NOT MEASUREMENT SENSITIVE

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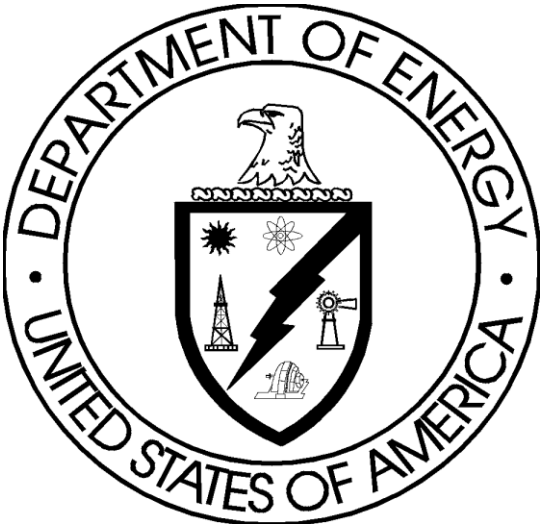
Worker Safety and Health Program for DOE (Including the National Nuclear Security Administration) Federal and Contractor Employees

[This Guide describes acceptable, but not mandatory means for complying with requirements. Guides are not requirements documents and are not to be construed as requirements in any audit or appraisal for compliance with associated rule or directives.]



U.S. Department of Energy
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Forward

This document was developed to assist the Department of Energy (DOE or the Department) Federal and contractor employees in effectively developing, managing, and implementing a worker safety and health program. Included in this document are generally acceptable best practices used at DOE, DOE sites and private industries to establish efficient and effective worker safety and health programs. The guidance provided in this document allows for tailoring of safety and health programs to effectively implement safety and health at every organizational level and to integrate safety and health and other related site-specific worker protection activities into an integrated safety management system. This Guide DOES NOT ESTABLISH REQUIREMENTS.

CONTENTS

1. INTRODUCTION

The following description of DOE Guides is contained in DOE Order 251.1C, *Departmental Directives Program*:

Guides

(1) Provide an acceptable, but not mandatory means for complying with requirements of an Order or rule. Note: Alternate methods that satisfy the requirements of an Order are also acceptable. However, any implementation selected must be justified to ensure that an adequate level of safety commensurate with the identified hazards is achieved.

(2) Are documents prepared by an OPI (Office of Principle Interest), issued by the Office of Management and developed using Process #1 outlined in Appendix A to this Order.

(3) Cannot be made mandatory by reference in an Order, Notice, appendix to a directive, or Technical Standard.

Guide describes suggested nonmandatory approaches for meeting requirements in DOE Orders or Rules. Therefore, Guides are not requirements documents and cannot be construed as requirements in any audit or appraisal for compliance with the parent document.
Worker Protection Programs are required for both DOE Federal employees (DOE Order 440.1B, *Worker Protection Program for DOE (including the National Nuclear Security Administration) Federal Employees,* and DOE contractor employees (Title 10, Code of Federal Regulations, Part 851 (10 CFR 851 or the Rule), (*Worker Safety and Health Program*). These programs establish a comprehensive worker protection program that reasonably ensures that all DOE employees are afforded a level of safety and health on the job that is at least equal to that provided to private-sector employees under the jurisdiction of the Occupational Safety and Health Administration (OSHA). This Guide provides information that may be useful in the development of a Worker Protection Program to meet the requirements established in either DOE O 440.1B or 10 CFR 851.

Notwithstanding any other provisions in this guide, employees are reminded of the requirements set forth in DOE O 221.1A, *Reporting Fraud, Waste and Abuse to the Office of Inspector General*, and DOE O 221.2A, *Cooperation with the Office of Inspector General*.

(a) DOE Order 440.1B

DOE Order 440.1B establishes the framework for providing DOE Federal workers with a safe and healthful workplace through an effective safety and health program that will reduce or prevent accidental losses, injuries, and illnesses. It requires the integration of the requirements of a Federal Employee Occupational Safety and Health (FEOSH) Program found in 29 CFR 1960, *Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters.*

The Order applies to all activities (which may include design, construction, operation, maintenance, decontamination and decommissioning, research and development, and environmental restoration activities) performed by DOE Federal employees. The Order does not apply to the Naval Nuclear Propulsion Program; activities conducted under the Nuclear Explosives and Weapons Safety Program relating to the prevention of accidental or unauthorized nuclear detonations to the extent a requirement under this part cannot be implemented for a particular facility in a manner that does not compromise the effectiveness of such activities; and activities conducted by Bonneville Power Administration as authorized by Delegation Order No. 00-033.00A.

(b) Title 10 CFR 851

Section 234C of the Atomic Energy Act requires DOE to promulgate worker safety and health regulations applicable to DOE contractors. DOE promulgated 10 CFR 851 which replaced the Contractor Requirements Document of DOE O 440.1A, and established safety and health requirements that a DOE contractor must implement through a Worker Safety and Health Program (WSHP) that provides its workers with a safe and healthful workplace in which workplace hazards are abated, controlled or otherwise mitigated to reasonably assure workers are adequately protected from recognized hazards.

10 CFR 851 applies to the conduct of contractor activities at DOE sites including sites that are the responsibility of DOE's NNSA. A contractor means any entity under contract with DOE, or a subcontractor to such an entity at any tier, and includes any affiliated entity such as a parent organization. (See section 2 of this document for clarification of the definition of contractor.) These activities should include design, construction, operation, maintenance, decontamination and decommissioning, research and development, and environmental restoration activities performed by DOE contractors (and their subcontractors) at covered workplaces. A covered workplace is a place at a DOE site where work is conducted by a contractor to further a DOE mission.

The Rule does not apply to an organization that is working at a DOE site that is regulated by OSHA. Examples of these types of organizations are other federal organizations and organizations conducting work on a DOE site under a Community Re-Use arrangement. DOE contractors should brief the OSHA covered organization's representatives on the site hazards and the contractor's worker safety and health program prior to the commencement of work for the protection of those workers and to avert those workers from creating hazards to DOE contractor workers. 10 CFR 851 does not apply to:

- DOE sites that are regulated by OSHA;
- Radiological hazards or nuclear explosives operations to the extent regulated by 10 CFR Parts 20, 820, 830 or 835;
- DOE activities performed away from a DOE site;
- Transportation activities to and from a DOE site; or

- DOE Federal employees

The Rule excludes radiological hazards to the extent they are already regulated by the DOE nuclear safety requirements in 10 CFR parts 820, 830, and 835. These existing rules already deal with radiological hazards in a comprehensive manner through methods such as the Quality Assurance Program Plan, the Safety Basis, the Documented Safety Analysis, and the Radiation Protection Program Plan. (The Rule does not exclude non-ionizing radiation.)

The Rule clarifies that the Chronic Beryllium Disease Prevention Program (CBDPP), required by 10 CFR 850, is an integral part of the WSHP for contractor employees. In addition, to ensure consistency, 10 CFR 850 was amended to clarify that the CBDPP supplements the WSHP under Part 851 and the CBDPP is enforceable upon DOE contractors under 10 CFR 851. Title 10 CFR 850 applies to DOE Federal employees separately from 10 CFR 851.

Enforcement provisions established in Section 10 CFR 851.5 allow DOE to employ either civil penalties or contractual mechanisms, such as reduction in fees, when a contractor fails to comply with the provisions of that rule. See Office of Enforcement's Enforcement Program Plan, available from a link at http://www.hss.doe.gov/enforce/index.html, for additional guidance on enforcement of the 10 CFR 851.

DOE Rules, Orders, and Standards change over time, so DOE elements should keep up to date with those changes.

2. Definitions

A discussion of several key terms is provided below. The terms that are undefined in this document but are defined in the Atomic Energy Act (AEA) of 1954 have the same meaning as under that Act.

2.1. Closure Facilities

A closure facility is defined as "a facility that is non-operational and is, or is expected to be permanently closed and/or demolished, or title to which is expected to be transferred to another entity for reuse." The head of the appropriate DOE field element is permitted, with the concurrence of the Cognizant Secretarial Officer, to accept hazard controls in closure facilities that are not otherwise fully compliant with 10 CFR 851. The closure facility provision may not be used to obtain relief from compliance unless the facility is non-operational. Closure facilities may include portions of facilities that are isolated from operations and meet the definition of a closure facility. A large canyon facility that is no longer operational as a whole but contains a small repackaging operation in an isolated area could have the nonoperational area defined as a closure facility. Closure facility would not apply to the operational portion of the facility. In facilities that are operational (and, therefore, are not closure facilities), contractors may apply for a variance to seek relief from the requirements of 10 CFR 851. In addition, contractors may use equivalencies granted by an Authority Having Jurisdiction (see section 6.4.1 of this document) when applicable to a requirement in a standard or code that contains the Authority Having Jurisdiction and equivalency provisions.

2.2. Closure Facility Hazard

Closure facility hazard refers only to those facility-related conditions within a closure facility involving deviations from technical requirements that would require costly and extensive structural and/or engineering modifications to be in compliance. Closure facilities may have other hazards in addition to closure facility hazards.

2.3. Contractor

2.3.1. Under Contract with DOE

A DOE contractor, as defined in 10 CFR 851 means any entity, including affiliated entities, such as a parent corporation, under contract with DOE, or a subcontractor at any tier that has responsibilities for performing work at a DOE site in furtherance of a DOE mission. This language dictates that a "DOE contractor," has a contract to perform services, as opposed to merely providing supplies. Consequently, a DOE contractor includes any contractor under a contract with DOE to perform services, or a subcontractor to such contractor, at any tier, that performs work at a DOE site in furtherance of a DOE mission." Size is not a relevant factor in determining whether an entity is a DOE contractor. Consequently, an individual can fit within the definition as readily as can a large corporation employing many thousands of people. The definition of contractor includes professional contractors, including entities with DOE contracts entered pursuant to § 8(a) of the Small Business Act, codified at 15 U.S.C. § 637 (a) (cf. 48 CFR Subpart 19.8) as well as all other types of contractual arrangements with those whom DOE has a direct contractual relationship for work to be performed at a DOE site.

The definition of contractor also may include other entities, such as parent companies of DOE contractors and subcontractors that have agreements that are contractual in nature with DOE or its contractors. Consult with DOE's Office of General Counsel/cognizant Office of the General Counsel (NNSA) to determine whether parties to agreements with DOE or DOE contractors are considered contractors. Confine requests to clarification of real situations since hypothetical situations are difficult to clarify conclusively.

2.3.2. Furtherance of a DOE Mission

The term in furtherance of a DOE mission means the contractor is doing work that DOE has authorized.

2.3.3. Vendors

Vendors, delivery persons and others who do not have service contracts with DOE, or who are not subcontractors to such contractors, are excluded and their employers are not required to develop and implement a DOE-approved WSHP.

2.3.4. Suppliers

Since suppliers would, at most, engage in no more than tangential work at a DOE site relating to delivery, installation or repair of their products, suppliers are not considered "contractors" under 10 CFR 851. Therefore, 10 CFR 851 does not apply to suppliers (who do not also have contracts with DOE to provide services at a DOE site).

2.3.5. Utility Providers

Utility providers, such as power or communications providers that may have power or communications lines installed on site to serve the facility, are covered under 48 CFR (FAR) Part 41, are not considered service contractors, and therefore not covered under 10 CFR 851. Utility providers operate under supply contracts rather than contracts for services. The fact that utility employees sometimes come on site to service such things as power or communications lines does not convert the contract into a service contract.

2.3.6. Commercial Items

Although the section-by-section discussion in the rulemaking promulgating 10 CFR 851 (71 6869) indicates that the definition of contractor does not apply to contractors or subcontractors that provide only "commercial items" as defined in the Federal Acquisition Regulations (FAR), The Rule, itself, does not explicitly address providers of only commercial items. The Rule's definition of contractor is the controlling definition in any contradiction with the FAR definition. Consult DOE's Office of General Counsel/cognizant Office of the General Counsel (NNSA) to clarify if an entity that provides items to DOE or DOE contractors is included in the definition of contractor. Confine requests to clarification of real situations since hypothetical situations are difficult to clarify conclusively.

2.3.7. Landlords of DOE Contractor Leased Off-Site Space.

Landlords of off-site space that is leased by DOE contractors for DOE work would not come under the definition of "contractor." These landlords provide a facility but do not perform work in furtherance of a DOE mission.

2.3.8. Universities or Other Recipients with DOE Cooperative Agreements

. Generally, cooperative agreements are transactions made pursuant to DOE's "financial assistance" regulation (10 CFR Part 600) and are not procurement contracts. However, it is possible that there are cooperative agreements that have some procurement contract terms. Those particular agreements (if they involve work at a DOE site) should be referred to DOE's Office of General Counsel/cognizant Office of the General Counsel (NNSA) for a case-by-case review to determine applicability.

2.3.9. Off-site Fire Departments

Off-site local government and volunteer fire departments provide fire protection and responsive services for some DOE sites. Some DOE sites use contracts with these groups to obtain fire protection and responsive services in which case those providers are contractors and subject to

the 10 CFR 851. The Rule would only apply to those services performed at a DOE site. Often there is some form of agreement other than a contract between DOE or a DOE contractor and the off-site fire departments in which case, depending on the terms of the agreement, those providers may not be considered contractors. DOE field offices may wish to evaluate if they are using the most appropriate arrangement for obtaining these services. DOE field offices may wish to consult DOE's Office of General Counsel/cognizant Office of the General Counsel (NNSA) if uncertain whether a particular agreement for fire and emergency services is tantamount to a contract and therefore within the scope of the regulation. Confine requests to clarification of real situations since hypothetical situations are difficult to conclusively clarify. DOE's Office of Enforcement addresses enforcement with respect to fire and emergency response services providers in their Enforcement Program Plan, available from a link at http://www.hss.doe.gov/enforce/index.html.

2.3.10. Academics Working On Site under Grants

College and university staff and students working at a DOE site under a DOE grant are not working under a service contract with DOE and are not, therefore, subject to the requirements of 10 CFR 851. DOE contractors should brief academic personnel on the workplace hazards and WSHP prior to commencement of their work in order to protect the academic personnel help those personnel avoid creating hazards to DOE contractor workers.

2.3.11. State and Municipal Highway Department

State and municipal highway departments on site to maintain roads passing through DOE property are not DOE contractors.

2.3.12. Work for Others

At DOE sites many individuals perform Work-for-Others (WFO) activities. These activities are performed under a contract with DOE to perform services at a DOE site in furtherance of a DOE mission and, therefore, individuals performing WFO activities are DOE contractors.

2.3.13. Other Federal Agencies

Federal agencies do not have contracts with DOE and, therefore, are not subject to the DOE's worker safety and health requirements. However, other Federal agencies are required under § 19 (a) of the Occupational Safety and Health Act of 1970 (OSH Act), codified at 29 U.S.C. § 668 (a) "to establish and maintain an effective and comprehensive occupational safety and health program" and to "provide safe and healthful places and conditions of employment" for their Federal employees. Federal Agencies ("except military personnel and uniquely military equipment, systems and operations") are also required by Executive Order 12196 to adhere to OSHA regulations promulgated for that purpose (see 29 CFR Part 1960) and may be subject to inspections by OSHA. Contractors working under contract with these agencies would be subject to OSHA unless they are subject to another Federal regulator (see OSH Act § 4 (b) (1), codified at 29 U.S.C. § 653 (b) (1): "Nothing in this Act shall apply to working conditions of employees with respect to which other Federal agencies, and State agencies acting under section 274 of the

Atomic Energy Act of 1954, as amended (42 USC 2021), exercise statutory authority to prescribe or enforce standards or regulations affecting occupational safety or health." Examples of non- DOE Federal organizations performing work on DOE sites include the Department of Homeland Security, the Department of Defense, the Department of Interior, and the Environmental Protection Agency. When a DOE contractor supports a non-DOE Federal organization pursuant to a contract with DOE on a DOE site, the contractor's work is covered by the Rule. (See section 2.3.12. *Work for Others*, above). When a non-DOE contractor is performing work for a non-DOE Federal organization on a DOE site, that contractor's work is not covered by the Rule. When a non-DOE Federal organization or its non-DOE contractor is performing work on a DOE site, DOE contractors should brief the non-DOE organizations' representatives on the site hazards and WSHP prior to commencement of their work in order to protect those organizations' workers and to avert those workers from creating hazards to DOE contractor workers.

2.3.14. Visitors at User Facilities

Many DOE sites host work that private organizations perform in DOE provided facilities. Those private organizations typically are not operating under a contract with DOE and therefore their activities and employees are not within the scope of 10 CFR 851. DOE contractors should brief the private organization's representatives on the workplace hazards and WSHP prior to commencement of their work in order to protect the private organization's workers and to avert those workers from creating hazards to DOE contractor workers.

2.4. Covered Workplace

2.4.1. DOE Property Leased for Private Sector Purposes

DOE sometimes leases to private sector organizations facilities on DOE property that are used by those organizations for their own purposes. Those facilities are not occupied by DOE contractors engaged in the furtherance of a DOE mission and, therefore, are not a DOE covered workplace.

2.5. DOE Site

DOE contractor workers often engage in activities in furtherance of DOE missions at locations that are not owned or leased by DOE. Those activities can be quite diverse, and may occur at other Federal and state facilities, private company facilities, educational facilities, in foreign countries, upon oceans and rivers, or at other locations. Even when such activities are in furtherance of DOE missions, most of these locations are not owned, leased, or controlled by DOE or its contractors and therefore these activities are not considered a DOE covered workplace. See section 2.5.2 of this document for information about what constitutes DOE control of an off-site location.

2.5.1. DOE Contractor-Owned or -Leased Off-Site Location

Space owned or leased by a DOE contractor for the conduct of DOE work is not a DOE site. However, space owned or leased by a DOE contractor for the conduct of DOE work that is

controlled by DOE is considered to be a DOE site. When DOE does not control the space, OSHA would regulate that space. See section 2.5.2 of this document for more information about DOE control of off-site locations.

2.5.2. Sites Controlled by DOE

"Sites controlled by DOE" refers to areas or locations at which DOE exerts some element of control over the area or location. Those areas could be outside of DOE-owned or -leased property.

DOE exercises its authority under the AEA

A number of DOE facilities have been identified as being under OSHA jurisdiction pursuant to a Memorandum of Understanding (MOU) between DOE and OSHA established in 1992 (see, e.g., 71 FR 36988, June 29, 2006). This list of facilities may be found in the Federal Register Notice / Vol. 65, No. 129 / Wednesday, July 5, 2000 or at http://www.hss.energy.gov/HealthSafety/WSHP/rule851/osha_doe_mou.html.

Other area or location controlled by DOE

This component of the definition of DOE site refers to locations controlled by DOE where activities and operations are performed at one or more facilities or places by a contractor in furtherance of a DOE mission. The fact that the contractor is performing DOE work is not sufficient to render the location a DOE site. DOE control of an area or location requires that two conditions be met:

The contractor is performing activities or operations in furtherance of a DOE mission; and
DOE exerts some element of control over the area or location.

In general, any work authorized by DOE and performed by a DOE contractor is in furtherance of a DOE mission. However, DOE control may be more difficult to determine. On the one hand, DOE may exert no control over a DOE contractor's arrangement for space in which case worker safety and health at that location would not be within the scope of 10 CFR 851. On the other hand, DOE may establish requirements for, and approve, a lease before the DOE contractor signs it in which case DOE exerts a significant level of control over that location and worker safety and health at that location is therefore within the scope of the Rule. Contractor activities within leased areas may not be within the scope of this Rule because they are not performing work in furtherance of a DOE mission or under the control of DOE. In these cases the Cognizant Secretarial Officers and the heads of the DOE field elements should consult DOE's Office of General Counsel/cognizant Office of the General Counsel (NNSA) to determine whether DOE can or should exercise the AEA authority for specific off-site facilities. This will also require coordination with Federal OSHA. Requests for clarification have to be real situations since it is not possible to conclusively clarify hypothetical situations.

Contractors should assume that their owned or leased space is within the scope of the Rule if DOE exerts any element of control of that space until the appropriate Office of General Counsel has made a ruling in order to assure proper protection of the DOE contractor's employees.

2.5.3. Contractor in Sold and Leased-Back

DOE sometimes sells property to a private company that constructs a building and leases it back to DOE for occupancy by DOE contractors. The construction of the building is not performed under contract with DOE, that work is not within the scope of 10 CFR 851 and, therefore, its provisions do not apply. Under these circumstances, Federal OSHA or the state regulatory agency operating under a Federal OSHA-approved state plan would have jurisdiction during construction of the building. Once the facility becomes a DOE-leased facility with DOE contractor employees working in the facility, the operations in the building would be within the scope of the Rule and, therefore, the Rule would apply. However, the rule does not apply to employees of the building owner or the employees of property management firms hired by the owner to operate and maintain the building.

2.6. Head of DOE Field Element

The Head of DOE Field Element is an individual who is the manager or head of the DOE operations office or field office/ site office (NNSA), or any official to whom the Head of the DOE Field Element delegates his or her functions.

2.7. Manager

Manager means the person that is directly responsible for the safety and health of DOE Federal or contractor employees while performing work at a DOE facility.

2.8. Worker

A worker, as defined in 10 CFR 851, is a person who performs work for or on behalf of DOE, including a DOE employee, an independent contractor, a DOE contractor or subcontractor employee, or any other person who performs work at a DOE facility.

3. Compliance Order

The authority to use compliance orders to stop work is independent from contract provisions. Compliance orders by the Secretary represent an exercise of AEA authority. DOE intends, however, that all mandated work stoppages (whether issued through a compliance order or as a result of the lack of an approved program) would be implemented in close coordination with the DOE field office and the contracting officer with proper consideration given to mission and safety critical operations and the continued safety of other workplace activities.

4. Informal Requests for Information

DOE's Office of Worker Safety and Health Policy, HS-11, develops and disseminates technical clarifications of DOE regulations and other worker protection standards. Contractors may request informal clarifications instead of applying to DOE's Office of General Counsel for binding interpretive rulings. Informal clarifications offer the benefit of a less formal process to obtain a quicker response. They are appropriate for issues involving clarification of how a

technical requirement applies in a specific case where the intent of the technical requirement is clear and well established. However, a binding interpretive ruling by the General Counsel would be more appropriate in situations where it is not clear how the requirement applies to a unique situation or workplace condition not specifically envisioned in the drafting of the regulation.

