

KRCEE Environmental, Safety, and Health Provisions

Part 2, Special Requirements

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ATTACHMENT 2, ENVIRONMENT, SAFETY, AND HEALTH REQUIREMENTS

PART II, SPECIAL REQUIREMENTS

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ACRONYMS

ACGIH	American Congress of Governmental Industrial Hygienist
ACM	asbestos containing material
AHA	Activity Hazard Assessment
AIHA	American Industrial Hygiene Association
ALARA	as low as reasonably achievable
ANSI	American National Standards Institute
BZA	breathing zone air
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CPR	cardiopulmonary resuscitation
CWA	Clean Water Act
DAC	derived air concentration
dBA	decibels A-weighted
DMR	discharge monitoring report
DOE	U.S. Department of Energy
DOT	U. S. Department of Transportation
EMEF	Environmental Management and Enrichment Facilities
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ES&H	Environment, Safety, and Health
ETTP	East Tennessee Technology Park
f/cc	fibers per cubic centimeter
GES	Generator Entry System
GET	General Employee Training
GFCI	ground fault circuit interrupter
HAZWOPER	Hazardous Waste Operations and Emergency Response Standard
HPD	hearing protection devices
HEPA	high-efficiency particulate air
HMIS	Hazardous Material Inventory System
HSWA	Hazardous and Solid Waste Amendments
ISMS	Integrated Safety Management System
LSS	Laboratory Shift Superintendent
M&I	Management and Integration
Mg/m ³	milligrams per cubic meter
MMF	man-made mineral fibers
MSDS	Material Safety Data Sheet
NCSA	Nuclear Criticality Safety Analysis
NEA	Negative Exposure Assessment
NEC	National Electric Codes
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
OREIS	Oak Ridge Environmental Information System
ORO	Oak Ridge Operations
ORR	Oak Ridge Reservation

OSHA	Occupational Safety and Health Administration
P2	Pollution Prevention
PAAA	Price Anderson Amendment Act
PCB	polychlorinated biphenyl
PEL	permissible exposure limit
PLHCP	physician or other licensed health care professional
PPE	personal protective equipment
PSS	Park Shift Superintendent
RADCON	Radiological Control Organization
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technicians
ROPS	Roll-Over Protective Structure
RP	Radiation Plan
RPP	Radiation Protection Program
RWA	Radiation Work Authorization
RWP	Radiation Work Permit
SAP	Sampling and Analysis Plan
SOW	Statement of Work
STR	Site Technical Representative
SWMU	Solid Waste Management Unit
TDEC	Tennessee Department of Environment and Conservation
TLD	thermoluminescent dosimeter
TLV	Threshold Limit Value
TOA	Tennessee Oversight Agreement
TSCA	Toxic Substances Control Act
TSDRF	treatment, storage, disposal, and recycle facilities
TWA	time-weighted average
WBH	welding/burning/hotwork
WIMS	Waste Information Management System
WSS	Work Smart Standards

**ATTACHMENT 2,
ENVIRONMENT, SAFETY, AND HEALTH REQUIREMENTS**

PART II, SPECIAL REQUIREMENTS

1. INTRODUCTION

The purpose of Environment, Safety, and Health (ES&H) Part II, Special Requirements, is to specify minimum acceptable ES&H requirements necessary for implementation of the Real-Time Demonstration Project Scope of Work. The requirements are applicable to all KRCEE personnel, including KRCEE Subcontractors.

All activities for the Real-Time Demonstration Project Scope of Work shall be performed in a safe and orderly manner that will not create a hazard to workers, the public, or the environment. The implementation of safe working practices and the safety of equipment shall be subject to DOE review. However, DOE review does not constitute direction to employ specific safety practices, nor does it relieve KRCEE of its responsibility for safety. Failure of KRCEE to comply with safety regulations and/or to conduct activities in a safe manner shall constitute cause for issuance of a Stop Work Order.

KRCEE and its subcontractors shall be responsible for KRCEE contractual agreements and for compliance with all applicable standards of 29 Code of Federal Regulations (CFR) 1910, 29 CFR 1926, the U.S. Environmental Protection Agency (EPA), state regulations, 10 CFR Part 835, and Environmental Management and Enrichment Facilities Phase 2 Work Smart Standards (WSS) for ES&H in effect at DOE's projects. Copies of applicable U.S. Department of Energy (DOE) Orders are available upon request. DOE will make inspections under the Occupational Safety and Health Administration (OSHA) format and require corrective actions for all deficiencies discovered. Willful violation, refusal, or failure to abate violations of safety, health, and/or environmental standards or rules may be justification for removal of KRCEE and/or KRCEE personnel and subcontractors from the Site.

DOE reserves the right to invoke the OSHA general duty clause on any operation which, in the opinion of DOE, is being conducted in an unsafe manner, even though the infraction is not specifically spelled out in the regulations. This will be based on the concept of prior knowledge (i.e., lessons learned and as represented by other industry consensus standards).

All KRCEE personnel are encouraged and shall be permitted to report ES&H concerns to their management without fear of reprimand or disciplinary action for reporting such concerns. If an ES&H concern is not resolved by the Employee's management, the Employee may submit the concern directly to DOE by using the I Care/We Care program as described in DOE's procedure SH-A-2015, "I Care/We Care (Personnel Safety Concerns)." Employee concerns may also be reported directly to DOE using the form contained in DOE Order 480.29, Employee Concerns Management System.

1.1 ACTIVITY HAZARD ASSESSMENT

Activity Hazard Assessments (AHAs) shall be developed by KRCEE at the activity/task level and shall provide a detailed, job-specific hazard assessment that addresses each step of the work process, the hazards involved, and the controls for those hazards. KRCEE is responsible for ensuring that Employees are involved in this process either during the initial development or afforded the opportunity to review and comment on AHA(s) prior to work starting. Multiple AHAs will be developed for complex work or when it is necessary to distinguish between different phases of work that may involve different hazards and/or controls. AHAs should clearly identify each step of the work process in sufficient detail to provide assurance to DOE that all hazards, including those introduced by the method of accomplishment of the Work, have been identified and that appropriate controls have been developed and are in place to eliminate or mitigate those hazards.

KRCEE will have adequate resources to perform the Work, plan for interfaces with DOE and its Prime Contractor, Leasees, other contractors and the public, working at the Facility/Site.

1.1.1 Responsibilities

KRCEE is responsible for writing the AHA and implementing the AHA in the field as the Work is being implemented. KRCEE shall involve KRCEE work force including KRCEE subcontractors in the development of the AHAs. Any changes to make to the AHAs shall be verbally communicated to the DOE. DOE is responsible for reviewing, overseeing and inspecting its implementation in the field, assessing its implementation, and taking appropriate action(s) based on that assessment.

1.1.2 Development

An AHA shall be developed to be compatible with the project schedule and shall be organized and prepared as an outline of activities of Work arranged according to the project activity/task schedule sequence. Mobilization and demobilization activities shall be included even if they are not activities listed on the schedule. Additionally, KRCEE plans to service, maintain, and repair onsite equipment under KRCEE and KRCEE subcontractor control shall be included in the AHA. AHAs are not mutually exclusive. When developing an AHA, consideration must be given to other activities/tasks that are taking place at the same time and how one AHA affects another. Proper integration of AHAs is essential.

1.1.3 Submittals

KRCEE shall submit all initial (new) AHAs to DOE. DOE will review the AHA documents submitted by KRCEE for compliance with technical ES&H requirements. This review shall not constitute a change and shall not relieve KRCEE of any obligation. Revisions to initial (new) AHAs will require verbal notification to DOE. DOE reserves the right to review revised AHAs upon request.

1.1.4 Implementation

The relevant portions of the AHA and applicable permits shall be reviewed with affected Employees before the start of work for each shift.

AHA meetings shall be conducted by a KRCEE or KRCEE subject matter expert. Workers and supervisors directly participating in the activity shall attend the meeting. KRCEE shall provide DOE personnel the opportunity to actively participate in the AHA reviews.

Following the review, the subject matter expert and workers who attended the briefing shall sign and date the document, thereby indicating that they have participated in the review and understand and will comply with the requirements. This document shall be provided to DOE upon request.

1.2 GENERAL SAFETY PROVISIONS AND INSPECTIONS

1.2.1 KRCEE Management/Supervisor Responsibilities

NOTE: This section applies only to a scope of work that requires an onsite KRCEE Supervisor.

KRCEE shall make and document daily Work Area safety inspections and take corrective actions. These safety inspection documents shall be made available to DOE upon request. The KRCEE Supervisor shall inspect work activities against the hazardous work controls that are specified in applicable AHAs and permits. KRCEE's ES&H Site Representative shall participate with DOE, and DOE Prime Contractors in weekly inspections of KRCEE Work Areas. DOE will forward reports on these inspections to KRCEE, who, within three working days of receipt, shall return them to DOE with abatement plans or statements that appropriate corrective actions have been taken. Where danger to personnel is imminent, DOE personnel or DOE Prime Contractor personnel will stop the activity until the hazard has been abated.

To control or eliminate hazards and other exposures that may result in injury or illness, the KRCEE Supervisor shall instruct each Employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his or her work environment.

1.2.2 Required Safety Meetings

- Before starting work on the project, KRCEE and its subcontractor personnel shall attend a pre-job safety meeting presented by KRCEE to review the project-specific ES&H Plan. A record of attendance shall be documented and provided to DOE upon request.
- KRCEE and KRCEE subcontractors shall hold a tool box safety meeting prior to the start of work each day.
- KRCEE Health and Safety Contractor shall review Work tasks with all KRCEE and subcontractor personnel performing the tasks, daily before Work begins. The review shall address hazards, ways to mitigate the hazards, and controls as identified in the KRCEE AHA.
- KRCEE's ES&H Site Representative shall participate in DOE ES&H safety meetings as required.
- KRCEE and KRCEE subcontractors should conduct safety meetings in an environment that is conducive to learning.

1.2.3 Equipment and Tool Inspections

If KRCEE furnishes construction equipment under this subcontract, KRCEE must comply with its procedures for safe operation and maintenance of equipment.

2. WORK PRACTICES AND ENGINEERING CONTROLS

2.1 RADIATION PROTECTION

KRCEE will be held responsible in accordance with the General Condition entitled "INDEMNITY", for any PAAA enforcement resulting from KRCEE acts or omissions in performance of the Work.

