

**WORKER PROTECTION MANAGEMENT
FOR DOE FEDERAL AND CONTRACTOR
EMPLOYEES GUIDE**
for use with
DOE ORDER 440.1



OFFICE OF WORKER HEALTH AND SAFETY

FOREWORD

1. This Department of Energy Guide is approved for use by the Office of Environment, Safety and Health and is available for use by all DOE components and their contractors.
2. Beneficial comments (recommendations, additions, and deletions) and any pertinent data that may improve this document should be sent to the Director, DOE Office for Worker Health and Safety (EH-51), U.S. Department of Energy, Washington, D.C. 20585, by letter or by sending the self-addressed Standardization Document Improvement Proposal (DOE F 1300.3).
3. This Guide is intended to identify acceptable methods for implementing the provisions of DOE O 440.1.

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WORKER PROTECTION MANAGEMENT FOR DOE FEDERAL AND CONTRACTOR EMPLOYEES

1. INTRODUCTION

DOE Order (DOE O) 440.1, WORKER PROTECTION MANAGEMENT FOR DOE FEDERAL AND CONTRACTOR EMPLOYEES, establishes the framework for an effective worker protection program that will reduce or prevent accidental losses, injuries, and illnesses by providing DOE Federal and contractor workers with a safe and healthful workplace. The worker protection program integrates occupational safety, industrial hygiene, occupational medical, construction safety, fire protection, firearms safety, explosives safety, motor vehicle safety, pressure vessel safety, and other functions addressed in Standards required by the Order.

The purpose of DOE O 440.1 is to establish a comprehensive worker protection program that ensures that DOE and its contractor 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 Occupational Safety and Health Act of 1970. The Order establishes a baseline program that can be used as the foundation for the type of proactive worker protection program that the best employers in private industry have established for their workplaces.

2. APPLICATION

DOE O 440.1 applies to all activities (including design, construction, operation, maintenance, decontamination and decommissioning, research and development, and environmental restoration activities) performed by DOE and its contractors (and their subcontractors). The Order (including the functional area requirements in Attachment 1 to the Order) is applicable to all DOE elements except the Naval Nuclear Propulsion Program and 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. The Contractor Requirements Document (CRD) (Attachment 2 to the Order) delineates requirements that are to be applied to contractors that have been awarded contracts for performing work for DOE on DOE-owned or -leased facilities. Contractor compliance with the CRD will be required to the extent set forth in a contract.

This Implementation Guide provides general information and methodologies that DOE finds acceptable in meeting the Department's requirements defined in DOE O 440.1. Other worker protection-related Implementation Guides are:

- DOE G 440.1-2, CONSTRUCTION SAFETY MANAGEMENT
- DOE G 440.1-3, OCCUPATIONAL EXPOSURE ASSESSMENT
- DOE G 440.1-4, CONTRACTOR OCCUPATIONAL MEDICAL PROGRAM
- DOE G 440.1-5, FIRE SAFETY

In addition, nonmandatory guidance for the implementation of 10 CFR 835, Occupational Radiation Protection, a key component of the Department's overall worker protection program, is contained in the following DOE Implementation Guides:

- DOE G 441.1-1 (formerly G-10 CFR 835/B1-Rev.1), RADIATION PROTECTION PROGRAM
- DOE G 441.2-1 (formerly G-10 CFR 835/B2-Rev.1), OCCUPATIONAL ALARA PROGRAM
- DOE G 441.3-1 (formerly G-10 CFR 835/C1-Rev.1), INTERNAL DOSIMETRY PROGRAM

- DOE G 441.4-1 (formerly G-10 CFR 835/C2-Rev.1), EXTERNAL DOSIMETRY PROGRAM
- DOE G 441.5-1 (formerly G-10 CFR 835/C3-Rev.1), RADIATION-GENERATING DEVICES
- DOE G 441.6-1 (formerly G-10 CFR 835/C4-Rev.1), EVALUATION AND CONTROL OF FETAL EXPOSURE
- DOE G 441.7-1 (formerly G-10 CFR 835/E1-Rev.1), INSTRUMENT CALIBRATION FOR PORTABLE INSTRUMENTS
- DOE G 441.8-1 (formerly G-10 CFR 835/E2-Rev.1), WORKPLACE AIR MONITORING
- DOE G 441.10-1 (formerly G-10 CFR 835/G1-Rev.1), POSTING AND LABELING FOR RADIOLOGICAL CONTROL
- DOE G 441.11-1 (formerly G-10 CFR 835/H1-Rev.1), OCCUPATIONAL RADIATION PROTECTION RECORDKEEPING AND REPORTING
- DOE G 441.12-1 (formerly G-10 CFR 835/J1-Rev.1), RADIATION SAFETY TRAINING
- DOE G 441.13-1 (formerly G-N 5400.9/M1-Rev.1), SEALED RADIOACTIVE SOURCE ACCOUNTABILITY AND CONTROL

The Federal Employee Occupational Safety and Health (FEOSH) Program is established in 29 CFR 1960, Basic Program Elements for Federal Employee Occupational Safety and Health (FEOSH) Program and Related Matters. Requirements for FEOSH flow down into DOE O 440.1 and are reflected in this Implementation Guide and in the *DOE Federal Employee Occupational Safety and Health Handbook*.

In addition, other DOE Rules, Orders, and their Implementation Guides will have an impact on the overall worker protection program. Those documents contain requirements that must be met for a worker protection program to be complete and effective. Those Orders and Rules include:

- DOE O 210.1, PERFORMANCE INDICATORS AND ANALYSIS OF OPERATIONS INFORMATION
- DOE O 225.1, ACCIDENT INVESTIGATIONS
- DOE O 231.1, ENVIRONMENT, SAFETY, AND HEALTH REPORTING
- DOE O 232.1, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION
- DOE O 360.1, TRAINING
- DOE 5480.29, EMPLOYEE CONCERNS MANAGEMENT SYSTEM
- 10 CFR 830.330, TRAINING AND QUALIFICATION
- 10 CFR 835, OCCUPATIONAL RADIATION PROTECTION

In addition to these Orders and Rules, requirements are also contained in the mandatory Manual, DOE M 440.1-1, DOE EXPLOSIVES SAFETY MANUAL.