Informal information provided to a contractor would be non-binding on DOE in that DOE's Office of Enforcement may take enforcement action against the contractor if the contractor's actions are consistent with the informal information provided to the contractor, but the Office of Enforcement subsequently has determined do not meet the requirements.

The Occupational Safety and Health Regulatory and Policy Response Line has been established to provide information on technical safety and health requirements, requirements published by OSHA, and other adopted standards. Contractors who would like technical clarification beyond what is found in this document may submit a request to the Safety and Health Standards Response Line at http://www.hss.energy.gov/HealthSafety/WSHP/il/. This web site allows users to submit new requests as well as search for and access previous technical clarifications.

The responses through the Occupational Safety and Health Regulatory and Policy Response Line are advisory and not binding on DOE. In cases where the information is related to OSHA standards, the existing body of OSHA interpretations on these standards is reviewed. HSS also consults with OSHA representatives if OSHA interpretations do not address a unique DOE question or circumstance.

5. Program Requirements

5.1. General Requirement

It is the Department's policy to provide a safe and healthful workplace for both its Federal and contractor employees. This provision closely parallels OSHA's general duty clause established in Section 5(a)(1) of the OSH Act. Accordingly, in implementing this provision, DOE and its contractors should consider criteria similar to those established by OSHA for the implementation of the general duty clause. Specifically, in determining whether a workplace condition presents a recognized hazard that is causing or has the potential to cause death or serious physical harm to workers, contractors should consider whether:

- The condition presents a hazard to which workers are exposed (e.g., the hazard exists and workers are exposed to the hazard);
- The hazard is a recognized hazard (e.g., the hazard is identified and addressed in a recognized industry consensus standard, or other credible industry guidance or documentation);
- The hazard is causing or is likely to cause death or serious physical harm; and
- Feasible and useful methods exist to correct the hazard.

For DOE contractors, the terms "feasible" and "serious physical harm" are subjective terms the meanings of which depend on the specific context in which the terms are used. The meanings of these terms in a situation should be determined by DOE line management starting with the head

of the DOE field element and progressing to the Under Secretary depending on the impact of the meanings. DOE line managers should obtain input from safety and health professionals and other relevant subject matter experts in making their determinations.

Fundamental elements of the WSHP include:

- Establishing a written program with policy, goals, objectives, and performance measures;
- Using qualified staff;
- Assigning responsibility and holding personnel accountable;
- Encouraging involvement of workers;
- Ensuring workers' rights and informing workers of their rights and responsibilities;
- Identifying workplace hazards and evaluating risk of injury and illness;
- Preventing or abating workplace hazards;
- Providing worker protection training; and
- Complying with DOE-prescribed worker protection standards.

The Department recognizes that the requirements contained in DOE orders and rules provide the basic foundation for a WSHP and some managers may need or decide to go beyond the minimum requirements in establishing programs to protect workers from hazards associated with their activities. Decisions concerning implementation of worker protection measures should be based on the use of a graded approach to ensure that available resources are used most efficiently. The Department also recognizes that the WSHPs will be integrated into other related site-specific worker protection activities and with the integrated safety management system. The graded approach, or tailoring, refers to developing safety controls fitted to the hazards and the work.

The Heads of DOE Field Elements should review and approve contractors' WSHPs. A DOE Cognizant Secretarial Officer (CSO)/Deputy Administrator (NNSA) issued a Standard Review Plan for field offices to use in reviewing contractor submitted WSHPs. That Standard Review Plan is available at http://www.hss.doe.gov/healthsafety/wshp/rule851/plan_approval_main.html for other DOE elements to use as a model to develop their own review plans. Intuitively, the contractors should apply the review standard when preparing and evaluating their program. Equally important is the need for a coordinated review and approval required by 10 CFR 851, .11 (a) (2) (ii) for contractors. The approval document should include all associated Heads of Field Elements. Federal worker protection programs should use this or a similar approach for developing its programs and coordinating federal worker safety programs.

5.2. Written Program

The written program provides the methods for implementing the requirements. The program should describe an integrated management organization and support systems that fully satisfy DOE worker protection requirements of all technical disciplines. It should clearly convey the framework for the program and describe how the program works. All elements of the safety and health program should be included in, or explicitly referenced by, the written program. This

description should be a high level description of the program that gives the overall structure of the program and identifies the lower tiered and complimentary policies, programs, and procedures that, combined with the high level description, constitute the full program.

All contractors and subcontractors at any tier must be included in some fashion in an approved written WSHP. The components of the written program addressing subcontractors and small DOE contractors may be tailored to the hazards and complexity of the work and the capabilities of the subcontractor or small DOE contractor.

See section 8. of this document for more guidance on the integration of functional area requirements into the written program. The contractor should explain the relationship of other documentation that is not directly part of its WSHP but is relevant for integration of the program (e.g., policy, objectives, and operating procedures) and interfaces with other functions (e.g., finance, maintenance, quality, and security).

5.2.1. Methods of Complying

Contractors can use a variety of generic contract provisions tailored to the work, type and level of hazard, and capabilities, of their organization or their subcontractor's organization to provide a compliant WSHP for workers while minimizing administrative burdens.

5.2.1.1. Subcontractors

Prime contractors may find that including the subcontractor's safety and health program directly in their WSHP, or including it as a separate component embedded in their program, is an effective approach to ensuring that the WSHP for subcontractor workers is compatible with their program and is approved by DOE. Prime contractors are not prohibited from allowing subcontractors to submit their own WSHP to DOE for approval but this approach could result in potential discrepancies between the prime contractor's and the subcontractor's programs and potential confusion over DOE expectations since DOE holds the prime contractor responsible for the subcontractor's performance.

A subcontractor can be included directly in the prime contractor's WSHP, the prime contractor can require the subcontractor to prepare and submit a separate program that the prime contractor approves and includes in its submission to DOE, and the prime contractor can develop templates of generic programs tailored for different types of narrow-scope work that are pre-approved by DOE and require subcontractors to accept the relevant generic programs. For example, a prime contractor may have a generic safety and health program that is placed in all subcontracts for specialized radiation contamination surveys that is a component of the prime contractor's DOE-approved program. Each subcontract that contains this provision would not need additional DOE approval.

Prime contractor approval of subcontractors' programs signifies that the prime contractor is satisfied that all relevant requirements are met, but does not constitute approval by DOE. Only DOE can approve a prime contractor's or subcontractor's WSHP. Embedding in some fashion the WSHP that applies to subcontractors in the prime contractor's program allows a DOE-

approved program to cover both the prime contractor and subcontractors. Subcontractors must assure that their WSHP is approved by DOE either as part of the prime's approved program or as a separate program. Subcontractors may be subject to enforcement action for failure to comply with the regulation.

Although subcontractors at any tier are responsible for compliance with the requirements, it is important that prime contractors include provisions in their subcontract documents to ensure that subcontractors comply with the standards and the functional areas as well as other requirements that may be needed to protect workers but were not included in the requirements that flowed down from the prime contractor. The Department of Energy Acquisition Regulations (DEAR) clause 48 CFR 970.5223-1, *Integration of Environment, Safety and Health into Work Planning and Execution* at (h) states that regardless of the performer of the work, the prime contractor is responsible for compliance with the environment, safety and health requirements applicable to the contract. The prime contractor is responsible for flowing down the worker safety and health requirements applicable to the contract to subcontracts at any tier to the extent necessary to ensure the prime contractor's compliance with the requirements. Prime contractors determine which program requirements should flow down into contracts with their subcontractors and incorporate appropriate requirements. The prime contractor's WSHP should describe the approach and process used to flow down its relevant program requirements to subcontractors. All requirements must be met, regardless of whether the prime contractor or the subcontractor performs the actual worker protection activity. For example, a prime contractor may provide exposure monitoring and medical surveillance for the subcontractor, or the prime contractor may require the subcontractor to conduct its own exposure monitoring and medical surveillance.

The prime contractor ensures that the subcontractor's work is within its scope of work. Therefore, the prime contractor should inform the subcontractor of the hazards associated with the subcontractor's scope of work so that the subcontractor is able to provide or adopt a compliant WSHP. The prime contractor also must describe in its WSHP how the subcontractor's program meets the requirement. DOE looks to the prime contractor for ensuring compliance by its subcontractors at the site. If the subcontractor will work to its own WSHP, the prime contractor must review the subcontractor's program to verify consistency with the parent WSHP and should inform the subcontractor of the requirement for DOE approval of the subcontractor's program (either as a component of the contractor's program or as a separate program) and relevant enforcement provisions.

DOE prime contractors should note that all subcontractors and suppliers of an indemnified contractor are considered indemnified contractors, and as such may be subject to either civil penalties or contract-based reduction in payment or fees as set forth in 10 CFR 851.5. (As a practical matter, DOE cannot impose civil penalties for suppliers' failure to comply. See paragraph 2.3.4., *Suppliers,* of this document for more information about suppliers.) DOE will consider the specific circumstances in a given case to determine appropriate enforcement actions in cases involving contractors and their subcontractors.

Some subcontractors with narrow-scope work may decide to submit their own WSHP to DOE for approval. DOE elements may find it useful to have templates of generic WSHPs tailored for different types of narrow-scope work and have the subcontractors accept the relevant generic programs as a condition of their contract. Another option for subcontractors is for the subcontractor to submit to DOE for approval a program that is modeled on the relevant components of the DOE field office's FEOSH program. In this approach, the sub contractor would manage its own program that has components that were "cut and pasted" from the DOE FEOSH Program.

5.2.2. Worker Safety and Health Program Coordination

DOE elements, contractors and subcontractors must coordinate to ensure clear roles, responsibilities and procedures to achieve an integrated approach to ensuring the safety and health of the worker. When multiple contractors, subcontractors, and Federal organizations are working on the same DOE site, resolving safety and health issues between the organizations can be confusing. For this reason, clear statements of roles and responsibilities with respect to compliance with WSHP requirements, and mechanisms for resolution of these issues should be clearly defined. Good lines of communication between the affected parties are essential and should be included in agreements between the parties. The nature and extent of the organizational relationships vary from situation to situation. The need for a firmly established agreement between affected parties regarding WSHP requirements is essential. The CSO/ Deputy Administrator (NNSA) and Heads of DOE field elements should evaluate the need for and, where necessary, support the development of formal written agreements between organizations on their sites. Such agreements would outline the respective roles, responsibilities, and authorities of each contractor or organization as they relate to compliance with all components of the WSHP and the resolution of cross-cutting worker protection related issues. Coordination agreements need not be highly detailed as long as roles, responsibilities and procedures are sufficiently addressed to assure that the requirements are consistently implemented.

Some common written instruments used at DOE facilities to document and communicate agreements between multiple organizations are the contract, the lease agreement (for tenant organizations), the Memorandum of Understanding (MOU), the Memorandum of Agreement (MOA), and the Intraservice Support Agreement (ISA). Authorization Agreements used at high hazard nuclear facilities may also provide a vehicle for clarifying worker safety and health roles and responsibilities. These and other documents are usually prepared to identify roles and responsibilities of respective parties in these shared situations. The roles, responsibilities, and procedures contained in these agreements should be clearly addressed in the written WSHP to ensure that they are adequately communicated throughout the site.

DOE contractor workers sometimes work at other sites operated by other DOE contractors. The WSHP of the contractor that employs the guest worker is applicable to that worker and that contractor should coordinate with the host contractor to ensure that the relevant provisions of both contractors' WSHPs are consistent for the guest worker's activities. In addition, the host should require that its WSHP be complied with by guest workers. It is reasonable to expect a

high level of consistency between DOE contractors' WSHPs so simply having the guest worker comply with the host's WSHP should satisfy the Rule's requirements for most activities.

5.2.3. Worker Safety and Health Integration

The WSHP must integrate the requirements with other site worker protection activities and the integrated safety management system (ISMS). Coordination should be established, maintained, and documented among worker safety and health technical disciplines and other safety and health organizations (e.g., radiation control) at a site to ensure successful implementation of the WSHP. Additional information concerning DOE expectations for integrating safety management can be found in DEAR clause 48 CFR 970.5223-1 (available by searching on http://professionals.pr.doe.gov/ma5/MA-5Web.nsf/Procurement/Acquisition+Regulation?OpenDocument).

5.2.4. DOE Evaluation and Approval

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Transition periods between contractors must be covered by a DOE-approved WSHP. No work may be performed at a covered workplace unless an approved WSHP is in place [see 10 CFR 851.11(b)(1)]. Possible approaches to addressing this requirement are including a WSHP in the new contract that DOE approves when it awards the contract or including a provision in the new contract that adopts the former contractor's approved WSHP.

5.2.5. Program Updates

An updated WSHP must be submitted to DOE annually for approval or a letter stating that no changes are necessary in the current program. The updated program or letter should be submitted in advance of the anniversary of the previous approval so that the head of the DOE field element has sufficient time to approve the submittal by the anniversary of the prior approval.

Whenever a significant change or addition to the program is made an update of the WSHP must be submitted to the Head of the DOE field element for approval. In determining whether a change is significant and an update is warranted, one should consider whether the change is needed to ensure the program accurately reflects actual workplace activities and related hazards and controls and approved major program roles and responsibilities. A change should be submitted to DOE if a hazard associated with a change in the worksite or processes, or any newly recognized hazards, is not effectively controlled by the measures in the currently approved WSHP. Examples may include:

- A new contractor is awarded a contract;
- A contractor accepts a new scope that introduces a chemical hazards which were not addressed in the approved WSHP;
- The toxicity or explosive hazard, such as chemical storage, has increased where there is a credible accident scenario that would impact the co-located workers or off-site public;

- A site not currently using explosives begins a project involving explosives. Such changes would be considered "significant" and would a require program update and submittal;
- Change of use of a facility which may require an evaluation of ventilation systems or other utilities.

Changes should not be implemented until approved. The WSHP updates can be embedded in the integrated safety management system program updates as long as 10 CFR 851's update requirements are met.

5.2.6. Labor Organizations

For contractors whose workers are represented for collective bargaining by a labor organization, it is required that contractors give the labor organizations timely notice of the development and implementation of the WSHP and bargain concerning implementation of the program consistent with Federal labor laws. These requirements are not to be confused with the other requirements for contractors to provide mechanisms to involve workers and their elected representatives in the development of the WSHP goals, objectives, and performance measures and in the identification and control of hazards in the workplace. These mechanisms must be included in the contractor's WSHP but the contractor is not required to involve workers and their elected representatives in the development of the mechanisms unless the mechanisms are subject to bargaining concerning implementation of the requirements.

6. Specific Program Requirements

6.1. Management Responsibilities and Worker Rights and Responsibilities

6.1.1. Management Responsibilities

6.1.1.1. Policy, Goals, and Objectives

The worker protection policy is the guiding principle or philosophy that provides overall direction for the organization in regard to worker protection. The written policy statement conveys senior management's commitment and expectations for overall performance. The organization states its commitment to worker protection through a written, clearly communicated policy, which is ultimately its "mission" statement relative to worker protection. The policy places appropriate emphasis on worker protection and should be signed by the highest ranking company official on the site.

A concise and clear worker protection policy:

- Creates consistency and continuity in safety and health activities;
- Provides a point of reference when worker protection conflicts with other company goals; and
- Supports supervisors in their enforcement of worker protection rules and safe and healthful work practices.

For example:

> *"Organizations Name" is committed to providing a safe and healthful workplace for employees. These conditions will be ensured through an aggressive and comprehensive worker safety and health program that is integrated with other site worker protection activities and our integrated safety management system. This organization regards employee protection as a priority and is committed to developing, implementing, and improving safety and health practices that will afford optimal protection to employees and enable continuous improvement of the quality of worker protection performance. The safety and health of employees will take precedence whenever conflicts with production or other objectives arise.*

The worker protection policy should flow down into specific goals and objectives, which in turn are reflected in the written program. This should include annual goals used to achieve continuous improvement. The goals and objectives should be measurable for use as indicators of performance.

6.1.1.2. Budget

To meet the challenge of managing an adequate worker protection program with existing resources, it is imperative that DOE elements and contractors request the necessary funding for operation of the facility and properly plan for effective use of the personnel, material, and resources to support the worker protection program. Planning and budgeting serve to set priorities for operations to include worker protection and become the foundation for structuring an operational plan that provides for adequate protection.

6.1.1.3. Qualified Staff

Organizations should hire and retain qualified worker safety and health professionals needed for the hazards at the site. Examples of these positions are Occupational Safety and Health Managers, Safety Engineers or Industrial Safety Professionals, Construction Managers, Industrial Hygienists, Fire Protection Engineers, etc. These individuals may be employed directly, by contract, or as consultants, but they should possess qualifications relative to the particular hazards at the facility. The hiring of certified professionals (e.g., Certified Safety Professionals, Certified Industrial Hygienists, and Board Certified Occupational and Environmental Medicine Physicians) may be appropriate and help to ensure that sufficient numbers of competent staff are in place. Examples of qualifications are available in DOE's *Functional Area Qualification Standards* available at http://www.eh.doe.gov/techstds/standard/standard.html. These technical qualification standards are written for DOE personnel that provide oversight of contractor programs, rather than contractor personnel that implement these programs, but are nonetheless a useful resource for determining qualifications in a specific safety and health technical area.

6.1.1.4. Accountability

Managers of facilities should clearly communicate roles, responsibilities, and authorities and insist on accountability of workers at all levels. Managers and supervisors should carry out their own responsibilities and expect employees to follow safe and healthful work practices. Line

Managers are accountable for the overall WSHP, including planning and allocating resources for their activities. Supervisors are accountable for ensuring that the worker protection plans, programs, and procedures, including hazard identification and abatement activities, are implemented on a day-to-day basis on the front line. Employee accountability involves following procedures, using safe work practices, and reporting hazards.

Holding managers, supervisors, and employees accountable relative to the expectations of their respective positions greatly increases the probability of maintaining safe working conditions. The results of holding people accountable should frequently be communicated and thoroughly documented. The best way to achieve accountability is to include roles, responsibilities, and authorities for worker protection in managers', supervisors', and employees' performance objectives. This can be done by establishing performance goals and objectives for personnel and evaluating the person against those elements periodically. The organization should have a process for measuring each individual's performance, including worker protection performance. These evaluations should be considered in the individual's evaluations, ratings, promotions, and bonuses.

The WSHP should include a system for ensuring that employees comply with safe and healthful work practices, which includes provisions for recognition of employees for following safe and healthful work practices, training and retraining programs, disciplinary actions, or any other means to ensure employee compliance with safe and healthful work practices.

Senior management sets the tone for the work done on site. They should make it known to all employees that worker protection is of vital importance. Moreover, their commitment to worker protection should be evident in every aspect of site operations. Management can demonstrate their commitment by taking an active role and setting a positive example. They can also demonstrate commitment through such activities as:

- Walking their spaces with workers, supervisors, and worker protection professionals;
- Becoming actively involved in worker protection committees; and
- Encouraging excellence through recognition programs such as DOE's Voluntary Protection Program (VPP) for contractors, or OSHA's VPP for Federal Employees.

The commitment to ensure that all employees understand that the organization regards worker protection as a primary objective is fundamental. Management commitment to worker protection should be evident to the employee and reinforced by genuine efforts to maintain excellence in worker protection.

6.1.1.5. Employee Involvement

Employees play a vital role in implementing an aggressive and effective WSHP. Employees are involved in all site operations, have intimate knowledge of potential hazards, and can contribute as valuable problem solvers. Active and meaningful employee involvement in the WSHP means the workforce is trained to recognize hazards and is involved in correcting them. An indicator of effective employee involvement is enthusiastic employees who understand their role in the program and who are interested in its success.

Managers should assign and communicate worker protection responsibilities to workers, provide adequate authority and resources to permit them to meet these responsibilities, and hold them accountable for proper performance. Managers should also develop and implement programs to encourage and promote employee involvement and commitment to the WSHP. DOE managers should also establish forums for employees to gain an appreciation for the WSHP and to foster communication between management and affected workers.

Examples of acceptable and effective mechanisms for employee involvement in safety and health program implementation include, but are not limited to, the following:

- Participation on committees and work teams;
- Participation in worksite inspections, hazard analysis [especially job hazard analyses (JHAs)]; and design control;
- Development and review of workplace operating procedures;
- Assistance in training;
- Conduct of worker protection meetings; and
- Participation in accident investigations.

6.1.1.5.1. Committees

An important component of employee involvement for a WSHP is the establishment of one or more worker safety and health committees that bring people together in a cooperative effort to promote safety and health at the worksite. Such committees can be used to promote employee involvement in the development of program goals, objectives, and performance measures and in the identification and correction of workplace hazards. Many types of committees exist that address worker protection issues, and no one committee organization fits all occasions and activities. Worker protection functions may be included in the charters of different committees. The charter, decisions, and actions of a worker protection committee should be developed by the committee through negotiations and voting and approved by management. Each worker protection committee should consist of employees and management representatives. In order to assure worker participation, committees should consider having a large proportion of non-managerial members. Note that the organization of any such committee must be consistent with acceptable practices for labor-management relations.

The responsibilities of each worker protection committee should be clearly stated in a written charter, and each committee should have clear and specific performance-based goals. These goals should be consistent with the goals and objectives of the WSHP and be responsive to the culture and operations in the worksite. The goals should also be revised as necessary to accommodate changes in operations, technology, and materials and to reflect tasks completed by the committee.

Worker safety and health committees should have access to necessary records (subject to provisions of the Privacy Act), work areas, and personnel to investigate any worker protection concern. Committees should also have access to the training, resources, and technical expertise that will allow them to function effectively.

6.1.1.5.2. Participation in Worksite Inspections, Hazard Analyses, and Design Control

Employees should be encouraged to perform informal worksite inspections as part of their daily work activities. This includes daily worksite walk-throughs by workers and their supervisors.

For work site inspections to be effective, employees should:

- Be trained in hazard recognition, analysis, and control;
- Have reasonable access to worker protection professionals;
- Have access to reference sources (e.g., all applicable worker protection requirements documents, guides, and technical standards);
- Be able to suggest abatement methods; and
- Be able to track corrective actions.