2.1.1 KRCEE Responsibilities

NOTE: Several items in this section have been changed from the responsibility of KRCEE to DOE.

KRCEE is responsible for conducting all work safely including properly assessing radiological hazards based on 10 CFR Part 835 and monitoring results provided by DOE. KRCEE's radiation safety responsibilities are specified in this section.

KRCEE shall be fully responsible for ensuring that its work force, including KRCEE subcontractors, implements and follows radiation protection controls based on 10 CFR Part 835 and the results of surveys and other services provided by DOE. KRCEE radiation control measures shall also comply with the requirements and controls established by 10 CFR Part 835.

KRCEE shall notify DOE 10 days in advance of work shift changes, work schedule changes, or special radiological survey needs that require an increase in the number of radiological contractor or Radiation Control Technicians assigned to the work.

2.1.1.1 As Low As Reasonable Achievable (ALARA)

The radiation exposure of KRCEE worker's will be maintained as far below DOE limits for an occupational worker as is reasonably achievable. An annual administrative dose equivalent level of 2000 mrem committed effective dose equivalent, which is less than the standard established in 10 CFR Part 835, will be in effect. If any worker exceeds the administrative dose equivalent level, a comprehensive evaluation will be performed. No person will be allowed to exceed the annual administrative dose equivalent level without the prior approval of the DOE. KRCEE may set Administrative Control Levels that may not be exceeded for any individual worker without written approval of KRCEE.

KRCEE shall implement the radiological protection requirements, specified in 10 CFR 835, to maintain radiation exposures As Low As Reasonably Achievable (ALARA) during all project work. The ALARA concept applies to radiological dose reduction, contamination control, and waste minimization measures.

Based on previous work in the scrap yards at the Paducah Gaseous Diffusion Plant, it is not likely that work will occur in Radiation Areas, High Radiation Areas and Very High Radiation Areas. If it is determine during project implementation that work will occur in these areas, the work in these areas will also be coordinated with DOE to identify locations where lower dose rates exist. These identified locations shall be used for performing all work within these areas to the maximum extent possible. It is not anticipated that KRCEE will conduct work in Radiation Areas, High Radiation Areas and Very High Radiation Areas. This negates the requirement for the use of temporary shielding to lower external dose rates.

The following concepts are generally applicable to KRCEE and shall be performed and documented:

Perform ALARA design and planning for the following activities:

- Modifications and major maintenance of existing areas (not anticipated as being part of Real Time Demonstration Project)
- Environmental remediation projects (not anticipated as being part of Real Time Demonstration Project)

The Real Time Demonstration Project will maintain personnel radiation exposures ALARA through the use of real-time technologies that provide dynamic control of radiation exposures. Primary emphasis on maintain doses ALARA will be based on utilized of real time measurement technologies.

Administrative controls and procedural requirements will be used to design and control features of the Real Time Demonstration Project to minimize radiation exposure and maintain radiation exposures ALARA.

The Real Time Demonstration Project by its very nature incorporates dose reduction, contamination reduction, and waste minimization features into the projects processes.

KRCEE shall set occupational, public, and environmental ALARA goals, as appropriate for the Real Time Demonstration Project scope of work and incorporate the ALARA goals in the scope of work. These ALARA goals shall be set as far below the project site Administrative Control Levels as the scope of work for this project allows. KRCEE'S ALARA goals shall not be exceeded without written approval of DOE.

2.1.1.2 Fetus Protection

It is the policy of KRCEE to practice reasonable precaution in the protection of unborn children so that exposures to ionizing radiation are minimized, and at the same time, to provide equal employment opportunities. Radiation protection for the unborn children (embryo and fetus) shall be a joint effort between the female radiation worker and KRCEE. After a female radiation worker voluntarily notifies her immediate supervisor in writing that she is pregnant, her supervisor shall then notify (in writing) DOE. Upon written notification, she is considered a declared pregnant worker. For a declared pregnant worker who chooses to continue working as a radiological worker, the dose limit as established by 10 CFR Part 835 to the embryo/fetus from conception to birth (entire gestation period) is 500 mrem, and measures shall be taken to avoid substantial variation above the uniform exposure rate necessary to meet the 500 mrem limit for the gestation period. Efforts should be made to avoid exceeding 50 mrem per month to the declared pregnant worker. If the dose to the unborn child is determined to have already exceeded 500 mrem by the time a worker notifies her supervisor in writing of her pregnancy, the worker will not be allowed to perform work where additional occupational radiation exposure is likely during the remainder of the gestation period. In any event, a reassignment of work tasks shall be mutually agreeable and shall not involve a loss of pay or promotional opportunity. In addition, the declared pregnant worker shall be included in the dosimetry program during the pregnancy.

The Embryo/Fetus Protection Policy shall be implemented as follows:

- KRCEE shall make all employees aware of the Embryo/Fetus protection policy.
- The female employee declares her pregnancy by completing the Pregnancy Declaration Form. This declaration is voluntary. The worker is not required to provide any reason regarding her decision to declare a pregnancy, withdraw a declaration of pregnancy, or choose not to declare a pregnancy.
- The female employee provides a signed and dated Pregnancy Declaration Form.

- The supervisor provides the completed Pregnancy Declaration Form to DOE.
- A declared pregnant worker may withdraw her declaration of pregnancy at any time before or after the birth of the child, by providing written notification of her intent on Withdrawing a Pregnancy Form.
- Supervisors shall not impose special work restrictions of female workers who may appear to be pregnant, but choose not to declare or withdraw their pregnancy declaration.
- Supervision shall not remind an undeclared worker of the opportunity for a declared pregnant worker to avail herself of special dose limits and protection for the embryo/fetus. This is a sensitive and private matter that is the responsibility of the worker.
- Supervisors of declared pregnant workers shall ensure that declarations of pregnancy are handled as confidential and private and that the rights and privacy of the declared worker are maintained at all times.
- Supervisors of declared pregnant workers shall assist in obtaining counseling, if requested by the declared pregnant worker by contacting DOE. Supervisor shall cooperate in job hazard evaluations as requested by DOE. Supervisors shall assist in implementing DOE recommendations, which may include work restrictions, for maintaining the effective dose equivalent to the embryo/fetus as low as reasonably achievable and within required limits.
- If work restrictions are imposed for a declared pregnant worker, the worker shall be provided with the option of a mutually agreeable assignment of work for the duration of the pregnancy without loss of benefits, seniority, or promotional opportunity.
- If a declared pregnant worker withdraws her declaration of pregnancy for any reason, the work restrictions no longer apply and the assignment of work does not need to address embryo/fetus protection requirements.

2.1.1.3 Radioactive Source Control

The University of Kentucky has Kentucky radioactive material licenses and maintains Radiation Protection Programs that authorizes the possession of radioactive sources. As part of the University of Kentucky, KRCEE shall not purchase or possess a radioactive source (to include nuclear density/moisture meters) unless; a) authorized by DOE or b) authorized through a current license with Kentucky's Agreement State Program. If KRCEE holds a current license with the Kentucky, the following requirements are applicable:

- KRCEE or its designee shall supply copies of all licensing and operator certification regarding use of the source before bringing the source on site.
- Sources shall not be left unattended when removed from storage.
- Sources shall be tested for leakage and/or contamination at intervals not to exceed 6 months per the conditions under KRCEE's materials license. Leak test results shall be provided to DOE prior to bringing the source on site.
- Radiation dosimetry for personnel using sources (where required) shall be the responsibility of KRCEE, in accordance with the provisions of the applicable Kentucky license and regulations.
- The Subcontract terms and conditions regarding of KRCEE reimbursement for contaminated equipment will apply only when background levels can be accurately determined by swipe samples prior to use of this equipment. Swipe samples will be taken and analyzed by KRCEE's subcontractors.
- The DOE shall be notified before the source is brought into the facility so that compliance with the Facility Safety Authorization Basis documents may be assured.

If KRCEE does not possess a Kentucky license and requires use of a radioactive source then the following provisions apply:

- KRCEE shall not purchase any sources.
- Only sources listed on the KRCEE's Agreement State license inventory of sources provided to DOE are allowed on site.
- KRCEE's Agreement State licensed must appoint a Source Custodian for all their sources.

KRCEE's subcontractors Source Custodians are responsible for the following:

- Ensuring that source are stored and locked when unattended during the project and only authorized individuals have access to the sources.
- Maintaining a written listing of authorized sources and source users.
- Ensuring that the DOE is notified before a source is brought into a facility so that compliance with the Facility Safety Authorization Basis documents may be assured.

KRCEE's Source Users are responsible for the following:

- Do not touch or abrade the active area of any sealed source.
- If a source is temporarily removed from its storage location, then complete the applicable portions of KRCEE's Radioactive Check/Calibration Source Sign-In Sheet.
- Notify the DOE's Transportation Specialist and the Source Custodian before source transport over public highways.
- When use of the source is completed, return the source to the designated storage area (and the container if applicable) and complete KRCEE's Radioactive Check/Calibration Source Sign-In Sheet.
- Track the use of unsealed sources (liquids, gases, etc.) that are used in work processes so that the magnitude of the remaining source is known and the disposal is documented.
- When handling high activity sources, implement the requirements that are contained in a Technical Work Document or in the Radiation Work Permit (RWP).

2.1.1.4 Entry Control

Written Radiological Work Authorizations (RWA) (primarily as RWPs) are used to control entry into Radiological Areas and Radioactive Material Areas (where storage containers are to be opened and materials removed or sampled unless there is sample data which shows the material is not radioactive material). KRCEE and its subcontractors may not enter a Radiological Area without an approved RWA. DOE and its subcontractor (PRS) are responsible for preparing all RWAs. Radiological Areas are posted as follows:

- Very High Radiation Areas
- High Radiation Areas
- Radiation Areas
- Airborne Radioactivity Areas
- High Contamination Areas
- Contamination Areas

The documents provided by KRCEE to DOE must demonstrate the preparation of a RWP. If the documents do not provide an adequate documentation for the preparation of an RWP as a result of lack of detail or appropriate information, KRCEE must revise and resubmit to DOE.

DOE is responsible for providing labor and material to erect and maintain any radiological barriers, barricades, shielding, warning devices, or locks needed to safely control the Work Site.