Additional nonmandatory Technical Standards and handbooks are available to assist DOE elements and contractors in developing successful worker protection programs. These include:

- DOE-STD-1091-96, FIREARMS SAFETY
- DOE-STD-1090-96, HOISTING AND RIGGING STANDARD
- DOE-HDBK-1092-97, ELECTRICAL SAFETY

These Implementation Guides and associated Technical Standards describe acceptable means of satisfying the requirements established in DOE O 440.1. DOE elements and contractors are free to use the guidance provided in these nonmandatory documents or to develop their own unique methods, provided that these alternate methods afford workers a level of protection equal to or greater than that afforded by DOE O 440.1 and the nonmandatory Guides and Standards.

Figure 1 summarizes the taxonomy of worker protection documentation. Figure 2 depicts the relationship of worker protection documents and other DOE Rules and Orders that are important to the overall worker protection program. DOE Rules, Orders, Guides, and Standards change over time, so DOE elements and contractors should keep up to date with these changes.

This Guide presents suggestions and alternative approaches that DOE elements and contractors may wish to consider in implementing their worker protection programs.

3. GENERAL INFORMATION

It is DOE policy to provide a safe and healthful workplace for all Federal and contractor personnel. These conditions will be ensured by implementing the worker protection program established in DOE O 440.1.

Fundamental elements of the worker protection program 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 requirements in DOE O 440.1 are organized in this Implementation Guide to reflect what the Department considers to be the essential elements of a successful worker protection program:

- management commitment;
- employee involvement;
- hazard identification and evaluation;
- hazard prevention and control; and
- worker protection training.

The Department recognizes that DOE O 440.1 provides the basic foundation for a worker protection program and that some DOE elements or contractors may need or decide to go beyond the Order's 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.

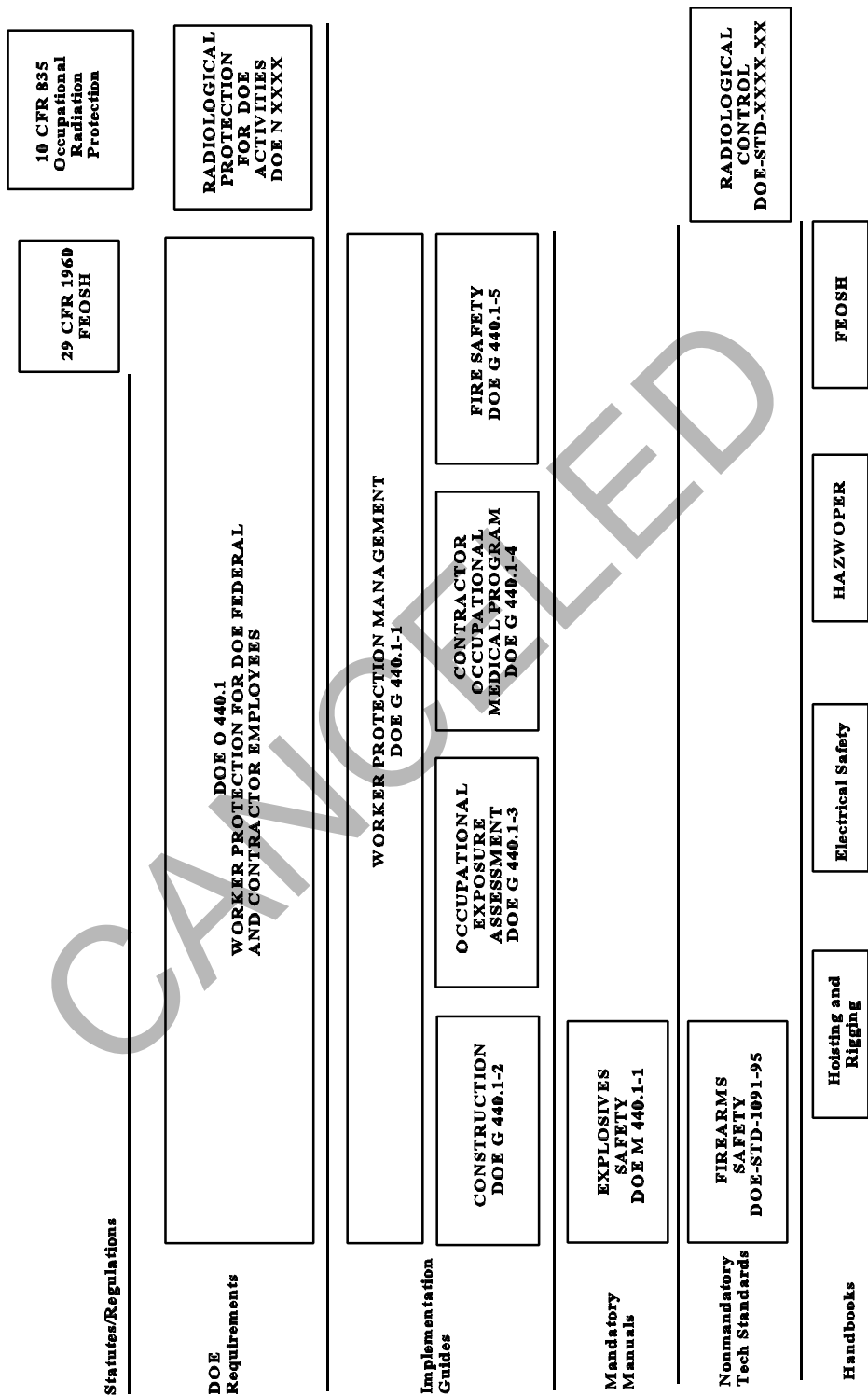


Figure 1. Worker Protection Management Taxonomy of Documents.