6.1.1.5.3. Instructors

Qualified employees make excellent instructors for new employees. Having employees as instructors also enhances worker protection awareness because instructors must keep up with requirements to be effective. Employee presentations at meetings are an excellent way for employees to share their experiences and lessons learned.

6.1.1.5.4. Accident and Incident Investigations

Including employees in accident and incident investigations is a worthwhile investment for managers. Worksite employees often provide valuable insight on actual workplace procedures that may have contributed to an accident and on the effectiveness and practicality of proposed corrective actions. In addition, involvement in accident investigations can increase an employee's awareness of how workplace hazards can lead to accidents and incidents and, thus, how employees can better protect themselves. One way to involve employees in accident investigations is to establish special function committees with a specific scope of responsibility and to rotate employee membership on the committee periodically. Selected employees should be trained in accident and incident investigations, be used in the investigations, and be recognized for their contributions.

6.1.1.5.5. Other Avenues for Employee Involvement

Employee participation activities should be included in the development, review, and revision of worker safety and health related documents and activities, including:

- Performance measures for the WSHP;
- Annual goals and objectives;
- Job safety analyses;
- Operating procedures;
- Site inspections and exposure assessments;

- Analyses of facilities, processes, materials, and equipment;

Variance requests and hazard abatement plans, along with the development of equivalent, interim, or protective measures for variance requests or abatement plans; and
Participation in the development of worker safety and health guides, standards, and procedures (consistent with labor-management agreements).

6.1.1.6. Prompt Response to Reports

The term "prompt" is a subjective term the meaning of which depends on the specific context in which the term is used. The meaning of this term in a situation should be determined by DOE line management starting with the head of the DOE field element and progressing to the Under Secretary depending on the impact of the meaning. DOE line managers should obtain input from safety and health professionals and other relevant subject matter experts in making their determinations.

6.1.1.7. Regular Communication

The manager should include a system for communicating with employees about matters relating to worker protection, including provisions designed to encourage employees to inform the employer of hazards at the worksite without reprisal. Many of the suggestions in section 6.1.1.5. of this document are excellent vehicles for regular communications between workers and management on workplace safety and health matters.

6.1.1.8. Inform Workers of Rights

Training is a useful tool for informing workers of their rights and responsibilities.

Managers are expected to post the DOE Worker Protection Poster (FEOSH version for Federal employees) in a sufficient number of places to permit workers the opportunity to observe the information en route to or from their work place. The poster is available at http://www.hss.doe.gov/healthsafety/wshp/rule851/safeworkplace6-07-final.pdf for contractor employees and at http://www.hss.energy.gov/CSA/CSP/feosh/reports.html for Federal employees. In addition to the poster, managers should take other actions to provide relevant information to workers. In areas where noncompliance with a DOE-prescribed worker protection Standard is identified during an oversight inspection, information about the noncompliance should be conveyed to worksite employees. This can be achieved by posting noncompliance information in such areas for 5 working days or until the noncompliance is corrected, whichever is longer.

Other worker protection posting requirements may be applicable to special situations in specific workplaces. For example, OSHA's confined space standard requires employers to post danger signs or use other equally effective means to inform exposed employees of the existence and location of, and the danger posed by, the confined space. DOE managers should consult the appropriate OSHA regulations for specific posting requirements.

For additional guidance on employee rights and responsibilities, see—

- U.S. Department of Labor Fact Sheet No. OSHA 95-35, *OSHA: Employee Workplace Rights and Responsibilities,* dated 01-01-95; and
- 10 CFR Part 708, which describes how contractor employee representatives are protected from acts of discharge, discipline, or other acts of retaliation that result from disclosure of information concerning danger to the public or worker health and safety; refusal to participate in dangerous activities and other specified protected activities. http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=c2a77424cbb1eea7b3975cf922084d7a&tpl=/ecfrbrowse/Title10/10cfr708_main_02.tpl

Other applicable standards and guidance documents include:

- 29 CFR 1960;
- DOE O 442.1A, Department of Energy Employee Concerns Program; and
- OSHA's *Safety and Health Program Management Guidelines*. (FR 54: 3904-3916; 1/26/1989, http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=12909

6.1.2. Worker Rights and Responsibilities

Workers should actively take advantage of their rights in a responsible manner and should be free of any form of job discrimination as a result of exercising these rights. Along with their rights, workers also have several responsibilities i.e., complying with Safety and Health Rules and directives. In addition, they should:

- Read the worker protection poster;
- Wear or use prescribed protective clothing and equipment while working;
- Report hazardous conditions to the supervisor;
- Report any job-related injury or illness to the employer, and seek treatment promptly;
- Cooperate with worker protection professionals conducting inspections; and
- Exercise their rights in a responsible manner.

For Federal employees additional details about requirements for informing workers through training are contained in DOE Order 360.1B.

6.1.2.1. Notification of Monitoring Results

A worker must be notified when monitoring results indicate the worker was overexposed to hazardous materials. Many of the OSHA substance-specific health standards in 29 CFR 1910, Subpart Z – Toxic and Hazardous Substances, also specifically require that this notification include all workers for whom the results are representative (e.g., 29 CFR Sub-parts 1910.1018, 1910.1025, 1910.1044, 1910.1045 and 1910.95). Where not specifically required, however, contractors should ensure that all workers covered under representative monitoring are notified when monitoring results indicate that they may have been overexposed to hazards. Furthermore, contractors should notify workers of results of monitoring for hazardous materials even if no

overexposure was detected. In this way, workers are informed and fully aware of ongoing workplace conditions and can observe trends in exposure monitoring results.

Unless otherwise specified in a requirement, notification of monitoring results should include the following:

- Notification to the affected workers of the results, in writing, within 10 working days after receipt of the results;
- Notification should be made personally to the affected worker or posted in a location that is readily accessible to the affected worker, but in a manner that does not identify the individual to other workers; and
- A description and explanation of the results with and without any respiratory protection that the worker used during the monitoring.

If the monitoring results indicate that a worker's exposure was at or above an occupational exposure limit (or action level for those hazardous materials with action levels), the contractor should:

- Include in the notice a statement that the occupational exposure limit or action level has been met or exceeded;
- Include in the notice a description of the corrective action being taken by the contractor to reduce the worker's exposure;
- Notify DOE and the medical services provider of these results; and
- Report exposures that exceed an occupational exposure limit in a manner consistent with DOE O 231.1B *Environment, Safety and Health Reporting.*. The Order is available by searching at http://www.directives.doe.gov/.

6.1.2.2. Observe Monitoring

This usually involves allowing an affected worker or authorized representative of workers to observe the actual monitoring and providing copies of the individual results in person or by some form of personal mail to the specific workers that were monitored. The objective is to assure workers and line management are involved in decisions on the monitoring needed to characterize health risks, the effectiveness of work practices and controls and identifying opportunities for improvement.

6.1.2.3. Accompany Inspections

One or more employee representatives should be provided the opportunity to participate in briefings and in the walk-around phase of DOE conducted enforcement inspections. Note that employee participation also may have to be consistent with binding labor management agreements that are outside the scope of the regulation. DOE expects that workers will exercise these rights in a responsible manner. When no authorized employee or representative is available, the DOE enforcement inspector must consult, as appropriate, with employees on matters of worker safety and health.

6.1.2.4. Results of Inspections and Investigations

In areas where noncompliance with a DOE-prescribed worker protection requirement is identified during an enforcement inspection, information about the noncompliance must be conveyed to worksite employees. This can be achieved in a number of ways but at a minimum, must include posting of the notice of violation in such areas until the noncompliance is corrected.

6.1.2.5. Express Concerns

In addition to relying on enforcement of the requirements, workers that believe they are being denied the rights or are being subjected to reprisals for attempting to exercise those rights may file an employee concern using DOE O 442.1A, *Department of Energy Employee Concerns Program.* (See also 10 CFR Part 708, DOE contractor Employee Protection Plan, for protection of contractor employees from retaliation for disclosure of information concerning danger to public or worker health and safety, among other things.) That program requires that employees be encouraged to seek to resolve concerns with their first-line supervisors or use established concern or complaint resolution systems at the site. If these systems are unknown or unavailable, or have not dealt, or cannot deal effectively with a concern, employee concerns program personnel (first local, then Headquarters) can assist concerned employees in determining which processes could be used to evaluate and resolve their concerns.

6.1.2.6. Stop Work

Any stop work authority should be exercised in a justifiable and responsible manner. All workers, supervisors, managers, and occupational safety and health professionals are responsible for being cognizant of the conditions in their workplaces and for being prepared to stop work when these conditions pose an imminent danger of death or serious physical harm. When a "reasonable person" views the circumstances as imminent danger of death or serious physical harm, a stop work order should be issued. The term "reasonable person" is a subjective term the meaning of which depends on the specific context in which the term is used.
Before a stop work order is issued, the person issuing it should ensure that the work stoppage itself would not negatively impact the safety and health of workers. Contractors should have procedures in place that address stop work authority, and workers should be trained to those procedures.

6.1.2.7. Additional Resources

Title 10 CFR 708 describes how contractor employee representatives are protected from acts of discharge, discipline, or other acts of retaliation that result from disclosure of information concerning danger to the public or worker health and safety; refusal to participate in dangerous activities and other specified protected activities.
http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=c2a77424cbb1eea7b3975cf922084d7a&tpl=/ecfrbrowse/Title10/10cfr708_main_02.tpl. Another guidance document is OSHA's *Safety and Health Program Management Guidelines*,
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=12909.

6.2. Hazard Identification and Assessment

6.2.1. Identify and Assess Risks

6.2.1.1. Assess Workers Exposures

Guidance on appropriate workplace monitoring strategies is provided in:

- Ignacio, JS and Bullock,WH, Strategy for Assessing and Managing Occupational Exposures, Third Edition, AIHA Press, Fairfax, VA, 2006. (Available at http://www.aiha.org/marketplace/Documents/AIHA_pubcatalog.pdf
- Guidance on workplace monitoring methods is provided in:

- National Institute for Occupational Safety and Health, NIOSH Manual of Analytical Methods (NMAM), http://www.cdc.gov/niosh/nmam/, and
- *OSHA Technical Manual*, TED 01-00-015 [TED 1-0.15A], http://www.osha.gov/dts/osta/otm/otm_toc.html

For safety hazards, see paragraph 4.1.3.1.4. of this document.

6.2.1.2. Document Hazard Assessment

Hazard assessments, the outcome of which determined that the risks were negligible, should also be documented using a graded approach, e.g., a contractor may determine that it is unnecessary to develop a detailed documented result of frequent, informal walk-throughs of workspace where no hazards were identified.

6.2.1.3. Record Result

Observations, testing and monitoring results must be recorded. Samples should be analyzed by a laboratory that is a successful participant in American Industrial Hygiene Association accreditation or proficiency testing programs, or equivalent laboratory quality assurance programs, for the hazards of concern. DOE's beryllium rule at 10 CFR 850.24(f), requires samples be analyzed by a laboratory accredited by the American Industrial Hygiene Association (AIHA) or one that demonstrates equivalent quality assurance. One example of an equivalent laboratory quality assurance program is the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) 17025:2005 *General requirements for the competence of testing and calibration laboratories*. Other equivalent laboratory quality assurance programs are acceptable. Formats for accrediting or certifying the quality of analytic results can be different for results obtained in the field rather than in a fixed laboratory as long as fundamental analytic quality assurance principles are observed. The head of the DOE field element determines the acceptability of analytic quality assurance programs.

Monitoring results should be recorded with documentation that describes the tasks and locations where monitoring occurred and identifies:

- Workers monitored or represented by the monitoring;
- Sampling methods and durations;
- Control measures in place during monitoring (including use of personal protective equipment);
- Job hazard and location; and
- Any other factors that may have affected sampling results.

The results of evaluations of workplace exposures and controls and the results of medical surveillance and epidemiology studies provide management with essential feedback for improvement. Management uses this information to upgrade current workplace controls and select controls for future operations. Additionally, this information is used to monitor the workforce for signs or symptoms of occupational disease, to prevent future disease cases, and to base workers' compensation decisions.

Quality assurance records for exposure assessment activities should be maintained and retrievable for the monitoring equipment and analytic methods used.

Records including hazard assessment and analysis documents, survey results, essential information gained through interviews, or whatever data is important to characterize the process and workplace safety and health hazards should be recorded, maintained, and retrievable in accordance with the contractor's Quality Assurance Program Plan consistent with DOE O 414.1 *Quality Assurance.*

6.2.1.4. Analyze Designs for Potential Hazards

Incorporating worker protection features and requirements in the design and construction of facilities and equipment is the most cost-effective way to control hazards. Design reviews should include input from a team of engineers, operations managers and employees, and appropriate worker protection professionals. This should be initiated at the earliest design phase and continue throughout the design process to ensure that potential hazards are identified, evaluated, and, to the extent feasible, eliminated or controlled through design features. The formality of the design review for worker safety and health should be tailored to the scope and complexity of the project. DOE O 413.3B *Program and Project Management for the Acquisition of Capital Assets* provides a formal process that should be followed for significant projects as described directly below. Less formal processes that nonetheless follow the same basic principles are discussed following the discussion of DOE O 413.3B.

Guidance for formal analysis of designs for potential workplace hazards is available in DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. DOE O 413.3B is not a regulatory requirement but it directs DOE officials to include it in DOE contracts that contain the Contractor Requirements Document in contracts making contractors responsible for project execution at DOE-owned or -leased facilities. This Order provides project management direction requirements for the acquisition of capital assets projects having a total project cost or environmental management total project cost for clean-up projects greater than or equal to $20 million for all capital asset, sets forth principles that apply to all assess projects, . It contains

specific design analysis and review principles, procedures, and approval authorities that are appropriate for large scale projects.

Worker protection professionals should be assigned to review and provide input in all four phases of project design: conceptual design, preliminary design, final design, and inspection. Review during the conceptual design phase, the earliest phase of the project, is critical. Hazard analysis methodologies can be applied to facilities, processes, equipment, and operations (including decontamination and decommissioning (D&D)] throughout their life cycle. Methodologies include:

- Preliminary hazard analysis (PHA);
- Health hazard analysis;
- Facility hazard analysis;
- Process hazard analysis; and
- Safety review.

Preliminary hazard analysis has a specific meaning in DOE O 413.3B and DOE-STD-1189-2008 (under development) which provides implementation guidance for nuclear facilities safety requirements for facilities rated at certain hazard categories. Preliminary hazard analysis also has a more general meaning when used for non-nuclear worker safety and health hazard analysis. The various uses of this term all follow the same basic principles and are therefore compatible. Preliminary hazard analyses (PHA) provide a broad hazard screening tool that includes a review of the types of operations that will be performed in the proposed facility and identifies the hazards associated with these types of operations and facilities. The results of the PHA are used to determine the need for additional, more detailed analysis, serve as a precursor documenting that further analysis is deemed necessary, and serve as a baseline hazard analysis where further analysis is not indicated. The PHA is most applicable in the conceptual design stage, but it is also useful for existing facilities and equipment that have not had an adequate baseline hazard analysis. PHAs are detailed studies to identify and analyze potential hazards associated with each aspect of the facility and related equipment and operations. The analysis should include a systematic review of each facility component and task and should consider:

- Facility design characteristics such as electrical installations, platform heights, egress concerns, etc.;
- Proposed equipment including types of equipment, location of equipment relative to the other operations and workers, required equipment interfaces, etc.;
- Proposed operations including related hazardous substances and potential exposures, potential energy sources, locations of operations and required interfaces, resulting material and personnel traffic patterns, etc.; and
- Facility and equipment maintenance requirements including confined space concerns, electrical hazards, and inadvertent equipment startup or operations hazards.

PHAs may identify the need for other more specialized hazard analyses such as exposure hazard analyses (see Ignacio, JS and Bullock, WH, Strategy for Assessing and Managing Occupational Exposures, Third Edition, AIHA Press, Fairfax, VA, 2006. (Available at

http://www.aiha.org/marketplace/Documents/AIHA_pubcatalog.pdf and process hazard analyses (see 29 CFR 1910.119).

The following techniques are available to assist in the performance of a general type (rather than the formal type referred to in DOE O 413.3B) of PHA:

Safety review is a technique to provide a detailed evaluation of facility operations or processes. It is used to identify hazards associated with conditions, practices, maintenance, and other pertinent aspects of the facility or process.

Change analysis is performed to ensure that proposed design or operational changes do not adversely affect the safety of the facility. The analysis identifies differences between the existing and the proposed design or operational change, identifies how the change will affect related features, and evaluates the effects of the differences and relationships on the overall safety of the facility. Change analysis can be used during the design, modification, construction, or renovation phase of the facility to address proposed changes.

Energy trace and barrier analysis (ETBA) identifies potential energy sources, traces those sources to a potential hazard, and determines if the proper barriers to the hazard (i.e., controls) are in place. The ETBA provides an effective tool to identify potential hazards for the PHA.

Failure modes and effects analysis (FMEA) is a critical review of the system (facility and operations), coupled with a systematic examination of all conceivable failures and an evaluation of the effects of these failures on the mission capability of the system. The FMEA can help avoid costly facility modifications and should be initiated early in the design phase. Once performed, the FMEA provides valuable information if updated throughout the design process.

Fault tree analysis (FTA) is a logic tree used to evaluate a specific undesired event. The FTA is developed through deductive logic from an undesired event to all sub-events that must occur to cause the undesired event. The FTA can be applied at any point in the life of a facility. The FTA can be used to support the PHA during facility design.

6.2.1.5. Evaluate Operations, Procedures, and Facilities

Ongoing hazard identification is accomplished most effectively by workers and their supervisors during the course of daily activities, with technical assistance from worker protection professionals and functional area technical experts, as necessary.

Daily workplace evaluations by workers and supervisors include such things as inspections of tools and equipment, ranging from inspection of manual tools and power tools, forklifts, cranes, slings, and warning systems to inspection of respiratory protective equipment and other personal protective equipment prior to and during use. In addition, workplace conditions, housekeeping, utilization of assigned personal protective equipment, and conformance with procedures, work permits, health and safety plans, and other established criteria should be evaluated. Workers and supervisors should consult with worker protection professionals as necessary to address

questions regarding regulatory requirements and compliance or where specific technical expertise is needed.

In addition, daily worker and supervisor evaluations should be supplemented by worker protection professional evaluations of the workplace. These routine evaluations should include both informal unscheduled walk-through evaluations conducted during worksite visits and formal, scheduled periodic workplace evaluations.

An initial hazard evaluation should be conducted to identify hazards and establish a baseline for future evaluations. The initial evaluation could consist of a comprehensive "wall-to-wall" evaluation, a compilation of results of evaluations that pre-date the Rule and are still valid, or a combination of both. Regularly scheduled evaluations should be conducted at all workplaces, including permanently housed construction workplaces, using a graded approach to set the frequency. For example, office buildings and other low hazard workplaces may be evaluated every three years; shops, laboratories, and warehouses every two years, and high hazard workplaces annually. Fire safety inspections should be conducted on a frequency agreed to by the fire protection Authority Having Jurisdiction (AHJ). (See section 4.1.3.1.6**.** of this document for more information about AHJ). Evaluations should then be conducted as often as necessary to ensure compliance with the requirements. The evaluations are conducted to identify and document existing and potentially hazardous work conditions and practices that do not comply with worker protection requirements or may otherwise pose hazards to the safety or health of workers. Evaluations should be performed by worker protection professionals with the participation of affected employees and supervisors.

An effective approach to accomplishing such an evaluation is to use a team comprised of affected employees and supervisors, as well as the worker protection professionals necessary to evaluate specific workplace hazards. Worker protection professionals required on the team may include:

- Safety professionals;
- Industrial hygienists;
- Occupational medical professionals;
- Workers and supervisors; and
- Other worker protection professionals, as appropriate for the nature of the workplace and the hazards associated with the activities.

Alternatively, the team could include safety and health professionals that are cross-trained in the disciplines applicable to the workplace being evaluated. These cross-trained professionals would consult with functional area experts as needed.

The evaluation team should use worker protection hazard abatement information, information from the employee concerns program, results of baseline and previous inspections, and injury and illness data, among others, as tools for determining their strategy for such evaluations.

Detailed information on the selection and use of various hazard analysis methodologies and techniques for chemical hazards is available in the American Institute of Chemical Engineers'

Guidelines for Hazard Evaluation Procedures, second edition, 1992, http://www.aiche.org/apps/pubcat/seadtl.asp?ACT=S&Title=ON&srchText=Guidelines+for+Hazard+Evaluation+Procedures.

6.2.1.6. Job Activity-Level Hazard Analysis

Routine job activity-level hazard analyses must be performed. Operations and procedures at the activity level should be analyzed and reviewed to identify potential worker protection hazards and deficiencies. A job hazard analysis (JHA), also known as a job safety analysis (JSA), is the most basic and widely used tool to identify hazards associated with jobs at the activity level. JHAs can satisfy a large portion of the worker protection hazard identification requirements at most workplaces. A JSA is useful for dynamic work environments like equipment repair as well as relatively stable environments such as operating a chemical process.

JHAs should be conducted:

- For existing operations and procedures that have not been adequately evaluated in the past or when there is no current hazard analysis available;
- In response to employee identified potential hazards; and
- For existing operations and procedures that have resulted in injuries, illnesses, or near misses.

JHAs should be updated periodically to ensure that any new hazards that have been introduced since the last evaluation of the activity are addressed.

The principle elements of a job safety analysis are:

- Selection of operations and procedures to be analyzed;
- Breakdown of operations and procedures to their component tasks;
- Identification of hazards associated with each task and the controls necessary to protect workers against those hazards;
- Identification and addressing of potential hazards to bystanders and identification of related controls;
- Development of documentation needed to indicate why controls were selected; and
- Development of procedures incorporating identified controls.

Affected employees and supervisors should participate in the JHA process. Their knowledge of the tasks and associated hazards, and familiarity with the procedures actually used in performing the work, provides information that is more complete during the JHA. In addition, these front-line personnel can assist in determining the feasibility and effectiveness of proposed control measures.