When using RWPs, KRCEE's supervisor is responsible for:

- Reviewing and accepting the RWP, either electronically or in writing, by signing the appropriate section of the RWP.
 - Performing a pre-job briefing prior to commencing work controlled by a new or revised RWP and documenting pre-job briefing attendance.
 - Notifying the DOE and stopping the work performed after ensuring the job site has been placed in a safe condition if a job-specific RWP requires a substantive revision due to changing work scope or additional safety and health requirements.
 - Terminate a RWP when any one of the following conditions occur:
 - The job has been completed.
 - The job has been discontinued for any reason.
 - The last day of work authorized has been reached.
 - A new RWP is needed for any other reason.
 - Returning the job site to an acceptable and safe condition. This includes, but is not limited to, the following activities:
 - Cleaning up all waste.
 - Bagging used anti-C's for removal from the area.
 - Removing all tools from the area provided they have been shown to be uncontaminated.
 - Assuring that all KRCEE personnel have exited the area.
- Removing any copies of RWPs .

When using RWPs, KRCEE's workers are responsible for:

- Verifying that the appropriate RWP for the job has been selected and is still current.
- Signing (or acknowledging electronically) the RWP or attachment thereof indicating that the RWP has been read, understood, and that the requirements will be followed.
- Documenting the results of self-reading dosimeters, when used.

2.1.1.5 Selection and Use of Personal Protective Apparel for Radioactive Contamination Control

This section provides requirements for complying with 10 CFR 835.1102 (e) when using "protective clothing" for radiological protection purposes (called personal protective apparel or anti-contamination clothing). Personal Protective apparel shall be required for entry into areas in which removable contamination exists at levels exceeding 10 CFR 835 Appendix D values. The following requirements apply to the selection and use of personal protective apparel for radioactive material control:

- Radiological personal protective apparel shall not be used for non-radiological work.
- Radiological personal protective apparel is approved for identified tasks as specified on the RWA. The user is not authorized to deviate from the approved, designated personal protective apparel; if changes are needed, then these must be approved through the RWA process.
- If workers occasionally request additional PPE, it is not a deviation from the approved designated personal protective apparel to wear additional layers or items of personal protective apparel beyond those approved. However, this may create unnecessary cleaning or disposal costs, and may reduce the overall safety for the user. Thus the use of additional personal protective apparel is discouraged.
- Laundered radiological personal protective apparel must be treated as radioactive material. Laundered radiological personal protective apparel shall not be taken to locations not

authorized for radiological materials, which include lunch rooms, break rooms, office areas, or personal lockers.

- All radiological personal protective apparel used for training purposes will not have previously been used in a radiological area, even if laundered and surveyed, and will be clearly marked as being for training purposes only.
- It is the user's responsibility to inspect each article of personal protective apparel before use to ensure it is not damaged. Damaged items will be placed in appropriate disposal containers and not returned to storage bins.
- Appropriate modesty clothing will be worn under personal protective apparel, at the direction of facility policy or the authorizing technical work document, and will consider environmental conditions and personal protective apparel requirements for worker safety.
- Once a worker enters a radiological area for removable surface contamination, the worker may not adjust the radiological personal protective apparel being worn, except if authorized in the RWA, or under the direction and assistance of KRCEE's Health and Safety Personnel.
- A minimum of full-face air purifying respirator (APR) is required when working in a posted Airborne Radioactivity Area except in extreme situations such as visibility impairment, heat stress or over-riding safety and health concerns. Cases such as these should be documented on the RWA.
- As a general rule of thumb, upgrades to a higher level of respiratory protection will be required such that the anticipated airborne radioactivity concentration, taking into account the respirator protection factor, does not exceed 0.1 Derived Air Concentration (DAC).
- Personal protective apparel should be donned as specified through training, posted instructions, procedures, or as directed by cognizant KRCEE Health and Safety Personnel.
- Workers should proceed directly to the radiological work area after donning is completed. If delays are anticipated, then the personal protective apparel should be doffed.
- Designated personal protective apparel shall be worn properly during the course of the work.
- If a failure of the personal protective apparel occurs, or conditions significantly change while the activity is underway in a radiological area, then work should be placed in a safe condition if doing this will not cause immediate harm; workers should then immediately leave the area, and immediately notify their supervisor and RADCON of the problems encountered.
- Workers should doff the personal protective apparel when leaving the work area as specified through training, posted instructions, procedures, or as directed by cognizant RADCON or Safety and Health Field Operations personnel.
- Workers should notify their supervisor and RADCON promptly if any problems wearing or using the personal protective apparel occur.

2.1.1.6 Radiation Dosimetry

KRCEE and subcontractors will ensure compliance with the dosimetry standards established in 10 CFR Part 835. DOE will issue a radiation monitoring badge (TLD) to employees working inside Radiological Areas who are qualified with Radiological Worker I and II Training, who require access to an area posted as requiring a TLD. It is KRCEE's responsibility to assure that these badges, when required, are worn in accordance with training and badging requirements when working in Radiological Areas. This requirement applies to all personnel, including inspectors and supervisors.

The following requirements apply to the use of TLDs for external dosimetry:

- TLDs shall only be worn by the person for whom it was issued and only during the proper exchange period.

- Beta-gamma TLDs shall be worn above the waist and below the neck, on the outside of clothing.
- TLDs must not be covered by anything (including other badges) other than anti-contamination clothing.
- TLDs shall not be tampered with or modified.
- TLDs should not be stored in areas with extreme temperatures (for example, in direct sunlight in a closed vehicle).
- Individuals shall return their TLDs to their supervisor at the end of the Real Time Demonstration Project.
- Individuals who perform radiological work during the same calendar year for multiple employers, or visit other DOE sites shall not wear dosimeters issued to them by KRCEE or its subcontractors while performing radiological work for another employer or while visiting a radiological site. Individuals who perform radiological work elsewhere (such as for another employer or DOE Prime Contractor) while being monitored for occupational exposure by KRCEE or its Environmental Safety and Health Representative must notify KRCEE.
- If an individual loses, damages, or contaminates their dosimeter in a Radiological Area, they shall place the work in a safe condition, immediately exit the area, and notify the KRCEE or its Environmental Safety and Health Representative. Individuals must not enter any Radiological Area until KRCEE or its Environmental Safety and Health Representative have conducted a review of the lost, damaged or contaminated dosimeter. Approval by the KRCEE or its Environmental Safety and Health Representative, and issuance of a replacement TLD is required prior to re-entry to Radiological Areas. Individuals shall personally report to the KRCEE or its Environmental Safety and Health Representative, to obtain a new TLD for lost, forgotten, or damaged TLDs.
- Individuals shall contact the KRCEE or its Environmental Safety and Health Representative prior to exposure of medical radioisotopes, if possible. Individuals shall contact the KRCEE or its Environmental Safety and Health Representative upon return to the site following the exposure, if contact prior to exposure is not possible.

KRCEE personnel who are placed on the bioassay program shall provide urine samples to DOE's radiation protection program (PRS) before the start of Work within Radiological Areas where a potential for internal radiation exposure exists. All workers who are qualified with Radiological II Training shall participate in the bioassay program. An exit urine sample must also be provided at the completion of the employee's last day of work within Radiological Areas. Urine samples will be analyzed for uranium and/or other radionuclides to help determine whether the employee has received an internal radiation dose while performing Work under the scope of the Real Time Demonstration Project. In cases where acute internal radiation exposures resulting in a significant fraction of the KRCEE or its KRCEE worker exposure limits are suspected, affected workers may be required to submit special bioassay samples. Special bioassay sampling will typically require the collection of urine and/or fecal samples for at least 5 days following the suspected acute intake and may also require multiple whole-body count. At the present time, KRCEE believes that special bioassay sampling will rarely, if ever, be required due to the stringent control measures applicable during the scope of work and the historical low radionuclide activity in the study area.

Sample collection containers will be provided by DOE. It is KRCEE's responsibility to ensure that each employee submits bioassay samples as required. KRCEE shall ensure exist bioassay sample are obtained for personnel terminations or transfers. Failure of any KRCEE employee or contractor employee to comply with bioassay requirements may result in delay of payment to KRCEE subcontractors and barring of the employee (s) from the Site(s).

The following requirements apply to the submission of bioassay samples:

- Individuals shall pick up a bioassay kit from the DOE radiation protection dosimetry program office and follow instructions for bioassay samples included in the sample kit.
- Individuals shall return the sample to the DOE radiation protection dosimetry program office .

KRCEE shall complete and submit to DOE Previous Occupational Radiological Exposure Forms for all workers planning to enter Radiological Areas, prior to starting Work. If it is determined by DOE's Radiological Control Organization that a baseline bioassay, whole-body count lung count, or TLD is required, KRCEE will be notified by DOE on how to obtain these services. Baseline bioassays must be completed before personnel can work in Radiological Areas. Upon termination, all workers must check out through DOE's Radiological Control Organization and obtain a signed statement that all dosimetry requirements (bioassay and TLD) have been met. This statement must be provided by KRCEE to DOE for all workers before final payment may be received.

2.1.1.7 Contamination Control

All KRCEE personnel exiting Buffer Areas, Contamination Control Zones, Contamination Areas, High Contamination Areas, and Airborne Radioactivity Areas shall be surveyed for radiological contamination and hand-carried articles such as flashlights, clip boards, or hard hats for contamination using DOE's Radiological Control Organization contamination monitors. In the event that contamination is found on the person's skin or clothing, the individual shall notify the KRCEE Environmental Safety and Health Representative for decontamination as directed before the individual is permitted to leave the area.

All vehicles, heavy equipment, tools, and equipment removed from the KRCEE work area shall be free of gross mud and debris. In addition, such equipment exiting Buffer Areas, Contamination Control Zones, Contamination Areas, High Contamination Areas, and Airborne Radioactivity Areas, as applicable, will be surveyed by DOE's Radiological Control Organization for radioactive contamination and will not be released for unrestricted use until it meets 10 CFR Part 835 unrestricted release criteria. KRCEE and its subcontractors are not permitted to remove potentially contaminated equipment for unrestricted (offsite) release without written documentation that the equipment has been subjected to radiological survey and has met the appropriate release criteria. Alternatively if the KRCEE or its subcontractors have an appropriate NRC or State Agreement license, contaminated equipment may be removed from the site in accordance with applicable DOT requirements. KRCEE shall be responsible for washing their equipment and tools at a DOE-approved location. Upon completion of decontamination operations DOE's Radiological Control Organization shall conduct decontamination screening.

