medical surveillance and training applicability and task specific initial PPE requirements for the project are listed on the **Task Hazard and Control Sheets** at the end of this section. It is the Contractor's responsibility to reevaluate occupational safety and health hazards as the work progresses and to adjust the PPE and onsite operations, if necessary, so that the work is performed safely and in compliance with occupational safety and health regulations.

1.9 STAFF ORGANIZATION, QUALIFICATION AND RESPONSIBILITIES

NOTE: Select the options below so that the Contractor's safety and health manager meets the following professional certification requirements.

Certified Industrial Hygienist - for cleanup of uncontrolled hazardous waste sites where cleanup is for the control of chemicals released into the environment and the chemical contamination presents occupational health hazards.

Certified Safety Professional - for cleanup of uncontrolled hazardous waste sites where cleanup is for the control of chemicals released into the environment and the chemical contamination presents occupational safety hazards.

Certified Health Physicist - for cleanup of uncontrolled hazardous waste sites where cleanup is for the control of radioactive isotope contamination.

1.9.1 Safety and Health Manager

Safety and Health Manager shall be [an Industrial Hygienist certified by the American Board of Industrial Hygiene] [a safety professional certified by the Board of Certified Safety Professionals] [a health physicist certified by the American Board of Health Physicists].

- 1). The Safety and Health Manager shall have the following additional qualifications:

- a. A minimum of [3] [_____] years experience in developing and implementing safety and health programs [at hazardous waste sites] [in the hazardous waste disposal industry] [in the chemical industry] [in the petroleum processing industry] [at underground storage tank removal projects].
- b. Documented experience in supervising professional and technician level personnel.
- c. Documented experience in developing worker exposure assessment programs and air monitoring programs and techniques.
- d. Documented experience in managing personal protective equipment programs and conducting PPE hazard evaluations for the types of activities and hazards likely to be encountered on the project.
- e. Working knowledge of state and Federal occupational safety and health regulations.

2). The Safety and Health Manager shall:

- a. Be responsible for the development, implementation, oversight, and enforcement of the APP/SSHP.
- b. Sign and date the APP/SSHP prior to submittal.
- c. Conduct initial site-specific training.
- d. Be [present onsite] [available for consultation] during the [first 3 days] [_____] of remedial activities and at the startup of each new major phase of work.
- e. Visit the site as needed and at least [once per week] [once per month] [_____] for the duration of activities, to audit the effectiveness of the APP/SSHP.
- f. Be available for emergencies.
- g. Provide onsite consultation as needed to ensure the APP/SSHP is fully implemented.
- h. Coordinate any modifications to the APP/SSHP with the Site Superintendent, the SSHO, and the Contracting Officer.
- i. Provide continued support for upgrading/downgrading of the level of personal protection.
- j. Be responsible for evaluating air monitoring data and recommending changes to engineering controls, work practices, and PPE.
- k. Review accident reports and results of daily inspections.
- l. Serve as a member of the Contractor's quality control staff.

1.9.2 Additional Certified Health and Safety Support Personnel

NOTE: Review project hazards and the safety and health manager's certification requirements and

select the paragraphs below requiring the Contractor to retain services from a CIH, CSP or CHP if project hazards warrant and if the safety and health manager will not possess the certification, knowledge and experience to address all occupational safety and health problems expected to be encountered. Delete the paragraphs below if they do not apply to the project and the use of additional safety and health professionals (beyond the safety and health manager) is not necessary.

The Contractor shall retain [health physics support from a health physicist certified by the American Board of Health Physics to develop radiation protection requirements of the APP/SSHP and, when necessary, visit the site to help implement ionizing radiation protection requirements of the APP/SSHP.] [safety support from a safety professional certified by the Board of Certified Safety professionals to develop written occupational safety procedures for the APP/SSHP and, when necessary, visit the site to help implement APP/SSHP requirements.] [industrial hygiene support from an industrial hygienist certified by the American Board of Industrial Hygiene to develop occupational health practices for the APP/SSHP and, if necessary, visit the site to help implement APP/SSHP requirements.]

1.9.3 Site Safety and Health Officer

An individual and [one alternate] [[_____] alternates] shall be designated the Site Safety and Health Officer (SSHO). The name, qualifications (education and training summary and documentation), and work experience of the Site Safety and Health Officer and [alternate] [alternates] shall be included in the APP/SSHP.

1). The SSHO shall have the following qualifications:

- a. A minimum of [2 years] [1 year] experience in implementing safety and health programs [at hazardous waste sites] [in the hazardous waste disposal industry] [at underground storage tank removal projects] [in the chemical or petroleum processing industry] [radioactive waste cleanup projects] where [Level B] [Level C] personal protective equipment was required.
- b. Documented experience in construction techniques and construction safety procedures.
- c. Working knowledge of Federal and state occupational safety and health regulations.
- d. Specific training in personal and respiratory protective equipment, confined space entry and in the proper use of air monitoring instruments and air sampling methods including monitoring for ionizing radiation.