Detailed information on the conduct of JHAs is presented in OSHA Publication 3071, *Job Hazard Analysis*, available at http://www.osha.gov/Publications/osha3071.html, and the DOE NNSA document *Activity Level Work Planning and Control Processes -Attributes, Best Practices, and Guidance for Effective Incorporation of Integrated Safety Management and*

Quality Assurance (link on web site http://www.hss.doe.gov/healthsafety/ism/NNSA-WorkPlanning.pdf). The NNSA document addresses activities at all levels of hazard and is particularly useful for work that is not well defined, is unique, or is extremely complex and should be approached carefully and meticulously to identify and control recognized hazards and plan for a wide range of contingencies that could have significant consequences. This document also describes appropriate use of ISM core functions and guiding principles as well as use of a graded approach to activity-level work planning based on the nature of the hazard.

6.2.1.7. Review Safety and Health Experience

Reporting and investigating accidents, injuries, and illnesses and analysis of related data for trends and lessons learned are key components of this review.

The collection of detailed, accurate data and information regarding workplace accidents, injuries, and illnesses and the subsequent analysis of the data and information are useful in identifying worker protection problem areas. This type of analysis or trending is used to identify the prevalent types of accidents, injuries, and illnesses and their sources and causes. Information derived from trend analysis can be used to focus worker protection efforts on the actual sources of injuries and illnesses and to help prioritize hazard abatement activities. Necessary components of accident, injury, and illness data collection and analysis include:

- A procedure to investigate, find root causes, and report occupational injuries and illnesses (e.g., procedures in (DOE O 225.1A, *Accident Investigations,* available by searching at http://www.directives.doe.gov/);
- Systems and methods to collect, record, compile, and manage accident, injury, and illness data and information (e.g., procedures in DOE M 231.1-1A, *Environment, Safety and Health Reporting Manual* available by searching at http://www.directives.doe.gov/); including but not limited to, the OSHA 300 log of occupational injuries and illnesses, workers' compensation data, accident reports, incident reports, industrial hygiene exposure monitoring results, inspection reports and corrective action tracking system entries;
- Methodologies to analyze data and information to identify and trend accidents, injuries, and illnesses by type and source; and
- A formalized approach to analyze identified trends, to determine root causes, and to develop appropriate control measures.

6.2.1.8. Workplace Hazards and Radiological Hazards

Interaction between workplace hazards (e.g., chemical, physical, biological, or safety hazards) and other hazards such as radiological hazards must be considered.

Personnel responsible for implementing worker protection and radiation protection requirements should coordinate in instances where the requirements overlap or appear to conflict. The two sets of requirements should be integrated and applied in a manner that prevents undesirable results and provides reasonable assurance of adequate worker protection. For example, control measures to minimize personnel radiation exposure should be reviewed to ensure that the workers are not

subjected to life-threatening asphyxiation or fire hazards. Both sets of requirements must be met. Complying with the more protective requirement usually also results in compliance with the less protective requirement if the requirements provide for different levels of protection.

6.2.2. Closure Facilities Hazard Identification

Closure facility hazards should be submitted when the hazards discovered are beyond the range of hazards for which controls have previously been identified and utilized with success. Identified closure facility hazards do not require submittal if those hazards will be eliminated or title to the facility will be transferred prior to 90 days from identification.

The Head of the DOE field element, with concurrence of the CSO/Deputy Administrator (NNSA), has 90 days to accept the controls or direct additional actions to achieve technical compliance or provide additional controls. This provision provides contractors flexibility in addressing hazards in facilities that are or will be permanently closed, demolished or subject to title transfer consistent with the provisions of 42 U.S.C. § 2282c (a)(3). In such facilities, contractors must submit a list and the established controls for facility hazards that would require costly and extensive structural/engineering modifications to be compliant within 90 days after identifying such hazards. For these hazards, contractors have the flexibility to propose appropriate abatement actions (subject to DOE approval) based on the special circumstances associated with the facilities.

Contractors should include their request for approval of the closure facilities that they have already identified as part of the WSHP that must be submitted to the DOE for approval. That provides the Head of the DOE field element the prescribed 90 days to act upon the request by the implementation date at which time all work at a covered workplace must be performed under an approved WSHP. Closure facility hazards that are identified too late to be included in the first proposed WSHP should be submitted for approval within 90 days of identification of those hazards.

Closed hazardous waste burial sites are not included in the definition of closure facilities.

6.2.3. Hazard Identification Baseline and Schedule

Hazard identification tasks must be performed initially to obtain a baseline and then as often as necessary to ensure compliance. The frequency of obtaining the hazard information, including the schedule for the first time an activity or facility is assessed should be established using a graded approach that reflects the potential degree of hazard, includes consideration of the uncertainties surrounding the hazard assessments, and supports a continual improvement process for minimizing hazards.

Initial baseline information is the compilation of information gathered for the first time. The scope and level of detail of the information generated should be commensurate with the hazards and risk to workers. This information could come from a variety of assessment activities such as those discussed above in section 6.2.1 of this document. As suggested in section 6.2.1.5, the

initial evaluation could consist of a comprehensive "wall-to-wall" evaluation, a compilation of results of evaluations that pre-date the Rule and are still valid, or a combination of both. The objective is to obtain hazard information that is sufficient to determine the controls that are commensurate with the hazards. The baseline evaluation of an operation or facility documents all the information needed to assess the health and safety risk that its hazards pose to involved and adjacent workers. The evaluation should contain sufficient detail to determine whether current worker protection standards are being met and provide management the information needed to prioritize and estimate the cost of correcting deficiencies. Additionally, the evaluation's description of current conditions (along with accident, injury and illness information) could be useful for providing effective feedback for improvement and establishing conditions that existed when workers received exposures or injuries.

Industrial hygiene. The baseline evaluation provides a key component of an industrial hygiene program as suggested by the National Institute for Occupational Health and Safety:

> *An effective industrial hygiene program involves the anticipation and recognition of health hazards arising from work operations and processes, evaluation and measurement of the magnitude of the hazard (based on past experience and study) and control of hazard. The industrial hygiene program provides information that is necessary for the effective medical surveillance program, which is a periodic evaluation of an employee by a health professional in order to assure that health problems associated with chemical exposures or physical agents are detected early, when there is time to prevent permanent or debilitating injury."*

DOE Std 6005-2001 *Industrial Hygiene Practices* lists the minimum data set to be included in a baseline industrial hygiene evaluation of an operation and discusses methods to produce a comprehensive baseline evaluation of a facility or site.

Industrial safety. The baseline evaluation of an operation's or facility's industrial safety hazards needs to collect the information needed to assess compliance with current standards, assess the risk that inadequacies pose, estimate the cost of correcting hazards and prioritize the correction of hazards. Industrial safety baseline data will vary greatly by hazard but generally requires the collection of less detailed information about a worker's exposure to the hazard than is required for industrial hygiene hazards. Most industrial safety hazards pose little or no future risk from past exposures. Such exposures would include work at heights that could result in falls, electrical shock hazards, working with sharp object that could cause cuts, crush or engulfment situations, thermal burn hazards, fires, explosions, etc. For these hazards, if no immediate injury occurs, there will be no future physical health consequence. Nonetheless, management can use industrial safety baseline data and accident experience (both at the site and published industrial experience elsewhere) to prioritize funding for hazard correction and the design of future controls.

6.3. Hazard Prevention and Abatement

An effective hazard abatement program is essential to ensure that workers are protected from exposure to current and future workplace hazards. The focus of this program must be the control of identified workplace hazards. Where immediate control is not possible, the program must

ensure the protection of workers while awaiting final abatement of the hazard. For significant hazards, this should include interim compensatory measures (e.g., limiting activities in the area, installing barriers and signs, providing hazard-specific training, and use of fire watches.). It must provide an efficient mechanism to ensure that all identified hazards are abated in a timely manner.

6.3.1. Hazard Prevention and Abatement Process

6.3.1.1. During Design or Procedure Development

For hazards identified either in the facility design or during the development of procedures, controls must be incorporated in the appropriate facility design or procedure.

Hazards that are identified in the design phase of new facilities and facility modifications or during the development or modification of procedures should be eliminated or controlled through design or procedure changes. The controls implemented should be commensurate with the risk level identified in the risk assessment process. For example, hazards that pose a serious threat to employee safety and health should be either eliminated or effectively controlled.

Proposed design or procedure modifications intended to eliminate or control hazards should be reviewed by worker protection professionals to ensure that the change adequately addresses the hazard and does not introduce new workplace hazards. Alternative control measures should be evaluated to determine the reduction of risk provided by each measure and identify the most effective practical control for the hazard.

Where hazards cannot be controlled through design changes, procedural or administrative controls or the use of personal protective equipment should be considered.

6.3.1.2. Existing Hazards

For existing hazards identified in the workplace, abatement actions, which are prioritized according to risk to the worker, should be promptly implemented and interim protective measures must be implemented pending final abatement of the hazards. Workers should be protected immediately from dangerous safety and health conditions. Hazards must be systematically managed and documented through final abatement or control.

For existing hazards identified in the workplace, contractors must prioritize and implement abatement actions according to the risk to workers. The relative level of risk must be assessed for each identified hazard to ensure that hazard abatement efforts and resources are focused first on addressing the most serious workplace hazards. Conversely, low risk hazards may warrant only minimal abatement efforts and resources and if determined to either be, or have become, sufficiently low should be removed from the category of actively managed hazards.
Risk assessment is an essential element of effective risk management. The assignment of risk levels provides a relatively simple and consistent method of expressing the risk associated with worker exposures to identified hazards. A Department of Defense publication and an AIHA publication identified under “Additional resources” below describe risk assessment

methodologies acceptable to DOE for meeting the risk assessment requirements of the Rule. Several DOE sites have developed tools for identifying hazards (some of which are automated), analyzing the hazards, and assigning a value to the level of risk of the hazards. These tools are useful for comprehensively reviewing (usually with a complete check list) all possible hazards of an activity, setting priorities for abatement of hazards, and for determining an appropriate level of work control to apply to activities that present the hazard. These tools can be very efficient but users should be careful to truly analyze the identified hazards and not simply "check the boxes." Although important in prioritization and abatement planning, assigning a risk assessment code or level to a hazard should not be an impediment to quick abatement. If a hazard can be fixed immediately, assigning a risk category is not necessary, although organizations may prefer to assign one for trending purposes.

The determination of the priority assigned to the abatement of a specific hazard should first be based on the risk of injury or illness the hazard presents to the worker; however, other factors may be considered, including:

- Regulatory compliance;
- Resources (budget and personnel);
- Complexity of abatement; and
- The organization's mission.

In some cases, it may be appropriate to address lower-level hazards before higher-level hazards if quick abatement is possible and effective interim protection is in place to protect workers from the higher level hazard until final abatement of the high level hazard can be implemented.

For existing hazards identified in the workplace, managers must implement interim protective measures pending final abatement. In the interval during which an abatement action is being carried out, the organizations must protect their employees from the identified hazards. A short-term strategy should be established that provides interim protection to employees. Methods such as administrative controls, work practice modifications, or personal protective equipment may used to provide this interim protection. These measures must provide employees with protection that is equivalent to the permanent protection provided by compliance with relevant standards.

For existing hazards identified in closure facilities, the most common approach to controlling worker exposure to closure facility hazards in a "cold and shutdown" closure facility is to control access to the facility. With access control, the closure facility hazards only pose risks to workers who have a need for access (e.g., for surveillance, maintenance, and preparation for decontamination and decommissioning activities). The hazards of those activities must be identified and controlled by the site's work control process, and the hazards updated as often as necessary to ensure safe access for needed activities.

Portions of a facility may be designated as a closure facility as long as the hazards of the closure facility portion are isolated from workers that occupy the balance of the facility.

The level of risk associated with interim protective measures can be assessed to verify that equivalent protective measures are provided. The assessment of risk associated with interim protection, however, should not be used to lower the priority of final abatement actions. The hazard should be tracked and abated based on the initial risk assessment.

For existing hazards identified in the workplace, workers must be must protected from imminent dangerous safety and health conditions. In the event a dangerous condition is discovered, immediate action must be taken either to correct the condition or to remove all employees from exposure to the condition until the danger has been abated. An effective hazard abatement program is essential to ensure that workers are protected from exposure to current and future workplace hazards. The focus of this program must be the immediate control of identified workplace hazards. Where this is not possible, the program must ensure the protection of workers while awaiting final abatement action and it must provide an efficient mechanism to ensure that all identified hazards are abated as quickly as possible.

6.3.2. Additional Resources

- MIL-STD-882D, *Standard Practice for System Safety*, Appendix A-Guide for implementation of system safety efforts, http://www.acq.osd.mil/atptf/policy/documents/MILSTD882D.pdf
- Ignacio, JS and Bullock, WH, Strategy for Assessing and Managing Occupational Exposures, Third Edition, AIHA Press, Fairfax, VA, 2006. (Available at http://www.aiha.org/marketplace/Documents/AIHA_pubcatalog.pdf)
- Department of Defense Instruction No. 6055.1, Department of Defense
- Occupational Safety and Health Program, E7. Enclosure 7, www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

6.3.3. Hierarchy of Controls

6.3.3.1. Elimination or Substitution

Elimination or substitution of hazards must be the first choice for controlling hazards. The contractor should verify that potential hazards of the substitution are identified and addressed before deciding to proceed.

6.3.3.2. Engineering Controls

Engineering controls must be the second choice for controlling hazards after elimination or substitution of the hazard has been implemented to the extent feasible and appropriate. Feasibility analysis should consider characteristics of the technology available for the task; worker acceptance; level of protection provided; hazards, operations and maintenance burdens introduced; and cost. Principal engineering controls include:

- Enclosing the hazard;
- Locating hazardous operations or equipment in remote or unoccupied areas;
- Establishing physical barriers and guards; and
- Using local and general exhaust ventilation.

6.3.3.3. Work Practices and Administrative Controls

Work practices and administrative controls must be the third choice for controlling hazards after elimination or substitution of the hazard and engineering controls have been implemented to the extent feasible and appropriate. The effectiveness of work practice and administrative controls depends on the ability of line management to make employees aware of established work practices and procedures, to reinforce the practices and procedures, and to provide consistent and reasonable enforcement. Administrative controls include:

- Written operating procedures, safe work practices, and work permits;
- Exposure time limitations;
- Limits on the use of hazardous materials and monitoring of such operations;
- Health and safety plans;
- Altered work schedules, such as working in the early morning or evening to reduce the potential for heat stress; and
- Training employees in methods of reducing exposure.

6.3.3.4. Personal Protective Equipment

When elimination or substitution, engineering, and work practices and administrative controls have been considered and implemented and are not sufficient to fully protect the worker from a recognized hazard; personal protective equipment (PPE) must be used to supplement these other controls as appropriate. PPE is acceptable as a control method:

- To supplement elimination or substitution, engineering, and work practices and administrative controls when such controls are not feasible or do not adequately reduce the hazard;
- As an interim measure while engineering controls are being developed and implemented;
- During emergencies when elimination or substitution, engineering, and work practices and administrative controls may not be feasible; and
- During maintenance and other non-routine activities where other controls are not feasible.

The use of PPE can itself create significant worker hazards, such as heat stress; physical and psychological stress; and impaired vision, mobility, and communication. An example would be a worker wearing several layers of protective clothing (for contamination control), a respirator, gloves, and a helmet while welding or cutting. This arrangement of PPE could prevent the worker from being aware of the environment in the event of a fire or other emergency.
In these situations, engineering and/or administrative controls (e.g., a fire watch to ensure the safety of the worker as well as the property) should be implemented to supplement PPE.
Equipment and clothing should be selected that provide an adequate level of protection. The selection process should involve representatives of the affected safety disciplines (e.g., health physicist, industrial hygienist, fire protection staff, etc.) working in concert with workers and supervisors.

Two basic objectives of any PPE practice should be to protect the wearer from safety and health hazards, and to prevent injury to the wearer from incorrect use or malfunction of the PPE. To accomplish these objectives, a comprehensive PPE program should include hazard identification (hazards that PPE will protect against and hazards caused by the use of PPE); medical monitoring; environmental surveillance; selection, use, maintenance, and decontamination of PPE; and associated training.

Respiratory protective equipment, including protective suits that provide breathing air, must be approved by the National Institute for Occupational Safety and Health (NIOSH) or accepted under the DOE Respiratory Protection Acceptance Program if NIOSH-approved respirators do not exist for specific DOE tasks (29 CFR 1910.134 and 10 CFR 850.28). Information about DOE's Respiratory Protection Acceptance Program is found in DOE-STD-1167-2003 *Respiratory Acceptance Program for Supplied-Air Suits* available at http://www.hss.doe.gov/nuclearsafety/ns/techstds/standard/std1167/doe-std-1167-2003.pdf.

6.3.4. Purchasing Equipment, Products, and Services

Hazards must be addressed when selecting or purchasing equipment, products, and services. Provisions should be made for worker protection professional and employee evaluation of pre-engineered or "off-the-shelf" equipment prior to selection and purchase.
This evaluation should focus on whether the equipment or procured material (e.g., parts, chemicals, or fasteners) can perform its required task without endangering the health and safety of workers (e.g., use of steel cable adequately rated for the anticipated weight of the loads) given existing facility and operational constraints. Evaluation methods should include:

- Review of equipment or material specifications;
- Observations of equipment or material demonstrations;
- Change analyses;
- Operational hazard analyses;
- Ergonomic and human factor analyses; and
- Checks for suspect or counterfeit parts.

Worker protection considerations to be taken into account when reviewing equipment specifications include, but are not limited to—

- Health hazards;
- Operating noise;
- Temperature levels;
- Point-of-operation guards;
- Lockout provisions;
- Presence of hazardous material;
- Training requirements for safe operation;
- Ergonomic design, worker-to-machine interface;
- Maintenance requirements;
- Availability and practicality of "add-on" (post-purchase) worker protection equipment; and

- Existing facility and operational constraints (e.g., floor loading, hazards from adjacent operations, congested workplaces, etc.).

After installation of complex or potentially hazardous equipment, a pre-startup evaluation with affected workers, supervisors, and worker protection professionals should be conducted to verify safe conditions and identify any previously unforeseen hazards.

6.3.5. Additional Resources

- Center for Chemical Process Safety, *Guidelines for Hazard Evaluation Procedures*, 2nd edition, American Institute of Chemical Engineers, New York, NY, 1992. (Available at http://www.aiche.org/apps/pubcat/seadtl.asp?ACT=S&Title=ON&srchText=Guidelines+for+Hazard+Evaluation+Procedures.)
- 29 CFR 1910, Occupational Safety and Health Administration.
- MIL-STD-882D, System Safety Program Requirements, Appendix A, available at http://www.everyspec.com/MIL-STD/MIL-STD+(0800+-+0899)/MIL_STD_882D_934/

6.4. Safety and Health Standards

DOE managers should determine which standards are applicable to the site hazards and whether additional standards are needed for their workplaces and activities to control recognized hazards. If necessary to protect the safety and health of workers, managers must include such additional standards in their written WSHP. An example of an additional standard that might be needed is the American National Standards Institute (ANSI) B-30 Series, Cranes.

When ACGIH TLV®s are used as exposure limits, DOE elements and contractors must nonetheless comply with the other provisions of any applicable OSHA substance-specific health standard. DOE recognizes that OSHA health standards and ACGIH TLV®s often are not expressed in directly comparable formats. Managers should use their qualified worker safety and health staff to determine the appropriate exposure limits and applicable provisions and may request clarification from DOE's HS-11. Users of ACGIH TLV®s should consult *Documentation of the Threshold Limit Values and Biological Exposure Indices*, 7th Ed., (http://www.acgih.org/store/) to ensure that they understand how to apply TLV®s properly.

The listed OSHA regulations are not dated but the consensus standards are. The current version of OSHA regulations are incorporated by reference because they are promulgated pursuant to public rulemaking. Only the versions of consensus standards that were in effect on February 9, 2006 were promulgated pursuant to rulemaking therefore only those specifically cited versions are required by the Rule. Managers may include successor versions of the consensus standards that provide equal or greater worker protection if included in their DOE-approved WSHP. For example, because the 2005 ACGIH TLV®s are specifically cited in the Rule they are required. ACGIH publishes TLV®s every year but successor versions to 2005 are not required by the Rule. Contractors have the option of substituting successor versions of the ACGIH TLV®s as long as those TLV®s are more protective than the 2005 TLV®s and the substitution is included in the DOE-approved WSHP. Users of successor ACGIH TLV®s should consult the corresponding

Documentation of the Threshold Limit Values and Biological Exposure Indices to assure that they understand how to properly apply those specificTLV®s.

Contractors can assume that HS-11 will concur with utilizing existing and future OSHA standards interpretations listed on the OSHA website www.osha.gov to evaluate compliance with the requirements of the OSHA regulations. Contractors also may request validation by HSS that an OSHA standards interpretation applies to a particular situation or request additional technical interpretations of OSHA regulations by submitting questions to the DOE Standards Response Line at http://www.hss.doe.gov/HealthSafety/WSHP/il// .

Some of the standards reference additional, i.e., secondary, standards. Contractors are required to comply with secondary standards that are applicable to identified hazards. The primary standards that reference secondary standards usually state how these secondary standards are to be used. For example, 29 CFR 1910.6(a)(1) states the following:

> *The standards of agencies of the U.S. Government, and organizations which are not agencies of the U.S. Government which are incorporated by reference in this part, have the same force and effect as other standards in this part. Only the mandatory provisions (i.e., provisions containing the word "shall" or other mandatory language) of standards incorporated by reference are adopted as standards under the Occupational Safety and Health Act.*

Similarly, mandatory provisions of secondary standards are incorporated by reference in the WSHP and have the same force and effect as primary cited standards. For example, ANSI Z49.1, Safety in Welding, Cutting and Allied Processes, is incorporated by reference. Section 4.2.2.1 of this standard specifies that "filter lenses shall be in accordance with ANSI Z87.1 and the shade shall be selected in accordance with AWS F2.2." Therefore, compliance with ANSI Z87.1 and AWS F2.2 for welding filter lenses and their shade is required. ANSI Z49.1 also includes references to other codes and standards that provide additional information on particular topics but are not mandatory requirements. Those other codes and standards are not required.