Unless otherwise specified by DOE, KRCEE shall procure sufficient tools so that tools frequently required in Radiological Buffer, Contamination Control Zones, Contamination Area, High Contamination, and Airborne Radioactive Areas may be solely dedicated for that use. A method to control the issuance and use of tools dedicated to these specified areas shall be developed by KRCEE and submitted for review by DOE. In the event that repairs or modifications to tools or equipment are needed, the repairs or changes shall be made, where reasonably practicable, in a non-radiological area and/or a portion of the Site with low levels of contamination.

A DOE representative may collect a swipe sample from the interior face-pieces of respirators used in Radiological Areas to monitor for loose radioactive contamination and to document respirator cleanliness or effectiveness. Positive radioactive contamination results on any swipe sample will require a contamination investigation and cleaning of the respirator before additional use. Positive contamination results caused by respirator failure may necessitate the initiation of special bioassay

monitoring of the affected worker. KRCEE shall ensure that its personnel are made available for respirator monitoring as required by DOE.

2.1.1.8 Air Monitoring for Radioactivity

At the discretion of DOE, air samples will be taken as necessary by DOE's Radiological contractor for airborne radioactivity. These samples will be taken in the breathing zones of workers, within the Work Area and downwind from the Work Area.

KRCEE and its Environmental Safety and Health Representative are responsible for ensuring that KRCEE personnel follow RWA requirements for wearing breathing zone air (BZA) monitoring devices designed to measure radioactive material in the worker breathing zone. These samples will be collected to assess airborne radioactive material concentrations and determine whether an upgrade of respiratory protection is necessary. Personal BZA sampling may also be used to estimate dose equivalents to workers resulting from inhalation of airborne radioactive material and to identify the need for initiation of special bioassay sampling. Area air monitoring deemed necessary will be performed in a location that will not affect KRCEE operations. This sampling will be conducted primarily to ensure that airborne contaminants in the general work area are maintained ALARA and to establish boundaries of airborne radioactivity areas. Monitoring frequency shall be at the discretion of DOE.

2.1.1 Services Provided By DOE or DOE's Radiological KRCEE to KRCEE

DOE or DOE's Radiological contractor will provide radiological support services, including the services of RCTs to perform surveys and monitoring, coordinate dose assessments, identify radiological areas, and prepare RWAs. DOE shall also assign nuclear safety personnel, as needed, to address criticality issues. KRCEE's ES&H Plan shall contain a Radiological Plan (RP) that specifies project-specific controls and procedures needed to conduct work with radioactive material while maintaining radiation exposures and controlling releases to the environment as low as reasonably achievable (ALARA).

DOE's radiological support will include the following functions and be performed according to DOE's procedures (made available to KRCEE for review on request):

- External dosimetry involving issuing, analyzing, and reporting the results of thermoluminescent dosimeters and self-reading dosimeters, as well as any required skin dosimetry.
- Internal dosimetry, including the specification of monitoring frequency, type of analyses, provision of sample collection kits, laboratory analyses, and reporting of results.
- Monitoring in the workplace, including radiation surveys, contamination surveys, and air monitoring (both personal and area) to determine radiological conditions in the Work Area and surrounding ambient environment and to verify the effectiveness of protective measures.
- Entry control, which includes maintaining access control with boundary control stations, providing and enforcing RWAs, and ensuring that all personnel perform proper surveys of themselves and their incidental tools and equipment before exiting Radiological Areas.
- Posting and labeling of the Work Site as dictated by the results of survey data.

- Surveys of vehicles, equipment, tools, and materials released from Radiological Areas to Controlled Areas, and unrestricted release surveys of vehicles, equipment, tools, and materials released from Controlled Areas to Unrestricted Areas.
- Recommendations on methods and procedures for decontaminating personnel.
- Providing radiological monitoring instruments.
- Performing radiological surveys of shipment(s) of radioactive materials to meet DOE and U.S. Department of Transportation (DOT) shipping requirements.
- Making provision for launderable anticontamination clothing or other appropriate type protective clothing.

2.1.2 Radiation Plan (RP)

- KRCEE will use DOE's existing Radiation Plan. The RP shall be project and site specific and is expected not to exceed approximately 10 pages. The RP shall be incorporated by reference into the KRCEE ES&H Plan.

KRCEE will not be conducting work in confined spaces during the project scope of work.

2.2 HAZARD COMMUNICATION PROGRAM

Regarding the requirements for using KRCEE provided materials, KRCEE shall comply with all the requirements of the OSHA Hazard Communication Standard (29 CFR 1926.59 and 29 CFR 1910.1200). KRCEE shall maintain a written Hazard Communication Program/Procedure at the work site. This Program/Procedure shall be subject to DOE review upon request. Each KRCEE and contractor employee shall be trained in accordance with KRCEE's Hazard Communication Program/Procedure. Documentation of employee training shall be made available for DOE review upon request. KRCEE shall submit to DOE a copy of the Material Safety Data Sheet (MSDS) for each hazardous chemical as defined in the OSHA Hazard Communication Standard at least 5 working days before the chemical is brought onto the Site. MSDS submittals shall be accompanied by the quantity and description of the intended use of the substance, container size, and number of containers KRCEE or its contractor(s) brings onsite. MSDS submittals without intended use and quantities will be rejected. Hazardous chemicals shall be properly labeled and posted as required by 29 CFR 1926.56 and 29 CFR 1910.1200. Secondary containers shall be labeled in accordance with KRCEE's Hazard Communication Program/Procedure with minimum labeling requirements of 29 CFR 1926.59 and 29 CFR 1910.1200.

KRCEE shall develop an inventory for all hazardous materials used in its operations which shall include materials used by KRCEE subcontractors. KRCEE shall submit an inventory containing the following minimum data: quantity purchased/brought onsite (after the initial submittal, this shall include quantity purchased/bought or onsite since last report), quantity on hand, sizes of containers, and maximum quantity onsite during the Real Time Demonstration Project. KRCEE can input data directly into DOE's Hazardous Material Inventory System (HMIS) or provide data in a compatible format for downloading into HMIS. The inventory shall be certified as true and correct. The KRCEE shall review each MSDS to determine if the chemical is or contains a concentration of 0.1% or greater of a confirmed or suspected human carcinogen (or greater than 1.0 % of a confirmed animal carcinogen). Such materials shall not be used at the DOE' site unless no suitable replacement can be identified. If no suitable replacement material can be identified, the KRCEE

shall evaluate the material and its intended use for exposure potential. The KRCEE shall develop procedures that include a description of the intended use and control measures (i.e., engineering controls, PPE, hygiene practices, and emergency response practices) used to keep exposure risk to a minimum. Additionally, if no exposure potential exists, documentation must so dictate. Documentation of the evaluation of such materials shall be submitted to the DOE prior to use onsite. After a complete evaluation of MSDSs by KRCEE's ES&H Representative, KRCEE shall attach a copy of each to the appropriate AHA before work with the product begins. Should KRCEE or their contractor(s) be found to be using materials that have not been reviewed and authorized, it will be considered a safety violation and handled accordingly.

KRCEE shall maintain copies of MSDS (at the Work Site) for products they will be using and shall maintain a copy of KRCEE's written Hazard Communication Program. This program shall be subject to DOE review. Documentation of KRCEE Employee training shall be available for inspection upon request by DOE. Hazards shall be properly labeled and posted as required by 29 CFR 1926.59 and 29 CFR 1910.1200.

2.3 DUST (PARTICULATE) CONTROL REQUIREMENTS

KRCEE shall use water spraying or other DOE-authorized methods as necessary to suppress dust emissions to the lowest practicable level. KRCEE shall also minimize dust emissions by minimizing drop heights when transferring material. Excessive visible emissions of particulates shall not be permitted. Total airborne dust concentrations, as measured in the Work Areas, shall at no time exceed a limit of 10 mg/m³ unless otherwise authorized in writing by DOE. If the Work involves contaminated soils, this limit may be adjusted down to help ensure that airborne concentrations of the contaminant remain within acceptable levels. The limit in Uncontrolled Areas is 5 mg/m³. Excessive runoff due to dust control operations shall not be permitted.

If measurement of the total airborne particulate concentration is not feasible or practical, DOE will evaluate the airborne particulate levels by visual inspection, and if, in DOE's judgment the airborne particulate is visible, KRCEE will be required to implement additional particulate control measures. KRCEE shall be responsible for ensuring that all operations are conducted in a manner that prevents airborne contaminants and total airborne particulates from exceeding established limits.

Responsibility for providing dust control equipment shall be borne by KRCEE and included in its ES&H Plan as applicable.

2.4 EXTREME TEMPERATURE REQUIREMENTS

Heat stress and cold stress prevention programs shall be implemented during periods of hot and cold weather. The heat stress prevention program shall include provisions for worker acclimatization and implementation of appropriate heat stress prevention measures. The program shall meet the requirements contained in the latest version of ACGIHs, TLVs, and Biological Exposure Indices Threshold Limit Values for Chemical Substances and Physical Agents. DOE may conduct confirmation monitoring on KRCEE personnel for temperature and heart rate to determine the effectiveness of the program. For cold stress prevention, KRCEE personnel shall use properly insulated clothing for the head, hands, feet, and body.

During periods of hot weather or when workers may be affected by heat stress, an adequate supply of cool drinking water and a shaded rest area shall be made available. During cold weather periods, a DOE-approved heated shelter area shall be readily available near the Work Site.

Responsibilities for providing drinking water, cold weather clothing, ice vests, and any other equipment, supplies, and facilities necessary to ensure an effective program for temperature extremes shall be contained in KRCEE's ES&H Plan.

2.5 REQUIREMENTS FOR REMOVING SAMPLES FROM FACILITY/SITE

When required to ship materials offsite for analysis, KRCEE shall comply with the requirements of applicable regulatory requirements for transportation of hazardous and radioactive materials.

