4. TRAINING AND DRILLS

4.1 Introduction

DOE O 151.1 provides a framework to effectively integrate emergency planning and preparedness activities for a comprehensive, all-emergency management concept and to promote more efficient use of resources. Emergency Management training is often provided by different organizations. To ensure training programs are effectively integrated, managers responsible for training should be aware of related training programs and coordinate their activities.

DOE Emergency Management training programs ensure that personnel are prepared to respond to, manage, mitigate, and recover from emergencies associated with DOE operations. Training programs include both classroom instruction and hands-on experience. Participants include personnel assigned to the facility/site Emergency Response Organization (ERO), onsite response personnel (i.e., fire, medical, security, health physics, industrial hygiene, hazardous material, etc.) general employees, and members of offsite response organizations.

General training for employee response, required as part of the Operational Emergency Base Program, could be included as part of an employer's General Employee Training (GET) Program. Emergency-related information includes emergency awareness, warnings and alarms, evacuation, accountability, and first aid. Employees assigned to specific responsibilities for onsite emergency response receive additional training**.**

The Operational Emergency Hazardous Materials Program necessitates a coordinated program of training and drills for developing and/or maintaining specific emergency response capabilities for all personnel and organizations that the site/facility expects to respond to onsite emergencies. This training program consists of a combination of self-study/homework, formal classroom training, and drills. Both initial and annual refresher training should be provided for the instruction and qualification of all personnel (primary and alternate) comprising the ERO. Emergency-related training should also be made available to offsite response organizations.

This Chapter provides guidance on program planning, development, implementation, evaluation, documentation, and records maintenance. The user will be introduced to the key elements necessary to define and implement a successful training and drill program. The majority of guidance focuses on the more extensive needs of a Hazardous Materials Program, but provides useful considerations for the needs of a Base Program.

Base Program. All workers who may be required to take protective actions (e.g., assembly, evacuation, shelter) are to be provided with initial training and periodic drills. Training should be provided at the time of employment, when expected response actions change, or when the emergency plan changes. Initial and annual refresher training should be provided to certified operators and supervisors, workers who are likely to witness emergency conditions, those required to notify proper authorities, and workers required to attain "First responder awareness level," as described in 29 CFR 1910.120. In addition, emergency-related information and training on site-specific conditions and hazards should be made available to offsite personnel who may be requested to respond to an emergency at the DOE site/facility. Section 4.2 provides guidance on topics to be covered by Base Program training activities.

4.2 Training Program Plan

The Emergency Management System Program Administrator should produce and annually update the Training Program Plan to assure that the program is accurate and focused on the site/facility personnel knowledge and performance needs for both the Operational Emergency Base Program and the site's Hazardous Material Program.

Base Program. If only the Operational Emergency Base Program is required for a site, then Emergency Management training responsibilities may be within the purview of the GET Program. Training for a Base Program should include information in the following areas:

- Overview of the Emergency Management Program for the facility, including information on emergency response organizations
- Emergency plans and procedures, including notification protocols and alarms/warning systems for work areas
- Employee accountability, response procedures, and protective actions

Training required under the Base Program, but not covered by GET, should be provided for individuals based on job responsibilities. A site/facility may be required to conduct hands-on training in the form of emergency drills, in accordance with Federal, state and/or local laws and regulations.

Emergency Management training that is incorporated into GET should be documented through that program. Separate documentation should be maintained for any additional training or retraining that is not included in GET.

The remaining sections in this chapter provide useful information for Base Programs, especially those more extensive than a minimal Base Program.

Hazardous Material Program. Operations/field office managers are required to ensure that Operations/Field Offices and contractors participate in a continuing program of training sessions/courses and drills as an integral component of their overall emergency preparedness program. The proficiency developed through the training program should be tested by a separate exercise component of the emergency preparedness program. The training program should be designed to instruct personnel (primary and alternate) included in the facility ERO and should provide for sites/facilities activities within their cognizance. The training program should be "commensurate with the hazards" identified in the Hazards Assessments. The individual training program should be commensurate with assigned emergency response responsibilities. Training topics should reflect the functional position and responsibilities of the trainee. Appropriate topics to be considered include, but are not limited to:

- Emergency facilities and equipment;
- Management and decision making;
- Basis for Protective Action Recommendations (Hazards Assessments/consequence assessment);
- Consequence assessment/dose projection;
- Notifications/communications;
- Emergency categorization and classification;
- Protective actions/protective action recommendations;
- Activation and coordination of response resources;
- Coordination and liaison with offsite response and support organizations;
- Control of onsite emergency activities;
- Emergency medical support;
- Emergency public information;
- Field monitoring; and
- Program administration.