2). The Site Safety and Health Officer shall:

- a. Assist and represent the Safety and Health Manager in onsite training and the day to day onsite implementation and enforcement of the accepted APP/SSHP.
- b. Be assigned to the site on a full time basis for the duration of

field activities. The SSHO [shall have no duties other than] [can have collateral duties in addition to] Safety and Health related duties. If operations are performed during more than 1 work shift per day, a site Safety and Health Officer shall be present for each shift and when applicable, act as the radiation safety officer (RSO) as defined in paragraph 06.E.02 of EM 385-1-1 on radioactive waste cleanup projects.

c. Have authority to ensure site compliance with specified safety and health requirements, Federal, state and OSHA regulations and all aspects of the APP/SSHP including, but not limited to, activity hazard analyses, air monitoring, monitoring for ionizing radiation, use of PPE, decontamination, site control, standard operating procedures used to minimize hazards, safe use of engineering controls, the emergency response plan, confined space entry procedures, spill containment program, and preparation of records by performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log in accordance with 29 CFR 1904.

d. Have authority to stop work if unacceptable health or safety conditions exist, and take necessary action to re-establish and maintain safe working conditions.

e. Consult with and coordinate any modifications to the APP/SSHP with the Safety and Health Manager, the Site Superintendent, and the Contracting Officer.

f. Serve as a member of the Contractor's quality control staff on matters relating to safety and health.

g. Conduct accident investigations and prepare accident reports.

h. Conduct daily safety inspection and document safety and health findings into the Daily Safety Inspection Log. Track noted safety and health deficiencies to ensure that they are corrected.

i. In coordination with site management and the Safety and Health Manager, recommend corrective actions for identified deficiencies and oversee the corrective actions.

1.9.4 Occupational Physician

The services of a licensed physician, who is certified in occupational medicine by the American Board of Preventative Medicine, or who, by necessary training and experience is Board eligible, shall be utilized. The physician shall be familiar with this site's hazards and the scope of this project. The medical consultant's name, qualifications, and knowledge of the site's conditions and proposed activities shall be included in the APP/SSHP. The physician shall be responsible for the determination of medical surveillance protocols and for review of examination/test results performed in compliance with 29 CFR 1910.120, (f) and 29 CFR 1926.65, (f) and paragraph MEDICAL SURVEILLANCE.

1.9.5 Persons Certified in First Aid and CPR

At least two persons who are currently certified in first aid and CPR by the American Red Cross or other approved agency shall be onsite at all times during site operations. They shall be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910, Section .1030. These persons may perform other

duties but shall be immediately available to render first aid when needed.

1.9.6 Safety and Health Technicians

For each work crew in the exclusion zone, one person, designated as a Safety and Health technician, shall perform activities such as air monitoring, decontamination, and safety oversight on behalf of the SSHO. They shall have appropriate training equivalent to the SSHO in each specific area for which they have responsibility and shall report to and be under the supervision of the SSHO.

1.10 TRAINING

The Contractor's training program for workers performing cleanup operations and who will be exposed to contaminants shall meet the following requirements.

1.10.1 General Hazardous Waste Operations Training

All Personnel performing duties with potential for exposure to onsite contaminants shall meet and maintain the following 29 CFR 1910.120/29 CFR 1926.65 (e) training requirements:

- a. 40 hours of off site hazardous waste instruction.
- b. 3 days actual field experience under the direct supervision of a trained, experienced supervisor.
- c. 8 hours refresher training annually.

Onsite supervisors shall have an additional 8 hours management and supervisor training specified in 29 CFR 1910.120/29 CFR 1926.65 (e) (4).

1.10.2 Pre-entry Briefing

Prior to commencement of onsite field activities, all site employees, including those assigned only to the Support Zone, shall attend a site-specific safety and health training session. This session shall be conducted by the Safety and Health Manager and the Site Safety and Health Officer to ensure that all personnel are familiar with requirements and responsibilities for maintaining a safe and healthful work environment. Procedures and contents of the accepted APP/SSHP and Sections 01.B.02 and 28.D.03 of EM 385-1-1 shall be thoroughly discussed. Each employee shall sign a training log to acknowledge attendance and understanding of the training. The Contracting Officer shall be notified at least [5] [_____] days prior to the initial site-specific training session so government personnel involved in the project may attend.

1.10.3 Periodic Sessions

Periodic onsite training shall be conducted by the SSHO at least [weekly] [daily] for personnel assigned to work at the site during the following [week] [day]. The training shall address safety and health procedures, work practices, any changes in the APP/SSHP, activity hazard analyses, work tasks, or schedule; results of previous week's air monitoring, review of safety discrepancies and accidents. Should an operational change affecting onsite field work be made, a meeting prior to implementation of the change shall be convened to explain safety and health procedures. Site-specific training sessions for new personnel, visitors, and suppliers shall be

conducted by the SSHO using the training curriculum outlines developed by the Safety and Health Manager. Each employee shall sign a training log to acknowledge attendance and understanding of the training.

1.10.4 Other Training

NOTE: If site conditions warrant additional special training, specify requirements below.

For sites where employees will be required to work with radiation, determine and specify applicable training requirements (Federal and state).

[Special site specific training requirements: [____]] [Site specific training for sites where radioactive wastes are to be cleaned up include:

- a. Site specific procedures for handling and storing radioactive materials;
- b. Health and safety hazards associated with exposure to the radioactive material that will be cleaned up or otherwise handled and the purpose and function of protective devices and precautions used to minimize exposures;
- c. Elements of the APP/SSHP and company specific procedures intended to provide protection from radiation exposure;
- d. Worker responsibility to report any unsafe acts which might result in exposure to ionizing radiation;
- e. Appropriate worker response procedures to events that may result in worker exposure to ionizing radiation;
- f. Worker rights and responsibilities with respect to ionizing radiation exposure.] [The Safety and Health Manager shall provide training as specified by 29 CFR 1910 Section .146, for employees who are required to supervise, standby, or enter permit-required confined spaces.] [Persons involved in any aspect of the transportation of hazardous materials shall be trained in accordance with 49 CFR 172 Subpart H.]

1.11 PERSONAL PROTECTIVE EQUIPMENT

1.11.1 Site Specific PPE Program

Onsite personnel exposed to contaminants shall be provided with appropriate personal protective equipment. Components of levels of protection (B, C, D and modifications) must be relevant to site-specific conditions, including heat and cold stress potential and safety hazards. Only respirators approved by NIOSH shall be used. Commercially available PPE, used to protect against chemical agent, shall be approved by the director of Army Safety through the Chemical Agent Safety and Health Policy Action Committee (CASHPAC). Protective equipment and clothing shall be kept clean and well maintained. The PPE section of the APP/SSHP shall include site-specific procedures to determine PPE program effectiveness and for onsite fit-testing of respirators, cleaning, maintenance, inspection, and storage of PPE.