3. PERSONAL PROTECTIVE EQUIPMENT

The use of appropriate PPE shall be required for personnel involved in operations where exposure to hazardous conditions exists and cannot be eliminated by engineering controls or where such equipment is needed to reduce hazards. PPE shall be selected and used in accordance with OSHA standards and the requirements. Documented instruction on how to use PPE shall be given to each individual who is assigned to use PPE. PPE shall be provided by KRCEE as required by OSHA, unless otherwise specified in the ES&H Plan. All modifications to PPE requirements shall require authorization by DOE before implementation. PPE shall be used and maintained in accordance with the manufacturers instruction/requirements.

3.1 SAFETY APPAREL

Personnel performing hands on work in the work zone at the PGDP shall, at a minimum, be required to wear the following standard safety apparel:

- Hard hats (with the bill facing forward) meeting the requirements of ANSI Z89.1 as prescribed in 29 CFR 1910.135, *Head Protection*, for protection from falling objects. Hard hats shall be worn with the brim forward and the suspension properly installed. Hard hats shall not be damaged, painted, deformed, or marked in any way except for markings required to identify the employee, company, craft, or title. **NOTE:** Cowboy style hard hats and suspensions shall not be used.
- Eye protection shall, at a minimum, consist of safety glasses with fixed or firm clip-on affixed side shields that meet the ANSI Z 87.1 standard. Prescription glasses shall also meet the ANSI standard and be provided with fixed or firm clip-on side shields. Cover glasses used over prescription glasses will be permitted. Safety glasses shall be worn at all times in Controlled Areas and in any other area where construction activities are taking place unless otherwise stated by DOE. Face shields shall not be worn in lieu of safety glasses.
- Sturdy work shoes or boots. **NOTE:** Safety-toed footwear shall be specified for each Scope of Work.
- Proper selection of gloves for hand protection shall be identified and available for use.
- Long pants and shirts with sleeves at least 4 inches long will be required. Tank tops, cut-off pants, and tennis shoes will not be permitted. Loosely fitting clothes will not be permitted near rotating machinery or equipment. DOE strongly recommends that personnel do not wear jewelry in construction areas.

4. SAFETY AND HEALTH MONITORING

Responsibility for monitoring in the workplace shall be as specified in KRCEE's ES&H Plan and as required DOE. When DOE performs monitoring for personnel exposures, it does so to verify engineering controls and PPE/respirator selection. This does not relieve KRCEE of the responsibility for characterizing its Employees' exposure. The following sections describe the monitoring program, exposure limits, and action levels that require additional engineering control measures and PPE.

When feasible, engineering controls shall be used to maintain personnel exposures to hazardous chemicals below the threshold limit values.

Tampering with monitoring devices will not be tolerated and may result in removal of the guilty individual from the Site.

4.1 EMPLOYEE EXPOSURE MONITORING–NONRADIOLOGICAL

4.1.1 General

Implementation of the real time technologies will provide real time data for assessing impacts of contaminants on workers during the Real Time Demonstration Project. Thus the dynamic real time approach will provide information as to the levels of contaminants associated with the Scope of Work. KRCEE will establish a set of administrative exposure action levels in its ES&H Plan for the compounds/contaminants to which its employees may be exposed while working onsite. These administrative action levels shall be developed based on regulatory drivers, industry standards, and sound industrial hygiene practice. The upgrading/downgrading of PPE and implementation of engineering controls will be based on these administrative action levels, which are the results of data generated by the appropriate real-time instrumentation.

4.1.2 Environmental Air Monitoring

The Real Time Demonstration Project should not result in the resuspension of soil from the proposed sampling areas. In addition, real time health assessment can be accomplished based on levels of contaminants determined by real time technologies to be present in the sampling area. However, if Work Area real-time monitoring indicates airborne level above the administrative action levels established in KRCEE's ES&H Plan of contaminants during any activity, then either project boundary or perimeter monitoring will be initiated by the ES&H Site Representative. The goal of such monitoring will be to determine whether any airborne contaminants are dispersing off the designated Work Area and to obtain data that would identify the need for corrective action in the Work Area. The significant contaminants of concern include fugitive dust. If Work Area monitoring shows a continuous concentration of particulates that exceed the administrative action level (not an individual peak), monitoring will be initiated at the site boundary downwind from the work activity. If the action level is exceeded at the downwind perimeter point, the level upwind of the Work Area will be measured immediately. If the potential for airborne dust generation exists, the downwind perimeter of the site will be observed. Dust-suppression methods will be initiated if visible dust is documented migrating offsite.

4.1.3 KRCEE Industrial Hygiene Laboratory Qualifications

All personal exposure or other industrial hygiene-related samples shall be analyzed by a laboratory accredited by AIHA for the analytical parameter categories that are to be analyzed. All samples will be analyzed in accordance with the appropriate NIOSH or OSHA methodology or a method deemed equivalent by the laboratory. Before the start of onsite Work, KRCEE shall submit to DOE

the name of the selected laboratory and the most recent analytical results of the laboratory's inter-laboratory quality assurance program.

4.1.4 KRCEE Posting of Monitoring Results

The Real Time Demonstration Project should not result in the resuspension of soil from the proposed sampling areas. In addition, real time health assessment can be accomplished based on levels of contaminants determined by real time technologies to be present in the sampling area. However, KRCEE shall review monitoring results with employees. KRCEE shall notify and supply employees with the results of any exposure monitoring in accordance with any OSHA standard requiring such written notification. KRCEE shall submit to DOE in writing the results of personnel, area, and other monitoring performed during the execution of this Subcontract within 24 hours of the receipt of results, unless otherwise specified.

5. ENVIRONMENTAL COMPLIANCE

KRCEE is not responsible for environmental compliance, NEPA requirement, and environmental monitoring, and reporting requirements. PRS shall be responsible for all environmental compliance requirements.

6. GENERAL SAFETY

KRCEE and its contractors are solely responsible for providing a safe workplace for their personnel who will be exposed to various hazards related to the scope of work. DOE requirements, OSHA regulations, applicable regulations, and DOE Orders identified in this section shall be strictly adhered to. If a modification to a Site requirement is necessary to meet the needs of a chosen work method, authorization from the DOE is required. OSHA or DOE regulations shall not be modified unless a formal variance is applied for and granted by DOE.

Where the provisions of the individual Subparts of OSHA 29 CFR 1910 or 1926 require a "competent person," KRCEE shall provide a qualified competent person meeting the specific requirements indicated for a "competent person."

6.1 TAGGING OF DEFECTIVE TOOLS, MATERIALS, OR EQUIPMENT

Defective tools, materials, and equipment shall not be used. KRCEE shall take defective tools, materials, and/or equipment out of service immediately by tagging, destroying, or removing them from the project site. KRCEE shall remove the tag only when the equipment has been properly repaired and is declared serviceable. Defective equipment tags shall be dated and signed by the person tagging the equipment. Defective equipment tags shall also contain a description of the problem that requires the equipment, tools, or materials to be tagged.

6.2 HOUSEKEEPING

KRCEE shall strictly enforce good housekeeping. All material, scrap, tools and toolboxes, and other equipment shall be stored in a neat and orderly fashion. Trash and scrap should be removed from the Work Area on a regular basis (i.e., at least daily, before the end of each work shift) and shall never be allowed to accumulate.

6.3 BLOODBORNE PATHOGENS

KRCEE Employees whose job responsibilities include emergency response [e.g., designated first aid and cardiopulmonary resuscitation (CPR) qualified] that have the potential for occupational exposure to bodily fluids and tissue shall be trained in accordance with the OSHA 29 CFR 1910.1030 *Bloodborne Pathogen* requirements. Appendix G-4 shall be used to verify training provided by KRCEE. Also, KRCEE shall submit proof of Hepatitis B vaccination or a Vaccination Declination Form.

6.4 SANITATION

6.4.1 General Requirements

Portable and nonportable water containers and portable toilets shall comply with OSHA 29 CFR 1910.141 requirements. Drinking water shall be provided in the form of bottled water in order to minimize paper waste and potential for contamination. Rest areas shall be kept clean, and trash shall be removed from them daily. Trash receptacles shall be stationed in all eating areas and emptied regularly.

6.4.2 Requirements for Radiological Areas

For drink stations that are set up within the Radiological Areas of the Site, personnel are required to survey their hands and faces for radioactive contamination before touching drinking water receptacles.

6.5 SLIP, TRIP, AND FALL HAZARDS

The Facility/Site, especially roadways, access ways, aisles, stairways, scaffolds, and ladders, shall be kept clean and clear of hoses, extension cords, welding leads, and other obstructions that may cause tripping or other accident hazards. Slipping hazards, such as grease, oil, water, ice, snow, or other liquids shall be cleaned up or eliminated on walkways, ladders, scaffolds, or other access ways or Work Areas. If slipping and/or tripping hazards cannot be completely eliminated, the area shall be barricaded and posted with applicable hazard postings.

6.6 FIRE PROTECTION AND PREVENTION

Although not anticipated as part of the Real Time Demonstration Project, KRCEE shall take all necessary and appropriate precautions to prevent fires in accordance with OSHA 1926 Subpart J, *Welding and Cutting* and NFPA 51B. "Hotwork" shall not be performed at the job site. Open burning of trash and debris shall not be permitted without approval of DOE.

Fire extinguishers shall be placed as required by OSHA and NFPA in facilities, storage areas, vehicles, and equipment. KRCEE shall be responsible for inspecting fire extinguishers as required by OSHA 29 CFR 1910.157 and NFPA 10. Copies of inspection reports shall be provided to the DOE upon request.

Pre-fire plans will be prepared by DOE's fire department with assistance from KRCEE. In addition, any structural changes to facilities will be reviewed by DOE's Fire Protection Engineering organization, and the pre-fire plans will be revised to reflect any changes.

The Real Time Demonstration Project will not conduct work within a building or enclosed area. All fuel storage areas and storage tanks must have written authorization by DOE. Marking and labeling of fuel tanks shall meet the requirements of OSHA 29 CFR 1926.59. All heating devices and their locations must be inspected by DOE's Safety Advocate before use. Fueling areas and tanks shall comply with all applicable NFPA and OSHA requirements. Exceptions will be evaluated on a case-by-case basis and approved by DOE.

Flammable or combustible liquid storage shall comply with NFPA 30 and OSHA 1926.152. All gas cans shall be free of deformities and constructed of metal, with self-closing lids and flame arresters. Fuel cans shall be labeled as to their contents. Fuel cans shall not be transported in vehicle

passenger enclosures (i.e., vans, truck cabs, inside vehicles, etc.). Fuel cans must be secured during transport. All equipment shall be fueled through funnels or spouts to prevent spills.