6.4.1. Authority Having Jurisdiction (AHJ) and Equivalencies

NFPA 70, *The National Electrical Code*, is a standard that is explicitly identified in the Rule and that includes provisions for an AHJ. NFPA 70 includes an AHJ with authority to approve equivalencies [NFPA 70 (2005), Annex G 80.9 (C)]. NFPA 70 defines the AHJ as "the organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure." NFPA 70 contains several provisions that allow the AHJ to approve alternatives that provide equivalent levels of protection, i.e., "equivalencies" to the levels provided by the standard. Other consensus standards that are included in a contractor's approved WSHP may include the AHJ or similar provisions.

The criteria for designating the AHJ have been handled differently in various DOE handbooks and technical standards, and the preamble to the Rule. For implementation of the Rule and to be consistent with DOE Technical Standard 1066-99 *Fire Protection Design Criteria* and DOE Handbook 1188-2006 *Glossary of Environment, Safety and Health Terms* (both available by searching at http://www.directives.doe.gov/), the AHJ should be the head of the DOE field

element or designee that has the requisite knowledge and abilities or has access to someone that has the knowledge and abilities. Ultimately, the head of the DOE field element is authorized to approve the contractor's WSHP and therefore can decide whether to personally perform the AHJ function with the help of qualified advisors or designate a qualified person to perform that function, or whether or not the AHJ must be a DOE person.

Individuals meeting the requirements of *Fire Protection Engineering Functional Area Qualification Standard*, DOE-STD-1137-2000, and *Electrical Systems Functional Area Qualification Standard*, DOE-STD-1170-2003, are examples of persons that have the requisite knowledge and abilities to advise the head of the DOE field element or designee on fire protection or electrical safety equivalencies, respectively. These standards are available at http://www.hss.doe.gov/nuclearsafety/ns/techstds/standard/standard.html.

Equivalencies that were granted prior to the promulgation of the Rule, and in accordance with AHJ and equivalency provisions of a code or standard that is included in a DOE-approved WSHP should continue to be acceptable to DOE and not require a variance. Those equivalencies should be identified in the DOE-approved WSHP. The equivalency process is separate from the variance process.

The following discussion is focused on the AHJ for electrical safety but the principles also apply to fire prevention and any other functional area requirements in the Rule that have AHJ provisions.

The Model Electrical Safety Program (MESP) in DOE's *Electrical Safety Handbook* (DOE-HDBK-1092-2004) provides an example of an acceptable electrical safety program for DOE contractors. Section 4 of the MESP defines the AHJ as the entity that interprets applicable electrical safety requirements including those established in NFPA 70 and the electrical safety provisions of the OSHA standards. Section 4 of the MESP further states that the AHJ approves electrical equipment, wiring methods, electrical installations, and utilization equipment for compliance. This is only correct for situations in which an AHJ provision applies as explained below.

Mandatory electrical safety requirements are defined as NFPA 70 and NFPA 70E as well as the applicable electrical safety regulations promulgated by OSHA such as Subpart S of 29 CFR 1910 for general industry operations and Subpart K of 29 CFR 1926 for construction operations. DOE's intent is that the technical requirements be applied consistent with the provisions of the individual standards as well as the programmatic requirements.

Specifically, DOE intends for the AHJ provisions discussed in the MESP to apply in full to the implementation of NFPA 70 but only to components of the OSHA regulations that incorporate NFPA standards by reference and include an AHJ or similar provision. DOE's rationale for this intent is that the AHJ provisions of the MESP parallel those established in NFPA standards such as NFPA 70. For example, Article 90-4 of NFPA 70 establishes that the AHJ has the responsibility to interpret rules, approve equipment and materials, and waive specific requirements of NFPA 70 or permit the use of alternate methods where such methods provide

equivalent protection. Thus, in mandating compliance with NFPA 70, DOE adopts the full text of the standard including the AHJ provisions of that standard.

On the other hand, Subpart S of 29 CFR 1910 contains some requirements that are affected by NFPA 70 and others that are not. OSHA standards that do not incorporate a consensus standard that includes an AHJ provision do not provide for an AHJ that can permit the use of alternate methods. The Rule provides that such deviations from the letter of the OSHA standards be permitted only if approved through the formal variance process. DOE encourages the use of an AHJ when permitted by the applicable code or standard in assisting in the proper interpretation of electrical safety requirements. Interpretations of electrical safety requirements in the absence of a code or standard that includes an AHJ provision are not binding on DOE unless issued under a binding interpretive ruling.

6.4.2. Code of Record

Certain codes and standards provide implementation flexibility in the form of "Code of Record." Code of Record refers to acceptability of the code that was in effect at the time a facility or item of equipment was designed and constructed rather than the current code or standard. The appropriate version of a Code of Record is the version that was in effect when approvals were obtained for the phase of the project for which the code applied, regardless of the duration of the project. Revised codes do not supersede previous codes for phases of the project that already have been approved.

Code of Record provisions that exist in the codes and standards that are explicitly referenced in 10 CFR 851.27(b) are considered part of the Rule and can be exercised in implementing the Rule. For example, NFPA 70 indicates that it applies to new buildings but not to existing buildings (NFPA 70 (2005), Annex G 80.13). In addition, the pressure safety codes specify that current code requirements apply only to new design and construction. Similarly, flexibility provisions in codes and standards that are not explicitly identified in the Rule but are included in the contractor's DOE-approved WSHP can be exercised in implementing the requirements.

6.4.3. Previously Granted Exemptions

DOE Orders allow the approval of exemptions from requirements in DOE Orders, Notices, and Manuals (DOE M 251.1-1C, *Departmental Directives Program Manual*, page 10, available by searching on site http://www.directives.doe.gov/) and many such exemptions have been granted at DOE sites. The Rule has no provision for these pre-existing exemptions; therefore exemptions to requirements in DOE Orders that are superseded by the Rule are not valid as of the Rule's implementation date of May 25, 2007. The Rule's variance process (Subpart D) can be used to request relief from a Rule requirement. The Contractor Requirements Document of DOE O 440.1A was superseded by the Rule so exemptions previously granted to requirements in that Order will not be valid as of the Rule's implementation date. In general, exemptions to DOE Orders other than O 440.1A are not affected by the Rule; however, it is possible that the Rule supersedes a worker safety and health requirement of a DOE Directive (Order, Notice, or Manual) other than O 440.1A and exemptions to any such requirements would also not be valid as of the implementation date of the Rule.

6.5. Training and Information

Worker protection training must be provided to all workers. Training also should be provided to supervisors, collateral duty safety and health personnel and committee members, and employee representatives that work for the contractor. Training should be included as a component of the written WSHP.

The worker safety and health training and information program is an integral component of the WSHP. If a subcontractor works under the contractor's WSHP, then the contractor's WSHP should describe the approach and process used to flow down the training program requirements to the subcontractor. The training program requirements that flow-down should be consistent with the scope and complexity of the work to be performed by the subcontractor. For subcontractors that will work to their own WSHPs, the contractor should review the training program to verify consistency with the contractor's program. One acceptable approach would be to require that subcontractor employees be trained through the contractor's training program. Alternatively, the subcontractor's own training program should be acceptable once it is verified by the contractor to be consistent with the contractor's program.

DOE elements are required to develop and implement occupant emergency plans and procedures, conduct training, and emergency drills according to directives and guidance issued by: DOE O 151.1C and associated guides; the General Services Administration; and the Office of Personnel Management.

6.5.1. Additional Resources

- DOE's Industrial Hygiene/Occupational Safety Special Interest Group (IH/OS SIG) is a peer-to-peer network of personnel from the U.S. Department of Energy community involved in occupational safety and health training. The IH/OS SIG provides the DOE community with tools for the development, enhancement, and/or implementation of training designed to improve worker safety and health. The IH/OS SIG's Web site http://orise.orau.gov/ihos/tsl/DOE_TSL_Index.htm provides information about the DOE's Technology Supported Learning (TSL) Index of training products developed by the DOE complex that are available to the DOE community upon request.
- U.S. Department of Energy, DOE-HDBK-1074-95, *Alternative Systematic Approaches to Training*, January 1995, http://www.hss.doe.gov/nuclearsafety/ns/techstds/standard/hdbk1074/hdbk1074.pdf
- American National Standards Institute, ANSI Z490.1-2009, *Accepted Practices for Safety, Health, and Environmental Training*, *http://webstore.ansi.org/ansidocstore/default.asp*
- Occupational Safety and Health Administration Publication 2254, *Training Requirements in OSHA Standards and Training Guidelines*, Revised: 1998, http://www.osha.gov/pls/publications/pubindex.list
- 29 CFR 1960, Subpart H, Training
- DOE O 360.1B, Federal Employee Training

6.6. Recordkeeping and Reporting

DOE contractors are required to:

- Maintain complete and accurate records of hazard inventory information, hazards assessments, exposure measurements, and exposure controls;
- Report injuries and illnesses consistent with DOE O231.1-1A, *Environment, Safety and Health Reporting* , dated 6-3-04;
- Comply with the injury and illness recordkeeping and reporting sections of the health standards unless otherwise directed in DOE M 231.1-1A;
- Neither conceal nor destroy information concerning compliance with the Rule; and
- Investigate (DOE Order 225.1A *Accident Investigations*); analyze for trends (DOE Order 210.2 *DOE Corporate Operating Experience Program*); (both available by searching on http://www.directives.doe.gov/) and report accidents, injuries, and illnesses.

Follow the DOE O 243.1 *Records Management Program* policies promulgated to ensure compliance with the Federal Records Act of 1950 and National Archives and Records Administration regulations. For more information see http://cio.energy.gov/records-management.htm.

The hazard inventory must be complete and accurate and should include sufficient detail for reviewers to characterize the hazards retrospectively.

Exposure monitoring data should include:

- Exposure levels;
- The date(s), number, duration, location and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable;
- A description of the sampling and analytical methods used and evidence of their accuracy;
- The type of PPE worn, if any;
- Name, social security number, employee identification number if different from the social security number, and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent; and
- The environmental variables that could affect the measurement of employee exposure.

Where it has been determined that no monitoring is required, a record of the objective data relied upon to support the determination that no employee is exposed at or above an action level or occupational exposure limit, as appropriate, should be maintained. Records containing personal identifiers must be maintained consistent with Privacy Act requirements.

Exposure monitoring records should be kept for 75 years. That is the duration required in the recordkeeping provisions of 10 CFR 850 “Chronic Beryllium Disease Prevention Program” and the duration of records needed to conduct epidemiological studies.

Other Objective Data:

Objective data records should be kept as long as the contractor relies on this data.

The requirement to maintain records of hazard inventory information refers to the compilation of information, materials and documents generated from the contractor's activities under hazard identification and assessment, parts (a), (b) and (c).

Summaries or representative information may be sufficient for routine and regularly changing hazards, (e.g., heat stress levels and changes in potential heavy metals exposures at different building demolition locations).

Title 10 CFR 850, *Chronic Beryllium Disease Prevention Program,* includes part 850.39 *Recordkeeping and use of information*. 10 CFR 850.39(h) requires contractors to transmit to the Office of Health, Safety and Security an electronic registry of beryllium-associated workers. The registry identifies these workers and includes data on their jobs, exposures and medical status. Procedures for completing and transmitting the data are found in DOE-STD-1187-2007, *Beryllium-Associated Worker Registry Data Collection and Management Guidance,* http://www.hss.doe.gov/nuclearsafety/ns/techstds/standard/std1187/doe-std-1187-2007.pdf.

The Office of Enforcement will use its voluntary Noncompliance Tracking System (NTS), which allows contractors to elect to report noncompliance. See Appendix B to Part 851—*General Statement of Enforcement Policy*, IX.5. *Self-Identification and Tracking Systems* for more information. Title 10 CFR 851 NTS Reporting Thresholds for reporting noncompliance of potentially greater worker safety and health significance into the NTS are available from a link on http://www.hss.doe.gov/enforce/index.html. The NTS is described in the guidance document, Enforcement Program Plan, also available from a link at http://www.hss.doe.gov/enforce/index.html.

6.6.1. Hazard Abatement Tracking

Hazard abatement is a component of hazard assessment and control. Hazard abatement management requires a mechanism to track all planned abatement activities through to completion. Therefore, all hazards identified during worker protection evaluations should be recorded regardless of whether the evaluation was conducted by DOE, contractors, or external agencies such as OSHA. In addition, hazards identified by employees or line management should be recorded if they are not immediately abated.

Hazard Abatement Information. Hazard abatement information may be in any format (electronic or paper file), as long as it (1) meets its purpose of documenting identified hazards and associated corrective actions through final abatement, (2) allows for appropriate planning and budgeting decisions, and (3) is retrievable. Electronic records are generally much more convenient than paper records and are preferred.

Contractors may not need to collect and maintain hazard information for hazards that rank low in assessed risk or have been abated quickly and easily. Contractors should establish a risk threshold below which hazard information need not be collected.

The following elements should be included in the documentation for each hazard:

Location;
- Date found;
- Description of hazard;
- Referenced standard in 851.23 or Appendix A to Part 851, or other standard included in the DOE-approved WSHP;
- Planned corrective action;
- Estimated cost of abatement;
- Interim protective measures;
- Abatement period (number of calendar days);
- Scheduled abatement date;
- Actual abatement date;
- Risk level; and
- Record identification number (unique identifying number).

In addition, the information should indicate if actual corrective action differs from planned corrective action.

Coordination. DOE field elements should be kept informed of the status of abatement activities. The contractor line organization should coordinate this reporting process with the field element to establish reporting mechanisms acceptable to both parties. In addition, the field element should establish the ability to request copies of the hazard abatement activity documentation at any time.

6.6.2. Reporting and Investigating; Analyzing Trends

Information about accident, injury, and illness reporting and investigating; and analysis of related data for trends and lessons learned; are contained in DOE O 231.1, *Environment, Safety and Health Reporting*; and DOE O 225.1, *Accident Investigations* (both available by searching at http://www.directives.doe.gov/).

6.7. Reference Sources

The Rule incorporates by reference a number of American National Standards Institute (ANSI), National Fire Protection Association (NFPA), American Conference of Governmental Industrial Hygienists (ACGIH), American Society of Mechanical Engineers (ASME) consensus standards and DOE Directives. It also indicates where those standards are available for inspection.

7. Variance Process

7.1. Consideration of Variance

Contractors should discuss the possibility of filing a variance application with representatives of the head of the DOE field element and the Cognizant Secretarial Office prior to filing the request in order to gain a preliminary view of the sufficiency of the supporting material and likelihood of the request being granted. Such discussions are encouraged as a means to improve the efficient use of resources. The head of the DOE field element also should provide the CSO with its recommendation for the approval and terms and conditions of variance applications that it supports. The head of the DOE field element should coordinate variance applications for which multiple CSOs have responsibilities for programs that would be affected by the variance.

Flexibility in Codes and Standards. Relief from technical compliance with certain codes and standards may be available within the code or standard in which case a variance may not be needed. Certain codes and standards provide implementation flexibility in the form of—

- An Authority Having Jurisdiction that can permit the use of alternate methods where such methods provide equivalent protection (referred to as "equivalencies"). (Paragraph 6.4.1 of this document discusses the AHJ and equivalencies.) The AHJ is authorized to approve equivalencies, and
- Acceptability of the code that was in effect at the time a facility or item of equipment was designed and constructed (referred to as the Code of Record) rather than the current code. (Paragraph 6.4.2 of this document discusses Code of Record.)

Any of the above flexibility provisions that exist in the codes and standards that are explicitly referenced in 10 CFR 851.27(b) is considered part of the Rule and may be exercised in implementing the Rule. Equivalencies approved by the AHJ and Code of Record accepted for facilities should be documented and retrievable for as long as the documents are in effect.
10 CFR 851 does not provide for applying similar flexibility to codes and standards, either those that are explicitly incorporated in the Rule or those that are adopted by a contractor and included in their WSHP, that do not contain flexibility provisions such as the AHJ and Code of Record. Most consensus codes and standards contain such provisions so the fact that the Rule does not provide generic flexibility for codes and standards should rarely present a problem to DOE sites.

7.2. Approval Criteria

Circumstances that could warrant granting of a variance include:

- Application of the requirement in the particular circumstances conflicts with other requirements; or
- Application of the requirement in the particular circumstances would not serve, or is not necessary to achieve, its underlying purpose; or would result in resource impacts which are not justified by the safety improvements; or
- Application of the requirement would result in a situation significantly different than that contemplated when the requirement was adopted, or that is significantly different from that encountered by others similarly situated; or

- The variance would result in benefit to human health and safety that compensates for any detriment that may result from the granting of the variance; or
- Circumstances exist which would justify temporary relief from application of the requirement while taking good faith action to achieve compliance; or
- There is present any other material circumstance not considered when the requirement was adopted for which it would be in the public interest to grant a variance.
- Establish a schedule for full or partial compliance with the standard.

8. Worker Safety and Health Functional Areas

8. 1. Construction Safety
8.1.1 Application

The construction-specific provisions apply to activities defined as construction under the definition section of 10 CFR 851. This definition is consistent with the definition provided by OSHA and the Davis-Bacon Act (40 U.S.C. 276a). Identification of construction activities is required by the Davis-Bacon Act for all Federally-funded projects in excess of $2,000. Accordingly, the determination as to which activities are construction defaults to an existing, formalized methodology in place at DOE sites.

It should be noted, however, that some activities meeting the definition of construction provided in 10 CFR 851 may not necessarily be deemed construction by a site's Davis- Bacon Committee. For example, there exists legal (and disputed) precedent that demolition activities not followed up by subsequent construction do not represent "public works" within the scope of the Davis-Bacon Act. It is not the intent of this document to resolve this dispute because a safety and health program document is an inappropriate mechanism to help resolve wage rate determinations. It is the intent, however, that construction requirements be applied to demolition activities, for example, because safety standards for construction, 29 CFR 1926, specifically address demolition activities while they are not addressed within 29 CFR 1910.

The application of these requirements to sites where the referenced contract clause is in force effectively exempts the Power Marketing Administrations as well as construction activities that are DOE funded but that are performed on state or private property outside the jurisdictional auspices of the Department (e.g., research facilities built on university campuses funded by DOE grants).

8.1.2. General

The intent of the construction-specific requirements is to compel proactive management of construction safety on all construction projects through:

- Systematic and timely evaluation of project hazards;
- Planning and selection of appropriate and effective protective measures;
- Informing workers of all foreseeable hazards and required protective measures;
- An active regimen of workplace inspections and prompt abatement of identified hazards.

Further, it is the intent of the requirements to integrate the safety and health requirements, to the greatest extent practicable, with the required activities of the project management team otherwise necessary to ensure compliance with the cost, quality, and schedule requirements of the project. For example, documentation should be integrated, to the greatest degree possible, with existing project documentation requirements (e.g., daily logs of construction), and when possible, the required job site inspections should be done, consistent with project staff qualifications, concurrent with other onsite quality assurance activities.

Though the construction program may seem overly burdensome or costly on small construction projects, a "graded approach" is inherent to the implementation of its requirements. Specifically, the "backbone" of the programmatic requirements is a hazard analysis for each construction operation presenting hazards not previously experienced or performed by a different subcontractor. By nature, the more complex and costly a project is, the more such operations are involved, and accordingly, the greater the amount of required pre-job planning.
Also, the construction safety and health program requirements (Hazard Analyses, Worker Training, Project Safety and Health Plan) need not duplicate those prescribed by the OSHA standard for Hazardous Waste Operations and Emergency Response [refer to Title 29 CFR 1926.65(b)].

8.1.3. Guidelines

The requirements provide considerable flexibility with regard to who on the project management team (i.e., the DOE project manager, his or her support staff, as well as the construction manager) should enforce and oversee safety and health performance of the construction contractor. However, these respective responsibilities must be delineated in written agreements or implementing instructions to ensure that the responsible parties are aware of and accept their respective responsibilities.

8.1.3.1. Coordination of Construction and M&O Safety and Health Requirements

DOE is required to review safety and health program elements developed by the host for site maintenance and operation activities to determine suitability and cost effectiveness on site construction projects. The intent of this requirement is twofold. First, in instances where the host and construction contractors mutually expose their employees to common hazards, it is probably both desirable and cost effective to mandate construction contractor adherence to site-wide OSH policies and procedures. However, there are also instances where mandated compliance by the construction contractor with host OSH program requirements that go beyond applicable DOE adopted OSH standards or are poorly suited to construction will have little, if any, positive impact on safety and health but will adversely affect project cost and schedule.

8.1.3.2. Construction Contractor Evaluations

Ensure the development and implementation at each site of a system by which the effectiveness of construction contractors' safety and health programs are systematically and objectively evaluated and to ensure that these evaluations are subsequently used in the determination of bidder responsibility on future projects. It should be noted that the system envisioned does not

specifically call for, nor encourage, a prequalification of prospective bidders based upon empirically derived indicators of past safety and health performance such as Workers' Compensation Experience Modifier Rates (EMRs) or incidence rates derived from a contractor's OSHA Form No. 300, *Log of Work-Related Injuries and Illnesses* (a required listing of recordable injuries and illnesses).

The distinctions between these systems need to be made clear. Whereas the former provides a direct (and fair) measure of a contractor's recent and relevant safety and health performance [and is accordingly prescribed by FAR 36.201for fixed-price construction], the use of performance indicators such as the EMR and incidence rates as the sole arbiter of prospective safety and health performance is problematic for several reasons.

The EMR is inherently biased against companies with small payrolls (i.e., small business) in that a single catastrophic loss constitutes a larger percentage of annual payroll (upon which premiums are based) than it would for a large company. Moreover, it is based on performance from two to four years ago as opposed to current performance and, therefore, will not reflect recent safety and health program improvements, regardless of magnitude.

With respect to the use of incidence rates as a prequalification criterion, history has shown clearly that the mere use of these rates for such purposes has led, in and of itself, to their marked improvement (without necessarily an improvement in true performance). Accordingly, it is doubtful whether sole reliance on such criteria fulfills the fundamental credo of Federal contracting: fair and open competition.

This is not to say that contractor prequalification does not have a place in the management of safety and health on DOE construction projects, but that is a distinctly different process than making a determination of bidder responsibility based upon past performance. Generally, prequalification should be reserved for use on highly complex or hazardous projects for which the need for specific safety and health experience and qualifications (and the resulting restriction of competition) can be clearly demonstrated (refer to FAR 9.202).