4.2.1 Management and Administration

The general responsibilities of the Program Administrator are discussed in Volume V, Chapter 1. The Program Administrator at a facility/site has overall responsibility for the development of the Emergency Management Program, including emergency management training. The Emergency Management Program Administrator may delegate responsibility for training program management but should retain oversight and approval. The Emergency Management Program Administrator (or, if delegated, the emergency management training program manager) should ensure the following.

- Develop a comprehensive emergency management training plan.
- Identify and coordinate adequate resources for program implementation, including facilities, equipment, budget, etc.
- Identify training needs and provide for development, scheduling, and delivery of training activities.
- Maintain access to a qualified training staff.
- Coordinate record keeping.
- Conduct periodic self-assessments, including evaluating instruction and reviewing materials.

4.2.2 Program Objectives and Guidelines

A coordinated program of training and drills must be in place to develop and maintain the required emergency response capabilities. This program must include all personnel expected to respond to an emergency. Qualification standards will affect the type, amount, frequency, and costs of training. Both initial and annual refresher training are required for qualification of all personnel (primary and alternate) in the emergency response organization. All personnel (primary and alternate) should participate in at least one drill or exercise annually.

Annual refresher training may be shorter for persons who have filled the response role for a number of years. Requalification may be limited, in these cases, to discussion of changes in requirements or procedures, lessons learned from actual and exercise events, and participation in an annual drill or exercise.

Training should be based on and consistent with elements of the Emergency Management Program. Every attempt should be made to develop training that incorporates these elements as information and guidance becomes available. The training program should include a mix of classroom instruction, tabletop activities or walk-throughs, and drills. Drills can provide "hands-on" instruction for emergency responders.

Specialized team training should be provided for personnel who function as members of emergency field response teams and should be considered for other functional groups within the ERO, such as the Consequence Assessment Team. Such training should be provided annually to individuals who regularly respond as a team, as well as to individuals who function as alternate team members. Training should address emergency tasks that require team efforts for response and mitigation as well as general team-building skills. Drills should address response scenarios that are realistic for the facilities involved, and response teams should drill as a unit to the extent possible.

Facility-specific orientation training on hazards and emergency response procedures should be offered annually to offsite state, tribal, and local emergency response organizations. Training should be offered annually to all parties (Federal, state, tribal, and local agencies, and DOE and DOE contractor facilities) of mutual aid agreements for emergency events.

A streamlined, standardized qualification process should be established for personnel with experience in a closely related industry. The same process should apply to new personnel who have transferred from other DOE sites and contractors. The feasibility of streamlined qualification must be evaluated on a case-by-case basis and documented by proof of experience (assignments, training and qualification records, references, etc.). Some additional training will always be required, because new personnel will have to become familiar with the facility-specific hazards and procedures. These personnel should receive any necessary training and participate in drills as determined by the qualifying authority.

4.2.3 Training Program Plan Contents

An emergency management training program plan should be developed to provide a systematic view of program goals, organizational responsibilities, resources, and planned activities. The plan should include the following.

- **Emergency Management Training Program Goals.** The emergency management training program should be fully described in the training plan, which

should be reviewed annually to ensure adherence to assigned goals and objectives and compliance with requirements and administrative policies and procedures.

- **Outline of Training Activities.** An annotated listing of the courses and drills provided by the emergency management training program, along with the terminal objectives for each activity, should be included in the training plan.

- **Resources and Facilities.** The training plan should include a list of needed resources and facilities (e.g., classroom space, laboratories), equipment (e.g., radios, protective clothing), and reference material to support training activities.

- **Qualification and Requalification Requirements.** Standards for successful completion of each training activity and requirements for updating, retraining, and remedial training should be established and stringently enforced. These standards and requirements should be described in the training plan.

- **Description of the Emergency Management Training Organization.** Emergency management training may be a subset of overall facility training. A description of the overall training organization should be maintained and included in the training plan.

- **Target Audience.** Position-specific descriptions should be developed and include training for support staff, emergency response personnel, and specialized teams. The training plan should identify the audience requiring training and the process for identifying and documenting the training needs of the audience.

- **Schedule for Training Activities.** A schedule for developing, delivering, and evaluating training activities should be developed and updated as needed. The schedule should be made available for use in the training section of the facility ERAP.

- **Materials Review and Approval Requirements.** Signature requirements verify that training materials have been reviewed and are acceptable to those who sign off on them. DOE facilities already have signature requirements that can be adapted to specific administrative needs of the emergency management training program.

- **Training Documentation and Record Keeping Requirements.**

  – A consistent, auditable method of maintaining records should be identified in the training program plan. The record keeping system should include files of course materials, which serve as a tracking method for course content.

  – The record keeping system should include a means for tracking attendance, student status, and scheduled training including a system for reminding employees when training is needed.

  – When possible, emergency management training records should be incorporated into central training records for the facility.

- **Instructor qualifications.** An instructional training and qualification program description for emergency management instructors/trainers, including part-time, contractual trainers (consultants) and offsite training support, should be developed, administered, and maintained. Training staff personnel must maintain their technical and instructional competence through a continuing training program, as described in the appropriate program description.

- **Analysis and design.** Training activities including classroom instruction, computer-based instruction, tabletop "role-play," and drills should be based on a systematic approach. A graded approach and performance-based principles should be used to establish the systematic approach. The methodology for analysis and design of the training system should be described in the Emergency Management Training Program Plan.

- **Position-specific training matrix.** A position-specific training matrix should show required training topics for facility ERO positions. The training matrix should identify onsite and offsite audiences and topical requirements.

- **Training implementation matrix.** The plan should include a training implementation matrix that clearly shows the relationship between the selection and qualification requirements for personnel with emergency management responsibilities and their training requirements. The matrix should illustrate how the technical qualification program at a site/facility and the training program work together to satisfy the knowledge and performance needs of the emergency management program.

4.3 Training Development

Needs analysis. A needs analysis should be performed to identify the differences between what ability levels are required and the ability level of ERO personnel. The regulatory needs analysis should include training and drill requirements for responders established by DOE and other agencies (see Section 4.7 for some sources.) A job analysis should be performed to determine the position-specific tasks for training. A needs analysis should be performed to identify the differences between what ability levels are required and the ability level of ERO personnel

Learning objectives. Learning objectives should be developed from training needs analyses and should identify and address the knowledge and skills necessary to perform the position-specific responsibilities.

Qualification Standards. A standard is necessary to determine whether the knowledge or skills have ben learned well enough that trainees will remember and perform the task in a future emergency. Standards address the question: How good is good enough? Since standards may be different for different tasks, setting standards requires considering the consequences of unsatisfactory performance, as well as the importance, difficulty, and frequency of practice or use of the knowledge or skills.

Lesson plans. Lesson plans should be derived from the training needs analyses and should undergo a thorough review and approval process. Lesson plans should reflect good instructional design and maximize knowledge and skill retention. Lesson plans should be sufficiently detailed to ensure consistency of instruction between instructors and facility training offices, as appropriate. The lesson plan should identify trainee prerequisites, course duration, learning objectives, instructional aids, and presentation and evaluation methods.

Training materials. Effective training materials should support and reinforce the learning objectives. Training materials should emphasize or replicate position-specific information and situations. The level of detail should take into account the emergency management member's position and experience and the experience of the designated instructor. Training materials may include handouts, audio/visual aids, trainee workbooks, or other items.

Trainee manuals. Trainee manuals that contain handouts, objectives, worksheets, etc., should be available during training to support classroom or computer-based instruction. Trainee manuals should contain key points and display a "For Training Use Only"

disclaimer. Students should be reminded that the trainee manual is not a procedures manual.

Qualification and testing. Training and drills should conclude with some form of measurement or demonstration that indicates completion of training objectives and achievement of qualification standards. A comprehensive written examination may be developed consistent with Emergency Management Program/position qualification requirements. The examination should contain a representative selection of test items identified from the learning objectives developed from the job and/or task analyses. Testing materials should be varied (e.g., through use of randomly selected question examination banks) to ensure long-term validity of the examinations. For some skills, demonstration of simulated response activities may be adequate to determine trainee qualification. In general, annual exercises represent an effective evaluation instrument of training program effectiveness.

New course evaluation. Training programs should be evaluated for the adequacy of program and lesson content, examinations, presentation, documentation, and post-training performance. The evaluation process determines individual strengths and weaknesses, improves program content and delivery, and ensures that revisions have been made as appropriate. Development of new courses should include evaluation and validation of the effectiveness of course materials through use of pilot presentations, peer reviews, and/or review by subject matter experts.

4.4 Training Implementation

4.4.1 Training Product Distribution

Training products may be distributed in a number of ways. These methods vary widely in cost per student, effectiveness for training groups versus individuals, ease of scheduling, breadth of distribution, and level of achievement.

Commonly used methods include the following.

- Live delivery at central training location.
- Live delivery at home site of audience.
- Train-the-trainer presentation (with supplied training packages).
- Delivery by “trained trainers” (unassisted or assisted).
- Outside study using workbooks and videotapes.
- Computer-based (diskette or CD format) self-paced learning.

- Live closed-circuit television.

4.4.2 Training Delivery

The type of delivery selected for emergency management training courses should be based on the learning objectives and the nature of the teaching and learning tasks. To be effective, training programs should combine classroom presentation and student participation methods, with the use of experiential sessions whenever possible. Realism should be maximized, within the constraints of safe facility operation and trainee safety (e.g., personnel should actually wear protective equipment while performing drills in simulated hazardous material fields).

A variety of presentation types are available for classroom-style delivery. Such methods are well suited to present fundamental and theoretical knowledge. These methods include the following.

- Live lecture.
- Live demonstration.
- Live video lecture/demonstration.
- Videotaped lecture/demonstration.
- Computerized lecture/demonstration (diskette or compact disk).

Student involvement is very effective in a group learning environment and to ensuring that a class as a whole has achieved a similar level of knowledge. Such methods are extremely valuable for training requiring physical skills or the use of response equipment. Student participation methods include the following.

- Lecture with student input required.
- Student reports/presentations and projects.
- Facilitated group discussions.
- Group tasks.
- Student-assisted demonstrations.
- Team task assignments.
- Tabletop training activities.
- Hands-on drills
- Interactive computer programs.
- Assigned/acknowledged reading.

Class/group size will determine the appropriateness and effectiveness of some of these interactive methods. The size of the class should be controlled to maximize instructor/trainee interaction on course material. Trainee feedback and student evaluations should be considered in modifying and improving courses.

4.4.3 Tabletop Activities

Tabletop activities provide a focused, cost-effective training experience. These activities may range from lecture and guided discussion to a detailed verbal simulation of a response to a particular scenario. A verbal walk-through of the response to a facility-specific scenario is a good way to provide an overall orientation and clarify participants' perceptions of their roles. Objectives for the tabletop will determine the focus of the activity (overall coordination versus detailed problem solving). A tabletop requires significant preparation to ensure that objectives can be satisfied. Because of the inherent flexibility of this approach, trainers are free to structure the training experience creatively, controlling scenario time and trainee activity. It is important to select a skilled instructor or moderator to maximize the benefit from this training experience. Additional training staff may be desired to facilitate or record the training session. A recorder can be used to note questions and problems so they may be addressed later through new procedures, agreements, or training. If the tabletop involves multiple response groups or a detailed or highly technical scenario, representatives of the involved agencies or technical specialists should be involved in the planning.

4.4.4 Drills

Drills are supervised hands-on instruction and application sessions for individuals or teams. These sessions provide an opportunity to demonstrate and maintain individual and organizational proficiency. Drills should be of sufficient scope, duration, and frequency to ensure adequate training for all elements applicable to the facility. The size and complexity of any drill will depend on the objectives. Many drills will be functional, focusing on training responders involved in a specific response function (e.g., formulating protective action recommendations, medical response, etc.). Drills can range from hands-on instruction in one simple procedure to a multi-organizational, scenario-driven event. The distinction in DOE activities between a drill and an exercise is that the primary purpose of a drill is training, not evaluation of the response activity.

Drills have three phases: planning, conduct, and evaluation. They should be as realistic as possible. Because the focus of the drill is training, some aspects of drill conduct can be more flexible than an exercise. Some roles may be combined, and the controller may be

free to stop and correct the responders' actions during the response. In a small drill, one person might plan, conduct, and evaluate the drill. Safety and security plans may be required. A drill that has the potential to affect the offsite population (e.g., offsite field monitoring team) should be planned to avoid public concern or inconvenience.

4.4.5 Training Schedule

A coordinated training schedule should be developed for training classes, exercises, and drills.

4.5 Training Evaluation and Self-Assessment

4.5.1 Evaluations

Instruction and materials. The training program should include a process for collecting evaluations of the course materials and the presentation. These evaluations should be used as a basis for course revision. Tabletops can be used to verify and validate training program components.

Performance. Evaluations of performance during an exercise or actual response should be used to evaluate the effectiveness of the training program. Evaluators, controllers, and players should identify problems noted during the response. Any necessary corrections in response procedures should be incorporated into initial and annual refresher training.

4.5.2 Self-Assessment

Self-assessment is an important tool for maintaining and improving the emergency management training program. The Emergency Manager, or designee, should conduct periodic assessments of the training program to ensure that all members of the emergency response organization are trained or qualified in pertinent aspects of emergency management. Emergency management training documentation should be reviewed during self-assessment. Results of the self-assessment activities should be used to improve the emergency management training program.

4.6 Training Documentation and Records

Maintaining proper program documentation is essential to providing complete and accurate records of both the emergency management training program and the qualifications of facility emergency management employees. Documentation for the

emergency management training program includes both the administrative records for the program and individual training records. Administrative records are used to show how the training program has been developed, reviewed, analyzed, evaluated, and maintained. Individual training records are necessary to document the training and qualification of members of the ERO.

Both administrative and individual training and qualification records must be kept for all personnel who have an assigned response role.

Training program records should include, but are not limited to the following.

- Administrative guides.
- Evaluation materials for training staff and trainees.
- Records documenting development of performance-based training.
- Evaluations of drills and exercises that relate to training (validation of training, recommendations for changes in training, etc.).
- Evidence of satisfactory completion of training (attendance, test results, etc.).
- Documentation of instructor qualification.
- Results of self-assessments.

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