Fire extinguishers shall be placed as required by OSHA and NFPA in facilities, storage areas, vehicles, and equipment. KRCEE shall be responsible for inspecting fire extinguishers as required by OSHA and NFPA. Inspection reports shall be provided to DOE upon request.

6.7 MATERIAL HANDLING AND STORAGE

All new material shall be stored on dunnage (off the ground) and secured as necessary to prevent blowing, falling, sliding, or collapsing. Debris and scrap material need not be stored on dunnage if the material is not to be moved with rigging and can be maintained in a stable manner.

Walkways and aisles shall be kept clear at all times, and laydown areas shall be neat and orderly. Material shall be stored on level ground, and the boundaries of laydown areas shall be identified. Poles, pipe, and other stock that may roll shall be wedged to prevent spreading and rolling.

Nails shall be removed from lumber that is to be reused. Nails in scrap lumber that will not be reused shall be bent back.

No material, tools, or equipment shall be leaned against other objects or walls unless they are secured from movement. Employees moving material by hand shall use proper lifting techniques and gloves. Safe working load limits shall be labeled on all temporary elevated floors or platforms, and those limits shall not be exceeded.

6.8 TOOLS

All tools shall be kept in good condition and properly stored. Tools shall not be altered, and they shall be used only for their intended purposes and within the manufacturer's guidelines. Guards shall not be removed from tools, and all nip points, open drums, and fly wheels shall be guarded. All tools shall be inspected by the user before use, with special attention given to power cords and the condition of teeth. If a power cord has been damaged, the tool shall be tagged defective in accordance with Section 6.2, Part II, Attachment 2, and not used until a new power cord is installed. Drawings of job-built jigs and tools shall be submitted to DOE. Owners' manuals shall be available to DOE on request, and KRCEE personnel shall be trained in the safe operation of all tools used.

Power tools shall be equipped with constant pressure switches that will shut the tool off when the switch is released. All power tools and electrical equipment shall be double insulated or be equipped with ground plugs.

All bench-mounted and floor-mounted tools shall be secured.. Tools equipped with handles shall have the handles installed. Cracked, splintered, or taped wooden handles shall be replaced. Cheater bars will not be permitted except when authorized by DOE.

Workbenches and sawhorses shall be provided when needed. All cords, hoses, and leads must be kept out of walkways. They must be strung 7 ft or more over walkways or along the sides of walkways. Cords, hoses, and leads are not to be exposed to vehicle or equipment traffic unless protected. Any damage detected on cords, hoses, and leads will require removal from the project. Repairs are not permitted.

6.9 LOCKOUT/TAGOUT OF HAZARDOUS ENERGY SOURCES

Work involving hazardous energy sources shall be conducted under a DOE Prime Contractor authorized lockout/tagout program. KRCEE and its contractors shall comply with DOE's Prime Contractor authorized lockout/tagout program.

6.10 SIGNS & BARRICADES

All signs shall be properly colored and labeled as prescribed by OSHA standards. Signs shall be constructed of metal, fiberglass, or plastic and shall be promptly removed when no longer needed. Signs shall also be conspicuously placed in conjunction with barricades. No minimum spacing is required unless otherwise specified in OSHA 29 CFR 1926 Subpart G.

The types of barricades permitted on the project include rope, tape, and similar barriers and hard barricades. The color of the barricades shall coincide with the OSHA color classifications. If hazard information is not printed on barricades at doorways, then signs or tags shall be attached to the doorways. Rope, tape, chain, and similar barriers used to designate the boundaries of posted Radiological Areas shall be yellow and magenta. Construction fences are physical barriers and need not be yellow and magenta.

NOTE: All Work Areas shall be barricaded with the appropriate material and proper signage. Stepping over or ducking under barricades is prohibited. Barricades shall be maintained at all times while in use.

6.11 MOTOR VEHICLES AND HEAVY EQUIPMENT

KRCEE shall ensure that all operators of motor vehicles have a current and valid state driver's license. KRCEE shall also ensure that before an operator uses equipment onsite, he/she shall furnish DOE documentation validating that the operator(s) have been certified and/or qualified to operate each piece of heavy equipment. KRCEE must submit this documentation before the Employee performs the work.

KRCEE shall be responsible for the safe operation of all vehicles and heavy equipment operated by KRCEE personnel and contractors. Drivers and/or operators of vehicles and heavy equipment shall use caution when operating in close proximity to other equipment and tools (e.g., power lines, vehicles, heavy equipment, scaffolding, hoses, cords, etc.).

Note: Although not anticipated as part of the Real Time Demonstration Project, KRCEE shall identify current manufacturer and industry consensus standards and regulations regarding safety features and safe operation of any specialty equipment, i.e., drill rigs, proposed for use at the Site. DOE may request that KRCEE submit a comparison of equipment against current manufacturer and industry consensus safety standards. This comparison submittal would identify any non-conformances of KRCEE equipment and necessary compensatory measures to support safe use of equipment. Equipment manufactured prior to the publication of current safety standards may be accepted for use if DOE assessment concurs that operational and administrative controls will achieve comparable level of protection.

Drivers shall be responsible for the safety of all passengers and the stability of materials being hauled. Personnel shall not mount or dismount moving vehicles. Personnel shall not ride in the bed of any vehicle. Vehicles used to transport Employees shall have seats firmly secured and adequate

for the number of Employees to be carried. The use of seat belts shall be mandatory when operating or riding in vehicles.

Rubber-tired heavy equipment shall not be left running unless the wheels are chocked and the parking brake set.

All blades and buckets shall be lowered when the operator leaves the cab unless physically locked or properly blocked. Workers may not work under or between machinery, equipment, or parts of machinery or equipment until the material is physically blocked or otherwise supported.

Heavy equipment shall be maintained in proper operating condition at all times and shall be equipped with Roll-Over Protective Structure (ROPS) cabs as identified by 29 CFR 1926.1000. Operators shall be trained in the proper method of working on slopes.

All heavy equipment with ROPS cabs shall be labeled as required by 29 CFR 1926.1000. Seat belts shall be used in all equipment when installed by the manufacturer. All heavy equipment shall be equipped with functioning back-up alarm systems that are clearly audible above surrounding noise. Motion alarms shall be used as applicable.

KRCEE shall identify any modifications made to equipment and furnish to DOE evidence that the modification was made by the original equipment manufacture or that the original equipment manufacture has approved the modification. Any identified modifications to equipment must be justified by the KRCEE (in writing) as having been made by the manufacturer or manufacturers approval for modification by an outside source. Defective equipment that could potentially endanger personnel or the environment shall be tagged defective and immediately repaired or removed from service. All machinery shall be subject to inspection by DOE. Operators/owner's manuals must be available for DOE review upon request. Strict adherence to the owner's manual is required. All operators shall review and understand the operator's manual. Equipment may not run over hoses, grating covers, debris, or other similar material. Caution must be used in operating equipment around scaffolding and other elevated platforms or in proximity to power lines or other utilities. If the task requires equipment to operate around elevated platforms, a "Safe Zone" must be designated around the elevated platform using tape barricade or other type of warning system.

Oils or other fluids (except water) that leak onto the ground shall be cleaned up by KRCEE, and the contaminated soil shall be disposed of in accordance with Attachment 2 Part II, Section 10.8.2.

All equipment is designed for a particular function and shall be operated according to the manufacturer's recommendations and within the manufacturer's limitations. All equipment must have its operating manuals with it upon arrival to the Site. The manuals must match the equipment and KRCEE's operating procedures should be consistent with the manufacturers guidance.

6.12 EXCAVATION/PENETRATION ACTIVITIES

All Work involving exterior excavation/trenches or penetration into the earth surface, concrete, or pavement and interior surface penetrations in building walls, floors, and ceilings shall be conducted in accordance with DOE's Prime Contractor Procedure, "Excavation/Penetration Permit." An excavation permit shall be required for all excavation/penetration activities except as exempted by the procedure. Permits may be obtained by submitting a request to DOE. Requests for permits shall be made at least two days in advance. KRCEE shall conduct appropriate field surveys to assist in identifying concealed utilities as required by the permit.

6.13 TRAFFIC CONTROL

KRCEE shall be responsible for orderly traffic control on the Jobsite. All traffic control measures on Site roadways shall be in accordance with applicable DOE requirements, state regulations, and Transportation Department regulations for use of flagmen, construction barriers, and appropriate distance requirements. KRCEE shall provide traffic signs and/or signalmen where and when necessary to protect personnel. Speed limits will be imposed as conditions dictate. Speed limits shall be obeyed at all times.

Alterations to or blockages of vehicular or pedestrian traffic routes may interfere with existing or planned activities, fire protection requirements, or emergency response actions. KRCEE shall develop a traffic control plan whenever streets, parking areas, or pedestrian walkways must be closed or have restricted access. KRCEE shall submit the plan to DOE for review 5 days prior to implementation of proposed changes. Any modifications to the plan shall be reviewed by DOE.

The traffic control plan shall describe the nature of the change, identify the areas affected, and utilize a map to clearly show planned alterations to existing traffic patterns. The plan shall list the beginning date and time that changes will be enacted and the duration. The plan shall identify whether a flagman will be necessary and shall describe the type(s) of barrier, rope, flagging, and signs to be used.

6.14 CLEARING AND GRUBBING

Reserved.

6.15 ELECTRICAL TRANSMISSION LINES

As required in OSHA 29 CFR 1926.950, any overhead wire shall be considered to be an energized line unless the person owning such line or the electrical utility authorities indicates that it is not an energized line, and it has been visibly grounded.

All parts of cranes, excavators, lift trucks, trucks with dump bodies, or other lifting equipment working in the area of energized overhead electrical lines shall maintain a minimum clearance of 10 ft from such lines. A person shall be designated to observe equipment clearance and give timely warning of all operations where it is difficult for the operator to maintain the desired clearance by visual means.

7. MEDICAL SURVEILLANCE PROGRAM

7.1 GENERAL MEDICAL SURVEILLANCE PROGRAM

KRCEE shall specify in its ES&H Plan the site-specific medical surveillance requirements for workers and visitors. At a minimum, KRCEE's medical surveillance program must meet the requirements set forth in DOE medical surveillance requirements and the minimums established in relevant Work Smart Standards. This includes applicable sections of DOE Order 440.1A, Chapter 19 as described in section 7.3 below.