8.1.3.3. Construction Project Acquisition Documents

The safety and health requirements must be clearly communicated to the construction contractor through the development and incorporation of appropriate contract language in the project acquisition documents and not simply by reference. In most cases, this can be best achieved through local development and use of contract “boilerplate” safety and health provisions, which allow for insertion of project-specific requirements when needed (e.g., dedicated project OSH staff, applicable host contractor safety and health requirements).

8.1.3.4. Hazard Analyses

The intent of the hazard analyses is to compel a proactive and systematic evaluation of project hazards, timely planning of abatement strategies, and effective, relevant employee training. This may be achieved in a variety of ways. Contract provisions may call for a complete hazard evaluation process to be performed by the construction contractor, or the project specifications

may provide checklists or outlines that fulfill any portion (or all) of the hazard analysis requirements for later completion and implementation by the construction contractor. Regardless of the procedural means chosen, a means to identify project operations requiring hazard analyses must be provided prior to project commencement. This ensures a means to "tie" those operations to the project schedule, allowing for their timely completion and providing a means for the project manager to assess whether adequate preparations have been made (i.e., abatement methods chosen/designed, professional staff in place, employee training accomplished) prior to commencement of each project phase.

The complexity and degree of effort associated with the development of these hazard analyses should not be confused with that required for the preparation of "Safety Analysis Reports," extensive evaluations of the safe operating parameters of DOE nuclear facilities. As is common across the construction industry, these analyses commonly require from several lines to several pages for each project operation (generally in tabular form), depending on the nature of work being addressed. Complexity is not the key; what is essential is the identification and approval, in advance, of the actual work practices and protective measures to be employed. This helps to ensure a safe work environment from the outset on each construction operation and to avoid the often lengthy and costly disputes that occur as a job is delayed while unresolved safety issues are resolved.

By virtue of the fact that the approval authority for these analyses is the project manager or his or her designee, the format, level of detail and required complexity are left to his or her discretion. However, it may be desirable within local implementing instructions to formalize the procedural means for accomplishing these hazard analyses, including such issues as format and level of required detail.

8.1.3.5. Worker Hazard Awareness

Beyond the specific training requirements contained within DOE-prescribed worker protection Standards (e.g., 29 CFR 1926), the requirement does not specify curricula or duration of required employee worker safety and health training but emphasizes the need to formally communicate information concerning foreseeable project hazards and required protective measures prior to commencement of work on the affected construction operation. The approved hazard analysis for the respective construction operation is ideally suited to communicate this information to the worker.

8.1.3.6. Project Safety and Health Plan

To avoid confusion, it was decided to use the word "program" to describe the safety and health requirements and the word "plan" to describe the contractor's project-specific written proposal to implement these requirements.

It was also decided to let the hazard analyses become "stand-alone" requirements separate from the safety and health plan in that, once approved, an acceptable safety and health plan could possibly be used, with little or no modification, by a construction contractor on future projects. This could help lessen the initial paperwork requirements that may unnecessarily delay a

project's start and also reduce the possibility that pressures to “break ground” would result in a hasty and incomplete evaluation of project hazards.

8.1.3.7. Inspections and Hazard Abatement

8.1.3.7.1. Inspections

The requirement of 29 CFR 1926.20(b)(2) calls for “frequent and regular inspections of the job sites” by each employer (i.e., the construction contractor and all subcontractors). Consistent with requirements of the Federal Acquisition Regulation, which call for the onsite presence of a superintendent during the performance of any project work activities (see FAR 36.506 and 36.519 for fixed-price and cost reimbursement construction, respectively), the requirement calls for daily inspections of the job site by the construction contractor during periods of active work.

It should be noted that the frequency of required job site inspections by the project manager or his or her designee (i.e., support staff or construction manager) is given as “frequent and regular” as opposed to any specific frequency (such as weekly or monthly). The desired frequency of project inspections, consistent with project size, complexity, and risk level should be addressed within local implementation guidance.

The safety and health inspections required for construction projects may be accomplished concurrent with other onsite activities. There is no specific requirement for standalone project safety and health inspections by the safety and health staffs of the construction or project managers if project personnel have the requisite skills to perform these functions.

However, in cases where project staff lacks the necessary skills or experience or where particularly hazardous or complex work is ongoing, it may be that these requirements are best fulfilled by safety and health professionals duly tasked by the construction or project managers.

8.1.3.7.2. Hazard Abatement

Generally, it is both desirable and practical to demand immediate abatement of identified hazards on a construction project because they are mostly of the construction contractor's making (and contract terms generally call for immediate abatement with provisions for uncompensated work stoppages if this is not achieved.) However, there are instances where it may be either impossible or impractical to demand immediate abatement of a hazard or where abatement of a particular hazard may fall outside of project scope.

The requirement provides specific steps that should be taken in such instances. It is not, however, the intent of the requirement to provide a vehicle or a requirement for priority treatment of abatement actions outside of project scope (with project funds) above other pending, and possibly more crucial, site abatement actions.

8.2. Fire Protection

DOE contractors are required to implement and maintain a comprehensive, multi-faceted fire protection and response program that is predicated, in part, on compliance with applicable building codes and National Fire Protection Association (NFPA) codes and standards and should incorporate applicable provisions of DOE O 420.1 *Facility Safety*. The Rule adopts as requirements NFPA 70 National Electrical Code, (2005) and NFPA 70E Standard for Electrical Safety in the Workplace (2004). These two standards, and additional NFPA codes and standards that may be applicable, are available at www.nfpa.org.

Complete guidance on the development, adoption and maintenance of a fire protection and response program that satisfies the provisions of the Rule can be found in DOE STD-1066-1999, *Fire Protection Design Criteria.* A contractor may choose a successor version of any NFPA code and standard, DOE standard and implementation guide, if approved by the DOE Authority Having Jurisdiction (AHJ) for fire protection. (See 9.4.1 of this document for more information about the AHJ).

Additional guidelines on certain aspects of an acceptable fire protection and response services program can be found on the DOE Fire Protection website, located at: http://www.hss.energy.gov/nuclearsafety/ns/fire/.

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8.2.1. Authority Having Jurisdiction (AHJ)

(See 6.4.1. for more information concerning AHJ for fire protection.)

8.2.2. Life Safety Code

NFPA Standard 101 Life Safety Code is applicable to most DOE facilities. AHJs may determine that NFPA 101A Alternate Approaches to Life Safety can be applied to DOE facilities where an equivalent level of life safety to that provided with NFPA 101 is needed. The AHJ also should determine the additional or modified exit requirements needed for toxic and explosive environments. The exit requirements for explosives environments should reflect the criteria contained in the DOE M 440.1-1A, Explosives Safety Manual (available by searching at http://www.directives.doe.gov/). Additional fire protection features and personnel limits should be maintained where noncompliance with some NFPA Standard 101 provisions are necessary to prevent creating serious hazards, e.g. as could occur in some containment structures. Compliance with NFPA 101 satisfies exit requirements of the applicable building code and 29 CFR 1910 life safety requirements. OSHA has a *de minimis* violations policy that accepts the current industry consensus standard, if the consensus standard provides personnel protection equal to or greater than the protection provided by the applicable OSHA standard. Based upon this policy, an employer who meets the requirements contained in the current NFPA 101 would be in compliance with 29 CFR 1910 life safety requirements, so long as the current version provides equal or greater protection than the OSHA standard.

8.2.3. Fire Watches

When applicable, fire watcher requirements in National Fire Protection Association (NFPA) 51B should be expanded to include responsibility for the safety of the welder(s) in addition to that of the facility.

8.3. Explosives Safety

A comprehensive explosives safety program must implement and comply with all applicable requirements of DOE Manual 440.1-1A, *Explosives Safety Manual*, (available at https://www.directives.doe.gov/directives/current-directives/440.1-DManual-1a/view).

The DOE Explosives Safety Committee, composed of DOE's subject matter experts in explosives safety, maintain this Manual that incorporates lessons learned and technological advances in the field of explosives safety. The Rule explicitly permits the contractor to choose to use a successor version of the Manual if approved by DOE.

DOE O 420.1B, *Facility Safety*, dated 12-22-05 references the Manual in addressing the design of facilities:

- That contain explosives;
- Within which explosives activities are conducted; or
- That can be adversely affected by an explosives accident or detonation.

With the notable exception of onsite explosives storage and transportation of explosives or explosive assemblies, the Manual is not intended to govern routine construction or tunnel blasting.

Explosives safety requirements do not apply to cartridge-firing devices such as nail guns used in construction. Explosives safety storage requirements apply to the explosive components of cartridge-firing devices if very large quantities, as determined by a safety professional with appropriate qualifications in explosives safety are stored.

8.4. Pressure Safety

Safety policies and procedures to ensure that pressure systems are designed, fabricated, tested, inspected, maintained, repaired, and operated by trained and qualified personnel in accordance with applicable and sound engineering principles must be established. Contractors should consider pressure relief devices, piping, fittings, gauges, valves, pumps, heat exchangers and associated pressure-retaining hardware to be part of pressure systems and should subject these devices and hardware to protection measures that are equivalent to codes. The Rule also references specific American Society of Mechanical Engineers (ASME) codes for pressure vessels, boilers, air receivers, and supporting piping systems. Hazards presented by cryogenic, pneumatic, hydraulic, steam, and vacuum systems should be addressed. Vacuum systems should be addressed due to their potential for catastrophic failure in the event of backfill pressurization.

The provisions of 10 CFR 851 do not supersede requirements in 10 CFR Part 830, Nuclear Safety Management and appropriate sections of the ASME Boiler and Pressure Vessel Code that more appropriately apply to nuclear reactors and other DOE nuclear facilities.

8.5. Firearms Safety

A firearms safety program must be established and implemented for DOE activities involving the use of firearms. Implementation guidance for comprehensive protective force firearms safety programs can be found within the relevant provisions of DOE M 470.4-3, *Protective Force* (available by searching at http://www.directives.doe.gov/).

Firearms protocols for the Office of Inspector General are governed by its internal policies and procedures and associated guidance from the the Federal Law Enforcement Training Center, the U.S. Attorney General, and related federal law enforcement requirements.

8.6. Industrial Hygiene

Consult DOE technical standard DOE-STD-6005-01 *Industrial Hygiene Practices* (http://www.directives.doe.gov/) for additional guidance for complying with industrial hygiene requirements. Title 10 CFR 851 Appendix A section 6(a) effectively addresses worker health risks in typical work areas and operations. Typical work areas and operations tend to be stable. This section of the Rule may not be sufficient for identifying worker health risks for non-routine, transient or dynamic work operations. See section 7 of DOE-STD-6005-01 for guidance for dealing with non-routine, transient, or dynamic work areas and operations.

Title 10 CFR 850 *Chronic Beryllium Disease Prevention Program* (available at http://www.hss.energy.gov/healthsafety/wshp/be/) is deemed an integral part of the WSHP.

8.6.1. Additional Resources.

Non-ionizing radiation (NIR):

- *Threshold Limit Values (TLV) for Chemical Substances and Physical Agents & Biological Exposure Indices (BEI),* American Conference of Governmental Industrial Hygienists (ACGIH), Cincinnati, OH. (Latest edition.) Provides good overall documentation on all aspects of NIR (microwaves; ultra-wide band, low frequency and static electric fields; lasers; and non-coherent optical radiation). It essentially adopts Institute of Electrical and Electronics Engineers (IEEE) C95.1 (for controlled area microwaves) and American National Standards Institute (ANSI) Z136.1 *Safe Use of Lasers*.
- IEEE C95.2, 1999, *IEEE Standard for Radio Frequency Energy and Current-flow Symbols*, IEEE, Piscataway, NJ. This standard provides IEEE recommended practice covering usage of signs.
- IEEE C95.3, 2002, *IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz - 300 GHz*, IEEE, Piscataway, NJ. This is a very technical document on making field measurements and computations of radio frequency (RF) energy fields.

- IEEE C95.4, 2002, *IEEE Recommended Practice for Determining Safe Distances from Radio Frequency Transmitting Antennas When Using Electric Blasting Caps During Explosive Operations,* IEEE, Piscataway, NJ. Should be used with caution and by personnel trained in these calculations. Incorrect use could result in the loss of life.
- IEEE C95.6, 2002, *IEEE Standard for Safety Levels With Respect to Human Exposure to Electromagnetic Fields, 0 - 3 kHz,* IEEE, Piscataway, NJ. This is IEEE's standard on low frequency fields. ACGIH limits cover the same hazard and may be simpler to use.
- IEEE C95.7, 2006, *IEEE Recommended Practice for Radio Frequency Safety Programs, 3 kHz to 300 GHz,* IEEE, Piscataway, NJ. This new standard provides good basic information on RF safety programs.

Laser Safety:

- ANSI Z136.1-2007 *Safe Use of Lasers,* American National Standards Institute, 25 West 43rd Street, New York, NY 10036. This document is the cornerstone document of laser safety, includes exposure limits and calculations. It is the basis for the ACGIH TLVs. Z136.1 provides extremely useful worked out examples.
- ANSI Z136.2-1997 *Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Sources,* American National Standards Institute, 25 West 43rd Street, New York, NY 10036. This standard provides information on the safety of laser-based fiber optics systems.
- ANSI Z136.3-2005 *Safe Use of Lasers in Health Care Facilities,* American National Standards Institute, 25 West 43rd Street, New York, NY 10036. This standard is for Laser Safety Officers at health care facilities.
- ANSI Z136.4-2010 *Recommended Practice for Laser Safety Measurements for Hazard Evaluation,* American National Standards Institute, 25 West 43rd Street, New York, NY 10036. This practice is useful for making laser measurements although the requirements can be calculated using Z 136.1 instead of making the measurements.
- ANSI Z136.6-2005 *Safe Use Of Lasers Outdoors,* American National Standards Institute, 25 West 43rd Street, New York, NY 10036.

All the laser safety standards can be obtained at: http://webstore.ansi.org/ansidocstore/default.asp or http://www.laserinstitute.org.

8.7. Biological Safety
The requirements in the documents listed may give useful insight into DOE's interest in staying informed of biological etiological agent work being undertaken at DOE sites and determining that an Institutional Biological Safety Committee is in place to provide effective review of all activities involving biological etiological agents at DOE sites.

References for additional guidance are:

- Title 42 CFR Parts 72, Interstate shipment of etiologic agents and 73, *Possession, Use, and Transfer of Select Agents and Toxins*; available at http://www.cdc.gov/od/sap/final_rule.htm

- Title 7 CFR Part 331, Possession of biological agents and toxins and 9 CFR Part 121, *Possession, Use, and Transfer of Biological Agents and Toxins*, available at http://www.cdc.gov/od/sap/final_rule.htm
- 42 CFR Part 73 *HHS and USDA Select Agents and Toxins*, http://www.cdc.gov/od/sap/docs/salist.pdf
- *Biosafety in Microbiological and Biomedical Laboratories*. CDC/NIH publication (current edition). http://www.cdc.gov/biosafety/publications/bmbl5/index.htm
- *NIH Guidelines for Research Involving Recombinant DNA Molecules*. NIH publication MSU/1998 (current edition). http://oba.od.nih.gov/oba/rac/guidelines_02/NIH_Gdlnes_lnk_2002z.pdf
- Title 29 CFR 1910.1030, *Bloodborne Pathogens*. http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051

8.8. Occupational Medicine

8.8.1. Introduction

Protection of the safety and health of workers and the public and protection and restoration of the environment are fundamental responsibilities of DOE. A policy which promotes excellence in environmental, safety, and health activities is essential. Prompt recognition, diagnosis, and treatment of occupational injury or disease is paramount in managing and maintaining worker health.

This section will outline the methods and approaches which may be utilized to implement an occupational medical program and provide assistance in meeting the following objectives:

- Assist contractor management in protecting employees from health hazards in their work environments;
- Assist contractor management in ensuring the placement of employees in work that can be performed in a reliable and safe manner consistent with the requirements of the Americans with Disabilities Act of 1990;
- Provide support to contractor management in the medical, mental, and substance abuse aspects of personnel reliability and fitness for duty;
- Assist contractor management in planning responses to medical emergencies including the provision of onsite aid when appropriate.

- Promote the early detection, treatment, and rehabilitation of employees who are ill, injured, or otherwise impaired;
- Apply preventive medical measures toward the maintenance of the optimal physical and mental health of employees through health promotion and education;
- Provide professional guidance and consultation to contractor management on all health-related issues;
- Provide employees, as appropriate, with professional medical evaluation, guidance, counseling, and referrals to specialists in support of optimal physical and mental health;

- Protect the privacy of employees and the confidentiality of their medical records; and
- Provide support to DOE and contractor management and to the Office of Health and Safety by the collection and analysis, when requested, of employee health data for the purpose of early detection and prevention of occupational and non-occupational illnesses and injuries, thereby reducing morbidity and mortality.

8.8.2. Application

This section describes approaches and methods that DOE finds acceptable to meet the requirements for an Occupational Medical Program, and is applicable to all contractors awarded contracts and subcontracts for performing work for DOE on DOE-owned or -leased facilities. Activities conducted under the Naval Nuclear Propulsion Program or the Nuclear Weapons Safety Program relating to the prevention of accidental or unauthorized nuclear detonations are excluded from the requirements.

Specific requirements for the FEOSH Program are contained in 29 CFR 1960 and should be integrated with the overall Worker Protection Program that is provided for Federal employees.

The term "comprehensive" in 10 CFR 851 Appendix A, Section 8(a) refers to the specific services that the occupational medicine provider determines are appropriate, considering the specific work activities performed by the worker under the contract and are necessary for the occupational medicine program to be consistent with DOE requirements, e.g. Hazwoper, respiratory protection, and substance-specific standards. All possible services identified in the Rule are not necessary for all workers. Unless there are other applicable specific requirements concerning the content of workers' medical evaluations (see, for instance, 10 CFR section 712.11), the occupational medicine provider determines the content of the medical evaluations which can range from a "paper" review of a worker's essential job functions and completed medical history questionnaire to a hands-on physical examination and batteries of diagnostic tests.

The intent of the provision in Section 8(a)(1) requiring occupational medicine services for workers who work on a DOE site for more than 30 days in a 12 month period is to address DOE's population of transient and short-term workers such as crafts and laborers that are accessed from union halls, work for multiple contractors, or frequently cycle in and out of DOE sites for short duration tasks. This provision makes it clear that a contractor must establish and provide occupational medicine services to their workers who work on site for 30 days in a 12-month period. Title 10 CFR 851.10 requires that contractors' WSHPs describe how the contractors will comply with the requirements of the regulation, including the occupational medicine requirements that are applicable to hazards within their scope of work. In addition, section 851.11(a)(2)(ii) requires contractors to coordinate with other contractors at the covered workplaces to ensure that there are clear roles, responsibilities and procedures to assure the safety and health at multi-contractor workplaces. Therefore, the prime contractors and subcontractors should reach agreement on the content of the subcontractor occupational medicine program prior to beginning work under the contract.

DOE expects that contractors that are on site for more than 30 days in a 12 month period will establish an occupational medicine program based on the hazards associated with the contractors' scopes of work and exercise reasonable judgment on enrolling their workers on a case-by-case basis. It would be reasonable for contractors immediately to enroll workers that are scheduled to work for more than 30 days in a 12 month period in the occupational medicine program; to not enroll workers scheduled to work for less than 30 days in a 12 month period; and to keep track of the time that their other workers work on site so that the contractor can identify for enrollment those approaching the 30-day threshold.

Contractors are not required to determine how much time a worker has worked for other contractors on site. Contractors are not required to provide occupational medicine services for those "less that 30-day" workers, as long as the Appendix A, Section 8(a)(2) enrollment provision, concerning workers enrolled in a medical or exposure monitoring program, also does not apply to those workers.

Appendix A, Section 8(a)(2) requires contractors to establish and provide comprehensive occupational medicine services to workers who are enrolled for any length of time in a medical or exposure monitoring program required by 10 CFR 851, other applicable regulation, or other obligation. Medical monitoring is a component of occupational medicine so it is clear that the contractor must provide occupational medicine services to workers enrolled in a medical monitoring program. However, limited exposure monitoring conducted to quantify hazard assessment exposure estimates may not constitute an exposure monitoring program for which the contractor must provide occupational medicine services to the monitored workers.
Section 8(a)(2) does not say "all exposure monitoring." The term "enrolled . . . in a(n) exposure monitoring program" in 8(a)(2) refers to a consistent regimen of monitoring the exposure that workers receive while performing specific tasks. A contractor's hazard assessment required by 10 CFR 851.21(a)(1) that includes worker exposure monitoring may or may not constitute an exposure monitoring program.

Exposure monitoring that is not enrollment in a program. Monitoring performed to characterize the exposure resulting from a new activity or to validate an industrial hygienist's judgment that exposures are likely to be minimal does not constitute enrollment in an exposure monitoring program. For example, a week of monitoring the airborne silica levels experienced by workers spending many hours outdoors on windy days near a tunneling activity in a desert area to determine whether a hazard exists is not enrollment in a monitoring program. A worker receiving this monitoring would not meet the criteria in Appendix A, Section 8(a)(2) for requiring occupational medicine services.

Exposure monitoring that is enrollment in a program. Routinely monitoring the airborne beryllium levels experienced by machinists that periodically machine items that contain beryllium in areas where concentrations of beryllium are at or above the action level is an example of enrollment in an exposure monitoring program. Appendix A, Section 8(a)(2) also requires contractors to establish and provide occupational medicine services to workers who are enrolled for any length of time in an exposure monitoring program required by any other applicable Federal, State or local regulation or other obligation. For example, the Rule requires that contractors provide occupational medicine services to workers where there is a possibility of

any employee exposure to lead at or above the OSHA action level because OSHA's regulation 29 CFR 1910.1025, "Lead," requires medical monitoring of workers whose airborne exposure to lead is at or above the 29 CFR 1910.1025 exposure action level. See 29 CFR § 1910.1025(d)(4).

8.8.3. General Information

An occupational medical program is established for the purpose of helping to provide for the safety and health of workers at DOE facilities through the provision of medical and other health-related services by qualified personnel who possess appropriate certification and training.