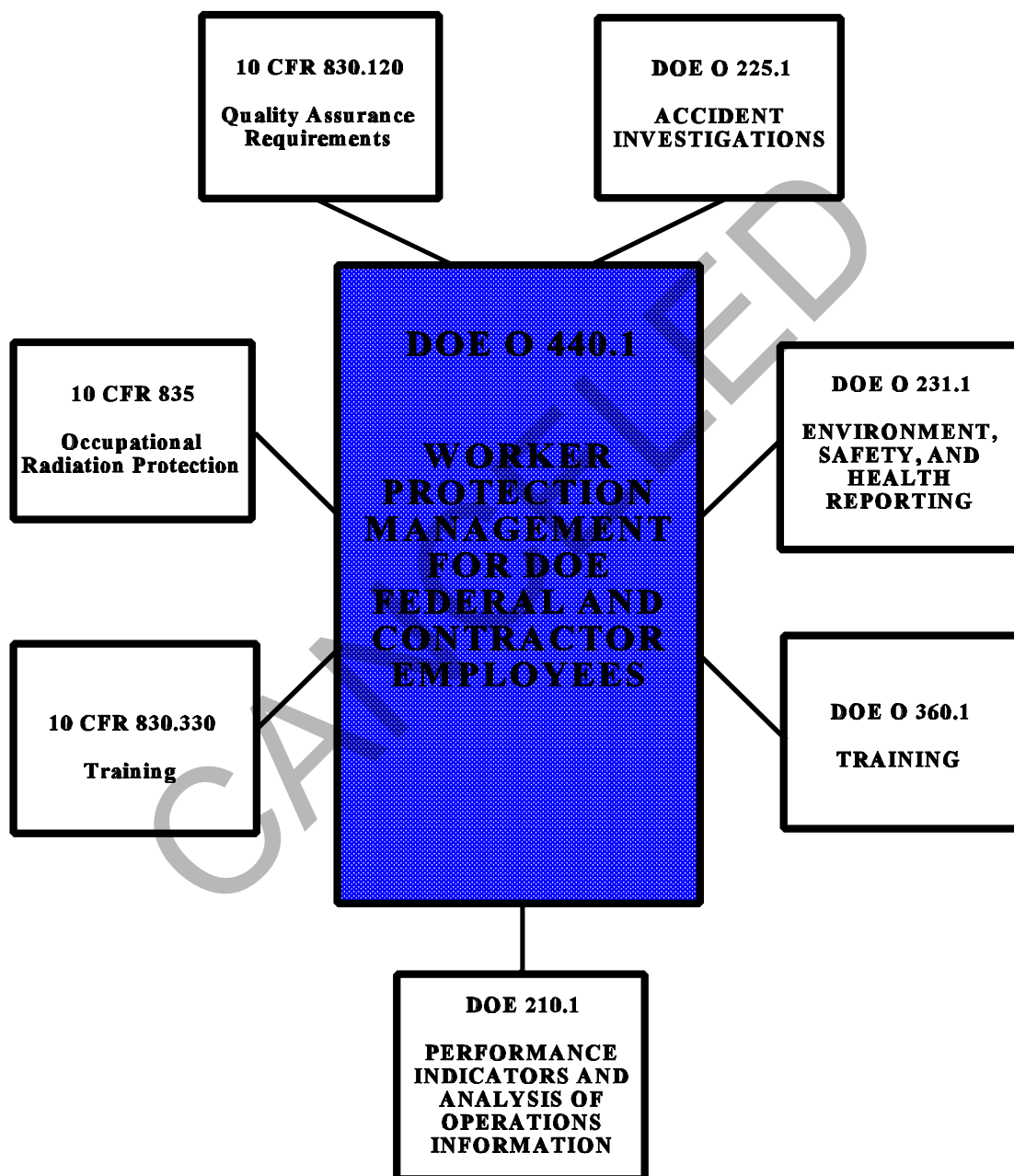


Figure 2. Major Interfaces Between DOE O 440.1 and other DOE Requirements.

4. GUIDELINES

NOTE: Throughout this section, “contractors” refers to those “awarded contracts and subcontracts for performing work for DOE on DOE-owned or -leased property” and where the Contractor Requirements Document for DOE O 440.1 is included in the contract.

4.1 Management Commitment

4.1.1 Establishing and Implementing a Written Worker Protection Program

DOE O 440.1 requires:

- DOE elements and contractors to implement a written worker protection program that provides a place of employment free from recognized hazards that are causing or likely to cause death or serious physical harm to their employees [paragraph 4a(1) and Attachment 2, paragraph 1a];
- DOE elements to implement a written worker protection program that integrates all requirements contained in paragraphs 4a through 4l, program requirements contained in Title 29, Code of Federal Regulations (CFR) Part 1960, “Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters,” applicable functional area requirements contained in Attachment 2 of the Order, and other related site-specific worker protection activities [paragraph 4a(2)]; and
- contractors to implement a written worker protection program that integrates all requirements contained in paragraphs 1 through 20 of the CRD and other related site-specific worker protection activities [Attachment 2, paragraph 1b].

The written 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, including management leadership, employee involvement, worksite analysis, hazard prevention and control, and worker protection training, are part of the written program. At a minimum, the written program should:

- Identify the roles, responsibilities, and authorities for implementing the program.
- Identify the taxonomy of other documentation for the organization's worker protection program [including policy, objectives, operating procedures, interfaces with other functions (e.g., finance, maintenance, security), and other safety and health related plans mandated by specific requirements (e.g., Health and Safety Plans in accordance with 29 CFR 1910.120)].
- Include a system for ensuring that employees comply with safe and healthy 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.
- Identify the mechanisms for involving workers in the worker protection program.
- 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.

- Include procedures for workers and supervisors to identify and evaluate workplace hazards and for qualified worker protection professionals to conduct periodic inspections to identify unsafe conditions and work practices.
- Include a procedure to investigate and report occupational injuries and illnesses.
- Include methods and/or procedures for correcting unsafe or unhealthy conditions, work practices, and work procedures in a timely manner based on the risk associated with the hazard.
- Provide for adequate initial and recurring training.