KRCEE's medical surveillance program shall specify site-specific bioassay requirements to identify and quantify exposure to nonradiological hazardous chemicals. KRCEE's site-specific bioassay requirements shall define which types of bioassay are required (other than radiological bioassays) for specific tasks or Site conditions and shall include:

- requirements for baseline bioassays,
- provisions for adherence to bioassay requirement stipulated by radiological protection personnel,
- frequency of routine bioassays,
- special bioassay requirements, and
- closeout bioassays.

KRCEE shall provide personnel who meet the medical surveillance requirements outlined above. KRCEE shall furnish to DOE certifications that all personnel working on sites for which KRCEE is responsible are current in their medical qualifications. The submittal of this information is required for the initial employees assigned to the Work and any new employees there after. Submittals will not be required for updates, however, information must be maintained by KRCEE for DOE review.

NOTE: KRCEE is responsible for maintaining employees' records.

7.1.1 Respirator Medical Monitoring Requirements

Although not anticipated as part of the Real Time Demonstration Project, any KRCEE or its subcontractor personnel wearing respirators during the course of the Subcontract shall participate in a medical surveillance program that meets the requirements of OSHA 29 CFR 1910.134, *Respiratory Protection*. This regulation requires an evaluation by a physician or other licensed health care professional (PLHCP) to determine what physiological and psychological conditions are pertinent to wearing respirators and whether an individual is medically suited to be assigned to a task requiring a respirator. This determination can be made by: (a) review of responses to a medical questionnaire in accordance with Appendix C of the OSHA 29 CFR 1910.134 standard and (b) a physical examination when deemed necessary by PLHCP. A written opinion signed by PLHCP shall state whether or not the individual evaluated is medically qualified to wear respiratory protection. The opinion shall also include a description of any recommended work limitations placed on the individual as a result of medical conditions detected from the evaluation. Evaluations shall be provided more frequently under the following circumstances;

- if determined necessary by PLHCP,
- if an employee is injured or becomes ill or develops signs or symptoms possibly due to an overexposure;
- if an individual develops a condition that may affect his/her ability to wear a respirator, such as respiratory or cardiovascular disease, diabetes, fear of tight or enclosed spaces, ruptured eardrum, defective vision, etc.; and

- as soon as possible following an emergency incident.

7.2 MEDICAL SURVEILLANCE PROGRAM FOR HAZARDOUS WASTE WORKERS

KRCEE personnel who will be required to work in areas that are within the scope of 29 CFR 1910.120 or 29 CFR 1926.65 shall participate in the KRCEE medical surveillance program designed to meet the requirement set forth therein. Certification means that KRCEE personnel have been examined by a licensed physician within the past year and are deemed medically and physically fit for work up through level B on a hazardous waste site. Although not anticipated as part of the Real Time Demonstration Project, if it is anticipated that Level A Work will be performed within KRCEE's scope, the examination should address fitness to that level. KRCEE is responsible for maintaining the physician's statements for each employee. The physician's statement shall be based on a medical examination, which, at a minimum, meets the criteria specified by KRCEE's ES&H Plan and OSHA 29 CFR 1926.65(f). The certifications shall be submitted a minimum of 7 days before mobilization. For personnel added after commencement of Work, the certification shall be submitted before site-specific training is provided.

The information and certifications required above shall be provided on the Training/Medical Surveillance Certification Report; one certification form must be submitted initially for each employee and any new employee there after. Each form must be reviewed by KRCEE's ES&H Site Representative and signed by a commitment authority for KRCEE; each must also be notarized. KRCEE is responsible for maintaining the actual documentation that supports this certification (i.e., training certificates, physician's statements, etc.) as part of its site files. These files are subject to verification by EOE at any time.

7.3 OCCUPATIONAL MEDICAL REQUIREMENTS

KRCEE and KRCEE subcontractors shall have a formal written medical surveillance program detailing the methods and procedures used to implement the occupational medical requirements necessary for worker protection and the promotion of a healthful work environment shall be established, maintained, reviewed, and updated. The medical surveillance program shall provide occupational health services to all employees as required and as appropriate. The goal of these services shall be the earliest possible detection and mitigation of occupational injury and illness.

Employee health examinations shall be conducted by an occupational health examiner under the direction of a licensed physician in accordance with current sound and acceptable medical practices. The content of health examinations shall be the responsibility of the medical provider responsible for the delivery of medical services. The following classes of examinations are required for the purpose of providing initial and continuing assessment of employee health as determined by the medical provider responsible for the delivery of services:

- Preplacement in accordance with the Americans with Disabilities Act (42 United States Code 12101),
- Qualification examinations,
- Fitness for duty,
- Medical surveillance and health monitoring,
- Return to work health evaluations.

KRCEE and KRCEE subcontractors medical provider shall be informed of all job transfers or major assignment changes and shall determine whether a medical evaluation is necessary. The medical provider responsible for the delivery of medical services shall inform KRCEE and KRCEE subcontractors management of appropriate employee work restrictions.

KRCEE's medical surveillance program shall also take into consideration the responsibility for the review of all monitored care of ill or injured employees to maximize their recovery and safe return to work, and to minimize lost time and associated costs. KRCEE and KRCEE subcontractors shall notify their medical provider responsible for the delivery of medical services when an employee has been absent because of an injury or illness for more than 5 consecutive workdays or experiences excessive absenteeism.

8. ES&H TRAINING AND QUALIFICATIONS

The following ES&H training requirements apply to KRCEE personnel, including KRCEE subcontractors. KRCEE shall be responsible for providing the appropriate ES&H training for its employees and maintaining the appropriate records. KRCEE shall also ensure that its subcontractors comply with these requirements. KRCEE shall provide, upon request, copies of any and/or all training documents or certifications to DOE.

8.1 GENERAL TRAINING REQUIREMENTS

8.1.1 Radiation Safety Training

All KRCEE and KRCEE subcontractor personnel who will work in Radiologically Controlled Areas shall meet the training requirements described below. DOE and PRS shall be responsible for all training necessary to implement the RTD.

Refer to Part I, Section 3.11 of Attachment 1 for information about Radiation Safety Orientation, Site Access Orientation, Park Worker Training, and General Employee Training. This section discusses Radiological Worker I and II Training.

The attached training matrix defines when Radiological Worker I and II Training are required and specifies when escorts can be used in lieu of training. Whenever Radiological Worker I or II Training is required, this training must be completed before unescorted access is allowed and before unescorted assignments as a Radiological Worker are performed. In extreme situations, workers without Radiological Worker I or II Training may be allowed to perform escorted assignments. Contact the DOE for approval.

The time interval to conduct retraining may be extended by a period not to exceed 30 days to accommodate scheduling needs. Individuals may satisfy required training and retraining by demonstrating knowledge and understanding of the subject by written examination or demonstration, as applicable. Proof of test-out shall consist of a record of completion of DOE's computer-based training.

DOE's Prime Contractor uses the DOE Core Radiological Worker Training material which is commensurate with risks of radiation exposure encountered on DOE Radiation Projects. Radiological Worker Training consists of three parts: Core academic (classroom or web-based) training; site-specific training; and Practical Factors Training (PFT). Radiation Worker Training I is for workers who will be exposed to radiation hazards and not to contamination hazards. Radiation Worker Training II is for workers who will be exposed to radiation and contamination hazards. In addition to the requirements outlined in this section, individuals must comply with the Radiation Work Permit (RWP) or other authorization, training requirements, radiological posting, and posting inserts such as: "Contact HP Prior to Entry," "RWP required," or "Contact HP Prior to Disturbing Soil."

Workers who complete Radiological Worker I or II Training at another DOE site or facility will be required to complete DOE's Radiation Worker Site Specific Training and PFT. Radiological Worker Core Academics (classroom or web-based) Training (Radiation Worker I or II) not specific to a given site or facility will be waived provided the following are met:

- The training has been received at another DOE site or facility within the past 24 months.
- There is proof-of-training in the form of a certification document containing the individual's name, date of training, specific topics covered, the location where the training was provided, and an appropriate official has certified the training of the individual. Acceptable proof that Radiological Worker Training has been completed is a submittal of photocopies of "Certificates of DOE Core Radiological Training," signed by the person providing the training. The following statement (or equivalent) must be on the card: "This card certifies that the employee whose name appears on the face of this card has successfully completed the stated core training course. This is subject to limitation of this specific training as identified in DOE Implementation Guidance Manuals. The attachments contains an optional form of acceptable proof of completion of Radiation Worker Training I or II Core Academics (classroom or web-based) Training.
- The individual completes DOE Radiation Worker Site Specific and PFT from a source acceptable by DOE.

Radiation Worker Site Specific Training consists of site-specific information. This program is provided by the DOE to KRCEE and KRCEE subcontractors Workers who complete Radiation Worker Training I or II at another DOE site or facility will be required to complete Radiation Worker Site Specific Training.

Each individual shall demonstrate knowledge of training content by successful completion of PFT. PFT consists of a program where workers learn how to properly don and doff radiological personal protective apparel. Workers also learn the proper protocol for entering and exiting radiological areas.

The following is applicable DOE Policy:

- When an escort is used in lieu of training, the escort SHALL have completed radiation safety training, examinations, and performance demonstrations required for entry to the area and performance of the work, and ensure that all escorted individuals comply with the documented Radiation Protection Program.
- Radiation Worker Training I is required for unescorted access into Radiological Buffer Areas for radiation, Radiation Areas, Radioactive Material Areas, and Radioactive Storage Areas. Radiation Worker Training I does not qualify individuals to perform work such as opening containers having potential for loose radioactive material/contamination.
- Radiation Worker Training II incorporates Radiation Worker Training I and is required for unescorted access to High Radiation/Very High Radiation Areas, Contamination/High Contamination, Radiological Buffer Areas for contamination or Contamination Control Zones, and Airborne Radioactivity Areas. Radiation Worker Training II qualifies individuals to access areas and perform work where there is potential for radiation and contamination exposure (e.g. opening containers having potential for loose radioactive material).
- Individuals not qualified with Radiation Worker Training II shall not enter Airborne Radioactivity Areas, High Contamination Areas, High Radiation Areas or Very High Radiation Areas under any circumstances. Individuals may enter other Radiological Areas provided that they have a

minimum of RSO or SAO and are continuously escorted by a Radiological Worker and perform no hands-on work activities.

Minors are prohibited from entering all Radiological Areas.

8.1.2 Hazardous Waste Operations Site Worker Training Requirements

KRCEE and KRCEE subcontractor personnel who will be required to work in areas that are within the scope of 29 CFR 1910.120 shall meet the applicable training requirements. KRCEE shall certify that KRCEE and KRCEE subcontractor personnel who will work onsite have previous education, training, experience, and/or attendance at training courses sufficient to meet the requirements of 29 CFR 1910.120(e). The certifications shall be submitted to DOE a minimum of 7 days before mobilization. For personnel added after commencement of Work, the certification shall be submitted before site-specific training is provided. KRCEE and KRCEE subcontractor personnel shall receive up to 8 hours of site-specific training, provided by DOE, before beginning Work onsite.

Specific HAZWOPER training requirements include but are not limited to those outlined below. DOE shall make available HAZWOPER training to KRCEE and KRCEE subcontractors.

8.1.2.1 Hazardous Waste Operations Site Worker 40-Hour Training Requirement

General site workers (such as equipment operators, general laborers, and supervisory personnel) engaged in hazardous substance removal or other activities that expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction offsite, and a minimum of three days actual field experience under the direct supervision of a trained experienced supervisor.

8.1.2.2 Hazardous Waste Operations Site Worker 24-Hour Training Requirements

Workers on site only occasionally for a specific limited task (such as, but not limited to ground water monitoring, land surveying, or geophysical surveying), and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction offsite, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Workers regularly onsite who work in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, shall receive a minimum of 24 hours of instruction offsite, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Workers with 24 hours of training who are covered by the paragraphs in 8.1.2.2 of this section, and who become general site workers or who are required to wear respirators, shall have the additional 16 hours and two days of training necessary to total the training specified in paragraph 8.1.2.1 of this section.

8.1.2.3 Management and Supervisor Training

Onsite management and supervisors directly responsible for or who supervise employees engaged in hazardous waste operations shall receive 40 hours initial and three days of supervised field experience (the training may be reduced to 24 hours and one day if the only area of their responsibility is employees covered by the paragraphs in 8.1.2.2 and at least eight additional hours of specialized training at the time of job assignment on such topics as, but not limited to, the employer's safety and health program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques.

8.1.2.4 HAZWOPER Refresher Training

Eight hours of HAZWOPER refresher training are required annually for all applicable personnel. KRCEE shall be responsible for providing this training.

8.1.3 Hazard Communication Program and Training

As required in OSHA 29 CFR 1926.59, all personnel exposed to materials shall be trained in the use of the materials, PPE required, and the emergency procedures associated with the materials they will be expected to use. All personnel shall be trained and shall know the location of their company's written Hazard Communication Program and have access to MSDSs and DOE's MSDSs for all materials to which they may be exposed. To evaluate the effectiveness of the KRCEE Hazard Communication Program, DOE will conduct periodic inspections and will ask KRCEE personnel questions about the materials they are handling.

8.1.4 Lockout/Tagout Hazardous Energy Control Training

KRCEE shall have employees capable of working in areas with energy sources, regardless of the type of work, who are trained in DOE's Prime Contractor Lockout/Tagout Program. KRCEE personnel shall attend a training session before performing Work.

8.1.5 Trenching and Excavation Training

As required by OSHA 29 CFR 1926.650, KRCEE and KRCEE subcontractor shall have employees designated as competent persons, where applicable, for the purpose of determining the safety and stability of excavations. In addition, special training and/or experience that qualifies each individual as a competent person shall be documented.

8.1.6 Site Visitor Requirements

Personnel (visitors) who will not perform hands-on work will not be required to complete HAZWOPER training. Visitors are required to remain outside restricted areas, to be escorted 100% of the time when in Radiological Areas, and to read and sign a visitor site-orientation form. Visitors shall not enter Airborne Radiological, High-Contamination, High-Radiation, or Very High-Radiation areas under any circumstances.

8.1.7 Other Substance or Hazard-Specific Mandated Training

KRCEE and KRCEE subcontractor personnel must also complete any other training that may be required by OSHA substance or hazard-specific standards or applicable Work Smart Standards before initiating Work that may fall within the Scope of Work.

9. WORK ZONE EXIT REQUIREMENTS, DECONTAMINATION, AND CLEANING

9.1 Additional Requirements for PCBs

KRCEE is not responsible for PCB environmental compliance. PRS shall be responsible for all environmental compliance requirements.

10. EMERGENCY RESPONSE

10.1 EMERGENCY PLAN

An emergency plan (an element of KRCEE's ES&H Plan) shall be developed and implemented by KRCEE describing KRCEE response plans for anticipated emergencies. The plan shall be in accordance with 29 CFR 1910.134, 29 CFR 1910.38, and 29 CFR 1910.120 (l), (1), (2), (3). The plan shall include facility maps clearly indicating evacuation routes, the location of fire extinguishers, the location of spill response equipment, and other critical information.

KRCEE shall agree to operate under its Emergency Management Plan and implementing procedures and any applicable site-specific plans to ensure consistent implementation of emergency response, including notification, reporting, and recovery. Requests for emergency response assistance shall be directed to PSS/LSS. Additional notifications shall be made to DOE. The DOE Manager of Projects will be responsible for classifying the event and all reporting requirements. DOE and PRS shall assist KRCEE in addressing emergency response requirements.

10.2 FIRST AID/MEDICAL CARE FOR INJURIES

KRCEE shall ensure that at least one KRCEE Employee on the Jobsite, per shift, has current first-aid and CPR training as required by 29 CFR 1926.50(c), *Medical Services and First Aid*. In the event of an accident involving personal injury or illness, minor first aid treatment shall be administered by KRCEE. The name of the KRCEE medical response designee shall be submitted to DOE. First aid and CPR training documentation shall be available to DOE upon request.

KRCEE shall maintain the capability to make emergency calls to designated DOE ambulance services at all times. In most circumstances, an injured person will be taken to the designated DOE medical facility. However, the medical provider may determine that another medical facility may be better suited to treat the individual based on the nature of the injury or illness.

10.3 HEAT/COLD STRESS

In the event of a heat-related illness, protective clothing shall be removed and the worker relocated to a cool location for administration of first aid. Medical assistance shall be requested immediately if heat stroke is suspected or if symptoms persist after first aid is administered.

Cold-related injuries range from frostbite to hypothermia. Victims should be moved to a warm place, and affected parts should be gently warmed by submersing them in warm water.

10.4 FIRES (PROTOCOL)

If a fire occurs in an area where combustible or flammable materials are present, the first action shall be evacuation of all personnel from the area to a remote location upwind of the fire. DOE will provide a site map of emergency rally points applicable to this Agreement. The onsite fire department shall be notified immediately and dispatched to the scene. Only those personnel trained in the use of fire extinguishers will be permitted to fight fires and then only in limited situations, such as small fires in uncontaminated areas where flammable liquids are not stored. Roll calls shall be made at designated rally points to verify that all persons have been accounted for. DOE shall be immediately notified of any unaccounted-for personnel.

10.5 INCLEMENT WEATHER

In the event of tornado or severe thunderstorm warnings or the threat of other severe weather conditions, KRCEE shall immediately perform those tasks necessary to stabilize the Work Site and proceed to shelter. In the event of substantial damage due to inclement weather, KRCEE shall be responsible for accounting for its personnel. DOE shall be immediately notified of any unaccounted-for personnel.

10.6 NOTIFICATION

KRCEE shall promptly notify the DOE and the PSS/LSS of any emergency conditions, personal injuries, or other unusual events that result in or could have resulted in personal injury, environmental releases, or property damage.

To ensure immediate notification for reporting of emergencies, KRCEE shall provide radio, telephone, or other reliable means of contact for its personnel working on project.

For emergency conditions not directly involving KRCEE's Work Area, KRCEE shall comply with direct verbal communication or two-way radio communication from DOE.

10.7 UNUSUAL OCCURRENCE - RESERVED

10.8 CONTINGENCY PLAN FOR SPILLS

10.8.1 Spill Notification

If unidentified or unanticipated substances are released during activities, KRCEE shall cease operations and call DOE and the PSS immediately.

Regarding spill notification for water treatment plants, upon discovery of any spill or leak of process water, water treatment chemicals, or other hazardous materials, the applicable access control monitor shall be immediately notified of the following information:

- materials involved,
- estimated quantity,
- location,
- affected personnel, and
- other hazardous conditions.

An effort to shut down the system shall be made, as applicable, and response measures shall be implemented provided that no unprotected exposures occur. A telephone call list shall be maintained at the access control point for emergency notification. DOE and/or the PSS/LSS shall notify designated individuals for response by DOE's Emergency Response Team for spills or leaks of acids or bases (approximately one gallon or more) or any large area spill of process water outside of the bermed area of the water treatment plants.

In the event of accidental exposure to hazardous chemicals or radioactive materials, appropriate emergency response action will be taken to remove the contaminated clothing. An emergency shower and eyewash station will be used to flush exposed skin and eyes, respectively. This equipment shall be maintained in a readily accessible location adjacent to the active Work Area. As a back-up, the Work Zone showers may be used for emergency decontamination.

If an acute exposure to airborne chemicals occurs or is suspected, and the affected individuals are unable to escape from the Work Area, KRCEE shall immediately notify DOE and the PSS/LSS for onsite and offsite assistance. No rescue operations shall be performed unless the rescuers are properly suited in Level B (self-contained breathing apparatus) protection.

10.8.2 Response Procedures

Procedures for response to spills of hazardous material shall be developed in coordination with DOE's procedures. The procedures are available to KRCEE on request. All spills of hazardous material must be properly cleaned up and disposed of. KRCEE shall also be responsible for disposal of any material generated from a spill, unless otherwise directed by DOE's STR.

10.9 EQUIPMENT AND SERVICES

Appropriate equipment and services shall be available to respond promptly to emergency events involving personal injury or other emergency situations.

An inventory list describing the minimum emergency response and spill equipment to be supplied by KRCEE and made available for emergency use is defined as follows [insert applicable equipment]. These items shall be maintained in an accessible location near the Work Area and may be inspected by DOE.