

Hazardous Materials and Terrorist Incident Response Curriculum Guidelines

Preface

Response
Training
Considerations

Awareness

Operations

Core

Mission-
Specific

Hazardous
Materials
Technician

Specialist
Employee

Hazardous
Materials
Specialist

Incident
Commander

Hazardous
Materials
Officer

Safety
Officer

BLS
Responder

ALS
Responder

Hospital
First
Receiver

Appendix A:
Related
Standards

Appendix B:
NIMS/ICS

Appendix C:
Special
Topics

About the Response Guidelines

The *Hazardous Materials Incident Response Curriculum Guidelines (Response Guidelines)* are provided to assist public sector training managers and employers to understand the requirements for training public sector response personnel. Existing regulatory requirements are defined, and additional recommendations are provided to help managers improve the quality and effectiveness of hazardous materials incident response training.

The *Response Guidelines* are organized into 14 sections. The first section addresses general response training issues and includes:

- Employer's legal responsibilities for training
- The challenge of training to competency
- Response competency definitions
- General methodology and testing considerations
- Refresher training
- Instructor qualifications

Sections 2 through 14 display the objectives to be addressed in training and achieved by public sector response trainees for each competency area or response role that a public sector employee may be required to perform during a hazardous materials incident. The competency area sections are:

- First Responder Awareness
- First Responder Operations
- Hazardous Materials Technician
- On-Scene Incident Commander
- Hazardous Materials Branch Officer
- Safety Officer at Hazardous Materials Incidents
- OSHA: Specialist and NFPA: Specialist Employee A and Technician Specialties
- OSHA: Specialist Employee and NFPA: Specialist Employees B,C
- Emergency Medical Services Level 1
- Emergency Medical Services Level 2
- Hospital Personnel
- Special Topics
- Related Standards

In each of these competency area sections, the minimum level of required training is defined by the specifications from OSHA 1910.120(q). In addition, a more extensive recommended level of training is defined primarily by the specifications from NFPA 472 and NFPA 473.

Additional training objectives have been added to the recommended level of training beyond those specified in NFPA 472 to address special topics such as radiological first responder, cleanup considerations, and skilled support personnel. Each topic and the rationale for the additional training objectives are discussed in the Special Topics section.

For all recommended training objectives in each competency area section, the source and relationship training required under OSHA 1910.120(q) are given. The relationship of recommended objectives to regulatory requirements is provided to assist in assessing courses for compliance.

Directions for using this material to assess courses and support overall planning of training programs are provided in the Guidelines for Hazardous Materials Program Management section.

Competency Definitions

First Responder Awareness Level

First responders at the awareness level are those individuals who are likely to witness or discover a release of hazardous materials and are trained to initiate an emergency response sequence. No hourly training requirement is listed in either OSHA 1910.120 or NFPA 472, but these documents indicate that first responders must have sufficient training or experience to demonstrate competency in the following areas:

- An understanding of what hazardous materials are and the associated risks
- An understanding of potential outcomes when hazardous materials are present
- The ability to recognize the presence of hazardous materials
- An understanding of the first responder’s role and use of the North American Emergency Response Guidebook
- The ability to recognize the need for additional resources and the knowledge of the procedures to make the appropriate notifications

First Responder Operations Level

OSHA minimum requirement = awareness + 8 hours at operations level (24 hours operations level training is required as a prerequisite to technician and/or incident commander training)

First responders at the operations level are those individuals who respond to releases or potential releases, as part of the initial response to protect people, property, and the environment. Operations-level first responders are trained to take defensive actions rather than try to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. OSHA 1910.120 requires that first responders at the operations level receive at least 8 hours of training or have sufficient experience to demonstrate competencies objectively. First responders must have the knowledge of the awareness level, and they are required to:

- Know basic hazard and risk assessment
- Know how to select and use protective equipment provided to the first responder
- Understand basic hazardous materials terms.