1.11.2 Levels of Protection

The Safety and Health Manager shall establish and evaluate as the work progresses the levels of protection for each work activity. The Safety and Health Manager shall also establish action levels for upgrade or downgrade in levels of PPE. Protocols and the communication network for changing the level of protection shall be described in the SSHP. The PPE evaluation protocol shall address air monitoring results, potential for exposure, changes in site conditions, work phases, job tasks, weather, temperature extremes, individual medical considerations, etc.

1.11.2.1 Initial PPE Components

NOTE: Specify all components of each minimum initial level of protection that will be required for this site. Consult industrial hygiene staff and the following references to determine appropriate components for levels of protection:

NIOSH, OSHA, USCG, EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, October 1985, NIOSH 85-115; EM 385-1-1, Section 5 and Appendix L; 29 CFR 1910.120, Appendix B; and 29 CFR 1926.65, Appendix B.

Components must be included that provide protection for the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing. Specify the types of materials (e.g., neoprene, nitrile, etc.) for gloves and boots and types of cartridges for air purifying respirators based on site-specific contaminants. Include types and thicknesses of radiation shielding, if applicable.

Cotton and cotton/polyester blend coveralls rented from local textile rental and laundering services provide dermal protection equivalent to uncoated disposable coveralls for a significantly reduced cost and offer superior personnel heat stress control performance. Require the Contractor to consider substituting cotton or cotton/polyester blend coveralls for disposables for Level D or Level C if site conditions warrant use of minimal dermal protection (tasks do not require manual handling of wet sloppy contaminated material and there are no chemical splash hazards). Check with the Textile Rental Services Association (tsra.org) or the Uniform Textile Services Organization (utsa.com) to determine likelihood of the Contractor finding local textile rental and laundering services.

The following items constitute initial minimum protective clothing and equipment ensembles.

- a. Level D. [_____].

b. Modified Level D. [____].

c. Level C. [____].

d. Level B. [____].

1.11.3 PPE for Government Personnel

NOTE: Confer with the Construction Division or Resident or Area Engineer in the Construction oversight District to determine the appropriate number of sets of PPE and personal dosimeters required.

[Three] [____] clean sets of personal protective equipment and personal dosimeters for work on radioactive waste cleanup sites and clothing (excluding air-purifying negative-pressure respirators and safety shoes, which will be provided by individual visitors), as required for entry into the Exclusion Zone and/or Contamination Reduction Zone, shall be available for use by the Contracting Officer or official visitors. The items shall be cleaned and maintained by the Contractor and stored [in the clean room of the decontamination facility] [____] and clearly marked: "FOR USE BY GOVERNMENT ONLY." The Contractor shall provide basic training in the use and limitations of the PPE provided.

1.12 MEDICAL SURVEILLANCE PROGRAM

The Contractor's medical surveillance program for workers performing cleanup operations and who will be exposed to contaminants shall meet 29 CFR 1910.120/29 CFR 1926.65 (f) and the following requirements. The Contractor shall assure the Occupational Physician or the physician's designee performs the physical examinations and reviews examination results. Participation in the medical surveillance program shall be without cost to the employee, without loss of pay and at a reasonable time and place.

1.12.1 Frequency of Examinations

Medical surveillance program participants shall receive medical examinations and consultations on the following schedule:

a. Every 12 months

b. If and when the participant develops signs and symptoms indicating a possible overexposure due to an uncontrolled release of a hazardous substance on the project.

c. Upon termination or reassignment to a job where medical surveillance program participation is not required, unless his/her previous annual examination/consultation was less than 6 months prior to reassignment or termination.

d. On a schedule specified by the occupational physician.

1.12.2 Content of Examinations

The physical examination/consultation shall verify the following

information about medical surveillance program participants:

- a. Baseline health conditions and exposure history.
- b. Allergies/sensitivity/susceptibility to hazardous substances exposure.
- c. Ability to wear personal protective equipment inclusive of NIOSH certified respirators under extreme temperature conditions.
- d. Fitness to perform assigned duties.

The Contractor shall provide the occupational physician with the following information for each medical surveillance program participant:

- a. Information on the employee's anticipated or measured exposure.
- b. A description of any PPE used or to be used.
- c. A description of the employee's duties as they relate to the employee's exposures (including physical demands on the employee and heat/cold stress).
- d. A copy of 29 CFR 1910.120, or 29 CFR 1926.65.
- e. Information from previous examinations not readily available to the examining physician.
- f. A copy of Section 5.0 of NIOSH 85-115.
- g. Information required by 29 CFR 1910 Section .134.

1.12.3 Physician's Written Opinion

A copy of the physician's written opinion for each employee shall be obtained and furnished to the Safety and Health Manager; and the employee before work begins. The opinion shall address the employee's ability to perform hazardous waste site remediation work and shall contain the following:

- a. The physician's verification of the employee's fitness to perform duties as well as recommended limitations upon the employee's assigned work and/or PPE usage.
- b. The physician's opinion about increased risk to the employee's health resulting from work; and
- c. A statement that the employee has been informed and advised about the results of the examination.

1.12.4 Employee Certificates

Documentation that employees have received medical examinations shall be provided on employee certificates.

1.12.5 Site Specific Medical Surveillance

NOTE: Consult local industrial hygiene staff and an

occupational physician, if available, to determine the need for site specific medical testing. Contaminants with potential to require site specific medical tests include but are not limited to lead, pesticides, radioactive material. Delete site specific medical surveillance testing if not necessary.