The scope and nature of the medical services rendered are predicated, in part, on the analysis of existing or potential health hazards to which workers might be exposed, as well as specific job tasks. This can only be accomplished through close cooperation with professionals in industrial hygiene, health physics, safety, and management and through frequent worksite visits by medical staff.

Employee fitness for duty is a foremost objective of contractor occupational medical programs, and the performance of health evaluations is essential to the process. High-priority evaluations include preplacement (health status and fitness for duty), medical surveillance (jobs involving specific physical, chemical, or biological hazards), qualification (job assignments with specific medical qualifications standards), return to work (ensure that the employee may return to work without undue health risk to self or others), job transfer (determine whether the employee's health status and fitness for the newly assigned duties can be performed in a safe and reliable manner), and termination (health status review).

Equally important is the creation, development, and maintenance of complete medical records for each employee in accordance with the provisions of the DOE Records Management Program.

All components of an occupational medical program should be evaluated and prioritized with respect to their impact on worker health and safety at the site and their benefit/effectiveness in relation to cost in order to contain health care expenditures and to allocate funds in the most judicious manner.

The following definitions are useful for interpreting this section:

- **Medical Department.** The occupational medical program or occupational medical department established by the contractor.
- **Dedicated Medical Computer System.** A computer system under the control of the occupational medical department designed to receive, collect, and store occupational medical information.

- **Employee Assistance Program (EAP).** A program offering employees counseling, treatment, rehabilitation, and referral services for a wide range of medical, drug, alcohol, stress, and mental health problems, as well as for legal, financial, or job or career development problems.

- **Fitness for Duty.** The determination that the physical and mental health of an individual is consistent with the performance of assigned duties in a safe and reliable manner.

- **Full-time Occupational Physician.** A physician providing full-time occupational medical services.

- **Guidance.** Information to assist in achieving the program policies and objectives.

- **Health and Safety Group.** The contractor organizations which are concerned with health and safety programs.

- **Job Hazard Analysis.** A statement outlining the physical and mental requirements and the potential exposures and hazards of a specific job.

- **Monitored Care.** The monitoring of the quality of medical care of employees who have extended absences from work due to illness or injury for the purpose of facilitating their rehabilitation, recovery, and early return to work.

- **Occupational Health Examiner (OHE).** Physicians or nurse practitioners, physician assistants, or other appropriately licensed allied health professionals who provide health care under the direction of a licensed physician.

- **Occupational Health Nurse.** A registered nurse providing occupational health nursing services under the direction of a licensed physician.

- **Occupational Medical Program.** A program to assist in the maintenance and protection of optimal health through the skills of occupational medicine, psychology, and nursing; and to maintain a close interface with allied health disciplines, including industrial hygiene, health physics, and safety.

- **Occupational Medicine.** Those specialty branches of the professions of medicine, nursing, and psychology which deal with the health protection and health maintenance of employees with special reference to job hazards, job stresses, and work environment hazards.

- **Part-time Occupational Physician.** A physician providing occupational medical services on a less than full-time basis.
- **Site Occupational Medical Director.** The physician responsible for the overall direction and operation of the site occupational medical program.

8.8.4. Guidelines

8.8.4.1. Comprehensive Occupational Medical Services

The categories of workers who must be covered by the occupational medicine program are workers who are:

(1) Employed at a covered DOE workplace and work there for more than 30 days in a 12-month period; or
(2) Enrolled for any length of time in a medical or exposure monitoring program.

Managers who do not employ workers fitting either description do not have to establish an occupational medicine program. All others should generate a written plan that includes, but is not be limited to, mission statements and policies and procedures that implement medical surveillance and disease management programs, case-management strategies and programs, and public health and emergency strategies. The occupational medicine provider determines the content of the services.

Most categories of workers will receive some level of services but the provider may determine that some categories of workers require minimal services. Authorities and responsibilities should be clearly assigned to the officials responsible for integrating and implementing the program. At sites where most occupational medicine services are obtained from a single provider, it is usual for the occupational medicine program to be integrated across the site. The need to provide aid and emergency response to the entire population of a site indicates the necessity for site-wide integration.

Occupational medical services may be provided by:

- DOE contractor employees or;

- Private physicians or medical groups who are capable of fulfilling the requirements and intent of the requirement.

8.8.4.1.1. Subcontractors

The definition of contractor includes subcontractors at any tier; therefore subcontractor workers must be included in a compliant occupational medicine program. Contractors and subcontractors can implement part, or all, of the program with their own staff or arrange through agreements or contracts for others to provide all or part of the program. Medical services may include all of the required elements under one or several contracts.

8.8.4.2. Maintenance of a Healthful Work Environment

Occupational medical physicians, nurses, and selected medical staff should maintain an ongoing familiarity and awareness of existing or potential work-related health hazards, employee job tasks, and worksite environments.

Close cooperation and coordination with industrial hygiene, health physics, and safety professionals is suggested for the purpose of reviewing materials, processes, and procedures with an emphasis on physical, chemical, and biological hazards present in the worksite.

Regular worksite visits should be conducted by physicians and selected medical staff and, when appropriate, coordinated with Industrial Hygiene, Safety, and Health Physics for the purpose of becoming knowledgeable and familiar with the work environment and potential hazards. Management should routinely furnish the physician responsible for medical services with information on potential physical, chemical, and biological hazards at the worksite. This information is necessary to plan for worker protection programs, medical surveillance examinations, emergency planning, and staff training.

Prior to the performance of a periodic health evaluation, contractor management should provide to the OHE a summary of potential exposures to hazardous agents or tasks and all worksite exposures in excess of OSHA/DOE permissible exposure limits pertaining to the employee to be evaluated.

Job hazard analysis and exposure assessment are highly desirable tools for determining the need or rationale for medical monitoring. They should include personal monitoring results and systems that make exposure assessment data available.

The occupational medical director or designee should have the opportunity to participate in new materials and process review committees, safety committees, and other health-related meetings to facilitate the exchange of information among worker protection team members.

Title 10 CFR 851 Appendix A, Section 8(d) requires contractors to provide access to information about site hazards and employee exposures and any changes to those parameters so that occupational medicine providers can offer the appropriate services. The occupational medicine provider should become familiar with the exposure data and other hazards and make requests for hazard information to the appropriate sources of the data.

Contractors must provide their occupational medicine providers with the information that is necessary to make sound medical judgments. Logistics for providing workplace access to occupational medicine providers can be challenging especially for sites with many providers, hazards that vary in type and duration over time, and workplaces that require security clearance for access. The necessary information may be provided to the occupational medicine provider in many ways and need not necessarily include an on site visit by the provider unless it is necessary for "evaluation of job conditions and issues relating to workers' health." See 10 CFR Part 851 Appendix A section 8(d)(4).

If there is a specific issue for which the occupational medicine provider needs to see the workplace environment, then arrangements should be made to allow this visit to take place. Providing escorts for the occupational medicine providers may reduce some of the logistical hurdles to providing site access. Security restrictions may pose the most difficult obstacles to providing access to the workplace or even information about the workplace. Occupational medicine provider may have to rely on security-cleared safety and health personnel, and security classification personnel, to assemble and provide workplace hazard information that is sufficiently complete for the occupational medicine provider to understand the hazards but does not reveal information that poses a security risk. Contractors may apply for a national defense variance by following the provisions of subpart D of 10 CFR 851 and specifically following the

provisions of 10 CFR 851.31(d)(3) "National defense variance." For certain situations, it may be necessary for DOE to provide the occupational medicine providers with security clearances.

8.8.4.3. Employee Health Evaluations

8.8.4.3.1. Rationale

Health evaluations should be conducted by an OHE under the direction of a licensed physician, using whatever ancillary assistance is needed in accordance with current, sound, and acceptable medical practices. Employee health evaluations should be used to provide initial and continuing assessment of the employee in order to:

- Determine whether the employee's physical and mental health are compatible with the safe and reliable performance of assigned job tasks in accordance with the Americans with Disabilities Act of 1990;

- Detect evidence of illness or injury and determine if there appears to be an occupational relationship;

- Contribute to employee health maintenance by providing the opportunity for early detection, treatment, and prevention of disease or injury;

- Provide an opportunity for intervention by assessing risk factors which will cause premature morbidity or mortality (e.g., hypertension, smoking, elevated lipids); and

- Maintain documented records of the physical and mental health experience of employees.

8.8.4.3.2. Content of Health Evaluations

The medical service provider must determine the content of worker health evaluations. Although the occupational medicine plan must address its coverage of all workers, the contents and necessity of services and health evaluations to be offered to these workers are determined by the medical provider. For example, administrative personnel who work solely in an office setting may not ordinarily be offered hazard-based medical monitoring evaluations, but would be included in emergency care, illness and injury management, and health promotion programs. Additionally, there are specific standards that require medical evaluations for workers regardless of the length of time they are employed. For example, the OSHA “Respiratory Protection” standard, 29 CFR 1910.134, requires a medical evaluation of any employee required to wear a respirator. There may be some categories of workers for whom no health evaluations are deemed necessary.

The medical professional responsible for the occupational medical program should have responsibility for health evaluation content. Initial or baseline evaluations should be comprehensive, and follow-up evaluations should be additionally targeted as determined by employee exposure data, job hazard analysis information, or other occupationally related factors. Minimum elements of a comprehensive evaluation are:

- Medical/occupational history;
- Physical examination;
- Laboratory studies; and
- Review and evaluation of findings.

The protocols for x-ray examinations should follow the recommendations and guidance contained in 43 FR 4377, dated 2-1-78. All radiographs should be interpreted by a qualified radiologist or as specified by OSHA/DOE.

8.8.4.3.3. Types of Exams

What is commonly called a pre-placement medical examination is aimed at assuring employees are able to perform essential job functions prior to their assignment and recording a baseline of condition at the time of placement.

The periodic evaluations commonly called medical monitoring are aimed at early detection of the adverse effects of work or of continuing medical qualification to perform work.

The medical evaluations provided when patients seek aid or after receiving emergency aid are aimed at assuring the employees receive appropriate care, whether they can return to work, and if there are work-related causes that require investigation.

There is some overlap with what is commonly called a return-to-work evaluation. These evaluations are usually provided after an employee has been absent for some period. They are also diagnostic in nature and aimed at supporting the management of illnesses and injuries.

The medical evaluations commonly called termination examinations are aimed at determining whether employees have suffered any ill effects as a result of their work and creating a record of health condition at the time of separation that can help physicians determine the work relatedness of health problems that develop in the future.

It is common for occupational medicine programs to provide additional services. These might include evaluations associated with traveler health and infectious disease control, health promotion and preventative programs, and other medical services where overall cost efficiency justifies their provision.

8.8.4.3.3.1. Preplacement

A medical evaluation of an individual should be conducted after the job offer, but prior to the performance of job duties, and in the case of current employees, prior to a job transfer. The health status and fitness for duty of the individual should be determined, thereby ensuring that assigned duties can be performed in a safe and reliable manner and consistent with the Americans with Disabilities Act of 1990.

Management should provide to the OHE a job hazard analysis pertaining to the applicant/employee to help assess any potential health risk.

The initial preplacement evaluation should be a comprehensive evaluation as outlined in this document. The OHE should determine additional evaluation content, considering such factors as special physical or mental requirements of the job, potential hazardous exposures, or medical surveillance requirements mandated by the OSH Act, 29 CFR 1910, or 29 CFR 1926.

Those contractor operations requiring large numbers of preplacement evaluations may defer the comprehensive evaluation of individuals not assigned to hazardous work or potentially hazardous exposures after a review of the individual's medical history. The evaluations should be performed within 6 months of the hire date.

The occupational medical professional performing employee health evaluations should be informed of all employee job transfers in order to determine whether a medical evaluation will be necessary.

8.8.4.3.3.2. Medical Surveillance and Health Monitoring

Standards and requirements for special health evaluations and health monitoring of employees who work in jobs involving specific physical, chemical, or biological hazards should be in accordance with applicable OSHA/DOE standards. When employees are exposed to potential hazards not covered by regulations, appropriate special evaluations may be required as determined by the physician responsible for medical services.

8.8.4.3.3.4. Qualification

Evaluations should be conducted to qualify employees for specific job assignments for which specific medical qualification standards exist (e.g., drivers, pilots, protective force personnel, and respirator wearers).

Special medical evaluations should be performed in response to contractor management's request to determine employee fitness for duty.

8.8.4.3.3.5. Fitness for Duty

The term "fitness for duty" refers to fitness in both the general sense that employees can perform their job safely and the specific sense that they meet the requirements of specific programs. Fitness for duty evaluations are used to determine whether employees are able to perform their job functions without creating an undo hazard to themselves or others. These include examinations to determine whether the employee meets specific medical and psychological qualifications required by Federal regulations or other standards.

The occupational health examiner has the responsibility to make fitness-for-duty determinations.

Employees should be evaluated for the presence of medical conditions that may reasonably impair their safe, reliable, and trustworthy performance of assigned tasks.

A substance abuse (drug and alcohol) identification and rehabilitation program is integral to a comprehensive fitness-for-duty program. Any testing provided should be in accordance with acceptable practices and applicable regulations. The goal is to promote a safe and healthy work environment and to rehabilitate employees involved with substance abuse.

8.8.4.3.3.6. Return to Work

Occupational

All employees with occupationally related injuries or illnesses should be evaluated before returning to work. The scope and content of this evaluation should be determined by the occupational health examiner, based upon the nature and extent of the injury or disease, and should be sufficient to ensure that the employee may return to work without undue health risk to self or others.

The employee should obtain written clearance from the occupational medical department before returning to work.

Non-occupational

Management should ensure that employees will not be allowed to return to work until they receive a health evaluation and written clearance from the occupational medical department in the following situations:

- Illnesses or injuries causing absence from work for 5 consecutive workdays (or 40 hours) or more;
- Procedures or treatments that would negatively affect the employee's ability to perform in a safe and reliable manner; and
- Hospitalization.

The employee should provide relevant medical information from their private physician to assist in this determination. The final decision for health-related work recommendations resides with the physician responsible for the medical program if a disagreement exists regarding return-to-work suitability.

8.8.4.3.3.7. Termination Health Evaluations

A health status review should be made available for all terminating employees. This review should include the employee medical record and associated exposure information. A health evaluation (the content to be determined by the physician responsible for the medical portion of the occupational medical program) should be conducted on all employees with known occupational illnesses or injuries, employees with documented or presumed exposures to hazardous substances as required by OSHA regulations, or when more than 1 year has elapsed since the last examination.

All terminating employees should complete a signed response for the following questions:

- Have you had any medical treatment or health changes since your last physical?

- To your knowledge, have you had any significant chemical, radiation, or physical (such as heat or noise) exposures since your last physical?

- Do you have any complaints or concerns related to prior illnesses, injuries, or exposures?

- Do you have any current medical complaints?

8.8.4.3.3.8. Voluntary Periodic Evaluations

Voluntary periodic evaluations may be offered. However, it should be recognized that specific work hazards or statutory requirements should take precedence over the voluntary program. A fundamental purpose of these evaluations is to provide employees with the periodic assessment of their health and serve as a basis for medical intervention.

Accordingly, relevant components of the comprehensive evaluation may be included, as well as other preventive health measures such as health-risk appraisals or wellness counseling as authorized by the site medical director.

8.8.4.3.3.9. Applicable Documents

- 10 CFR 707, *Workplace Substance Abuse Programs at DOE Sites*
- 10 CFR 710, *Criteria and Procedures for Determining Eligibility for Access to Classified Matter or Special Nuclear Material*
- 42 CFR Chapter 1, Part II, *Confidentiality of Alcohol and Drug Patient Records*
- 49 CFR 40, *Procedures for Transportation Workplace Drug Testing Programs*
- DOE 5610.11, *Nuclear Explosive Safety*
- 10 CFR 1046.11, *Medical and Physical Fitness Qualification Standards*
- Public Law 102 484, *Defense Authorization Act*
- 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*

8.8.4.4. Diagnosis and Treatment of Injury or Disease

8.8.4.4.1. Occupational Injury or Disease

The management of occupational injury or disease should be in accordance with the laws and regulations of the state in which the facility is located.

Diagnosis and treatment of occupational injury or disease should be prompt, with emphasis placed on rehabilitation and return to work at the earliest time compatible with job safety and employee health.

Contractor management has the responsibility to establish procedures to ensure that all employees with occupational injuries or illnesses receive medical clearance before returning to work.

The responsible first-line management and health and safety groups (health physics, industrial hygiene, or safety) should be notified of unhealthy work situations detected by the occupational medical staff.

8.8.4.4.2. Non-occupational Injury and Illness

Employees should be encouraged to utilize the services of a private physician or medical facility, where these are available, for care of non-occupational injuries or illnesses. However, the medical department should assist employees who become ill at work. Care should be available for what may be judged a short-term, self-limited condition. Such a policy will contribute to containment of medical costs and encourage an atmosphere of trust for employees. The objective is to return the worker to a state of health in the shortest possible time consistent with modern medical therapy. Long-term treatment of non-occupational injury and illness is not considered to be a routine responsibility of an occupational medical program, except when delivery of treatment prescribed by a worker's personal physician in an onsite clinic is justified by savings in time away from work. **NOTE**: In emergencies, employees shall be given the necessary care required until referred to a private physician or facility.

8.8.4.4.3. Monitored Care

Monitored care of ill or injured employees by occupational medical staff is highly desirable to maximize recovery and safe return to work and to minimize lost time and associated costs. Contractor management has the responsibility to advise and assist the occupational medical department when an employee has been absent because of an illness or injury for more than 5 consecutive workdays (or 40 hours), or has experienced excessive absenteeism. Worker's compensation cases should be monitored when appropriate through frequent return visits and physician-to-physician communication with private physicians where applicable. The goal is to assist the employees in their recovery and to facilitate their return to duty at the earliest practicable time, which may require reasonable accommodations consistent with the Americans with Disabilities Act of 1990. Coordination with managers, employee benefit programs, and human resource staff should be considered when developing a comprehensive monitored care program.

8.8.4.5. Employee Counseling, Health Promotion, and Prevention

The physician responsible for the delivery of medical services should review and approve the medical aspects of an Employee Assistance Program (EAP), which should include physical and mental health, as well as alcohol and other substance abuse rehabilitation programs. Program evaluation should include treatment processes, records, referrals, treatment outcomes, follow-up (aftercare programs), and staffing.

The physician responsible for the delivery of medical services should review and approve all contractor-sponsored or supported wellness programs as essential components of a preventive medicine program. Health counseling should be available to all employees.

Program evaluation should address the training/education opportunities provided, lesson plans, class evaluation records, and referral counseling sessions. The evaluation should assure that medical and psychological services are being provided by or under the supervision of individuals with licenses to practice in the states where services are being delivered.

The responsible physician should ensure that training and immunization programs are available for workers potentially at risk of exposure to bloodborne pathogens and that the disposition of biohazardous waste conforms to OSHA regulations and Centers for Disease Control (CDC) guidelines.

8.8.4.5.1. Applicable Documents

- 10 CFR 707, *Workplace Substance Abuse Programs at DOE Sites*
- 29 CFR 1910.1030, *Bloodborne Pathogens*

8.8.4.6. Medical Records

The occupational medical program should outline procedures for the creation and maintenance of a medical record for each employee for which medical services are provided. These records should be kept from the time of the first examination and should be accurate, current, and complete. It should be noted that DOE's ability to collect medical information on employees is constrained by existing Privacy Act System of Records Notices.

EAP records should be maintained separately by the EAP director to ensure confidentiality.

Employee medical records are to be developed and maintained in accordance with Executive Order 13335 *Incentives for the Use of Health Information Technology and Establishing the Position of the National Health Information Technology Coordinator* (Federal Register: April 30, 2004 (Volume 69, Number 84), Page 24057-24061, http://www.archives.gov/federal-register/executive-orders/2004.html). This Executive Order establishes a National Health Information Technology Coordinator whose responsibility is, to the extent permitted by law, to develop, maintain, and direct the implementation of a strategic plan to guide the nationwide implementation of interoperable health information technology in both the public and private health care sectors that will reduce medical errors, improve quality, and produce greater value for health care expenditures. It does not require, but strongly encourages, the use of electronic occupational medical records. Occupational medical records should be maintained in standardized electronic formats as much as possible. Several standards for electronic medical records are available and others are under development (see additional resources below.)

8.8.4.6.1. Privacy

The confidentiality of all employee medical records, including written, microfilmed, or computerized records, should be observed by all persons having official access to them. Except as provide by Federal law, including law enforcement provisions, disclosure of information should be made only with the employee's written consent. Access to employee medical records should only be granted as permitted by Federal law or regulation. Custody of the medical records should remain with the occupational medical department.

8.8.4.6.2. Access

Access to medical records must be provided in accordance DOE regulations implementing the Privacy Act. Access to employee medical records should be in accordance with:

- The Privacy Act, as codified in 5 U.S.C. 552a and implemented in DEPARTMENT OF ENERGY Privacy Act of 1974; Publication of Compilation of Privacy Act Systems of Records, 74 FR 994 – 1090 (see http://management.energy.gov/documents/FinalPASORNCompilation.1.8.09.pdf);
- Access to Employee Exposure and Medical Records, as codified in 29 CFR 1910.1020 (OSHA General Industry Standards); and
- State laws and codes.

8.8.4.6.3. Identification

Employee medical records should be properly identified and coded in a consistent manner to provide the medical staff with the following information:

- Current job title/work location,
- Job certifications or limitations,
- Allergies, and
- Medical surveillance/work hazards.

This information is necessary to alert medical professionals to the identification of potential work-related conditions or fitness-for-duty considerations during examinations and treatments. Contractor management should assist the medical department in obtaining and updating this information.

8.8.4.6.4. Work Restrictions

Appropriate work restrictions should be communicated to contractor management. Contractor management should maintain a work restriction registry, if appropriate.

8.8.4.6.5. Retention of Medical Records

The medical records of contractor employees are considered valuable epidemiologic research records (along with other records such as exposure, work history, personnel, and litigation

records) and should not be lost or destroyed. Inactive records may be retired to low-cost storage in an approved onsite records holding area or a Federal Records Center. They should be packed and sealed for storage so as to preserve confidentiality. If resources permit, the paper medical records may be stored on microfilm or any electronic media acceptable to DOE.