Listed below are examples of specific technical disciplines that the written program should address and integrate as applicable:

- | | |
|---------------------------|--------------------------|
| • Occupational Safety | • Motor Vehicle Safety |
| • Industrial Hygiene | • Occupational Medicine |
| • Radiological Protection | • Explosives Safety |
| • Firearms Safety | • Emergency Preparedness |
| • Pressure Vessel Safety | • Fire Protection |

Separate Implementation Guides to accompany DOE O 440.1 have been developed for several of these disciplines. Coordination must be established, maintained, and documented among these technical disciplines and other organizations at a site to ensure successful implementation of the worker protection program.

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 worker protection program requirements, and mechanisms for resolution of these issues need to 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 worker protection program requirements is essential. As described in paragraph 5b(5) of DOE O 440.1, one of the responsibilities of the Heads of Departmental Elements and Heads of Field Elements is to evaluate the need for and, where necessary, direct the development of formal written agreements between organizations on their sites. Such agreements are to outline the respective roles, responsibilities, and authorities of each contractor or organization as they relate to compliance with DOE worker protection requirements and the resolution of cross-cutting worker protection related issues.

Some common written instruments used at DOE facilities to document and communicate agreements between multiple organizations are the Contract, the Memorandum of Understanding (MOU), the Memorandum of Agreement (MOA), and the Intraservice Support Agreement (ISA). 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 worker protection program to ensure that they are adequately communicated throughout the site.

4.1.2 Managing the Worker Protection Program

DOE O 440.1 requires DOE elements and contractors to establish written policy, goals, and objectives for the worker protection program [paragraph 4b and Attachment 2, paragraph 2].

4.1.2.1 Policy, Goals, and Objectives

A facility's 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 is 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.

An example of a worker protection policy might be as follows:

This organization is committed to providing a safe and healthful workplace for employees. These conditions shall be ensured through an aggressive and comprehensive worker protection program. 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 the organization to continually improve the quality of its

worker protection performance. The safety and health of employees shall take precedence whenever conflicts with production or other objectives arise.

An organization's worker protection policy should flow down into specific goals and objectives, which in turn are reflected in the written program (see Section 4.1.1). The goals and objectives should be measurable for use as indicators of performance.

4.1.2.2 Budget

To meet the challenge of managing an adequate worker protection program with sometimes constrained 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 exercises serve to set priorities for operations to include worker protection and become the foundation for structuring an operational plan that provides for adequate worker protection. Funding requirements are determined based on projected costs and are submitted in the annual operating budget plan.

Operational planning typically spans periods of 1 to 5 years and focuses on specific functions such as marketing, research and development, production, finances, worker protection, etc. These are the things necessary to ensure that the day-to-day operation has adequate materials and supplies to carry out its work. Likewise, the facility requirements—including the people, equipment, supplies, and resources necessary for worker protection—must be addressed in this planning. One vehicle for worker protection planning and budgeting within DOE is the Environment, Safety, and Health Management Plan (formerly referred to as the Safety and Health Five-Year Plan).

4.1.2.3 Qualified Staff

DOE O 440.1 requires DOE elements and contractors to use qualified worker protection staff to direct and manage the worker protection program [paragraph 4c and Attachment 2, paragraph 3].

Project organizations should seek to hire and retain the most qualified worker protection professionals needed for the hazards at the site. Examples of these positions are Occupational Safety and Health Managers, Safety Engineers, Construction Managers, Industrial Hygienists, Health Physicists, etc. The U.S. Office of Personnel Management has published position classification standards for safety and occupational health managers (018), industrial hygienists (690), safety engineers (803), health physicists (1306), and fire protection engineers (804). The OPM standard should be followed for DOE Federal worker protection. 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 Certified Health Physicists) may be appropriate and help to ensure that competent staff are in place. Specific training for personnel qualifications is addressed in DOE O 360.1, TRAINING, and its supporting Implementation Guide.

4.1.2.4 Accountability

DOE O 440.1 requires DOE elements and contractors to assign worker protection responsibilities, evaluate personnel performance, and hold personnel accountable for worker protection performance [paragraph 4d and Attachment 2, paragraph 4].

Managers of facilities must clearly communicate roles, responsibilities, and authorities and insist on accountability of workers at all levels. Managers and supervisors must carry out their own responsibilities and expect employees to follow safe and healthful work practices. Managers and supervisors held accountable for their worker protection

responsibilities are more likely to press for solutions to safety and health problems. Managers are typically accountable for the overall worker protection program, including planning and allocating resources for the facility. 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, reporting hazards, etc.

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 be frequently communicated and thoroughly documented. The best way 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 ratings, promotions, bonuses, evaluations, etc.

Top management sets the tone for the work done on site. They must make it known to all employees that worker protection is of vital importance. Moreover, top management 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 should establish the written worker protection program, ensure that it integrates all elements and functional areas covered by DOE Orders, and fully support the program. 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 for contractors.

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.

4.1.3 Applicable Standards and Guidance Documents

- Occupational Safety and Health Administration, *Managing Worker Safety and Health*
- Occupational Safety and Health Administration, *Safety and Health Program Management Guidelines*
- 29 CFR 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters
- 10 CFR 830.330, Training and Qualification

- National Safety Council Data Sheet 585, Rev. 94, “Management Safety Policies and Procedures.”

4.2 Employee Involvement

Employees play a vital role in implementing an aggressive and effective worker protection program. Employees are involved in all site operations, have intimate knowledge of potential worker protection hazards, and can contribute as valuable problem solvers. Active and meaningful employee involvement in the worker protection program 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.

DOE and contractor line organizations should (as described in Section 4.1) 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. Line management should also develop and implement programs to encourage and promote employee involvement and commitment to the worker protection program. DOE elements and contractors should also establish forums for employees to gain an appreciation for the worker protection program and to foster communication between management and affected workers.

4.2.1 Involving Workers

DOE O 440.1 requires DOE elements and contractors to encourage employee involvement in developing program goals, objectives, and performance measures and in the identifying and controlling of hazards in the workplace [paragraph 4e and Attachment 2, paragraph 5].

Avenues for employee involvement include, but are not limited to, the following:

- participation on committees and work teams;
- participation in worksite inspections, hazard analysis [especially job safety analyses (JSAs)], and design control;
- development and review of workplace operating procedures;
- assistance in training;
- conduct of worker protection meetings; and
- participation in accident investigations.