Prior to onsite work, medical surveillance program participants shall undergo the following medical testing: [____]. The Contractor shall provide an explanation of the site specific medical surveillance testing in the APP/SSHP.

1.13 EXPOSURE MONITORING/AIR SAMPLING PROGRAM

NOTE: Exposure monitoring for the protection of workers must be representative of the chemical and physical hazards presented by the onsite activities. Evaluate physical properties of hazardous materials and how they will be managed/handled and specify initial occupational exposure monitoring requirements which will assess initial personal protective equipment adequacy. Consult local industrial hygiene staff to select appropriate initial monitoring instruments and exposure monitoring methods.

Select the last bracketed sentence requiring the Contractor to have backup instruments for hazardous waste sites in remote locations where instrument rental companies cannot provide immediate service. Delete the option if not applicable to the project.

The Safety and Health Manager shall prepare and implement an exposure monitoring/air sampling program to identify and quantify safety and health hazards and airborne levels of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment for affected site personnel. Include action levels for upgrading/downgrading PPE in the program. The Contractor shall monitor for the following gasses and vapors [____]. The Contractor shall monitor for the following aerosolized contaminants.

1.13.1 Ionizing Radiation Sampling and Dosimetry

NOTE: Check with local health physics staff or members of the radiation safety support team to determine the appropriate air sampling, dosimeters and instruments to determine occupational exposure/dose to radioactive isotopes and ionizing radiation fields. If radioactive isotopes and ionizing radiation fields are not a part of the project the following ionizing radiation sampling and dosimetry paragraphs can be eliminated from the specification.

1.13.1.1 Air Sampling and Dosimetry

The Contractor shall use the following instrument [_____] sampling methods [_____] and dosimeters [_____] to evaluate occupational exposure to radioactive isotopes and ionizing radiation fields.

1.13.1.2 Evaluation

[Radiation dosimetry shall be evaluated by an individual or company holding current personnel dosimetry accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP). Electronic dosimetry may be used to assign external dose if approved by the Contracting Officer. Internal intake assessment and applicable monitoring shall be evaluated by the CHP.]

1.13.1.3 Documentation

[Employee exposure to external radiation shall be documented. This shall include reviewing each employee's radiation exposure history in accordance with 10 CFR 20 Section .2104, for compliance with exposure standards prior to allowing the employee access to a restricted area. If the employee has no exposure history, the employee shall provide a signed written statement to that effect.]

1.13.1.4 Reporting

[Reports of exposure to ionizing radiation shall be furnished to the Contracting Officer as soon as available and to each employee annually, upon termination, and within 30 days of any personal request.]

1.14 HEAT STRESS MONITORING AND MANAGEMENT

The Contractor shall document in the APP/SSHPP and implement the procedures and practices in section 06.J. in EM 385-1-1 to monitor and manage heat stress.

1.15 SPILL AND DISCHARGE CONTROL

NOTE: If requirements for spill and discharge control are described in a separate section, reference the appropriate section. Determine local notification requirements and include them in the following paragraph.

Written spill and discharge containment/control procedures shall be developed and implemented. These procedures shall address radioactive wastes, shock sensitive wastes, laboratory waste packs, material handling equipment, as well as drum and container handling, opening, sampling, shipping and transport. These procedures shall describe prevention measures, such as building berms or dikes; spill control measures and material to be used (e.g. booms, vermiculite); location of the spill control material; personal protective equipment required to cleanup spills; disposal of contaminated material; and who is responsible to report the spill. Storage of contaminated material or hazardous materials shall be appropriately bermed, diked and/or contained to prevent any spillage of material on uncontaminated soil. If the spill or discharge is reportable, and/or human health or the environment are threatened, the National

Response Center, the state, and the Contracting Officer shall be notified as soon as possible. Reporting requirements shall be in accordance with [Section 02115A UNDERGROUND STORAGE TANK REMOVAL] [_____].

1.16 MATERIALS TRANSFER SAFETY

Liquids and residues shall be removed from the tanks using explosion-proof or air-driven pumps. Pump motors and suction hoses shall be bonded to the tank and grounded to prevent electrostatic ignition hazards. Use of a hand pump will be permitted to remove the last of the liquid from the bottom of the tanks. If a vacuum truck is used for removal of liquids or residues, the area of operation for the vacuum truck shall be vapor free. The truck shall be located upwind from the tank and outside the path of probable vapor travel. The vacuum pump exhaust gases shall be discharged through a hose of adequate size and length downwind of the truck and tank area. Vacuum truck operating and safety practices shall conform to API PUBL 2219.

Tank residues shall be collected in drums, tanks, or tank trucks labeled according to 49 CFR 171 and 49 CFR 172 and disposed of as specified. After the materials have been transferred and the tanks have been exposed, fittings and lines leading to the tanks shall be disconnected and drained of their contents. The contents of the lines shall not spill to the environment during cutting or disconnecting of tank fittings. Materials drained shall be transferred into DOT-approved drums for storage and/or transportation. Only non-sparking or non-heat producing tools shall be used to disconnect and drain or to cut through tank fittings. Electrical equipment (e.g., pumps, portable hand tools, etc.) used for tank preparation shall be explosion-proof. Following cutting or disconnecting of the fittings, openings leading to the tanks shall be plugged.

1.18 DRUM AND CONTAINER HANDLING

Procedures and Precautions (opening, sampling, overpacking): [_____].

1.19 CONFINED SPACE ENTRY PROCEDURES

[_____].