Response Training Considerations
Awareness
Core
Mission-Specific
Operations
Hazardous Materials Technician
Specialist Employee
Hazardous Materials Specialist
Incident Commander
Hazardous Materials Officer
Safety Officer
BLS Responder
ALS Responder
Hospital First Receiver
Appendix A: Related Standards
Appendix B: NIMS/ICS
Appendix C: Special Topics

- Know how to perform basic control, containment, and/or confinement operations within the capabilities of their resources and protective equipment
- Know basic decontamination procedures
- Understand relevant SOP's and termination procedures

Hazardous Materials Technician

OSHA minimum requirement= 24 hours at operations level + technician training

Hazardous materials technicians are those who respond to releases or potential releases for the purpose of stopping the release. This level requires at least 24 hours of training at the operations level, training equal to the competencies at the technician level, and certification by the employer. Hazardous materials technicians assume a more aggressive role than first responders at the operations level. They approach the point of release to plug, patch, or otherwise stop the release of a hazardous substance. They must be trained at the first responder operations level, and they are required to:

- Know how to implement the employer's emergency response plan
- Know how to identify materials by using field survey instruments
- Be able to function in an assigned role in the incident command system
- Know how to select and use specialized personal protective equipment
- Understand hazard and risk assessment techniques
- Be able to perform advanced control and containment operations within the resources and equipment available
- Understand and implement decontamination procedures

On Scene Incident Commander

OSHA minimum requirement= 24 hours at operations level + incident commander training

Incident commanders who assume control of the incident scene beyond the first responder awareness level should receive at least 24 hours of training equal to the first responder operations level. In addition, the employer must certify that personnel in this position:

- Are able to implement the employer's incident command system
- Are able to implement the employer's emergency response plan
- Understand the risks associated with working in chemical protective clothing
- Know how to implement the local emergency response plan
- Know of the State emergency response plan and the Federal regional response team
- Understand the importance of decontamination

Hazardous Materials Branch Officer

The hazardous materials branch officer is that person who is responsible for directing and coordinating all operations assigned to the hazardous material branch by the incident

commander. This function is akin to that of hazardous materials team leader and encompasses both the general command functions at the branch chief level in an incident command system and in addition includes the responsibility for technical and tactical leadership of the team of hazardous materials technicians at the incident. While the function of hazardous materials branch officer is not directly specified in OSHA 1910.120 or EPA 311, the branch officer function is a natural derivative of the incident command system requirements and incident commander delegation options which are themselves specified as required under the OSHA and EPA regulations for hazardous materials incident response. NFPA 472, Chapter 9: Competencies for Hazardous Materials Branch Officer include:

- Analyzing the incident
- Planning the response
- Implementing the response
- Reporting and documenting the hazardous materials incident

Safety Officer at Hazardous Materials Incidents and Hazardous Materials Branch Safety Officer

Safety Officer at Hazardous Materials Incidents

OSHA 29 CFR 1910.120(q)(3)(vii-viii) specifies certain performance and competency requirements for the safety officer at hazardous materials incidents, and employers are required to ensure that employees demonstrate competency in the skills defined. Although the safety officer was initially defined in OSHA as advising the incident commander only, subsequent OSHA interpretations acknowledge that there may be multiple safety officers at the incident scene, advising to several levels of command. OSHA competencies include:

- Identify and evaluate hazards, and assist in developing a safe response plan
- Identify and evaluate unsafe operations, activities, and/or conditions
- Identify appropriate interventions and coordinate with incident commander

Hazardous Materials Branch Safety Officer

NFPA 472, Chapter 10: Competencies for Hazardous Materials Branch Safety Officer defines the hazardous materials branch safety officer as that person who works within an incident command system (also called an incident management system) to ensure that recognized safe practices are followed within the hazardous materials branch. The hazardous materials branch safety officer will be called upon to provide technical advice or assistance regarding safety issues to the hazardous materials branch officer and incident safety officer at a hazardous materials incident. Competencies include:

- Analyzing the incident
- Assisting in developing a safe response plan
- Assisting in implementing the response plan safely
- Evaluating the response for safety problems and identifying needed interventions

Response Training Considerations
Awareness
Operations
Core
Mission-Specific
Hazardous Materials Technician
Specialist Employee
Hazardous Materials Specialist
Incident Commander
Hazardous Materials Officer
Safety Officer
BLS Responder
ALS Responder
Hospital First Receiver
Appendix A: Related Standards
Appendix B: NIMS/ICS
Appendix C: Special Topics

OSHA: Specialist Employee/NFPA: Specialist Employee B,C

Specialist employees are defined by OSHA 1910.120(q)(5) as persons who, in the course of their regular job duties, work with and are trained in the handling of specific hazardous substances or chemical-carrying containers and are also prepared to provide advice or assistance within their area of expertise to an incident commander of the hazardous materials team at a hazardous materials incident. Advice and assistance may include gathering, recording, and analyzing information as well as guidance regarding hazards and response options. Assistance also may include working as a technical adviser in the warm and hot zones, if the specialist employee is qualified to do so safely.