8.8.4.6.6. Applicable Documents

- 10 CFR 1008, *Records Maintained on Individuals (Privacy Act)*
- 29 CFR 1910.1020, *Access to Employee Exposure and Medical Records*

8.8.4.7. Emergency Preparedness

8.8.4.7.1. Rationale

The physician responsible for the occupational medical program should develop the medical portion of the site emergency plan.

This input should be closely integrated with, and made a part of, the overall site emergency r preparedness plan. It will require coordination and cooperation with management, emergency preparedness coordinators, safety, health physics, industrial hygiene, fire and rescue units, security organizations, and offsite medical facilities.

The occupational medical portion of the site emergency plan should also be integrated with surrounding community emergency plans to the extent consistent with the development of a mutual aid and assistance capability.

Preplanning and prearrangements are key factors vital to the effectiveness of the medical portion of the site emergency plan. The medical portion of the plan should be appropriate for the site. In formulating the plan, management should consider the type of plant operations, number of employees, emergency response capability, and the type and severity of accidents and trauma.

Other considerations should include, where appropriate:

- Capabilities for medical aid, triage, and personnel decontamination by trained, qualified medical staff members;
- Capabilities for cardiopulmonary resuscitation, cardiac defibrillation, and advanced cardiac life support;
- Services of health physicists and industrial hygienists to evaluate any associated radiological or chemical hazards affecting the casualties, the general public, or the environment, and to assist rescue and medical personnel;
- Arrangements for adequate offsite treatment of injuries and illnesses resulting from exposure to radiation and/or toxic materials, including internal and external contamination;
- Services of medical specialists and consultants;
- Services of rescue squads, ambulances, and helicopters, as needed, with the capability of handling radioactively contaminated casualties as appropriate;

- Medical aid coverage during evacuation operations from facilities and the site; and
- Communication links between medical aid and triage teams, fire and rescue units, hospitals and hospital teams, local and State police, and the DOE Emergency Operations Center.

8.8.4.7.2. Applicable Documents

- U.S. Department of Transportation guides and appropriate State requirements for ambulance personnel;
- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA);
- The Resource Conservation and Recovery Act (RCRA);
- The Emergency Planning and Community Right-to-Know Act (EPCRA) Executive Orders 12580 and 12656;
- Title 40 CFR 300, *National Oil and Hazardous Substances Contingency Plan*;
- Title 40 CFR 302, *Designation, Reportable Quantities, and Notification*;
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- DOE O 151.1C, *Comprehensive Emergency Management System;*
- DOE G 151.1-4, *Response Elements*, Chapter 8, *Emergency Medical Support. and*
- The National Response Framework

8.8.4.8. Information Provided to Medical Services Provider and Interaction with Worker Protection Teams

Access to information about site hazards and employee exposures and any changes must be provided so that medical services can be offered as appropriate. The medical service provider should become familiar with the types of data available and make requests to the appropriate sources of the data. The occupational medicine provider staff members must avail themselves of opportunities to visit workplaces and interact with employees and other worker safety and health staff members to the extent needed to plan and implement appropriate services.

8.8.4.9. Feedback Medical Results to Mitigate Hazards

Medical providers must communicate results indicating that an adverse health effect may be due to work to those who are able to investigate and correct unsafe working conditions. These are usually single events, such as an unusual medical monitoring result, but could also be an unusual pattern of findings in a group. Access to personal and medical information, such as that which may be needed to investigate causes of injury or illness is subject to requirements of the Privacy Act of 1974 and the Health Insurance Portability and Accountability Act. Implementation plans should include assignments of authorities and responsibilities for the routine collection, analysis and communication of information on potentially work-related health effects to management and others who need to know.

8.8.4.10. Manage Preventable Morbidity and Mortality

The medical provider must identify and manage the principal preventable causes of premature morbidity and mortality affecting worker health and productivity. The medical provider should seek to manage causes identified by available evidence, published medical studies, demonstration projects at other institutions, or internal analyses, indicating that management efforts are likely to be cost-effective. Contractors must work with their health, disability, and other insurance plans to provide requested information or access to the information (de-identified as necessary) to the occupational medicine provider in order to facilitate this process. Upon request, the contractor should provide the occupational medicine provider the means to collect and analyze data for this purpose from voluntary employee surveys, disability reports, return-to-work data and other available sources.

Title 10 CFR 851 Appendix A, Section 8(j) requires occupational medicine providers to identify and manage the principal preventable causes of premature morbidity and mortality affecting worker health and productivity. Section 8(j) (1) requires contractors to include programs to manage these causes when evaluations demonstrate their cost effectiveness.

DOE recognizes that occupational medicine providers for small contractors will not have enough workers with which to identify the principal preventable causes of premature morbidity and mortality affecting worker health and productivity and, even if such causes could be identified, the small numbers of workers will prevent small contractors from being able to determine the cost-effectiveness of such prevention and management programs. Small contractors comply with Appendix A, Section 8(j) and 8(j)(1) if their occupational medicine providers determine that not enough information is available to 1) allow an evaluation of the contractors' workers for these preventable causes; or 2) demonstrate the cost effectiveness of instituting such programs. DOE will utilize Small Business Administration guidance when designating a contractor as a small business.

The occupational medicine provider should seek to manage causes identified by available evidence, published medical studies, demonstration projects at other institutions, or internal analyses indicating that these services are likely to be cost-effective. Medical conditions arising outside of the workplace, as well as those arising within the workplace, can affect workers' physical ability to perform their jobs and, therefore, should be included in the identification process.

Appendix A, Sections 8(j)(2) requires that "contractors must make available to the occupational medicine provider appropriate access to information from health, disability, and other insurance plans (de-identified as necessary) in order to facilitate [the] process [of evaluating the cost effectiveness of programs to manage the principal preventable causes of premature morbidity and mortality affecting worker health and productivity]."

Contractors should work with their health, disability, and other insurance plans to provide to the occupational medicine provider this information, or access to this information, to the extent practicable given the restrictions on the release of this information. For example, contractors can request workers to provide signed release forms to allow the occupational medicine provider

access to protected records containing medical information. The contractor also should provide the occupational medicine provider with relevant information from voluntary employee surveys, disability reports, return-to-work data and other available sources.

8.8.4.11. Rehabilitation

The medical provider must participate in the management of employees with continuing health problems. Implementation plans should make clear assignments of authorities and responsibilities of medical providers to monitor the rehabilitation of injured and ill workers, assure workers are not assigned task that create undo risk, and recommend workplace accommodations that facilitate return to work. The medical provider must have access to information and knowledge of the employee's health condition and working conditions to perform this required function. The ADA provides policy on placement decisions.

8.8.4.12. Assistance and Wellness

The occupational medicine services must provide for review and approve the medical and behavioral aspects of several types of contractor-supported employee assistance or health programs. This is to ensure that the provision of these medical and psychological services are supervised by licensed personnel and that pertinent medical information resulting from these DOE-funded services become part of the worker's medical record. Since contractors and subcontractors can implement part, or all, of their occupational medicine program with their own staff or arrange for others to provide program services, it is important that the implementation plan for the occupational medicine program assign authorities and responsibilities to ensure that integration of such services and information routinely takes place. At some sites, the medical services provider assigned these responsibilities is the site occupational medicine director, who must be licensed.

8.8.4.13. Immunizations and Biohazards

The occupational medicine services provider must review the medical aspects of immunization programs, blood-borne pathogens programs, and biohazardous waste programs to evaluate their conformance to applicable guidelines. The purpose of this requirement is to ensure that the occupational medical providers have knowledge of the identity of employees at elevated risk for infections or other biohazards (i.e. strong allergens) so that workplace controls can be evaluated, recommended immunizations can be provided, and emergency care can be planned.

Biohazardous waste includes blood, body fluids, and other potentially infectious materials (listed by OSHA at http://www.osha-slc.gov/SLTC/etools/hospital/hazards/univprec/univ.html) and may include waste from a biological research program. The occupational medicine program should have a role determining if a biohazard exists and in managing that risk.

8.8.4.14. Organization and Staffing

8.8.4.14.1. Medical Services Provider Credentials

In all cases, a licensed physician will have the authority to direct medical services. In many instances, the official responsible for coordinating, approving and directing occupational medicine services is the site occupational medicine director. When multiple medical providers are involved, particularly when determining the work-relatedness of illnesses and injuries, the authorities and responsibilities of the medical providers should be clearly stated in the occupational medicine plan to ensure that injury and medical data are collected, integrated, and appropriately reported. For example, the plan implementing the occupational medicine program should ensure that essential information for the Computerized Accident/Incident Reporting System (CAIRS); total recordable cases (TRC); and days away from work, days of restricted work activity or job transfer (DART) are collected and reported as required by DOE O 231.1-1B *Environment, Safety and Health Reporting*.

The personnel providing health services must be licensed, registered, or certified as required by Federal or state law where employed. Other sources of such credentials include, but are not limited to the following:

- American College of Occupational and Environmental Medicine;
- American Board for Occupational Health Nurses;
- American Academy of Nurse Practitioners;
- American Academy of Physician Assistants;
- American Board of Professional Psychologists;
- Employee Assistance Certification Commission;
- American Counseling Association with National Board Certified Counselors Inc.- except for licensure requirements in California and Nevada.

8.8.4.14.2. Physician Staffing

Physicians who are providing occupational medical services to contractor employees need to have a degree from an accredited school of medicine or osteopathy and meet the licensing requirements applicable to the locations in which they work. Board certification in occupational medicine is preferred. It is desirable that the responsible physician report to the contractor site manager, appropriate laboratory director, or another management level with sufficient authority to participate in health and environmental issues at policymaking levels to ensure program effectiveness. They should be afforded opportunities for continuing education, including attendance at professional meetings.

8.8.4.14.3. Nurse and Other Occupational Health Personnel Staffing

It is recommended that occupational health nurses, physician's assistants, nurse practitioners, and other occupational health personnel be graduates of accredited schools, licensed, registered, or certified, and legally qualified to practice by Federal or State law where employed. They should be afforded opportunities for continuing education, including attendance at professional meetings.

8.8.4.14.4. Professional Staffing Ratio

The proper professional staffing ratio of physicians and nurses to the employee population is related to many factors that may include the following:

- Size of population to be served;
- Geographic distribution and location of employees;
- Shifts worked;
- Rate of employee turnover;
- Age and distribution of the employee population;
- Extent of occupational hazards and associated medical surveillance requirements;
- Types and complexities of job tasks and operations performed;
- Total number of all health examinations required;
- Degree of isolation of worksites from the community and its medical services; and
- Degree of employee utilization of occupational health services.

At sites where a full-time nurse or physician would not be cost effective (e.g., sites with less than 300 employees), management should provide at least one employee on duty that is trained and currently qualified in first aid and cardiopulmonary resuscitation.

8.8.4.14.5. Clinical Psychologists

Clinical psychologist should:

- Be graduates of accredited schools of clinical psychology and hold a valid license as required in the state where they work. A Doctor of Philosophy (Ph.D.) or a Doctor of Psychology (Psy.D.) degree with training and experience in clinical occupational assessment and treatment is highly desirable;

- Report directly to the site occupational medical director or designee; and
- Be afforded opportunities, as determined by the site occupational medical director, for continuing psychological education related to services provided on the site, including psychological evaluation. Psychologists employed full-time should be afforded opportunities for membership and participation in professional associations.

8.8.4.14.6. Counselors (i.e., Substance Abuse, Mental Health)

Counselors should:

- Have the education and training appropriate to their specialty and be certified or licensed as required by the state in which the facility operates;
- Be responsible to the site occupational medical director or designee; and
- Be afforded opportunities for continuing education and membership and participation in professional associations as approved by the site occupational medical director when they are employed full-time.

8.8.4.14.7. Psychological Staffing

The site occupational medical director should establish consulting relationships with psychiatrists or psychologists as required by the demands of the program. At sites with 2,000 or more employees, one full-time equivalent clinical psychologist is desirable.

The option of contracting for the services of a part-time clinical psychologist or psychiatrist for facilities with fewer than 2,000 employees or to supplement existing services is acceptable.

8.8.4.14.8. Applicable Documents and Organizations

- State Practice Acts
- *American Association of Occupational Health Nurses*, 1994
- *Standards of Occupational Health Nursing Practice*
- The American Association of Occupational Health Nurses, 50 Lenox Pointe, Atlanta, GA 30324-3176
- American Board for Occupational Health Nurses, Inc., 10503 N. Cedarburg Road, Mequon, WI 53092-4403
- American Academy of Nurse Practitioners, Capitol Station, LBJ Building, P.O. Box 12846, Austin, TX 78711
- American Academy of Physician Assistants, 950 N. Washington Street, Alexandria, VA 22314
- American College of Occupational and Environmental Medicine
- U.S. Department of Health and Human Services, Public Health Service, Division of Occupational Medicine
- 29 CFR 1910.151, Medical Services and First Aid
- American Psychological Association, *Standards and Guidelines for Professional Psychological Practice*
- American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders DSM-IV*
- Employee Assistance Professionals Association (EAPA), *Standards and Guidelines*
- State Licensing Boards for the Practice of Psychology
- National Professional Counselors Association
- Alcohol and Substance Abuse Counselor Association
- Mental Health Counselors Association
- State Counselor Licensing Departments

8.8.4.15. Occupational Medical Facilities and Equipment

8.8.4.15.1. Facilities

Occupational medical program facilities should have sufficient space, lighting, and climate control and should be adequate for the privacy and comfort of employees for waiting, consultation, examination, and emergency treatment. Occupational medical facilities should be located in areas readily accessible to employees and transportation.

Adequate decontamination facilities for chemical and radiological purposes should be readily available when the potential for those hazards exists.

8.8.4.15.2. Equipment

Selection, supply, and use of medical equipment should be adequate in terms of present day accepted standards of medical practice, should meet OSHA standards, and should be properly maintained and calibrated.

8.8.4.15.3. Pharmaceuticals

Dispensing, storing, and disposing of pharmaceuticals should be in accordance with appropriate Federal, State, and local law.

8.8.4.16. Quality Assurance/Quality Improvement

Each occupational medical department should strive to develop, maintain, update, and continuously improve a quality plan that exemplifies the organization's mission and vision, quality values, and customer focus orientation. The quality plan should contain provisions that address customer service strategies, that analyze service delivery systems, and that develop customer service standards, with the goal of empowering employees and reinforcing and rewarding excellence. Applicable standards regarding equipment, procedures, and documentation may also be used.

8.8.4.16.1. Applicable Document

- 10 CFR 830.120, Quality Assurance

8.8.4.17. Additional Resources

8.8.4.17.1. Standards for Electronic Medical Records

Health Level 7 (HL7) messaging standards to ensure that each Federal agency can share information that will improve coordinated care for patients such as entries of orders, scheduling appointments and tests and better coordination of the admittance, discharge and transfer of patients.

- National Council on Prescription Drug Programs (NCDCP) standards for ordering drugs from retail pharmacies to standardize information between health care providers and the pharmacies. These standards already have been adopted under the Health Insurance Portability and Accountability Act (HIPAA) of 1996, which ensures that parts of the three Federal departments that aren’t covered by HIPAA will also use the same standards.

- The Institute of Electrical and Electronics Engineers 1073 (IEEE1073) series of standards that allow for health care providers to plug medical devices into information and computer systems that allow health care providers to monitor information from an

intensive care unit or through telephonic remote health services on Indian reservations, and in other circumstances.

- Digital Imaging Communications in Medicine (DICOM) standards that enable image and associated diagnostic information retrieval and transfer from various manufacturers' devices and medical staff workstations.

- Laboratory Logical Observation Identifier Name Codes (LOINC) to standardize the electronic exchange of clinical laboratory results.

  Health Level 7 (HL7) vocabulary standards for demographic information, units of measure, immunizations, and clinical encounters, and HL7's Clinical Document Architecture standard for text based reports. (Five standards)
- The College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) for laboratory result contents, non-laboratory interventions and procedures, anatomy, diagnosis and problems, and nursing. HHS is making SNOMED-CT available for use in the U.S. at no charge to users. (Five standards)

- Laboratory Logical Observation Identifier Name Codes (LOINC) to standardize the electronic exchange of laboratory test orders and drug label section headers. (One standard.)
- The Health Insurance Portability and Accountability Act (HIPAA) transactions and code sets for electronic exchange of health related information to perform billing or administrative functions. These are the same standards now required under HIPAA. (One standard.)
- A set of Federal terminologies related to medications, including the Food and Drug Administration's names and codes for ingredients, manufactured dosage forms, drug products and medication packages, the National Library of Medicine's RxNORM for describing clinical drugs, and the Veterans Administration's National Drug File Reference Terminology (NDF-RT) for specific drug classifications. (One standard.)

- The Human Gene Nomenclature (HUGN) for exchanging information regarding the role of genes in biomedical research in the Federal health sector. (One standard.)
- The Environmental Protection Agency's Substance Registry System for non-medicinal chemicals of importance to health care. (One standard.)

- Chronic Beryllium Disease Prevention.
- Medical screening test results and other relevant data for beryllium-associated workers must be transmitted to DOE in electronic format (10 CFR 850.39(h) and should be provided in accordance with DOE-STD-1187-2007, Beryllium-Associated Worker Registry Data Collection and Management Guidance http://www.hss.doe.gov/nuclearsafety/ns/techstds/standard/std1187/doe-std-1187-2007.pdf
- DOE-SPEC-1142-2001 Beryllium Lymphocyte Proliferation Testing (BeLPT), April 2001 provides specifications that can be used for the purchase of BeLPT services.

8.8.4.17.2. Psychological Services

- Standards for employee assistance programs are included in Specific Service Areas Standards available from the Council on Accreditation (http://www.coanet.org/front3/page.cfm?sect=55&cont=4191).
- DOE O 350.1, Contractor Human Resource Management Programs, Chapter IX, Attachment 1, Contract Requirements Document, Employee Assistance Programs.

8.8.4.17.3. Occupational Medicine Services

- The American College of Occupational and Environmental Medicine publishes statements and guidelines on the practice of occupational medicine. See http://www.acoem.org/ for more information.
- Applications Manual for the Revised NIOSH Lifting Equation, January, 1994. DHHS (NIOSH) Publication No. 94-110

8.9. Motor vehicle safety

The U.S. Department of Labor, OSHA, provides guidance on motor vehicle safety policies and programs, applicable standards, hazard recognition and control, and additional information at http://www.osha.gov/SLTC/motorvehiclesafety/index.html. States have policies and regulations that may apply to sites that include state roads.

8.10. Electrical safety

A comprehensive electrical safety program appropriate for the activities at the site must be implemented. The program must meet the applicable electrical safety codes and standards. Specifically, those codes and standards include in the applicable electrical safety regulations promulgated by OSHA such as Subpart S of 29 CFR 1910 for general industry operations and Subpart K of 29 CFR 1926 for construction operations and NFPA electrical safety standards: NFPA 70 (*National Electrical Code*, 2005) and NFPA 70E (*Electrical Safety in the Workplace*, 2004).

The purpose of the electrical safety program is to provide a sound and effective approach to electrical safety to ensure the safety and well-being of all DOE contractor and subcontractor employees, enhance electrical safety awareness and mitigate potential electrical hazards to employees, the public, and the environment associated with the use of electrical energy within any DOE site or facility.

Electrical safety guidance is available in DOE's *Electrical Safety Handbook* (DOE-HDBK-1092-2004, available by searching at http://www.directives.doe.gov/). That handbook also provides an example of an acceptable electrical safety program in the Handbook's Appendix A, A Model Electrical Safety Program (MESP). As illustrated in this MESP, the main elements of an effective electrical safety program include the following six (6) components:

- Management commitment to the program;

- Effective training (including baseline training) for all degrees of hazard;
- Effective and complete safe electrical work practices;
- Documentation for all activities;
- Electrical safety engineering support; and
- Oversight for the electrical safety program.

Refer to the MESP described in the DOE Handbook (1092-2004) for more detailed guidance and suggestions on program content such as purpose, scope, and ownership; performance objectives; responsibilities, authorities, and interfaces; definitions; and implementation procedures. The Handbook also includes references for more in-depth guidance.

Note, the MESP described in the Handbook is intended as guidance to assist individuals in formulating their own programs and does not represent requirements. Evaluate your own worksites, operations, and facilities and develop an appropriate electrical safety program consistent with your specific circumstances and within the framework of your overarching health and safety program. For instance, in determining the need for, and role of, an electrical safety committee, consider the MESP's suggested provisions for the committee's roles, responsibilities, membership, and charter, but you must also consider the current health and safety management structure as well as existing collective bargaining agreements in place at the facility.

8.10.1. Authority Having Jurisdiction (AHJ) for electrical safety

(See 6.4.1 for more information concerning AHJ for electrical safety.)

8.10.2. Exemptions and waivers of electrical safety requirements

Section 5.6.3 of the MESP discusses suggested provisions and procedures for the content and review of requests for exemptions and waivers from codes and regulations. As discussed in section 6.4.1 of this document, the AHJ has the authority to waive specific requirements of NFPA 70 or permit the use of alternate methods where such methods provide equivalent protection (i.e., equivalencies) consistent with the AHJ provisions of these codes. Deviations from the letter of the electrical safety requirements of the OSHA standards that do not incorporate NFPA 70, however, are only permitted if approved through the formal variance process. See section 6.4.1 of this document for a more detailed discussion of equivalencies.

8.11. Nanotechnology Safety

To understand DOE's objectives for nanotechnology safety consult:

- P 456.1, *Secretarial Policy Statement On Nanoscale Safety*, available at: http://www.directives.doe.gov/pdfs/doe/doetext/neword/456/p4561.html; and
- *Safety Bulletin 2005-06: Good Practices for Handling Nanomaterials*, available at http://www.hss.doe.gov/paa/bulletins.html.

8.11.1. Additional Resources

- DOE Industrial Hygiene/Occupational Safety Special Interest Group, http://orise.orau.gov/ihos/Nanotechnology/nanotech_home.html;
- NIOSH, *Topic Page*, http://www.cdc.gov/niosh/topics/ctrlbanding/;
- HSE, *COSSH Essentials*, http://www.coshh-essentials.org.uk/;
- ILO *SafeWork*, http://www.ilo.org/public/english/protection/safework/ctrl_banding/index.htm.