1.19 HOT WORK

Hot work will not be permitted on or within the tanks or anywhere else not previously specified as a hot work area, except as outlined herein. Prior to conducting hot work, a hot work permit shall be prepared by the person to be conducting the hot work and reviewed and signed of on by the Contractor's qualified person. An additional hot work permit may need to be obtained from local authorities or in the case of military or other federal installations, the fire marshal. An example format for a hot work permit shall be included in the AAPP/SSHP. The permit shall describe compliance with the following procedures. After tank interiors have been decontaminated, hot work may be conducted only when the tank is inerted, and to the extent necessary to begin dismantling the tanks. After decontamination of tank interiors, hot work shall not be performed unless monitoring indicates atmospheres within and immediately surrounding the tanks are less than 8% oxygen inside the tank and less than 10% of the LFL outside the tank; continuous monitoring shall continue until the hot work is completed. The hot work prohibition includes welding, cutting, grinding, sawing, or other similar operations which could be expected to potentially generate combustion-producing temperatures or sparks, or which could produce potentially hazardous fumes or vapors. An individual at each hot work site shall be designated as a fire watch. This person's sole

responsibility shall be to monitor the hot work and have immediate access to the fire extinguisher located at each hot work site. A new permit shall be obtained at the start of each work shift during which hot work will be conducted.

1.20 IGNITION SOURCES

[_____] .

1.21 FIRE PROTECTION AND PREVENTION

[_____] .

1.22 ELECTRICAL SAFETY

[_____] .

1.23 EXCAVATION AND TRENCH SAFETY

[_____] .

1.24 GUARDING OF MACHINERY AND EQUIPMENT

[_____] .

1.25 LOCKOUT/TAGOUT

[_____] .

1.26 FALL PROTECTION

[_____] .

1.27 HAZARD COMMUNICATION

[_____] .

1.28 ILLUMINATION

[_____] .

1.29 SANITATION

[_____] .

1.30 ENGINEERING CONTROLS

[_____] .

1.31 PROCESS SAFETY MANAGEMENT

[_____] .

1.32 SIGNS AND LABELS

[_____] .

1.33 WASTE DISPOSAL

[_____].

1.34 TANK PURGING FOR PERMIT-REQUIRED CONFINED SPACE ENTRIES

Tanks shall be purged for confined space entry. The flammable vapors shall be reduced to less than 10% of the LFL and the oxygen content shall be between 19.5% and 23.5%. Confined space entry into the tanks shall not be attempted unless absolutely necessary, as for example, to remove sludge from the tank. Flammable vapors may be exhausted from the tank by any of the methods from API RP 1604 listed below, or any method approved by the Contracting Officer. The APP/SSHP shall specify the purging method to be used.

a. Ventilation by Eductor-Type Air Movers: The eductor-type air mover shall be properly bonded and grounded to prevent the generation and discharge of static electricity. When using this method, the fill (drop) tube shall remain in place to ensure ventilation at the bottom of the tank. Tanks equipped with fill (drop) tubes that are not removable shall be purged by this method. An eductor extension shall be used to discharge vapors a minimum of 3.7 m 12 feet above grade or 1 m 3 feet above adjacent roof lines, whichever is greater. If this is not possible, alternative methods shall be proposed and approved prior to purging. Noise levels generated by these devices as a result of high airflow may exceed OSHA PELs. Noise levels shall be evaluated and appropriate hearing protection shall be provided.

b. Ventilation by Diffused Air Blowers: When using this purging method, the air-diffusing pipe is properly bonded and grounded to prevent the discharge of a spark. Fill (drop) tubes shall be removed to allow proper diffusion of the air in the tank. Air supply shall be from a compressor that has been checked to ensure that Grade D breathing air is being supplied. Air pressure in the tank shall not exceed 34 kPa 5 psi gauge to avoid tank failure.

c. Commercial Emulsifiers and Volatile Fuel Encapsulators: These products are completely miscible in water, aid in the elimination of flammable vapors, and are biodegradable. Regulatory requirements for treatment and disposal of the water shall be determined prior to using this method. Standing outside the tank, the operator shall rinse the tank with a 3-to-6 percent solution of the product using a pressure sprayer through a tank opening. Explosive concentrations shall be measured at several levels (top, middle, and bottom) within the tank. If readings are greater than 10% of the LFL, the tank shall be rinsed again. When LFL readings are acceptable, the water in the tank shall be pumped out for disposal.

1.35 TANK INERTING (NO ENTRY)

Following the removal of tank contents but prior to excavation of the tanks and tank preparation activities, the tanks shall be inerted only by introducing an inert gas, carbon dioxide (CO₂) or liquid nitrogen (N₂), to remove flammable vapors. Before inerting, all openings in the tanks shall be plugged with threaded or expansion type plugs except the vent tube and the opening to be used for introducing the inert gas. Within 30 minutes prior to initiating any activities (e.g., excavating, preparation, removal, opening, demolition, transportation, or other similar activities) involving a tank which has been inerted, the inerted nature of the tank (oxygen

levels less than 8%) shall be verified.

a. CO2 fire extinguishers shall not be used for inerting the tank interiors. If a compressed gas (e.g., CO2 or N2) is introduced into the tank the following requirements shall be met to prevent the buildup of static electricity:

(1) The UST and the compressed gas supply tank shall be bonded together and grounded.

(2) The compressed gas shall be supplied only at low flows.