These specialist functions are addressed somewhat differently in the National Fire Protection Association Standard 472, as Private Sector Specialist Employee C and Private Sector Specialist Employee B. Private Sector Specialist Employees C are persons having training or educationally acquired expertise in a product, a container, a chemical process, or some procedure of importance to the mitigation of a hazardous materials incident. Private Sector Specialist Employees C may be asked to gather, record, and analyze information. They may serve as consultants and technical advisers to the incident commander or the hazardous materials team, or they may arrange for the provision of such assistance as necessary and related to their area of expertise. They are not expected to work in either the hot or warm zones of an incident area.

Private Sector Specialist Employees B meet the competencies of Private Sector Specialist Employees C and in addition are qualified to assist the response in the warm and hot zones of an incident area and are qualified to provide information on personal protective equipment, decontamination methods, and response evaluation.

OSHA: Specialist/NFPA: Specialist Employee A and Technician Specialties

Hazardous materials specialists is a defined response competency in OSHA 29 CFR 1910.120 (q)(6)(iv) but is not a defined competency category in NFPA 472, 2002 edition. However, there is a relationship between the OSHA Specialist competency and the competencies in NFPA 472, 2002 edition, for Private Sector Specialist Employee A and the Technician Specialties: Tank Car, Cargo Tank, and Intermodal Tank. For this reason, these competencies are grouped together in these Guidelines.

HAZARDOUS MATERIALS SPECIALIST

OSHA minimum requirement = 24 hours at technician level + specialist training

Hazardous materials specialists are those senior experienced responders who respond with, and provide support to, hazardous materials technicians. Their duties parallel those of hazardous materials technicians, but specialists are required to have more direct or specific knowledge of the various substances they may be called on to contain. They also act as senior leaders of hazardous materials teams and may act as site liaisons with Federal, State, and local government authorities with regard to site activities according to OSHA 1910.120. OSHA regulations also require that specialists should receive at least 24 hours of training equal to the technician level, and they must:

- Know how to implement the local emergency response plan
- Be able to use advanced survey instruments

- Have knowledge of the State emergency response plan
- Be able to select and use proper specialized protective equipment
- Understand in-depth hazard and risk assessment techniques
- Be able to perform specialized control and containment operations with the available equipment and resources
- Be able to implement decontamination
- Be able to develop a site safety and control plan
- Understand chemical, radiological, and toxicological terminology and behavior

PRIVATE SECTOR SPECIALIST EMPLOYEE A

NFPA 472, Chapter 8—(2002 Edition)

Those persons who are specifically trained to handle incidents involving chemicals or containers for chemicals used in their organization’s area of specialization. Consistent with the organization’s emergency response plan and standard operating procedures, the private sector specialist employee A shall be able to analyze an incident involving chemicals within their organization’s area of specialization, plan a response to that incident, implement the planned response within the capabilities of the resources available, and evaluate the progress of the planned response.

TECHNICIAN WITH A TANK CAR SPECIALTY

NFPA 472, Chapter 11—(2002 Edition)

Those persons who provide support to the hazardous materials technician, provide oversight for product removal and movement of damaged tank cars, and act as a liaison between technicians and other outside resources. These technicians are expected to use specialized chemical-protective clothing and specialized control equipment.

TECHNICIAN WITH A CARGO TANK SPECIALTY

NFPA 472, Chapter 12—(2002 Edition)

Those persons who provide support to the hazardous materials technician, provide oversight for product removal and movement of damaged cargo tanks, and act as a liaison between technicians and other outside resources. These technicians are expected to use specialized chemical-protective clothing and specialized control equipment.

TECHNICIAN WITH AN INTERMODAL TANK SPECIALTY

NFPA 472, Chapter 13—(2002 Edition)

Those persons who provide support to the hazardous materials technician, provide oversight for product removal and movement of damaged intermodal tanks, and act as a liaison between technicians and other outside resources. These technicians are expected to use specialized chemical-protective clothing and specialized control equipment.

Response Training Considerations
Awareness
Core
Mission-Specific
Operations
Hazardous Materials Technician
Specialist Employee
Hazardous Materials Specialist
Incident Commander
Hazardous Materials Officer
Safety Officer
BLS Responder
ALS Responder
Hospital First Receiver
Appendix A: Related Standards
Appendix B: NIMS/ICS
Appendix C: Special Topics

EMS/Hazardous Materials Responder

Emergency medical services personnel at EMS Hazardous Materials (HM) Level 1 are those persons who, in the course of their normal duties, may be called on to perform patient care activities in the “cold zone” at a hazardous materials incident. The incident’s cold zone is the area that contains the command post and other support functions. In other documents it may be referred to as the clean zone or support zone. The role of the EMS/HM Level 1 responder is to provide care only to those individuals who no longer pose a significant risk of secondary contamination (that is, a risk of contaminating others, including those providing care). EMS personnel at EMS/HM Level II are those persons who, in the course of their normal duties, may be called on to perform patient care activities in the “warm zone” (the area where personnel and equipment decontamination and hot zone support take place) at hazardous materials incidents. The EMS/HM Level II response personnel may provide care to individuals who still pose a significant risk of secondary contamination. In addition, personnel at this level should be able to coordinate EMS activities at a hazardous materials incident and provide medical support for hazardous materials response personnel.

EMS personnel responding to hazardous materials incidents should be trained and receive regular continuing education to maintain competency in four areas:

- Emergency medical technology
- Hazardous materials
- Special topics approved by the authority having jurisdiction
- The importance of decontamination and basic decontamination procedures

Hospital Personnel

Hospital emergency department personnel are persons who, in the course of their normal work activities, may be called upon to perform patient care and decontamination within the confines of the hospital. These personnel in the performance of their duties may be exposed to a significant risk of secondary contamination from the patients which they are charged to care for. In addition these personnel may be called upon to assist pre-hospital personnel requiring technical assistance in the area of patient decontamination.

Refresher Training

OSHA minimum requirement = annual refresher training or recertification for all levels

All public sector employees who may respond to hazardous materials emergencies must receive refresher training on an annual basis or have experience that ensures their competency to perform their roles safely and efficiently. Employers must certify on an annual basis that employees continue to meet the performance objectives as defined in OSHA 1910.120. This may be accomplished through refresher training or demonstration of competency.

Refresher training or competency retesting requirements vary for each of the response levels. In general, refresher training should include critical skills practice, technical information updates, and refinement of incident scene coordination through field exercises simulating emergencies. At a minimum, competency should be demonstrated in all refresher training for the skills directly affecting the safety of responding personnel. Minimum hours for annual refresher training for

response personnel are not specified in OSHA 1910.120(q). However, in practice, many jurisdictions use the 8-hour minimum refresher training requirement for site workers in OSHA 1910.120(e) as a guide.

In each of the competency sections of the Response Guidelines, unique areas of emphasis for refresher training are noted.

Recommended Instructor Qualifications

OSHA 1910.120(q)(7) states: “Trainers who teach any of the above training subjects shall have satisfactorily completed a training course for teaching the subjects they are expected to teach, such as the courses offered by the U.S. National Fire Academy, or they shall have the training and/or academic credentials and instructional experience necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach.”

To implement the OSHA regulations and to encourage quality instruction, it is recommended that instructors possess the following:

- Job knowledge-thorough knowledge of the content to be taught; knowledge of how the information, techniques, and principles apply to performing the job; understanding the difficulties and problems that arise on the job; and specific training or education in the subject matter being taught
- Job Experience-actual work experience directly related to the subject matter (have performed that job being taught) and experience in hazardous materials incidents
- Training knowledge-successful completion of an instructor training course that covers the principles of learning, methods and sequencing of instruction, methods of testing and evaluation, preparing performance objectives and lesson plans, training liability (Reference: NFPA 1041), and oral and written communication skills
- Personal qualities-patience and understanding, enjoyment of and respect for students, and flexibility
- Sensitivity to cultural diversity among students

Some States and private organizations certify hazardous materials instructors. Professional organizations, such as NFPA, have established professional standards for instructors (NFPA 1041) that can be used to evaluate instructor training and certification. Employers and trainers should carefully examine the following criteria for certification of hazardous materials instructors.

- What standards have been applied?
- Are potential certified instructors tested in their area of subject matter expertise?
- Are candidates required to demonstrate their skills and knowledge in the classroom setting?
- Are there follow-up evaluations or rectification requirements?
- Are both instructional and technical skills addressed by certification?
- Is hands-on experience in hazardous materials response considered?
- Have the instructors performed the tasks being taught?

Response Training Considerations
Awareness
Core
Mission-Specific
Operations
Hazardous Materials Technician
Specialist Employee
Hazardous Materials Specialist
Incident Commander
Hazardous Materials Officer
Safety Officer
BLS Responder
ALS Responder
Hospital First Receiver
Appendix A: Related Standards
Appendix B: NIMS/ICS
Appendix C: Special Topics