4.2.1.1 Committees

An important component of employee involvement for any worker protection program is the establishment of one or more worker protection committees, which 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. (For example, worker protection functions may be included in the charter of other committees.) The charter, decisions, and actions of the worker protection committee are decided by the committee through negotiations and voting.

Each worker protection committee should consist of employees and management representatives, with the majority being non-managerial. 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 responsive to the atmosphere and operations in the worksite and should be revised as necessary to accommodate changes in operations, technology, and materials and to reflect tasks completed by the committee.

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

4.2.1.2 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 worksite inspections to be effective, employees should:

- be trained in hazard recognition;
- have reasonable access to worker protection professionals;
- have access to reference sources (e.g., all DOE worker protection requirements documents, Guides, and Technical Standards);

- be able to suggest abatement methods; and
- be able to track corrective actions.

4.2.1.3 Other Avenues for Employee Involvement

Employee participation activities should ensure employee involvement in the development, review, and revision of worker protection related documents and activities, including:

- performance measures for the worker protection program;
- 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 protection requirements, Guides, and Standards (consistent with any acceptable practices for labor/management relations).

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.

Including employees in accident/incident investigations is a worthwhile investment for employers. Worksite employees often can provide valuable insight on actual workplace procedures that could 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 periodically rotate employee membership on the committee. Selected employees must be trained in accident/incident investigations, be used in the investigations, and be recognized for their contributions.

4.2.2 Workers' Rights

DOE O 440.1 requires DOE elements and contractors to provide workers the right, without reprisal, to:

- accompany DOE worker protection personnel during workplace inspections;
- participate in activities provided for in the Order on official time;
- express concerns related to worker protection;
- decline to perform an assigned task because of a reasonable belief that, under the circumstances, the task poses an imminent risk of death or serious bodily harm to that individual, coupled with a reasonable belief that there is insufficient time to

seek effective redress through the normal hazard reporting and abatement procedures established in accordance with the Order;

- have access to DOE worker protection publications, DOE-prescribed Standards, and the organization's own worker protection standards or procedures applicable to the workplace;
- observe monitoring or measuring of hazardous agents and have access to the results of exposure monitoring;
- be notified when monitoring results indicate they were overexposed to hazardous materials; and
- receive results of inspections and accident investigations upon request [paragraph 4f and Attachment 2, paragraph 6].

One or more employee representatives should be provided the opportunity to participate in briefings and in the walk-around phase of DOE-conducted oversight inspections. Employee participation may be waived by DOE in the event of labor disputes or other special circumstances. Note that employee participation must be consistent with acceptable practices for labor/management relations (e.g., union official or bargaining unit representative participation in compliance inspections).

Workers have the right to report hazards without fear of reprisal and to refuse to work when faced with an imminent danger of death or serious injury. If workers are punished for reporting such hazards or for refusing to work when faced with an imminent danger condition, they may file a discrimination complaint.

Workers also have other rights with regard to worker protection; they can:

- request information about safety and health hazards in the workplace, precautions that may be taken, and procedures to be followed if the worker is involved in an accident or is exposed to toxic substances;
- have access to relevant exposure and medical records;
- review (or have an authorized representative review) the summary information about occupational injuries; and
- be notified if the organization applies for an exemption from a worker protection standard or for approval of an alternate standard, provide input for the exemption decision, and appeal the final decision.

4.2.3 Stop Work Authority

DOE O 440.1 requires that DOE elements and contractors implement procedures to allow workers, through their supervisors, to stop work when they discover employee exposures to imminent danger conditions or other serious hazards [paragraph 4g and Attachment 2, paragraph 7].

The procedure should ensure that any stop work authority is exercised in a justifiable and responsible manner. All workers, supervisors, managers, and OSH professionals are responsible for being cognizant of the conditions in their workplaces and for being prepared to stop work when these conditions pose a serious threat to health or safety. When a “reasonable person” views the circumstances as having the potential to cause injury, serious impairment, or harmful health effects, a stop work order should be issued.

Whenever workers see a need for a stop work order, they are expected to request one from their supervisors. Before a stop work order is issued, the person issuing it should ensure that the work stoppage itself will not negatively impact the health and safety of workers. DOE elements and contracts should have procedures in place that address stop work authority, and workers should be trained to those procedures.

4.2.4 Informing Workers

DOE O 440.1 requires DOE elements and contractors to inform workers of their rights and responsibilities by appropriate means, including posting the appropriate DOE Worker Protection Poster in the workplace where it is accessible to all workers [paragraph 4h and Attachment 2, paragraph 8].

DOE elements and contractors are expected to post the DOE Worker Protection Poster (FEOSH version or contractor version) in a significant number of places to permit workers the opportunity to observe the information en route to or from their work place. This expectation applies to all DOE-owned or leased facilities. In addition to the poster, DOE elements and contractors are expected to 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 must 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 elements

and contractors should consult the appropriate OSHA regulations for specific posting requirements.

Along with their rights, workers also have several responsibilities. First, they must comply with all worker protection Standards and all related Rules, Regulations, and Orders. 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.

Additional details about requirements for informing workers through training are contained in DOE O 360.1, which addresses training for Federal employees, and 10 CFR 830.330, which addresses training for contractor employees.

4.2.5 Applicable Standards and Guidance Documents

OSHA standards that address informing workers of hazards include, among others, Hazard Communication (29 CFR 1910.1200), Hazardous Waste Operations and

Emergency Response (29 CFR 1910.120), Confined Space (29 CFR 1910.146), Blood-borne Pathogens (29 CFR 1910.1030), and the specific chemical substance regulations in 29 CFR 1910, Subpart Z.

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.

10 CFR Part 708 describes how contractor employee representatives are protected from acts of discharge, discipline, or other acts of discrimination that result from participation in compliance inspections.

Other applicable standards and guidance documents include: 29 CFR 1960; DOE 5480.29, EMPLOYEE CONCERNS MANAGEMENT SYSTEM; and OSHA's *Safety and Health Program Management Guidelines*.

4.3 Hazard Identification and Evaluation

DOE O 440.1 requires DOE elements and contractors to identify existing and potential workplace hazards and evaluate the risk of associated worker injury or illness [paragraph 4i and Attachment 2, paragraph 9]. The four components of this requirement are detailed in Sections 4.3.1 through 4.3.4.

4.3.1 Analysis and Review

DOE O 440.1 requires the analysis or review of:

- designs for new facilities and for modifications to existing facilities and equipment;

- operations and procedures;
- equipment, product, and service needs; and
- the construction phase (to ensure that modifications do not preclude safety and health) [paragraph 4i(1) and Attachment 2, paragraph 9a].

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

Worker protection professionals should be assigned review and approval authority 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 D&D) throughout their life cycle. Methodologies include:

- preliminary hazard analysis;
- health hazard analyses;
- facility hazard analysis;
- process hazard analysis; and
- safety review.

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 where 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. A facility hazard analysis is a detailed study 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.
- facility and equipment maintenance requirements including confined space concerns, electrical hazards, inadvertent equipment startup or operation hazards, etc.

The facility hazard analysis may identify the need for other more specialized hazard analyses by functional experts such as health hazard analyses (see DOE G 440.1-3, OCCUPATIONAL EXPOSURE ASSESSMENT) and process hazard analyses (see 29 CFR 1910.119).

The following techniques are available to assist in the performance of hazard analyses.

Safety Review. A 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. A change analysis is performed to ensure that design or proposed 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. The change analysis is used during the design and construction phase of the facility to address proposed changes.

Energy Trace and Barrier Analysis (ETBA). The 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). The 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). The 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 subevents 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.

Detailed information on the selection and use of various hazard analysis methodologies and techniques is available in the American Institute of Chemical Engineers' *Guidelines for Hazard Evaluation Procedures*, Second Edition, 1992.

Operations and procedures should also be analyzed and reviewed to identify potential worker protection hazards and deficiencies. A Job Safety Analysis (JSA), or a job hazard analysis (JHA), is the most basic and widely used tool to identify hazards associated with work operations and procedures. JSAs and JHAs can satisfy a large portion of the worker protection hazard identification requirements at most workplaces. A JSA is useful for dynamic work activities like construction as well as relatively static activities involved in continuous operations.

JSAs should be conducted:

- during the planning stage for new operations and procedures;
- prior to implementation of changes to existing operations and procedures;

- for existing operations and procedures that have resulted in injuries, illnesses, or near misses; and
- for existing operations and procedures that have not been adequately evaluated in the past or when there is no recent hazard analysis.

JSAs should be updated periodically to ensure that new hazards have not been introduced since the last evaluation of the activity and that procedures are still applicable to the operations.

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; and
- development of operations procedures incorporating identified controls.

Participation by affected employees and supervisors in the JSA process is essential. Their knowledge of the tasks and familiarity with the procedures actually used in performing the work, along with the associated hazards, will provide more complete information during the JSA. In addition, these front-line personnel can assist in determining the feasibility and effectiveness of proposed control measures.

Detailed information on the conduct of JSAs is presented in DOE 76-45/19 SSDC-19, *Job Safety Analysis*, and U.S. Department of Labor Mine Safety and Health Administration, Safety Manual No. 5, *Job Safety Analysis*.

4.3.2 Exposure Assessment

DOE O 440.1 requires assessment of worker exposure to chemical, physical, biological, and ergonomic hazards. This assessment should entail appropriate:

- workplace monitoring (including personal, area, wipe, and bulk sampling);
- biological monitoring; and
- observation [paragraph 4i(2) and Attachment 2, paragraph 9b].

Monitoring results should be recorded with documentation that (1) describes the tasks and locations where monitoring occurred and (2) identifies

- workers monitored or represented by the monitoring,
- sampling methods and durations,
- control measures in place during monitoring (including use of personal protective equipment), and
- any other factors that may have affected sampling results.

Samples should be analyzed by a laboratory that is accredited by the American Industrial Hygiene Association. Other detailed guidance on the implementation of this requirement is provided in DOE G 440.1-3, OCCUPATIONAL EXPOSURE ASSESSMENT.

4.3.3 Workplaces and Activities

DOE O 440.1 requires routine evaluation of workplaces and activities by workers, supervisors, and managers and periodic evaluation by qualified worker protection professionals [paragraph 4i(3) and Attachment 2, paragraph 9c].

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 (annual) workplace evaluations.

Annual evaluations are recommended at all workplaces, including permanently housed construction workplaces. It should be noted that 29 CFR 1960.25(c) requires annual workplace inspections of Federal operations. The first annual evaluation should be a

comprehensive “wall-to-wall” evaluation which serves as a baseline for future evaluations. Annual evaluations are conducted to identify and document existing and potentially hazardous work conditions and practices that do not comply with worker protection standards or may otherwise pose hazards to the safety or health of workers. These 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;
- health physicists;
- occupational medical professionals; 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 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 the 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.

4.3.4 Accident, Injury, and Illness Reporting and Data Analysis

DOE 440.1 requires the reporting and investigation of accidents, injuries, and illnesses and analysis of related data for trends and lessons learned [paragraph 4i(4) and Attachment 2, paragraph 9d]. 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:

- Systems and methods to collect, record, compile, and manage accident, injury, and illness data and information, including but not limited to the OSHA 200 log of occupational injuries and illnesses, workers compensation data, accident reports, incident reports, industrial hygiene and health physics exposure monitoring results, and inspection reports and corrective action tracking 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.

Requirements for accident, injury, and illness reporting and investigation are contained in DOE O 231.1, DOE O 232.1, and DOE O 225.1. Requirements for analysis of related data for trends and lessons learned are contained in DOE O 210.1.

4.4 Hazard Prevention and Control

DOE O 440.1 requires DOE elements and contractors to implement a hazard prevention/abatement process to ensure that all identified hazards are managed through final abatement or control [paragraph 4j and Attachment 2, paragraph 10].

4.4.1 During Design and Development

For hazards identified either in the facility design or during the development of procedures, controls are incorporated in the appropriate facility design or procedure [paragraph 4j(1) and Attachment 2, paragraph 10a].

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 health and safety should be either completely eliminated or be 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.

When engineering controls do not reduce the associated risk to acceptable levels, they may be supplemented with work practices and administrative controls. Where necessary, these controls may be further supplemented with the use appropriate personal protective equipment.

4.4.2 Existing Hazards

For hazards identified in the workplace, abatement actions, which are prioritized according to risk to the worker, should be promptly implemented and interim protective measures should be implemented pending final abatement. Workers should be protected immediately from imminent danger conditions [paragraph 4j(2) and Attachment 2, paragraph 10b]. Hazards should be systematically managed and documented through final abatement or control.

4.4.2.1 Imminent Danger

In the event an imminent danger situation is discovered, immediate action must be taken either to correct the imminent danger condition or practice or to remove all employees from exposure to the imminent danger until the condition or practice 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.

4.4.2.2 Hazard Abatement Prioritization

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.

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. MIL-STD-882C, System Safety Program Requirements, and Department of Defense Instruction No. 6055.1, Department of Defense Occupational Safety and Health Program, both describe a risk assessment methodology acceptable to DOE for meeting the risk assessment requirements of DOE O 440.1.

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 must 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
- organizational mission.

In some cases, it may be appropriate to address lower-level hazards before higher-level hazards if quick abatement is possible.

4.4.2.3 Interim Protection

In the interval during which an abatement action is being carried out, DOE and contractor organizations must protect their employees from the identified hazards. A short-term strategy must be established that provides interim protection to employees. Methods such as administrative controls, work practice modifications, or personal protective equipment may be used to provide this interim protection. These measures must provide employees with protection that is equivalent to the permanent protection that will be provided by compliance with the relevant DOE-prescribed worker protection Standard.

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, cannot be used to lower the priority of final abatement actions. The hazard should be tracked and abated based on the initial risk assessment.

4.4.2.4 Hazard Abatement Tracking

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 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.

Hazard Abatement Information

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

- location;
- date found;
- description of hazard;
- referenced DOE-prescribed worker protection Standard;
- 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 also indicate if actual corrective action differs from planned corrective action.

Coordination

To ensure that the Operations Office is kept informed of the status of abatement activities, the DOE or contractor line organization should advise the cognizant Operations Office quarterly on the status of hazard abatement activities requiring 30 or more days to complete. The DOE or contractor line organization should coordinate this reporting process with the Operations Office to establish reporting mechanisms acceptable to both parties. In addition, the Operations Office can request copies of the hazard abatement activity documentation at any time.

4.4.3 Equipment, Products, and Services

Hazards should also be addressed when selecting or purchasing equipment, products, and services [paragraph 4j(3) and Attachment 2, paragraph 10c]. 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., suspect or counterfeit parts) given existing facility and operational constraints. Evaluation methods can include:

- review of equipment or material specifications;
- observations of equipment or material demonstrations;
- change analyses;
- operational hazard analyses;
- ergonomic/human factor analyses; and
- checks for suspect or counterfeit parts.

Worker Protection considerations to be taken into account when reviewing equipment specifications include:

- health hazards;
- operating noise;
- temperature levels;
- point-of-operation guards;
- lockout provisions;
- presence of hazardous material;
- training requirements for safe operation;
- ergonomic design, worker/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.

4.4.4 Control Hierarchy

DOE O 440.1 requires that hazard control methods be selected based on the following hierarchy:

1. Engineering controls;
2. Work practices and administrative controls that limit worker exposures; and
3. Personal protective equipment [paragraph 4j(4) and Attachment 2, paragraph 10d].

4.4.4.1 Engineering Controls

Where controls are necessary to reduce worker risk from exposure to workplace hazards, engineering controls should be implemented to the extent feasible. Principal engineering controls include:

- substituting a less hazardous substance or process;
- enclosing the hazard;
- locating hazardous operations or equipment in remote and/or unoccupied areas;
- establishing physical barriers and guards; and
- using local and general exhaust ventilation.

4.4.4.2 Work Practice and Administrative Controls

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 them, 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.

4.4.4.3 Personal Protective Equipment

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

- to supplement engineering, work practice, 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 engineering 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 clothing (for warmth and anti-contamination), 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 (for example, because of the lower heat transfer rate) 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.

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 and/or malfunction of the PPE. To accomplish these objectives, a comprehensive PPE practice 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 its associated training.

4.4.5 Applicable Standards and Guidance Documents

- DOE 76-45/19, SSDC-19, *Job Safety Analysis*, 1979.
- Center for Chemical Process Safety, *Guidelines for Hazard Evaluation Procedures*, 2nd Edition, American Institute of Chemical Engineers, New York, NY, 1992.
- 29 CFR 1910, Occupational Safety and Health Administration, 1992.

- U.S. Department of Labor, Mine Safety and Health Administration, Safety Manual No. 5, *Job Safety Analysis*.
- MIL-STD-882C, *System Safety Program Requirements*.
- Department of Defense Instruction No. 6055.1, *Department of Defense Occupational Safety and Health Program*.

4.5 Worker Protection Training

4.5.1 Providing Training

DOE O 440.1 requires DOE elements and contractors to provide workers, supervisors, managers, visitors, and worker protection professionals with worker protection training [paragraph 4k and Attachment 2, paragraph 11].

DOE O 360.1 and 29 CFR 1960, Subpart H, contains training requirements for Federal employees. DOE elements should consult the OSHA requirements (29 CFR 1960) and the DOE Order and the associated Implementation Guide and Technical Standards for direction in implementing a successful worker protection training program. Training is required for the following personnel:

- top management officials;
- supervisors;
- safety and health specialists and inspectors;
- collateral duty safety and health personnel and committee members; and

- employees and employee representatives.

10 CFR 830.330, Training and Qualification, contains training requirements for Federal employees. Contractors should consult that Rule for direction in implementing a successful worker protection training program. Training should be included as a component of the written worker protection program.

4.5.2 Applicable Standards and Guidance Documents

- 29 CFR 1960, Subpart H, Training
- DOE O 360.1, TRAINING
- 10 CFR 830.330, Training and Qualification
- *Department of Energy, Occupational Safety And Health Training Program Management Guide (Draft)*, November 1992, prepared by Pacific Northwest Laboratory.
- OSHA Publication 2254, *Training Requirements in OSHA Standards and Training Guidelines*.

4.6 Standards

The CRD (Attachment 2 to DOE O 440.1), paragraph 12, requires contractors to comply with the following DOE-prescribed worker protection standards:

- 29 CFR 1910, Occupational Safety and Health Standards

- 29 CFR 1915, Shipyard Employment
- 29 CFR 1917, Marine Terminals
- 29 CFR 1918, Safety and Health Regulations for Longshoring
- 29 CFR 1926, Safety and Health Regulations for Construction
- 29 CFR 1928, Occupational Safety and Health Standards for Agriculture
- American Conference of Governmental Industrial Hygienists, *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices* (most recent edition), when ACGIH TLVs are lower (more protective) than OSHA Permissible Exposure Limits
- American National Standards Institute (ANSI) standard Z136.1, *Safe Use of Lasers* (exposure limits and technical requirements only—programmatic components covered by the CRD do not apply)
- ANSI Z88.2, *Respiratory Protection*

DOE O 440.1, paragraph 4l, requires DOE elements to comply with the following worker protection requirements:

- American Conference of Governmental Industrial Hygienists, *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices* (most recent edition), when ACGIH TLVs are lower (more protective) than OSHA Permissible Exposure Limits

- ANSI Z136.1, *Safe Use of Lasers* (exposure limits and technical requirements only—programmatic components covered by this Order do not apply)
- ANSI Z88.2, *Respiratory Protection*

These standards are the baseline requirements for the worker protection program. DOE elements and contractors should ensure that the appropriate versions of these standards are used:

- For DOE Technical Standards, use the version listed in the current DOE Technical Standards List, DOE-TSL-1.
- For OSHA standards, use the version contained in the current Code of Federal Regulations.
- For ACGIH TLVs, use the most current published version.

It should be noted that DOE elements are required to comply with OSHA standards in accordance with 29 CFR 1960.

When ACGIH TLVs are used as exposure limits, DOE and contractor operations should nonetheless comply with the other provisions of any applicable OSHA expanded health standard. The TLVs for exposures to laser emissions in the ACGIH Indices are excluded from this requirement.

DOE elements and contractors should determine whether additional standards are needed for their workplaces and activities to control recognized hazards. If so, DOE elements and contractors should include such additional standards in their written worker protection

program documents. Examples of additional standards might be ANSI C2, National Electrical Safety Code, and the ANSI B-30 Series, Cranes.

4.7 Other Provisions of DOE O 440.1

4.7.1 Functional Programs

DOE O 440.1 establishes requirements for the overall management system that supports the functional areas of worker protection (e.g., industrial hygiene). Certain functional areas have additional requirements [paragraph 4m and Attachment 2, paragraphs 13 through 20] specific to potential hazards in those areas. Those functional requirements are addressed in Attachments 1 and 2 to the Order and in the associated Implementation Guides, Technical Standards, and Manuals.

4.7.2 Subcontractor Compliance

The CRD (Attachment 2 to DOE O 440.1), paragraph 21, requires DOE contractors to ensure that their subcontractors performing work on DOE-owned or -leased facilities comply with requirements in the CRD and with the contractor's own site worker protection standards (where applicable).

All work performed by contractors or subcontractors on DOE-owned or -leased sites must comply with DOE-prescribed worker protection Standards. It is important that contractors include provisions in their subcontract documents to ensure that subcontractors comply with DOE-prescribed Standards and other appropriate requirements. Contractors must determine which program requirements should flow down into contracts with their subcontractors and incorporate appropriate requirements. All requirements in DOE O 440.1 must be met,

regardless of whether the contractor or the subcontractor performs the actual worker protection activity. For example, a contractor may provide exposure monitoring for the subcontractor, or the contractor may require the subcontractor to conduct its own exposure monitoring. In either case, DOE looks to the prime contractor for ensuring compliance at the site.

4.7.3 Exemptions

The Secretarial Officer responsible for a facility or activity to which the Order relates may grant an exemption to a specific requirement in the Order provided that:

- it is not prohibited by law,
- it does not present undue risk to public health and safety or the environment, and
- equivalent protection is provided to facility workers.

A request from a contractor should be submitted to the Secretarial Officer (or his delegated authority) responsible for a facility or activity to which DOE O 440.1 relates. The authority to grant an exemption may also be delegated by the Secretarial Officer to others (except for exemptions to OSHA standards). All exemption decisions should be accompanied by written documentation giving the reasons for granting or denying the exemption and, if granted, the basis for determining that the exemption does not present an undue risk.

Deviations by DOE elements from OSHA requirements are to be handled in accordance with 29 CFR 1960.17, Alternate Standards. EH will concur on all alternate standards and forward requests to OSHA for its approval.

4.7.4 Applicable Standards and Guidance Documents

- 29 CFR 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters
- DOE Interpretations Guide to OSH Standards

5. ADDITIONAL INFORMATION

For site-specific questions concerning the implementation of DOE O 440.1, contact your DOE Operations Office's or DOE contractor organization's Worker Protection Manager. For additional information about the DOE Worker Protection Program, contact the Office for Worker Health and Safety (EH-51).

EH-51 also develops and disseminates interpretations of DOE worker protection Standards. A toll-free response line has been established to address requests for interpretations. Precedented requests for interpretations are maintained in a database and can usually be addressed in a matter of minutes. Unprecedented requests are addressed with a written response, usually within 20 working days. The telephone number for the Standards Interpretations Response Line is 1-800-292-8061. Hours of operation are 8 a.m. to 4 p.m. (Eastern time) Monday through Friday.

For information on the requirements of 29 CFR 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Program and Related Matters, and the Worker Protection Program for DOE Federal employees, contact Dennis Lubow at 301-903-2075. For general questions concerning the implementation of DOE O 440.1 or for questions concerning the contents of the Implementation Guide, contact Terry Krietz at 301-903-6456 or Phil Wilhelm at 301-903-5678.