(3) The liquid or gas shall be released at the tank bottom so that static electricity is not generated by liquid falling to the bottom of the tank. The tank shall be slowly filled from the bottom up.

b. Dry ice, which evolves CO2 gas as it evaporates, if used, shall be introduced in the amount of at least 10 kg per 400 L (3 lbs per 100 gal) 3 lbs per 100 gallons of tank capacity. Skin contact with dry ice shall be prevented by wearing heavy cloth gloves.

c. Sufficient quantities of inert gas (CO2 or N2) shall be introduced into the tanks to lower the oxygen content to less than 8%. Pressure inside the tank shall not exceed 34 kPa 5 psi. Prior to proceeding with additional activities on the tank (e.g., excavating), the oxygen content of the tanks shall be monitored to confirm that it is less than 8%. Additional oxygen level monitoring shall be conducted at least hourly while activities involving the tanks are underway but prior to decontamination of tank interiors; at least daily during periods in which the tanks are not being disturbed but prior to decontamination of their interiors; or as directed by the Contracting Officer. If monitoring of tank interiors indicates that oxygen levels are not remaining below 8%, additional inert gas shall be introduced and more frequent oxygen monitoring shall be initiated.

d. During inerting procedures, an extension vent tube a minimum of 3.7 m 12 feet above grade or 1 m 3 feet above any adjacent (within 22.5 m 75 feet) roof lines, whichever is greater shall be used to discharge tank vapors. If this is not possible, alternative methods shall be proposed and approved prior to inerting. Continuous combustible gas/oxygen monitoring shall be conducted at the vent and inert gas introduction holes.

1.36 TANK ATMOSPHERE TESTING

The air within the storage tanks shall be monitored to ensure the space is either adequately purged and safe for personnel entry, or to ensure the tank has been adequately inerted and the oxygen content is less than 8%. In both instances, monitoring shall be performed at the top, bottom, and middle areas of the tanks to ensure stratification has not occurred. Monitoring results shall be reported to project personnel to ensure safe operations. Data shall be recorded as specified in paragraph EXPOSURE MONITORING/AIR SAMPLING PROGRAM.

1.36.1 Monitoring to Ensure Purging

When monitoring to ensure purging, both oxygen content and LFL readings are required. Prior to obtaining LFL readings, the Contractor shall monitor

the oxygen content of the space and verify that the combustible gas indicators are operating within the oxygen limits identified by the CGI manufacturer. Personnel shall not be permitted to enter spaces with oxygen levels less than 19.5%, except in emergencies, and then only when equipped with the proper PPE and when following permit-required confined space entry procedures. Toxic air contaminants shall be monitored as specified in paragraph EXPOSURE MONITORING/AIR SAMPLING PROGRAM.

1.36.2 Monitoring to Ensure Inerting

Inerted tanks shall be monitored to ensure oxygen readings remain below a maximum allowable percentage of 8% by volume.

1.37 TANK LIFTING

Tanks shall be lifted using equipment with a rated capacity greater than the load to be lifted. Tanks shall be lifted by lifting eyes or by straps under the ends of the tanks. Tanks shall not be lifted by the manhole flange or by removing the bungs. Personnel shall be directed to remain away from the ends of the tanks and tanks shall be positioned, whenever possible, with the ends oriented away from occupied or traveled areas, due to potential for rupture. During transportation, the tanks shall be secured to prevent movement.

1.38 TANK DEMOLITION

Excavated tanks shall be demolished before being removed from the site unless they are transported directly to a state certified tank destruction facility. Demolition will not be permitted until a decontamination of the interiors and exteriors is complete. Demolition shall involve opening the tanks sufficiently to permanently prohibit further use as containers of liquids. Tanks shall be inerted and tested before they are opened. Plans and procedures, including a list of materials and supplies, for safely and effectively demolishing the tanks shall be submitted in the APP/SSHP.

1.39 TANK CLEANING

Safety practices and procedures for the cleaning of the storage tanks shall conform to API Std 2015. Opening of the tanks to permit decontamination shall be conducted utilizing only methods approved in the APP/SSHP. The interior and exterior of the tank shall be decontaminated prior to removing it from the work site unless the tank is being transported directly to a state certified tank destruction facility. Plans and procedures, including materials and supplies, for safely and effectively opening the tanks, cleaning surfaces of the interior and exterior of the tanks, and disposing of the decontamination fluids shall be submitted in the SSHP. Volatile organic solvents shall not be permitted to be utilized for decontamination procedures. Personnel shall not enter any of the storage tanks as a part of this project, except when following permit-required confined space entry procedures. Decontamination fluids shall be collected and disposed. Upon completion of this project, written certification shall be made that the tank was properly decontaminated prior to being removed from the site.

1.40 SITE CONTROL MEASURES

1.40.1 Work Zones

NOTE: Utilize the contamination characterization

information and the preliminary hazard/risk analysis to delineate work zone boundaries on the drawings. Include a note on the drawings that these are only initial anticipated work zone boundaries and they must be modified by the Contractor to show the actual zones.

On sites where ionizing radiation or radioactive material may be encountered, specify that the Contractor shall designate restricted areas (Radiation Areas, High Radiation Areas and Airborne Radioactive Contamination Areas as defined in 10 CFR 20).

Initial anticipated work zone boundaries (exclusion zone, contamination reduction zone, support zone, all access points and decontamination areas) are to be clearly delineated on the site drawings. Delineation of work zone boundaries shall be based on the contamination characterization data and the hazard/risk analysis to be performed as described in paragraph: HAZARD/RISK ANALYSIS. As work progresses and field conditions are monitored, work zone boundaries may be modified (and site drawings modified) with approval of the Contracting Officer. Work zones shall be clearly identified and marked in the field (using fences, tape, signs, etc.). A site map, showing work zone boundaries and locations of decontamination facilities, shall be posted in the onsite office. Work zones shall consist of the following:

- a. Exclusion Zone (EZ): The exclusion zone is the area where hazardous contamination is either known or expected to occur and the greatest potential for exposure exists. Entry into this area shall be controlled and exit may only be made through the CRZ.
- b. Contamination Reduction Zone (CRZ): The CRZ is the transition area between the Exclusion Zone and the Support Zone. The personnel and equipment decontamination areas shall be separate and unique areas located in the CRZ.
- c. Support Zone (SZ): The Support Zone is defined as areas of the site, other than exclusion zones and contamination reduction zones, where workers do not have the potential to be exposed to hazardous substances or dangerous conditions resulting from hazardous waste operations. The Support Zone shall be secured against active or passive contamination. Site offices, parking areas, and other support facilities shall be located in the Support Zone.

1.40.2 Site Control Log

A log of personnel visiting, entering, or working on the site shall be maintained. The log shall include the following: date, name, agency or company, time entering and exiting site, time entering and exiting the exclusion zone (if applicable). Before visitors are allowed to enter the Contamination Reduction Zone or Exclusion Zone, they shall show proof of current training, medical surveillance and respirator fit testing (if respirators are required for the tasks to be performed) and shall fill out a Certificate of Worker or Visitor Acknowledgment. This visitor information, including date, shall be recorded in the log.

1.40.3 Communication

NOTE: Specify the appropriate communication systems (i.e., air horns, walkie talkies, radios, telephones, etc.) based on site-specific conditions.

An employee alarm system that has adequate means of on and off site communication shall be provided and installed in accordance with 29 CFR 1910 Section .165. The means of communication shall be able to be perceived above ambient noise or light levels by employees in the affected portions of the workplace. The signals shall be distinctive and recognizable as messages to evacuate or to perform critical operations. This includes: [_____].

1.40.4 Site Security

NOTE: Specify the appropriate type of site security (i.e., warning signs, fences, 24-hour security guard, site access procedures, etc.) based on site-specific conditions.

On sites where ionizing radiation or radioactive material may be encountered, specify and post signs that meet the requirements of 10 CFR 20 for restricted areas.

The following site security shall be provided: [_____]. Signs shall be printed in bold large letters on contrasting backgrounds. Signs shall be visible from all points where entry might occur and at such distances from the restricted area that employees may read the signs and take necessary protective steps before entering.

1.41 PERSONAL HYGIENE AND DECONTAMINATION

Personnel entering the Exclusion or Contamination Reduction Zones or otherwise exposed to hazardous chemical vapors, gases, liquids, or contaminated solids shall decontaminate themselves and their equipment prior to exiting the contamination reduction zone (CRZ) and entering the support zone. Chapter 10.0 of NIOSH 85-115 shall be consulted when preparing decontamination procedures. A detailed discussion of personal hygiene and decontamination facilities and procedures to be followed by site workers shall be submitted as part of the APP/SSHP. Employees shall be trained in the procedures and the procedures shall be enforced throughout site operations.

1.41.1 Decontamination Facilities

NOTE: Evaluate project specific tasks and contaminants to be handled and select appropriate initial personnel decontamination techniques and procedures below. Add appropriate decontamination techniques if not included. Select the showering option below when specific OSHA standards (29 CFR 1910.1003, 13 Carcinogens for example) require

shower use or if industrial hygiene staff recommend showering for personnel decontamination. Specify the equipment necessary to perform personnel decontamination on this project.

The Contractor shall initially set up a decontamination line in the CRZ. Employees shall exit the exclusion zone through the CRZ and shall implement the following decontamination procedures and techniques: [Scrub and rinse water proof outer garments] [remove all outer garments] [hand and face wash] [shower]. Showers, if needed, must comply with 29 CFR 1910, Section.141 and EM 385-1-1, 02 C, Washing Facilities. Following are additional decontamination procedures contractor personnel are to follow: [_____]. It is the Site Safety and Health Officer's responsibility to recommend techniques to improve personnel decontamination procedures, if necessary. Initial personnel decontamination equipment includes the following: [_____].

1.41.2 Equipment Decontamination

Vehicles and equipment used in the EZ shall be decontaminated in the CRZ prior to leaving the site.

1.41.2.1 Facilities for Equipment and Personnel

NOTE: Other sections of the specifications and drawings should contain detailed requirements for the vehicle or equipment decontamination pad. As an alternative, the design of the decontamination pad may be a Contractor submittal. The language in this paragraph provides general requirements for the Contractor's submittal. Edit as necessary for project.

A [vehicle] [/] [equipment] decontamination station shall be provided within the CRZ for decontaminating vehicles and equipment leaving the EZ. [A decontamination station pad, which meets the site decontamination needs, shall be constructed for all vehicles and larger equipment decontamination.

The pad shall be constructed to capture decontamination water, including overspray, and shall allow for collection and removal of the decontamination water using sumps, dikes and ditches as required.] [High pressure, low volume, water wash area for equipment and vehicles.] [A steam cleaning system for use after the mud and/or site material has been cleaned from the equipment.] [Dry decontamination using a broom to remove dry/loose spilled materials on accessible surfaces.] [A designated "clean area" in the CRZ for performing equipment maintenance. This area shall be used when personnel are required by normal practices to come in contact with the ground, i.e., crawling under a vehicle to change engine oil. Equipment within the EZ or CRZ shall be decontaminated before maintenance is performed.] [_____].

1.41.2.2 Procedures

NOTE: Specify necessary procedures. Include any special procedures and methods to determine adequacy of decontamination.

Procedures for equipment decontamination shall be developed and utilized to prevent the spread of contamination into the SZ and offsite areas. These procedures shall address disposal of contaminated products and spent materials used on the site, including containers, fluids, oils, etc. Any item taken into the EZ shall be assumed to be contaminated and shall be inspected and decontaminated before. Vehicles, equipment, and materials shall be cleaned and decontaminated prior to leaving the site. Construction material shall be handled in such a way as to minimize the potential for contaminants being spread and/or carried offsite. Prior to exiting the site, vehicles and equipment shall be monitored to ensure the adequacy of decontamination.

1.42 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

The following items, as a minimum, shall be maintained onsite and available for immediate use:

- a. First aid equipment and supplies approved by the consulting physician.
- b. Emergency eyewashes and showers that comply with ANSI Z358.1.
- c. Emergency-use respirators. For escape purposes, [____] 5- to 15-minute emergency escape masks shall be supplied. For rescue purposes, [2] [____] positive pressure self-contained breathing apparatus (SCBA) shall be supplied. These shall be dedicated for emergency use only and maintained onsite in the Contamination Reduction Zone.
- d. Fire extinguishers of sufficient size and type shall be provided at site facilities and in all vehicles and at any other site locations where flammable or combustible materials present a fire risk.
- e. [____].

1.43 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

NOTE: It is the designers responsibility to contact and/or meet with local emergency response planning agencies to assure that emergency response services will be available to the contractor during remedial action construction. Inform the USACE project manager if special procedures/arrangements or equipment have to be included in the design to accomodate local emergency responder needs.

An Emergency Response Plan, that meets the requirements of 29 CFR 1910.120 (1) and 29 CFR 1926.65 (1), shall be developed and implemented as a section of the APP/SSHP. In the event of any emergency associated with remedial action, the Contractor shall, without delay, alert all onsite employees and as necessary offsite emergency respondersthat there is an emergency situation; take action to remove or otherwise minimize the cause of the emergency; alert the Contracting Officer; and institute measures necessary to prevent repetition of the conditions or actions leading to, or resulting in, the emergency. Employees that are required to respond to hazardous

emergency situations shall be trained to their level of responsibility according to 29 CFR 1910.120 (q) and 29 CFR 1926.65 (q) requirements. The plan shall be rehearsed regularly as part of the overall training program for site operations. The plan shall be reviewed periodically and revised as necessary to reflect new or changing site conditions or information. Copies of the Emergency Response Portion of the accepted APP/SSHPP shall be provided to the affected local emergency response agencies. The following elements, as a minimum, shall be addressed in the plan:

- a. Pre-emergency planning. The Contractor shall coordinate with local emergency response providers during preparation of the Emergency Response Plan. At a minimum, coordinate with local fire, rescue, hazardous materials response teams, police and emergency medical providers to assure all organizations are capable and willing to respond to and provide services for on-site emergencies. The Contractor shall ensure the Emergency Response Plan for the site is compatible and integrated with the local fire, rescue, medical and police security services available from local emergency response planning agencies.
- b. Personnel roles, lines of authority, communications for emergencies.
- c. Emergency recognition and prevention.
- d. Site topography, layout, and prevailing weather conditions.
- e. Criteria and procedures for site evacuation (emergency alerting procedures, employee alarm system, emergency PPE and equipment, safe distances, places of refuge, evacuation routes, site security and control).
- f. Specific procedures for decontamination and medical treatment of injured personnel.
- g. Route maps to nearest prenotified medical facility. Site-support vehicles shall be equipped with maps. At the beginning of project operations, drivers of the support vehicles shall become familiar with the emergency route and the travel time required.
- h. Emergency alerting and response procedures including posted instructions and a list of names and telephone numbers of emergency contacts (physician, nearby medical facility, fire and police departments, ambulance service, Federal, state, and local environmental agencies; as well as Safety and Health Manager, the Site Superintendent, the Contracting Officer and/or their alternates).
- i. Criteria for initiating community alert program, contacts, and responsibilities.
- j. Procedures for reporting incidents to appropriate government agencies. In the event that an incident such as an explosion or fire, or a spill or release of toxic materials occurs during the course of the project, the appropriate government agencies shall be immediately notified. In addition, the Contracting Officer and the local district safety office shall be verbally notified immediately and receive a written notification within 24 hours. The report shall include the following items:

- (1) Name, organization, telephone number, and location of the

Contractor.

- (2) Name and title of the person(s) reporting.
- (3) Date and time of the incident.
- (4) Location of the incident, i.e., site location, facility name.
- (5) Brief summary of the incident giving pertinent details including type of operation ongoing at the time of the incident.
- (6) Cause of the incident, if known.
- (7) Casualties (fatalities, disabling injuries).
- (8) Details of any existing chemical hazard or contamination.
- (9) Estimated property damage, if applicable.
- (10) Nature of damage, effect on contract schedule.
- (11) Action taken to ensure safety and security.
- (12) Other damage or injuries sustained, public or private.

k. Procedures for critique of emergency responses and follow-up.

1.44 CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGEMENT

A copy of a Contractor-generated certificate of worker/visitor acknowledgement shall be completed and submitted for each visitor allowed to enter contamination reduction or exclusion zones, and for each employee, following the example certificate at the end of this section.

1.45 INSPECTIONS

The SSO's Daily Inspection Logs shall be attached to and submitted with the Daily Quality Control reports. Each entry shall include the following: date, work area checked, employees present in work area, PPE and work equipment being used in each area, special safety and health issues and notes, and signature of preparer.

1.46 SAFETY AND HEALTH PHASE-OUT REPORT

A Safety and Health Phase-Out Report shall be submitted in conjunction with the project close out report and will be received prior to final acceptance of the work. The following minimum information shall be included:

- a. Summary of the overall performance of safety and health (accidents or incidents including near misses, unusual events, lessons learned, etc.).
- b. Final decontamination documentation including procedures and techniques used to decontaminate equipment, vehicles, and on site facilities.
- c. Summary of exposure monitoring and air sampling accomplished during the project.

d. Signatures of Safety and Health Manager and SSHO.

Task Hazard and Control Requirements Sheet.

Task _____

Initial Anticipated Hazards_____

Initial PPE_____

Initial Controls_____

Initial Exposure Monitoring _____

HAZWOPER Medical Surveillance Required	yes	no
--	-----	----

HAZWOPER Training Required	yes	no
----------------------------	-----	----

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --