Hazardous Materials Incident Prevention/Mitigation Curriculum Guidelines

Preface

Organization of the Curriculum

The ultimate goal of the *Hazardous Materials/WMD Prevention/Mitigation Curriculum Guidelines (Prevention/Mitigation Guidelines)* is to improve safety in hazardous materials operations, thereby reducing the probability and severity of accidents and exposures. This goal is accomplished by enhancing participants' motivation and ability to develop and implement effective prevention/mitigation programs and activities within their organizations and jurisdictions. Instruction is intended to supplement, not replace, other job-specific education and training that audience members receive in their primary work functions.

The *Prevention/Mitigation Curriculum* addresses the training needs of two broad audience groups: persons who conduct hazardous materials operations, whether in the public or private sectors; and persons responsible for government and other oversight and enforcement programs to protect worker and citizen health. At this time, the general public is not identified as a curriculum audience, although personnel responsible for public information and education activities are included.

The *Prevention/Mitigation Curriculum* is organized into eight audience categories based on commonalties in knowledge and skill requirements. These categories are briefly described below; more detailed information on each is presented in the following sections.

- **Prevention/Mitigation Awareness** describes the introductory training requirements of all audiences in the Prevention/Mitigation Curriculum. Instruction is intended to give participants general knowledge about hazardous materials prevention/mitigation that can serve as a foundation for subsequent job-specific training. The audience includes anyone who has responsibilities in hazardous materials prevention/mitigation or could influence hazardous materials prevention/mitigation efforts at state and local levels. Participants are provided with (1) an introduction to basic hazardous materials prevention/mitigation terminology and concepts, (2) an explanation of individual and organizational roles in hazardous materials prevention/mitigation, and (3) an overview of common hazardous materials prevention/mitigation methods and activities.
- **Prevention/Mitigation Policy Development** describes the training requirements of persons who direct, manage, or own organizations that use hazardous materials—chief executives and senior managers from a broad spectrum of government, private sector, and non-profit organizations. In this role, audience members oversee the development and maintenance of the hazardous materials prevention/mitigation program, and direct staff and others who implement the program on a day-to-day basis. They have the organizational authority to develop and enforce hazardous materials prevention/mitigation program policies and to budget and expend related funds.

- **Prevention/Mitigation Program Management** describes the training requirements of persons who develop or manage hazardous materials prevention/mitigation programs and related activities for organizations that use hazardous materials. Individuals in this category are responsible for ensuring worker and public safety in hazardous materials operations, and for implementing the organizational policy and direction established by senior managers. The training audience consists of supervisory-level personnel in hazardous materials facilities and transport operations, both public and private. Because training requirements will depend on the size and nature of the operations, the audience is further subdivided as follows:
    - Smaller/Less Complex Operations describes the training needs of persons that manage smaller and/or less complex hazardous materials operations, such as retail outlets, small energy distributors, trucking firms, and so forth.
    - Larger/More Complex Operations describes the training needs of persons that manage hazardous materials prevention/mitigation programs for larger producers, processors, and distributors of hazardous materials, including those subject to OSHA's Process Safety Management (PSM) Standard
- **Community Prevention/Mitigation Program Management** describes the training needs of persons who develop and manage state and local government hazardous materials prevention/mitigation programs and activities (community hazards analysis, hazardous materials prevention/mitigation planning, land use planning, construction plans review, inspection and codes enforcement, public education, etc.). The training audience includes government officials and others with supervisory-level responsibilities in community hazardous materials prevention/mitigation, e.g., state environmental agency hazardous materials prevention/mitigation managers, Hazardous Materials Emergency Preparedness (HMEP) program managers, local response agency (fire, law enforcement, emergency medical services) hazardous materials prevention/mitigation managers, hazardous materials planners, zoning board members, codes enforcement managers, emergency management program directors, and other community representatives.
- **Prevention/Mitigation in Operations** describes the training requirements of persons who regulate, respond to, supervise, or operate systems or processes that involve the use of hazardous materials. These employees are responsible for ensuring that hazardous materials prevention/mitigation activities and safety requirements defined in safety management plans and standard operating guidelines (SOGs) are properly implemented and enforced. The training audience includes employees of public, private, and non-profit facilities, including large and small operations at industrial plants, commercial establishments,

trucking and other transport companies, government agencies, health care operations, utilities, and many other types of organizations.

- **Design and Plans Review** describes the training needs of persons who oversee and participate in the design, planning, approval, and construction of hazardous materials operations (plants, buildings, processing systems, equipment, etc.). Individuals performing this function are responsible for incorporating the requirements and recommended practices contained in prevention/mitigation codes and standards into detailed plans, specifications, instructions, and other documents. The training audience includes members of the design team and community officials who oversee the process. A secondary audience includes persons that implement the approved design (procurement personnel, contractors, vendor representatives, production operators, etc.)
- **Facility Inspection and Enforcement** describes the training needs of persons who monitor, inspect, and evaluate safety in hazardous materials operations. In this role, audience members (1) identify risks and prevention/mitigation opportunities associated with specific operations, (2) assess and enforce compliance with established authorities and codes, and (3) consult with and make referrals to subject matter experts for unique applications of the codes. The audience includes inspectors and enforcement officials from community agencies (fire service, police, health agency, etc.), and individuals with similar roles in public, private, and non-profit organizations (safety officers, production managers, shift supervisors, insurance company representatives, consultants, etc.).
- **Transportation Investigation and Inspection** describes the training needs of persons who monitor, inspect, and evaluate safety in hazardous materials transportation. In this role, audience members (1) identify risks and prevention/mitigation opportunities associated with specific transportation conditions, modes, and systems, and (2) assess and enforce compliance with established authorities and codes. The performance competencies displayed in this section are directly based upon the competencies articulated in the November 2014 publication *Hazardous Materials Transportation Investigator/Inspector Uniform Training Performance Standards* (*HMT Standards*), by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), and by the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, and the Federal Aviation Administration. Detailed competencies are provided for hazardous materials transportation inspectors, investigators, and supporting specialists in the following six general areas;
    - Core Competencies for Hazardous Material Transportation Inspectors and Investigators
    - Advanced Competencies for Hazardous Material Inspectors and Investigators

- Competencies for Supervisory Hazardous Material Inspectors and Investigators
- Competencies for Hazard Class Specialists
- Competencies for Hazardous Material Packaging Specialists
- Competencies for Modal Hazardous Material Specialists

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Hazardous Materials Prevention/Mitigation Training Considerations

Introduction

Because most hazardous materials accidents are caused by human activities, communities and employers can influence the probability of incidents and the magnitude of their effects by emphasizing prevention/mitigation in hazardous materials emergency management. Hazardous materials prevention and mitigation efforts focus on helping communities and citizens avoid becoming disaster victims in the first place, and reducing the impact of incidents when they occur.

Hazardous materials prevention/mitigation includes efforts to eliminate or reduce risk due to either accidental releases of hazardous materials or exposure to toxic substances. Basic hazardous materials prevention/mitigation strategies can be broadly summarized as follows:

- Improve methods and procedures for storing, transporting, handling, and processing hazardous materials.
- Promote compliance with safety codes, regulations, and statutes.
- Develop and enforce land-use plans that regulate the location of sites with hazardous chemicals.
- Increase public and community awareness and support for prevention.

Well-designed hazardous materials prevention/mitigation programs have been shown to reduce loss of life, property, and environmental damage from disasters. The Occupational Safety and Health Administration (OSHA) concludes that “a strong correlation [exists] between the application of sound management practices in the operation of safety and health programs and a low incidence of occupational injuries and illnesses. Where effective safety and health management is practiced, injury and illness rates are significantly less than rates at comparable worksites where safety and health management is weak or non-existent” (Safety and Health Program Management Guidelines; Issuance of Voluntary Guidelines).

For all general hazards and risks, as well as for hazardous materials, experience has shown again and again that lives can be saved, damage to property can be reduced significantly, and economic recovery can be accelerated by consistently building safer and stronger buildings, strengthening existing infrastructures, ensuring safer transportation, enforcing building codes, and making the proper preparations BEFORE a disaster occurs. More important, mitigation investments by businesses and citizens will enhance and strengthen the economic structure, stability, and future of the community regardless of when a disaster may strike.

In recent years, both government and industry have made significant strides in hazardous materials prevention/mitigation. However, more must be done to encourage a change from the traditional focus on disaster preparedness and response to a new emphasis on accident prevention. This shift in perspective by business leaders and emergency management professionals will require adjustments in corporate and community attitudes about prevention/mitigation, improvements in safety management

methods and technologies, better access to information and research, and a strengthened cooperation between government agencies and hazardous materials end users.

One of the most effective ways of promoting this transition is through hazardous materials prevention/mitigation training and education programs. Training helps employees understand the nature and causes of potential safety problems, apply safe work practices and procedures, and participate in the design of effective prevention programs. For this reason, federal and state agencies have consistently identified training as a critical component in all prevention activities.

This document identifies training requirements for public and private sector personnel who have a role in hazardous materials prevention/mitigation.

The Philosophy of Prevention

Hazardous materials prevention/mitigation is based on the concept that the majority of accidents don't just happen; they are caused. While the use of chemicals may involve risk, the factors that precipitate most accidents are at some point under an organization's or an individual's control. Therefore, most chemical accidents and the damage they cause are preventable by definition.

Hazardous materials prevention/mitigation is not new. For many years, federal and state governments have issued regulations governing workplace safety, transportation safety, and environmental safety. Communities have assessed local hazards, managed land use, enforced safety codes, and conducted public education activities. Businesses have implemented safety programs to protect worker health and minimize the potential for accidental releases of, and exposures to, toxic substances.

The benefits to communities and employers of well-designed hazardous materials prevention/mitigation programs have proven to be significant. These benefits include reductions in hazardous materials incidents and accidents; fewer deaths and injuries to workers and citizens; improvements in employee skills, productivity, and morale; lower insurance and operating costs; decreased damage and cleanup costs; elimination of regulatory penalties; and protection against litigation.

Although the concepts of prevention and mitigation are well established, the practice of making safety a primary focus of production and emergency management may be new to some organizations. Hazardous materials prevention/mitigation requires identifying safety as a basic goal and priority of hazardous materials operations. The objective is accomplished through formal programs that incorporate a systematic analysis of potential hazards, a comprehensive effort to eliminate or minimize risk, and activities that foster a safety culture among workers and the public.

A key element of this new emphasis on hazardous materials prevention/mitigation is the concept of a public/private sector partnership to promote hazardous materials safety.

Increasingly, communities, businesses, and professional associations recognize the mutual benefits of cooperation and coordination in prevention program planning and development. For example, FEMA's concept of Disaster Resistant Whole Communities aims to bring together private industry, insurance providers, mortgage lenders, the real estate industry, homebuilding associations, citizens, and others to create model communities in high-risk areas. Other federal initiatives strive to promote understanding and cooperation between government and industry, and to simplify unnecessarily burdensome and confusing regulations.

Everyone who can affect hazardous materials prevention/mitigation has a role in this partnership. The federal government establishes minimum safety standards, provides incentives and guidelines for compliance, conducts inspection and enforcement activities, and supplies assistance and resources, including training. State governments serve as a conduit for federal programs, and provide supplementary programs, regulations, and assistance. Local jurisdictions identify and assess hazards, develop prevention strategies and plans that address community needs, and implement programs to enforce safety standards and protect the public health.

Although government plays a key role in hazardous materials prevention/mitigation, organizations that process, store, handle, and transport hazardous materials are in the best position to actually eliminate or mitigate against accidents. Employers in both the public and private sectors are ultimately responsible for the safety of chemical operations and for coordinating hazardous materials prevention/mitigation activities within the community. They accomplish these goals through programs and activities that are appropriate to the hazards involved and in full compliance with legal requirements.

The general public also has a role in hazardous materials prevention/mitigation. With adequate information, community groups, professional associations, and individual citizens can provide valuable support and resources to government prevention programs and initiatives. They also contribute to hazardous materials prevention/mitigation by preparing individual and family preparedness plans that address household chemicals, and by maintaining safe homes and workplaces.

In addition to the concept of a public/private partnership, other aspects of this new philosophy on prevention include the following:

- A focus on safety must be evident during the complete life cycle of hazardous materials, from design and testing to production, storage, transportation, use, treatment, and disposal. This approach implies methods to systematically evaluate entire operations, as well as comprehensive programs that address all phases of production and transportation operations.
- Organizations that use hazardous materials should first attempt to eliminate the possibility of accidents or exposures by substituting inherently safer technologies or less hazardous substances in existing operations. If this approach is not

feasible, other measures should be considered to reduce the probability or severity of accidents.

- Communities and employers should recognize that costs for prevention may not be extensive, and many measures will pay for themselves over time. Costs and benefits should be established early in the planning process, even though it may be difficult to estimate savings that accrue by avoiding accidents and exposures.
- Safety management techniques and technologies are continually evolving. When possible, communities and professional associations should promote activities that foster research, information sharing, technology transfer, and the development of a supportive regulatory and economic environment for organizational innovation.

Prevention/Mitigation Legal Authorities

Hazardous materials safety efforts have continually expanded through many laws, regulations, and standards. These legal authorities address separate pieces of the hazardous materials problem, and are administered by different agencies at all levels of government.

On the community level, planning for hazardous materials prevention/mitigation is often considered a natural extension of state and local governments' responsibility for developing emergency operations plans. In effect, planning team members "piggyback" and expand on the hazards analysis conducted for response planning to prepare prevention strategies and plans. These materials are often incorporated as an annex to the community's emergency operations plan. A number of federal laws, regulations, and guidelines apply to this process. (For more information, see the Hazardous Materials Planning Curriculum Guidelines.)

- Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA)
- OSHA Hazardous Waste Operations and Emergency Response (29 CFR 1910.120)
- Resource Conservation and Recovery Act (RCRA)
- FEMA Emergency Operations Plan Requirements (44 CFR Part 302)
- Guide for All-Hazard Emergency Operations Planning (FEMA SLG 101)
- Hazardous Materials Emergency Planning Guide (NRT-1)
- Technical Guidance for Hazards Analysis (EPA/FEMA/DOT)
- Handbook of Chemical Hazard Analysis Procedures (FEMA/DOT/EPA)
- National Fire Protection Association (NFPA) 400: Hazardous Materials Code
- The Hazardous Materials Regulations (49 CFR Parts 100-185)

Public and private sector facilities that store, handle, or transport certain types and quantities of hazardous materials are also subject to federal contingency planning regulations. Although different requirements may apply to different facilities and operations, the National Response Team's Integrated Contingency Plan (ICP) Guidance

provides a format for complying with the various planning regulations in one functional emergency response plan. Annex 7 of the ICP addresses prevention-based requirements that are specified in the regulations or that may impact response activities.

Federal statutes and regulations that specifically address hazardous materials prevention safety are listed below and described further in the appendix to these guidelines:

- Hazardous Materials Transportation Act
- Hazardous Materials Transportation Uniform Safety Act
- Hazardous Materials Regulations (49 CFR Parts 171-180)
- The Occupational Safety and Health Act of 1970
- OSHA Process Safety Management of Highly Hazardous Chemicals (29 CFR 1910.119)
- OSHA Hazard Communication Standard (29 CFR 1910.1200/1926.59)
- OSHA Safety and Health Program Management Guidelines (Federal Register 54(18):3908-3916, January 26, 1989)
- The Clean Air Act Amendments of 1990 (Public Law 101-549)
- EPA Accidental Release Prevention Requirements: Risk Management Programs Under Clean Air Act, Section 112(r)(7) (40 CFR Part 68)
- The Hazardous Materials Regulations (49 CFR Parts 100-185)

Finally, jurisdictions adopt and enforce standards and codes that define safe practices and procedures in the use of hazardous materials. These codes may govern design and construction of buildings, fire prevention, land use planning (zoning and occupancy), employee safety, accident prevention, public health, environmental quality, and related areas. Several important national codes developed by cognizant professional associations are described in Appendix A.

Hazardous Materials Prevention/Mitigation Programs

The key to hazardous materials prevention/mitigation programs is improving the safety of methods used to store, transport, handle, and process hazardous materials. This is true whether the requirement exists in business and industrial operations or in government-managed facilities (water treatment plants, sewer systems, utilities, etc.). Broad strategies and methods for accomplishing this goal include:

- Use of less hazardous alternatives. Examples of this approach include the use of inherently safer technologies, substitution of non-toxic or less toxic materials, reassessment of plant layout to isolate hazardous substances, and reduction of chemical stockpiles through efficient management of inventory.
- Engineering controls. Examples of engineering controls commonly used in hazardous materials operations include ventilation systems, containment systems, detection and

monitoring systems, robotic controls, physical barriers, isolation controls, electrical protection, sprinklers, and pollution control technologies.

- Safety information. Accurate safety information must be accessible to all end users, including secondary processors, distributors, transporters, contractors, and workers. Tactics used to accomplish this objective include employee training, labeling and placarding, and process safety information management systems. Establishing an effective labor-management dialogue on safety is also important.
- Standard operating guidelines (SOGs). These guidelines distill the analysis conducted during the hazard assessment, systems design, and safety planning phases into job-specific procedures and worker performance standards and expectations. Development and enforcement of SOGs define and implement safe working practices for each hazardous materials application.
- Administrative actions. Personnel management systems and procedures often have great potential for enhancing prevention, often at little cost. Examples include reducing employee shift length, cross-training, or rotating employees to keep them alert; improving security, access control systems, and isolation strategies; modifying maintenance and housekeeping schedules and procedures; identifying safety as a factor in organizational goals and objectives, worker performance reviews, and management incentives; and integrating planning with the community and local health care facilities.
- Personal protective equipment. When exposure is less controllable, adequate personal protective equipment (PPE) and related training must be made available. Examples of PPE include chemical resistant gloves, aprons, face shields, respiratory protection, etc.

Although prevention/mitigation is first and foremost a responsibility of hazardous materials users, government oversight agencies, insurance companies, professional associations, community groups, and others can do much to promote safety. Examples of activities used to motivate and support facilities and transporters in prevention include:

- Legislation, regulations, and standards that clarify prevention requirements and programmatic guidelines
- Community right-to-know policies and information management systems
- Land-use planning and zoning (setback, density, relocation, land acquisition, etc.)
- Plans review and permitting programs for building and operational systems designs
- Inspections and enforcement of hazardous materials and other safety codes
- Environmental and hazard monitoring systems
- Public education and information activities
- Disaster insurance (premium reductions, criteria for coverage, etc.)
- Tax incentives/disincentives and financial resources
- Methods to foster improved public/private sector coordination and cooperation
- Research and information dissemination

Obviously, the concept of hazardous materials prevention/mitigation covers a broad spectrum of strategies and tactics conducted by many different types of organizations. The nature of prevention programs is equally diverse, depending on such factors as the mission of the organization, the types and quantities of chemicals involved, financial and personnel resources, legal requirements, etc. However, all hazardous materials prevention/mitigation programs should be based on a thorough hazard assessment, and include a comprehensive and systematic program planning process appropriate to the organization's needs.

Rationale for Hazardous Materials Prevention/Mitigation Training and Education

Of all the hazardous materials prevention/mitigation strategies, training and education programs may be the most effective. Well-designed training programs significantly reduce the number and severity of incidents arising from process operations, and assist in preventing small problems from leading to a catastrophic release. The Department of Transportation notes simply that "training is the best means of preventing hazardous materials accidents" (Training For the Safe Transportation of Hazardous Materials, DOT, 1997).

Why is training so effective? It is because training directly addresses the common barriers to effective hazardous materials prevention/mitigation efforts. Studies have identified some of the barriers to effective hazardous materials prevention/mitigation programs, as follows:

- Inadequate information about chemical hazards and the causes of accidents, safer technologies, and the costs associated with those technologies.
- A lack of managerial awareness and expertise about preventive measures and regulatory requirements.
- Organizational obstacles based on corporate attitudes.
- Limited communications among public officials, employers, and workers.
- Inadequate employee and citizen knowledge about safety and prevention.

Training and education programs targeted to the various groups that can potentially contribute to prevention are an effective method for addressing these problems. Training programs increase employee awareness of hazards and help workers understand the nature and causes of potential problems. They provide opportunities for individuals to learn and practice safety systems and procedures in a risk-free environment. And they contribute to the development of a safety culture within the organization that motivates worker participation in hazard identification, program planning, safety audits, incident reviews, and other prevention activities.

Training is also critical for public officials, executives, managers, and others not directly involved in hazardous materials operations. Promoting change within organizations is most effective when the process starts at the top. Shifting the traditional focus from productivity and emergency preparedness to prevention requires changing the mindset

of decision-makers in government, business, and industry. The same is true for design professionals and technical experts—architects, engineers, consultants, etc.—that plan operational systems and contribute to policy development.

Recognizing the importance and benefits of prevention training, OSHA, DOT, EPA, and other federal agencies have identified training requirements and guidelines for hazardous materials employers. General requirements are summarized in Appendix B; training managers may need to research more specific mandates for different industrial sectors and employer types.

Hazardous Materials Prevention/Mitigation Training Challenges

Although hazardous materials prevention/mitigation training is mandated by law, and the potential benefits are well established, too few organizations place an adequate emphasis on this safety strategy. Several reasons exist for this state of affairs:

- The benefits of hazardous materials prevention/mitigation are often poorly understood and difficult to quantify. As a result, some organizations place a low priority on prevention initiatives, including training. This is especially true in smaller commercial operations, where safety information is limited and resources are tight.
- Traditionally, employee training has focused on improving productivity, with prevention viewed as an adjunct to workers' primary job responsibilities. Thus, hazardous materials prevention/mitigation training is not usually identified as a separate requirement or curriculum area, with the attention and resources it deserves.
- Workplace safety is not identified as a separate competency in many professional schools of business management, architecture, engineering, public administration, etc. Opportunities to deliver prevention training to these key audiences may be limited.
- Hazardous materials prevention/mitigation covers a very broad range of possible subject areas and audiences. The resulting scope of training program requirements can be overwhelming for some communities and facilities.
- Hazardous materials prevention/mitigation training is often highly technical and complex. Opportunities should be provided for students to practice key skills in a realistic but safe environment. As a result, training delivery often benefits by the use of specialized facilities and equipment that are beyond the resources of some organizations.
- Recruitment for training activities can be difficult because organizations and audience members may place a low priority on prevention, or view prevention as an ancillary duty to primary work responsibilities.

How individual training managers deal with these challenges will depend on the organizational situation they face—management priorities, training requirements, safety

concerns, resources, etc. However, three general principles can be stated: (1) educational activities designed to heighten the awareness of decision-makers about the organizational benefits of prevention should be considered early in program planning; (2) a comprehensive hazardous materials prevention/mitigation training needs assessment should be prepared to identify priorities, appropriate training methodologies, and techniques for demonstrating competence; and (3) whenever possible, employee participation should be encouraged in the training development process.

Hazardous Materials Incident Response Curriculum Guidelines

Hazardous Materials Prevention/Mitigation Awareness

Introduction

Prevention/Mitigation Awareness describes the introductory training requirements of all audiences in the Hazardous Materials Prevention/Mitigation Curriculum. Instruction in this area is intended to give participants a general knowledge base about hazardous materials prevention/mitigation that can serve as a foundation for subsequent job-specific training.

The goal of *Prevention/Mitigation Awareness* training is to enhance participants' understanding of the importance and benefits of hazardous materials prevention/mitigation, and to motivate them to seek additional information and assistance as needed. This goal is accomplished by providing students with (1) an introduction to basic hazardous materials prevention/mitigation terminology and concepts, (2) an explanation of individual and organizational roles in hazardous materials prevention/mitigation, and (3) an overview of common hazardous materials prevention/mitigation methods and activities.

(Note: As defined here, *Prevention/Mitigation Awareness* is a common training requirement for all audiences, not a unique audience category. This material would typically be included in training delivered to each of the audiences described in the following sections. It is presented as a separate category to minimize redundancy and to facilitate use for mixed audiences, non-hazardous materials workers, and the general public.)

Training Audience

The training audience for *Prevention/Mitigation Awareness* includes everyone that has responsibilities in hazardous materials prevention/mitigation or could influence hazardous materials prevention/mitigation efforts at the state and local levels. Specifically included are employees of hazardous materials facilities, transportation workers, and personnel in agencies and organizations that implement the community's hazardous materials prevention/mitigation policies and plans. Other workers and the general public will also benefit from awareness training in prevention. Potential audiences include union members, employee groups, civic organizations, volunteer agencies, activist groups, etc.

Training Requirements

Prevention/Mitigation Awareness training includes generic information about hazardous materials prevention/mitigation and the community's hazardous materials prevention/mitigation system. Also included is a general orientation to the student's work requirements and expectations. More specific knowledge and skills are defined for different audience groups in subsequent sections of these Guidelines.

At the conclusion of training, participants should be able to describe the hazardous materials prevention/mitigation system as it applies to them, their responsibilities in that system, and ways to get further assistance. Possible content areas include:

- Relevant technological hazards
- Understanding chemical interactions
- Chemical container requirements
- Applicable laws, regulations, and codes
- Common hazardous materials prevention/mitigation strategies and activities
- Community and organizational plans, roles, and activities
- Sources of hazardous materials prevention/mitigation information and training

Methodology Recommendations

Prevention/Mitigation Awareness training can usually be delivered in three to six hours of classroom instruction. Content is typically presented as an introductory module in a broader training program for a specific audience group, although stand-alone training is possible. This type of awareness-level training can also be presented through the use of written materials and instructional media, a strategy that is particularly cost-effective for large and dispersed audiences. Other recommendations and considerations include the following:

- Training should emphasize the jurisdiction's strategies and methods for creating a disaster resistant community, and encourage the coordination and cooperation of government agencies and private sector organizations in hazardous materials prevention/mitigation.
- Heterogeneous audiences for *Prevention/Mitigation Awareness* training provide the opportunity for cross-disciplinary information sharing and networking among participants.
- Appropriate instructional methodologies include case studies, discussions, and small group activities to promote participant interaction and individual action planning.
- Although the bulk of *Prevention/Mitigation Awareness* training is by definition generic, some tailoring of course materials to specific audiences may be beneficial to account for differences in community hazards, hazardous materials prevention/mitigation strategies and systems, job requirements, etc.
- The use of instructional media (videotapes, slides, graphics, etc.) to enhance the impact and efficiency of training is particularly appropriate for this audience.

Recommended Training Objectives

Key Objectives

PM AWAR – 1 Given the hazards in a specific jurisdiction, describe the purpose and benefits of hazardous materials prevention/mitigation.

PM AWAR – 2 Describe relevant aspects of a hazardous materials **prevention/mitigation system.**

PM AWAR – 3 Given this model hazardous materials prevention/mitigation program, identify common prevention/mitigation activities.

PM AWAR - 1

Given the hazards in a specific jurisdiction, describe the purpose and benefits of hazardous materials prevention/mitigation.

PM AWAR - 1.1

Define hazardous materials prevention/mitigation, and describe the benefits of hazardous materials prevention/mitigation programs.

PM AWAR - 1.2

Define Comprehensive Emergency Management (CEM) and the integrated approach to hazardous materials prevention/mitigation.

PM AWAR - 1.3

Describe the nature of technological hazards facing the community.

PM AWAR - 1.4

Describe the concept of disaster resistant communities.

PM AWAR - 2

Describe relevant aspects of a hazardous materials prevention/mitigation system.

PM AWAR - 2.1

Identify key legislation, regulations, and policies governing hazardous materials prevention/mitigation.

PM AWAR - 2.2

Identify the roles and general responsibilities of federal, state, and local government agencies and private sector organizations in hazardous materials prevention/mitigation.

PM AWAR - 2.3

Describe the hazardous materials prevention/mitigation planning process and participants.

PM AWAR - 2.4

Identify the roles and general responsibilities of workers and citizens in hazardous materials prevention/mitigation.

PM AWAR - 2.5

Describe major hazardous materials prevention/mitigation strategies, activities, and how these should be developed in the emergency operations plan and hazardous materials prevention/mitigation plans.

PM AWAR - 3

Given this model hazardous materials prevention/mitigation program, identify common prevention/mitigation activities.

PM AWAR - 3.1

Describe activities associated with hazardous materials prevention/mitigation Program Analysis and Planning:

- Review of authorities and statutory mandates
- Hazard analysis
- Program planning
- Program implementation, evaluation, and maintenance
- Interagency coordination and cooperation.

PM AWAR - 3.2

Describe hazardous materials prevention/mitigation activities associated with Employee Participation, Education, and Training:

PM AWAR - 3.3

Describe hazardous materials prevention/mitigation activities associated with Design, Plans Review, and Construction:

- Facility and systems/process design and construction
- Transportation and storage design and construction
- Plans review and permitting

- Code compliance

PM AWAR - 3.4

Describe hazardous materials prevention/mitigation activities associated with Safety Systems:

- Pre-startup safety reviews
- Maintenance/mechanical integrity
- Management of change

PM AWAR - 3.5

Describe hazardous materials prevention/mitigation activities associated with Safety Systems:

- Pre-startup safety reviews
- Maintenance/mechanical integrity
- Management of change communities.

PM AWAR - 3.6

Describe hazardous materials prevention/mitigation activities associated with Compliance and Enforcement:

- Safety inspections, investigations, and enforcement
- Referencing the appropriate codes of the AHJ
- Compliance and safety audits
- Record keeping and reporting

PM AWAR - 3.7

Describe hazardous materials prevention/mitigation activities associated with Public Information and Education:

- Public awareness/prevention communication
- Family and individual preparedness

Hazardous Materials Incident Response Curriculum Guidelines

Hazardous Materials Prevention/Mitigation Policy Development

Introduction

Prevention/Mitigation Policy Development describes the training requirements of persons who direct or manage organizations that have defined responsibilities in hazardous materials prevention/mitigation. In this role, audience members initiate and oversee the development and maintenance of the hazardous materials prevention/mitigation program's mission statement, policies, strategies, goals, objectives, plans, activities, and administrative systems.

In their jobs, audience members direct staff and others who manage and implement hazardous materials prevention/mitigation programs and activities. Tasks include initiating and directing the development of hazardous materials prevention/mitigation programs, setting related policy, establishing priorities based on cost/benefit analyses and other information, allocating staff and resources, approving and monitoring plans, supporting program implementation and evaluation, and ensuring interagency liaison and coordination.

Training Audience

The training audience for *Prevention/Mitigation Policy Development* consists of chief executives and senior managers from a broad spectrum of public, private, and nonprofit organizations. Potential audience members include city and county elected and appointed officials; SERC and LEPC members; facility owners and managers; police and fire chiefs; planning commissioners; school boards; managers of financial institutions; hospital administrators; media executives and station managers; and officers of professional groups, fraternal organizations, and unions.

The training audience should reflect persons who have the organizational authority to develop and enforce hazardous materials prevention/mitigation program policy and to budget and expend related funds. Some students, especially in smaller jurisdictions and organizations, will also have responsibility for supervising and implementing specific hazardous materials prevention/mitigation programs and activities. Individuals with dual responsibilities may need additional training, described under the *Prevention/Mitigation Program Management* training area that follows this section in the Hazardous Materials and Terrorist Incident Prevention/Mitigation Training Guidelines.

Training Requirements

Persons responsible for *Prevention/Mitigation Policy Development* represent a broad range of organizations, with very different hazardous materials prevention/mitigation program needs and resources. Thus, the job requirements of individual audience members may differ, sometimes dramatically. However, all students involved in hazardous materials prevention/mitigation policy development will benefit from generic training in hazardous materials prevention concepts, techniques, and applications as well as the intent and application of appropriate policies. Many also need training that is

specific to their unique organizational and prevention program responsibilities (e.g., type of operations, legal and regulatory requirements, management systems, etc.).

As a prerequisite for training, students are assumed to already possess the management skills, technical support, and resources they need to carry out their assigned organizational responsibilities. Thus, the goal of training is to motivate effective hazardous materials prevention/mitigation program leadership, promote hazardous materials prevention/mitigation program excellence, and contribute to the development of a disaster resistant community by providing students with a heightened awareness of:

- The risks posed by hazardous materials to the community and the organization.
- The benefits of hazardous materials prevention/mitigation programs and activities.
- Strategies and options for hazardous materials prevention/mitigation.
- Organizational and individual roles and responsibilities in hazardous materials prevention/mitigation.
- Related administrative and resource requirements.

Methodology Recommendations

Generic training that is appropriate for all audience members can usually be accomplished in one to three hours. Content should emphasize (1) the jurisdiction's strategy for developing and implementing prevention programs that contribute to the development of a disaster resistant community, and (2) the organization's and student's role in that system. Audiences should be heterogeneous whenever possible, reflecting the contribution of different types of organizations to the community's hazardous materials prevention system.

More training may be necessary to address the unique needs of different audience members, covering, for example, specific organizational hazards, regulatory requirements, prevention program activities, etc. If so, training managers should group students and tailor training accordingly. Instruction must be presented in such a way that non-specialists can acquire the information they need to make informed management-level decisions.

Other training methodology recommendations and considerations include the following:

- Training should emphasize the jurisdiction's strategies and methods for developing a disaster resistant community, and encourage the coordination and cooperation of government agencies and private sector organizations in hazardous materials prevention/mitigation.
- Instructional methodologies should include discussions and small group activities that promote participant interaction and support the resolution of conflicts.
- Course materials for heterogeneous audiences should include examples of hazardous materials prevention/mitigation activities from various types of organizations, e.g., government agencies, public utilities, chemical transporters,

industrial production facilities, hospitals, sewage treatment facilities, truck stops, and pipelines.

- The use of instructional media (videotapes, slides, overhead transparencies, etc.) to enhance the impact and efficiency of training is particularly appropriate for this audience.
- Special efforts may be needed to recruit students due to the nature of their organizational positions and the low priority sometimes afforded hazardous materials prevention/mitigation programs and training.

Recommended Training Objectives

Key Objectives

POLICY - 1 Given an overview of prevention/mitigation concepts and activities (see *Prevention/Mitigation Awareness*), analyze the organization's hazardous materials prevention/mitigation program mission, policies, goals, objectives, strategies, activities, and plans.

POLICY - 2 Given a hazardous materials prevention/mitigation program strategy and plans, identify administrative systems and resources needed to implement the program.

POLICY - 3 Given implementation of the organization's hazardous materials prevention/mitigation program, describe steps involved, challenges that may be encountered, and recommended strategies to support and sustain evaluation and maintenance of the program.

POLICY - 4 Given a review of hazardous materials prevention/mitigation program needs, identify additional sources of information, assistance and training to meet those needs.

POLICY- 1

Given an overview of prevention/mitigation concepts and activities (see *Prevention/Mitigation Awareness*), analyze the organization's hazardous materials prevention/mitigation program mission, policies, goals, objectives, strategies, activities, and plans.

POLICY- 1.1

Describe procedures for researching and assessing hazardous materials prevention authorities and statutory mandates.

POLICY - 1.2

Identify strategies for identifying and analyzing technological hazards, vulnerabilities, and risks.

POLICY - 1.3

Describe steps for evaluating, developing or refining the organization's hazardous materials prevention/mitigation program mission statement and policies.

POLICY - 1.4

Identify processes for evaluating, developing or refining the hazardous materials prevention/mitigation program's short- and long-term goals, measurable objectives, and evaluation criteria.

POLICY - 1.5

Describe steps for identifying and analyzing hazardous materials prevention/mitigation program strategies and activities.

POLICY - 1.6

Describe guidelines for preparing and coordinating short- and long-term hazardous materials prevention/mitigation program plans.

POLICY - 1.7

Describe common hazardous materials prevention/mitigation program implementation shortfalls and opportunities.

POLICY - 2

Given a hazardous materials prevention/mitigation program strategy and plans, identify administrative systems and resources needed to implement the program.

POLICY - 2.1

Describe the process for determining the scope of the hazardous materials prevention/mitigation program's administrative and resource requirements.

POLICY - 2.2

Identify guidelines for assessing existing personnel, available resources, organizational capabilities, competing requirements, and staffing alternatives.

POLICY - 2.3

Describe possible funding resources and alternatives.

POLICY - 2.4

Describe methods to assess organizational impacts (economic, legal, public relations, etc.) resulting from different resource allocation strategies and program outcomes.

POLICY - 3

Given implementation of the organization's hazardous materials prevention/mitigation program, describe steps involved, challenges that may be encountered, and recommended strategies to support and sustain evaluation and maintenance of the program.

POLICY - 3.1

Describe guidelines for monitoring hazardous materials prevention/mitigation program activities and measuring progress in implementing prevention/mitigation strategies.

POLICY - 3.2

Describe guidelines for evaluating and refining hazardous materials prevention/mitigation program systems, strategies, plans, budgets, procedures, etc. to enhance prevention/mitigation.

POLICY - 3.3

Describe guidelines for ensuring long-term compliance with legal requirements and maintaining interagency liaison and coordination.

POLICY - 4

Given a review of hazardous materials prevention/mitigation program needs for complying with the applicable codes that have been adopted by the authority having jurisdiction, identify additional sources of information, assistance and training to meet those needs.

POLICY - 4.1

Assess individual and organizational needs for additional information, assistance, and training.

POLICY - 4.2

Identify and describe methods to research and evaluate information, assistance, and training available through government and private sector sources.

Hazardous Materials Incident Response Curriculum Guidelines

Community Hazardous Materials Prevention/Mitigation Program Management

Introduction

Community Prevention/Mitigation Program Management describes the training requirements of persons who develop and manage state and local government hazardous materials prevention/mitigation programs and activities. These activities include community hazard analysis, hazardous materials prevention/mitigation planning, land-use planning, construction plans review, inspection and codes enforcement, public education, and other efforts designed to enhance worker and public safety and contribute to the development of a disaster resistant community. (Note: Governmental entities may also be involved in hazardous materials operations—the processing, storage, handling, or transport of regulated chemicals—for example in waste water treatment plants, utilities, medical care facilities, military applications, etc.)

Persons performing *Community Prevention/Mitigation Program Management* are responsible for implementing the organizational policy and direction established by senior managers (see Prevention Policy Development). Tasks include conducting and/or supervising staff and consultants (e.g., architects, engineers, and other technical specialists) in the following types of prevention activities:

- Assisting senior managers in writing hazardous materials prevention/mitigation policy, establishing hazardous materials prevention/mitigation goals, designing related administrative systems, assessing budgets, promoting interagency coordination, developing evaluation criteria, and so forth.
- Researching and assessing hazardous materials prevention/mitigation legal requirements, technological hazards, potential incident impacts, and organizational capabilities.
- Analyzing hazardous materials prevention/mitigation strategies and options (i.e., activities designed to prevent and mitigate hazardous materials incidents).
- Determining hazardous materials prevention/mitigation training needs, developing course materials, managing training programs, and delivering instruction.
- Developing hazardous materials prevention/mitigation program staff plans and schedules, negotiating subcontractor arrangements, assigning personnel, monitoring and evaluating performance, and tracking expenditures.
- Implementing specific hazardous materials prevention/mitigation activities, monitoring progress, evaluating outcomes, and recommending changes to improve safety and program effectiveness.

Training Audience

The training audience for *Community Prevention/Mitigation Program Management* consists primarily of government officials and others with supervisory-level responsibilities in community hazardous materials prevention/mitigation. Potential audience members include state environmental agency hazardous materials

prevention/mitigation managers, Hazardous Materials Emergency Preparedness (HMEP) program managers, local response agency (fire, law enforcement, emergency medical services) hazardous materials prevention/mitigation program managers, hazardous materials planners, zoning board members, codes enforcement managers, emergency management program directors, and other representatives of community organizations that have a defined role in hazardous materials prevention/mitigation.

Training Requirements

Candidates for instruction in this curriculum area are assumed to already possess basic management skills and expertise in their areas of responsibility (fire prevention, code enforcement, plans review, etc.). Thus, the goal of training is to improve leadership and enhance safety programs by providing students with supplementary knowledge and skills in hazardous materials incident prevention/mitigation and related activities.

The job and training requirements of individual audience members will vary depending on their roles and responsibilities, and the extent to which they have a basic understanding of chemistry and chemical reactivity. For example, the needs of agency officials in large metropolitan areas and rapidly growing jurisdictions may exceed those in smaller, rural, and established communities. However, all audience members will benefit by generic training in hazardous materials prevention/mitigation concepts, techniques, and applications. Possible content areas include:

- The hazardous materials prevention/mitigation program manager's role and responsibilities.
- The organization's hazardous materials prevention/mitigation mission and policies.
- State-of-the-art hazardous materials prevention/mitigation program strategies, concepts, and techniques.
- Methodologies to enhance program planning, implementation, monitoring, and evaluation.
- Incident case study reviews, analyses and assessments.
- Problem-solving methods and techniques.

For instruction to be most effective, audience members should be grouped to the extent possible by prevention program type and the technical requirements of the job. Training can then address any specialized knowledge and skills needed by different groups. Possible content areas for advanced training include legislative and regulatory requirements, hazard analysis techniques, planning strategies, and hazardous materials prevention/mitigation applications.

Methodology Recommendations

General training in *Community Prevention/Mitigation Program Management* can usually be accomplished in one to three days of instruction, if audiences have a prerequisite

basic understanding of chemistry and chemical reactivity . More time may be appropriate for audiences with greater needs. Instructional methodologies should emphasize case studies and examples relevant to the audience. Participant activities should highlight innovative approaches to prevention and practical solutions to common problems. Other training methodology recommendations and considerations include the following:

- Training should emphasize the jurisdiction's strategies and methods for creating a disaster resistant community, and encourage the coordination and cooperation of government agencies and private sector organizations in hazardous materials prevention/mitigation.
- Student activities should encourage participant interaction and provide ample opportunities for practice and application of acquired skills. Checklists, job aids, and other practical tools should be included in the course materials. Activities should focus on the development of useful work products (e.g., hazards analyses, work plans, program strategies, etc.) under classroom conditions that are as realistic as possible. Methods to transfer learning back to the job should be emphasized.
- Instructors need significant practical experience and technical expertise in hazardous materials prevention/mitigation programs relevant to the audience's needs. Familiarity with state and local program requirements and systems is also important.

Recommended Training Objectives

Key Objectives

COMM PM - 1 Given an overview of hazardous materials prevention/mitigation concepts and activities and a specific state or local jurisdiction, describe the community's hazardous materials prevention/ mitigation system.

COMM PM - 2 Given a community's hazards analysis, identify related hazardous materials prevention/mitigation program considerations and priorities..

COMM PM - 3 Given a community's hazards analysis, identify and assess options for promoting hazardous materials prevention/mitigation through plans review and permitting programs.

COMM PM - 4 Given a community's hazards analysis, identify and assess options for promoting hazardous materials prevention/mitigation through inspections and enforcement activities..

COMM PM - 5 Given a community's hazards analysis, identify and assess options for promoting hazardous materials prevention/mitigation through incident record keeping, reporting, and investigations..

COMM PM - 6 Given a community's hazards analysis, identify and assess options for promoting public information and education on hazardous materials prevention/mitigation.

COMM PM - 7 Given an analysis of prevention/mitigation risks, authorities, and activity options, prepare a hazardous materials prevention/mitigation program management plan.

COMM PM - 8 Given a hazardous materials prevention/mitigation program management plan, conduct and/or supervise the implementation, monitoring, evaluation, and continual refinement of the hazardous materials prevention/mitigation program.

COMM PM - 1

Given an overview of prevention/mitigation concepts and activities (see *Prevention/Mitigation Awareness* and a specific state or local jurisdiction, describe the community's hazardous materials prevention/mitigation system.

COMM PM - 1.1

Describe general guidelines for hazardous materials prevention/mitigation plans and roles for state and local jurisdictions contained in the following authorities (see Hazardous Materials Planning Curriculum Guidelines for more information):

- Robert T. Stafford Disaster Relief and Emergency Assistance Act
- Title III of the Superfund Amendments Reauthorization Act (SARA)
- Guide for All-Hazard Emergency Operations Planning (SLG-101)
- Hazardous Materials Emergency Planning Guide (NRT-1)
- OSHA 29 CFR 1910.120 and EPA 40 CFR
- NFPA 400: Hazardous Materials Code
- State and local laws, fire codes and regulations

COMM PM - 1.2

Describe general hazardous materials prevention/mitigation guidelines and roles contained in:

- State and local legislation, regulations, and policies
- State and local emergency operations and hazardous materials prevention/mitigation plans
- State and local planning and zoning ordinances
- State and local building, fire, hazardous materials, health, and other codes

COMM PM - 2

Given the community's hazards analysis, identify related hazardous materials prevention/mitigation program considerations and priorities. (See Hazardous Materials Planning Curriculum Guidelines for more information.)

COMM PM - 2.1

Describe the hazards identified in the community's hazards analysis.

COMM PM - 2.2

Describe guidelines and methods for evaluating and refining the community's hazards analysis, if appropriate.

COMM PM - 2.3

De Describe guidelines and methods for identifying planning considerations and prioritizing hazardous materials prevention/mitigation activities to reflect the community's hazard analysis.

COMM PM - 3

Given a community's hazards analysis, identify and assess options for promoting hazardous materials prevention/mitigation through plans review and permitting programs.

COMM PM - 3.1

Describe community systems and roles for promoting hazardous materials prevention/mitigation through plans review and permitting programs.

COMM PM - 3.2

Identify hazardous materials regulations, codes, and standards applicable to various design scenarios.

COMM PM - 3.3

Describe guidelines, methods, and procedures for conducting hazardous materials prevention/mitigation plans reviews and permitting activities, addressing such factors as:

- Consultation with facility management and design team members
- Review of design specifications, plans, and supporting documents
- Construction permitting and licensing (approval)
- Construction monitoring and consultation
- Inspection of new or modified facilities and operations
- Operational permits

COMM PM - 3.4

Describe the essential elements and management requirements of hazardous materials prevention/mitigation plans review and permitting programs.

COMM PM - 3.5

Describe staffing strategies and recommended personnel qualifications for hazardous materials prevention plans review and permitting programs.

COMM PM - 3.6

Describe guidelines and methods for determining administrative and resource requirements for hazardous materials prevention/mitigation plans review and permitting programs.

COMM PM - 4

Given a community's hazards analysis, identify and assess options for promoting hazardous materials prevention/mitigation through inspections and enforcement activities.

COMM PM - 4.1

Describe community systems and roles for conducting hazardous materials inspections and enforcement activities.

COMM PM - 4.2

Describe key authorities governing the processing, storage, handling, and transport of hazardous materials, including:

- OSHA's General Safety and Health Provisions (29 CFR 1926.20)
- OSHA's Process Safety Management Standard (29 CFR 1910.119)
- The Clean Air Act Amendments (1990)
- EPA's Accidental Release Prevention Requirements (40 CFR Part 68)
- OSHA's Hazard Communication Standard (29 CFR 1910.1200)
- DOT's Hazardous Materials Regulations (49 CFR Parts 171-180)
- NRT's Integrated Contingency Plan Guidance

COMM PM - 4.3

Describe guidelines, methods, and information sources for gathering hazardous materials data on facilities and operations, categorizing risks, and establishing priorities among inspection and enforcement requirements.

COMM PM - 4.4

Describe guidelines, methods, and procedures for conducting hazardous materials inspections, addressing such factors as:

- Developing required forms, checklists, questionnaires, etc.
- Scheduling and planning site visits
- Briefing management and operating personnel
- Gathering inspection data
- Assessing the adequacy of plans, permits, process safety information, operating procedures, training, safety systems, etc.
- Identifying deficiencies and concerns
- Documenting and reporting results

COMM PM - 4.5

Describe guidelines, methods, and procedures for achieving compliance with hazardous materials inspection results (consultation, violation notices, citations, personnel actions, audits, legal actions, etc.).

COMM PM - 4.6

Describe the essential elements and management requirements of hazardous materials inspection and enforcement programs.

COMM PM - 4.7

Describe staffing strategies and recommended personnel qualifications for hazardous materials inspection and enforcement programs.

COMM PM - 4.8

Describe guidelines and methods for determining administrative and resource requirements for hazardous materials inspection and enforcement programs.

COMM PM - 5

Given a community's hazards analysis, identify and assess options for promoting hazardous materials prevention/mitigation through incident record keeping, reporting, and investigations.

COMM PM - 5.1

Describe community systems and roles for promoting hazardous materials prevention/mitigation through incident record keeping, reporting, and investigations.

COMM PM - 5.2

Describe appropriate data gathering forms and procedures for promoting incident reporting and record keeping.

COMM PM - 5.3

Describe staffing strategies and recommended personnel qualifications for the hazardous materials incident investigation team, including requirements for training.

COMM PM - 5.4

Describe strategies to ensure that hazardous materials prevention/mitigation codes and concepts and techniques are adequately considered during incident investigations.

COMM PM - 5.5

Describe strategies for ensuring that hazardous materials incident investigation findings and recommendations are addressed, that corrective measures are adequately documented, and that results are considered in hazardous materials prevention/mitigation program planning.

COMM PM - 5.6

Describe guidelines and methods for determining administrative and resource requirements for hazardous materials investigations or inspections.

COMM PM - 6

Given a community's hazards analysis, identify and assess options for promoting public information and education on hazardous materials prevention/mitigation.

COMM PM - 6.1

Describe community systems and roles for conducting hazardous materials public awareness/risk communication activities.

COMM PM - 6.2

Describe community systems and roles for conducting individual and family preparedness public education activities in hazardous materials prevention/mitigation.

COMM PM - 6.3

Describe guidelines and methods for determining audience needs for hazardous materials public information and education activities.

COMM PM - 6.4

Identify and assess communication strategies (media, participants, etc.) for hazardous materials public information and education programs.

COMM PM - 6.5

Identify and assess existing materials and sources of assistance for hazardous materials public information and education programs.

COMM PM - 6.6

Describe the essential elements and management requirements of hazardous materials public information and education programs.

COMM PM - 6.7

Describe staffing strategies and recommended personnel qualifications for hazardous materials public information and education programs.

COMM PM - 6.8

Describe guidelines and methods for determining administrative and resource requirements for public information and education programs.

COMM PM - 7

Given an analysis of hazardous materials risks, authorities, and activity options, prepare a hazardous materials prevention/mitigation program management plan. (See Hazardous Materials Planning Curriculum Guidelines for more information.)

COMM PM - 7.1

Describe guidelines and methods for preparing and formatting a hazardous materials prevention/mitigation program management plan.

COMM PM - 7.2

Describe guidelines for developing an organizational strategy for program activities that addresses:

- Short- and long-term goals, measurable objectives, and evaluation criteria.
- Analysis of program activities and options.
- Resources and administrative support systems and procedures.
- Staffing assignments and contractor requirements.

COMM PM - 7.3

Describe guidelines and methods for coordinating the planning process and communicating results to community officials.

COMM PM - 8

Given a hazardous materials prevention/mitigation program management plan, conduct and/or supervise the implementation, monitoring, evaluation, and continual refinement of the prevention/mitigation program.

COMM PM - 8.1

Describe strategies and methods for implementing hazardous materials prevention/mitigation program elements, activities, and procedures.

COMM PM - 8.2

Describe strategies and methods for monitoring, evaluating, and continually refining hazardous materials prevention/mitigation program elements, activities, and procedures.

COMM PM - 8.3

Describe common shortfalls and opportunities in implementing, evaluating, and maintaining hazardous materials prevention/mitigation programs.

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Hazardous Materials Incident Response Curriculum Guidelines

Prevention/Mitigation in Hazardous Materials Operations

Introduction

Prevention/Mitigation in Operations describes the training requirements of persons who supervise or operate processes that involve the storage, transport, handling, manufacture, or use of hazardous materials. These employees are responsible for ensuring that hazardous materials prevention/mitigation activities and safety requirements defined in system/process safety management plans and standard operating guidelines (SOGs) are properly implemented and enforced.

The job requirements and training needs of operations personnel will vary significantly, depending on the size and nature of the operation, the type of hazards involved, the hazardous materials prevention/mitigation strategy adopted by the facility, and the duties of the employee. However, generic roles and responsibilities can be defined as follows:

- Assist the hazardous materials prevention/mitigation program manager to identify hazardous materials risks, prevention/mitigation opportunities, and safe operating practices and procedures for specific processes/operations.
- Implement, monitor, and enforce safe working practices and procedures for specific operations.
- Participate in record keeping, reporting, safety reviews, compliance audits, incident investigations, inspections, evaluations, and other hazardous materials prevention/mitigation program activities.

Training Audience

The training audience for *Prevention/Mitigation in Operations* consists of employees of public, private, and non-profit facilities. In this context, the terms “facility” and “process” are broadly defined, specifically to include large and small operations at industrial plants, commercial establishments, trucking and other transport companies, government agencies, health care operations, utilities, and many other types of organizations.

The training audience includes a broad spectrum of facility workers, from supervisors of huge chemical production systems to forklift operators. Audience members include production managers, shift supervisors, line operators, general laborers, hazardous materials transport employees, and many process-specific job titles.

Training Requirements

As a prerequisite of training, students are assumed to already know how to carry out their basic work responsibilities. Thus, the goal of training is to promote hazardous materials incident prevention/mitigation and employee safety by enhancing participants’ ability and motivation to (1) identify and apply safe working practices and procedures on the job, (2) ensure compliance with established hazardous materials prevention/mitigation program requirements, and (3) contribute as assigned to related

program activities (e.g., hazard analysis, planning, record keeping, incident critiques, audits, etc.).

A safety management plan and job-specific Standard Operating Guidelines (SOGs), prepared under the direction of the hazardous materials prevention/mitigation program manager, should exist for all hazardous materials activities. Instruction in *Prevention/Mitigation in Operations* therefore emphasizes the knowledge and skills students need to apply these established systems and procedures under varying conditions and in a wide range of routine and non-routine work situations. Specifically included is the ability to implement SOGs that define the student's hazardous materials prevention/mitigation responsibilities, and to recognize and report potential safety problems.

Training must be highly specific to each student's needs, which, in turn, depend on their unique job requirements (type of operations, work responsibilities, associated hazards, hazardous materials prevention/mitigation strategies, etc.). Therefore, instruction emphasizes the transfer of operations-specific knowledge and skills that students need to implement the organization's prevention program and avoid accidents. General training in hazardous materials prevention/mitigation concepts and techniques is provided as necessary to support this primary goal.

Methodology Recommendations

All students will benefit by awareness-level training in hazardous materials prevention/mitigation and an understanding of the organization's hazardous materials prevention/mitigation program. Audience members also need technical knowledge and skills that are specific to their jobs. For this latter type of training, audience members should be grouped to the extent possible by process, hazard, and job type. Training can then be more effectively tailored to the needs of different workers.

Participants should be given opportunities to apply and practice job-specific operating procedures and safety systems under different work conditions and situations. For classroom activities, case studies and scenarios can be used. However, hands-on use of equipment under realistic working conditions and on-the-job training are encouraged. Activities should highlight creative approaches to prevention program requirements and practical solutions to common problems. Drills or exercises under simulated emergency or non-routine situations are also useful.

The scope and duration of training will vary depending on the nature and complexity of related SOGs and safety systems. Checklists, job aids, and other practical tools that can be used at the work site should be included in course materials whenever possible.

Recommended Training Objectives

Key Objectives

PM OPS 1 Given an overview of hazardous materials prevention/mitigation concepts and activities (see Prevention/Mitigation Awareness), describe employee safety requirements.

PM OPS 2 Given the organization's hazardous materials prevention/mitigation program, describe elements of the program that affect operations.

PM OPS 3 Given an operation's hazards assessment and safety plan, describe hazardous materials prevention/mitigation strategies.

PM OPS 4 Given an operation's work situation and scenarios, describe and apply standard operating guidelines (SOGs) that relate to safe working practices.

PM OPS 5 Given the organization's hazardous materials prevention/mitigation program, participate as assigned in various program activities.

PM OPS - 1

Given an overview of hazardous materials prevention/mitigation concepts and activities (see Prevention/Mitigation Awareness), describe employee safety requirements.

PM OPS - 1.1

Describe general safety and health provisions protecting worker safety.

PM OPS - 1.2

Describe general guidelines for employee participation in hazardous materials prevention/mitigation activities.

PM OPS - 1.3

Describe general guidelines for employee training in workplace safety and health.

PM OPS - 1.4

Describe general guidelines for maintaining and accessing process safety information.

PM OPS - 2

Given the community's hazards analysis, identify related hazardous materials prevention/mitigation program considerations and priorities. (See Hazardous Materials Planning Curriculum Guidelines for more information.)

PM OPS - 2.1

Describe the hazards identified in the community's hazards analysis.

PM OPS - 2.2

Describe guidelines and methods for evaluating and refining the community's hazards analysis, if appropriate.

PM OPS - 2.3

De Describe guidelines and methods for identifying planning considerations and prioritizing hazardous materials prevention/mitigation activities to reflect the community's hazard analysis.

PM OPS - 3

Given an operation's hazards assessment and safety plan, describe hazardous materials prevention/mitigation strategies.

PM OPS - 3.1

Identify specific hazards and risks associated with the operation.

PM OPS - 3.2

Describe and demonstrate the ability to access and use process safety information to enhance hazardous materials prevention/mitigation.

PM OPS - 3.3

Describe organizational strategies and safe work practices designed to address all identified hazards.

PM OPS - 4

Given an operation's work situation and scenarios, describe and apply standard operating guidelines (SOGs) that relate to safe working practices.

PM OPS - 4.1

Describe the role of SOGs in hazardous materials safety and prevention/mitigation programs.

PM OPS - 4.2

Demonstrate the ability to apply SOGs that define safe operations (e.g., routine and non-routine operating procedures and practices, contractor safety).

PM OPS - 4.3

Demonstrate the ability to apply SOGs for safety systems (e.g., pre-startup safety reviews, maintenance/mechanical integrity, management of change).

PM OPS - 4.4

Demonstrate the ability to apply SOGs for compliance and enforcement activities (e.g., safety inspections and enforcement, proper materials storage and housekeeping measures, compliance safety audits, incident record keeping, reporting, and investigations).

PM OPS - 5

Given the organization's hazardous materials prevention/mitigation program, participate as assigned in various program activities.

PM OPS - 5.1

Demonstrate the ability to participate as assigned in prevention/mitigation program analysis and planning activities.

PM OPS - 5.2

Demonstrate the ability to participate as assigned in prevention/mitigation training activities.

PM OPS - 5.3

Demonstrate the ability to participate as assigned in the design of new or modified facilities, systems, or processes.

PM OPS - 5.4

Demonstrate the ability to participate as assigned in monitoring, evaluating, and continually refining hazardous materials prevention/mitigation program activities.

Hazardous Materials Incident Response Curriculum Guidelines

Design and Plans Review

Introduction

Design and Plans Review describes the training requirements of persons who oversee and participate in the design, planning, approval, or construction of operations that produce, use, store, or transport hazardous materials. Audience members are responsible for incorporating the requirements and recommended practices contained in applicable prevention codes and standards into detailed blueprints, drawings, plans, specifications, instructions, and other documents. In this role, they conduct and/or supervise staff, consultants, and subcontractors in the following types of activities:

- Clarifying the technical and prevention requirements of design projects, including associated hazardous materials risks.
- Conducting a search and analysis of applicable regulations, codes, and standards to identify prevention requirements, opportunities, and recommended practices.
- Briefing and/or training design staff, construction managers, vendor representatives, consultants, and others on prevention opportunities and initiatives.
- Preparing and reviewing design plans, specifications, and support documents that incorporate and clarify prevention requirements.
- Consulting and coordinating with community and facility representatives to enhance the hazardous materials operations plans review process.
- Monitoring procurement and construction to ensure that hazardous materials operations plan requirements are met and related problems are resolved.
- Identifying hazardous materials prevention requirements for management systems and standard operating procedures for planned operations.
- Advising prevention managers, operators, and others on ways to implement, evaluate, and maintain the new facilities, systems, and processes.

Training Audience

The training audience for *Design and Plans Review* is composed of persons in governmental, private, industry, or non-profit organizations that develop or review the technical content of hazardous materials design plans and operational specifications. This category includes members of the facility design team and community officials who oversee the process—design project managers, prevention program managers, production managers, construction managers, community plans reviewers, zoning and planning board members, insurance professionals, architects, engineers (mechanical, structural, chemical, electrical, civil, etc.), draftsmen, safety experts, consultants, subcontractors, and other technical specialists.

A secondary audience includes persons that implement the approved design. This group will benefit from more limited training that focuses on the specific design project and is intended to heighten awareness of related hazardous materials prevention/mitigation

concepts and techniques. Included in this category are facility procurement personnel, construction contractors, vendor representatives, community and facility inspectors, codes enforcement officials, and production operators.

Training Requirements

As a prerequisite of training, audience members are assumed to already possess the basic knowledge and skills they need to carry out their primary job responsibilities (architecture, engineering, plans review, prevention program management, etc.). Thus, the goal of training is to promote safety in hazardous materials operations by enhancing the participant's ability and motivation to (1) identify opportunities to reduce accidents and recommended practices in proposed designs, and (2) ensure that requirements for hazardous materials incident prevention are incorporated in design plans and specifications.

Training should stress the importance of the design and plans review function in hazardous materials prevention/mitigation, and provide students with a solid grounding in related codes and standards. Instruction should also give students advanced knowledge and skills in the following areas:

- Identifying, interpreting, and applying specific prevention/mitigation code items, concepts, and techniques to varying design requirements and problems.
- Assessing hazardous materials risks and prevention/mitigation opportunities associated with alternative design strategies.
- Preparing and/or evaluating design plans and other documents that contribute to hazardous materials prevention/mitigation.
- Providing guidance and direction to community and facility representatives to encourage the safe and effective implementation of hazardous materials operational designs.

Methodology Recommendations

Design and Plans Review is a highly technical and complex process involving a wide variety of possible design requirements, parameters, and variables. Training managers and course developers are encouraged to limit the scope of training to the extent possible by grouping students according to the prevention requirements of their jobs and then focusing training accordingly. All students will benefit by some basic training in hazardous materials codes, standards, and design principles. More advanced training can then be classified into five categories:

- General: the ability to apply the broad range of hazardous materials authorities and codes to any facility or operations design.
- Project-specific: the ability to identify and apply only those prevention requirements that are relevant to a specific facility or operations design.

- Operations-specific: the ability to apply the broad range of hazardous materials authorities and codes to a certain type of facility or operations design (e.g., refineries, retail outlets).
- Code-specific: the ability to apply a specific prevention code (fire, building, health, NFPA 400: Hazardous Materials Code, etc.) to any facility or operations design.
- Operations and code-specific: the ability to apply a specific prevention code to a certain type of facility or operations design.

The amount of time planned for instruction will depend on the needs of the audience and the scope of training. Participants will greatly benefit by opportunities to practice and apply skills acquired during training. For example, activities can be designed to permit students, organized in teams, to research and apply prevention codes to realistic design scenarios. Actual design problems from the participants' communities and organizations are preferable for this purpose. Training should also address management and political considerations in project planning.

Other training methodology recommendations and considerations include the following:

- Instructors need significant experience and technical expertise in design, plans review, hazardous materials incident prevention techniques, and state and local prevention authorities.
- Participant activities should emphasize the development of practical work products and methods to transfer learning back to the job, including checklists, job aids, and other design and planning tools.
- If possible, training should encourage interagency cooperation and information sharing among public and private sector participants.

Recommended Training Objectives

Key Objectives

DESN PR 1 Given an overview of prevention/mitigation concepts and activities (see Prevention/Mitigation Awareness), describe community and organizational prevention systems for design and plans review.

DESN PR 2 Given a range of representative design scenarios, design and/or evaluate plans for proposed projects to ensure that prevention/mitigation requirements are met.

DESN PR 3 Given an approved design, assist in promoting prevention/mitigation through the effective implementation and maintenance of the project.

DESN PR - 1

Given an overview of prevention/mitigation concepts and activities (see Prevention/Mitigation Awareness), describe community and organizational prevention systems for design and plans review.

DESN PR - 1.1

Describe the purpose, structure, and content of state and authorities and codes that govern hazardous materials design and plans review, including those addressing:

- Buildings, construction, and fire prevention
- Community planning, zoning, and occupancy
- Employee safety and accident prevention
- Storage and separation requirements
- Health and environmental concerns

DESN PR - 1.2

Describe organizational prevention policies, strategies, and systems for hazardous materials design and construction.

DESN PR - 1.3

Describe community and organizational prevention policies, strategies, and systems for hazardous materials plans review and approval.

DESN PR - 2

Given a range of representative design scenarios, design and/or evaluate plans for proposed projects to ensure that prevention/mitigation requirements are met.

DESN PR - 2.1

Demonstrate the ability to research and analyze state and local authorities that govern hazardous materials design.

DESN PR - 2.2

Describe information sources on state of the art hazardous materials prevention/mitigation technologies and recommended practices in hazardous materials design.

DESN PR - 2.3

Assess strategies for briefing and educating design staff members, including ways to:

- Identify the knowledge requirements of design staff members.
- Train staff on standard and non-standard code items.
- Maintain current knowledge of hazardous materials prevention/mitigation codes and building design/life safety codes.

DESN PR - 2.4

Demonstrate the ability to identify and assess hazards associated with alternative design strategies.

DESN PR - 2.5

Demonstrate the ability to identify design strategies that optimize safety and hazardous materials prevention/mitigation opportunities.

DESN PR - 2.6

Demonstrate the ability to prepare and/or evaluate design plans, specifications, and supporting documents that incorporate and clarify hazardous materials prevention/mitigation requirements.

DESN PR - 2.7

Describe strategies for coordinating activities among facility, community, and design team representatives to enhance hazardous materials prevention/mitigation.

DESN PR - 3

Given an approved design, assist in promoting hazardous materials prevention/mitigation through the effective implementation and maintenance of the project.

DESN PR - 3.1

Describe strategies for preparing contractor and vendor documents that incorporate and clarify the hazardous materials storage and use requirements of the design plan.

DESN PR - 3.2

Identify strategies for assisting construction personnel and vendor representatives to interpret the project's hazardous materials prevention/mitigation requirements.

DESN PR - 3.3

Describe strategies for monitoring procurement and construction activities to ensure that hazardous materials prevention/mitigation requirements are met.

DESN PR - 3.4

Identify strategies for assisting prevention/mitigation n program managers and operators to develop and implement safe operational systems and employee work procedures.

DESN PR - 3.5

Describe strategies for assisting prevention/mitigation program managers and operators to safely activate, integrate, evaluate, and maintain the new facility, system, or process.

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Hazardous Materials Incident Response Curriculum Guidelines

Hazardous Materials Facility Inspection and Enforcement

Introduction

Facility Inspection and Enforcement describes the training needs of persons who monitor, inspect, and enforce safety compliance in operations that produce, use, or store hazardous materials. In this role, audience members (1) identify hazardous materials risks and prevention opportunities associated with specific facility function and operations, and (2) assess and enforce compliance with established prevention authorities and codes.

The specific job requirements of *Facility Inspection and Enforcement* personnel will vary depending on the size and nature of operations involved, the prevention strategy of the organization, and assigned responsibilities, among other factors. However, a generic list of job responsibilities would include the following:

- Assess the adequacy of hazardous materials prevention/mitigation plans and programs prepared by facilities and storage companies.
- Assess the adequacy of safety systems and response capabilities in facilities and storage companies.
- Ensure that equipment is properly installed and maintained.
- Ensure that operating procedures are safe and effectively implemented.
- Ensure that operations and maintenance personnel are adequately trained.
- Brief community and facility officials of safety deficiencies and opportunities, and promote cooperation and coordination among decision makers.
- Monitor efforts to resolve problems, and implement policies and procedures designed to enforce compliance with applicable authorities and codes.
- Participate in safety reviews, compliance audits, incident investigations, and other types of prevention activities.

Training Audience

The training audience for *Facility Inspection and Enforcement* includes inspectors and officials from community agencies (e.g., fire service, police, health agency, etc.) that are responsible for prevention, enforcement, and compliance programs and activities in the jurisdiction. Included are representatives of agencies that develop and enforce codes in all related areas (buildings, employee safety, fire, health, etc.).

The training audience also includes inspectors and enforcement personnel from public, private, and non-profit facilities that store, handle, produce, or use hazardous materials. In business and industry, the role may be filled by prevention program managers, safety officers, production managers, shift supervisors, or others assigned the responsibility. Representatives of insurance companies, consultants, safety experts, and others also perform the function in certain situations.

Training Requirements

Students are assumed to possess basic knowledge and skills in inspection and enforcement as a prerequisite of training. Therefore, the primary goal of training is to promote hazardous materials prevention and safety by enhancing the participant's ability and motivation to (1) identify safety deficiencies and opportunities associated with the hazardous materials operations, (2) assess compliance with applicable prevention authorities and codes, and (3) monitor and enforce compliance according to established policies and protocols.

Facility Inspection and Enforcement is a technical and complex process, potentially involving the application of a broad range of prevention authorities and codes to many different types of hazardous materials operations. All students will benefit from basic training in hazardous materials prevention and related authorities and codes. Training managers and course developers are encouraged to limit the scope of more advanced instruction to the extent possible by grouping students according to their job requirements and then focusing training accordingly. More advanced technical training can be classified into five categories:

- General: the ability to apply the broad range of hazardous materials authorities and codes to any facility/process or operations.
- Project-specific: the ability to identify and apply only those hazardous materials prevention/mitigation requirements that are relevant to a specific facility/process or operations (including the ability to effectively consult with a process safety manager or other professional).
- Operations-specific: the ability to apply the broad range of hazardous materials authorities and codes to a certain type of facility/process or operations (e.g., refineries, retail outlets).
- Code-specific: the ability to apply a specific prevention code (fire, building, health, etc.) to any facility/process or operations.
- Process- and code-specific: the ability to apply a specific prevention code to a certain type of facility/process or operations.

However training is targeted, participants will benefit by generic instruction in hazardous materials prevention and an understanding of the organization's prevention, inspection, and enforcement programs. Course content should then emphasize the knowledge and skills students need to apply established authorities, systems, and procedures in representative hazardous materials and transport operations.

Methodology Recommendations

As described above, training requirements for different audience members may vary significantly. Therefore, students should be grouped whenever possible by job categories that reflect their inspection and enforcement responsibilities. Training can then be more effectively tailored to the specialized needs of different employees.

Instructional methodologies should emphasize opportunities for students to interpret and practice applying prevention codes and program requirements to different types of operations and under different types of conditions. Participant activities should also address management and political considerations. Examples and realistic scenarios are appropriate for this purpose. Practice should highlight creative approaches and practical solutions to common problems.

The scope and duration of training will vary, depending on the nature and complexity of organizational inspection and enforcement procedures, hazardous materials operations, transportation and on-site storage of hazardous materials, and related authorities and codes. Checklists, job aids, and other practical tools that can be used on site should be included in course materials whenever possible. For the roles and job functions addressed in this training area, task specific job aids would be of great value in helping ensure effective and safe facility inspection and enforcement.

Recommended Training Objectives

Key Objectives

F INSP/EF 1 Given an overview of hazardous materials prevention/mitigation concepts and activities (see Prevention/Mitigation Awareness), describe aspects of the hazardous materials prevention/mitigation system that apply to hazardous materials facility storage, production and handling, and inspection/enforcement.

F INSP/EF 2 Given key hazardous materials prevention/mitigation authorities and a range of representative facility inspection scenarios, identify hazardous materials safety deficiencies and opportunities..

F INSP/EF 3 Given hazardous materials prevention/mitigation strategies and plans, conduct hazardous materials facility inspections and enforcement activities as assigned.

F INSP/EF- 1

Given an overview of prevention/mitigation concepts and activities (see Prevention/Mitigation Awareness), describe aspects of the hazardous materials prevention/mitigation system that apply to hazardous materials facility storage, production and handling inspection/enforcement.

F INSP/EF - 1.1

Describe state and local laws, regulations, and policies that govern hazardous materials facility storage, production, and handling inspections and enforcement.

F INSP/EF - 1.2

Describe prevention/mitigation strategies, activities, and roles specified in emergency operations and prevention/mitigation plans.

F INSP/EF - 1.3

Describe strategies and plans for conducting hazardous materials inspections and enforcement activities.

F INSP/EF - 1.4

Describe administrative systems and roles for conducting hazardous materials facility storage, production, and handling inspections and enforcement activities.

F INSP/EF - 2

Given key prevention/mitigation authorities and a range of representative facility inspection scenarios, identify hazardous materials safety deficiencies and opportunities.

F INSP/EF - 2.1

Describe the purpose, structure, and content of key federal authorities governing facility production, storage, and handling, of hazardous materials, including:

- OSHA's General Safety and Health Provisions (29 CFR 1926.20)
- OSHA's Process Safety Management Standard (29 CFR 1910.119)
- EPA's Accidental Release Prevention Requirements (40 CFR Part 68)
- OSHA's Hazard Communication Standard (29 CFR 1910.1200)
- DOT's Hazardous Materials Regulations (49 CFR parts 171-180)
- NRT's Integrated Contingency Plan Guidance

F INSP/EF - 2.2

Describe the purpose, structure, and content of state and local hazardous materials prevention/mitigation ordinances, codes, and standards addressing:

- Buildings, construction, and fire prevention
- Community planning, zoning, and occupancy
- Employee safety and accident prevention
- Health and environmental concerns

F INSP/EF - 2.3

Demonstrate the ability to 1) research and apply prevention authorities and codes to representative hazardous materials facility operations and situations, 2) identify

when and how to use expert consultants to assist in correctly applying prevention codes and authorities, and 3) identify related safety deficiencies and opportunities.

F INSP/EF - 3

Given hazardous materials prevention/mitigation strategies and plans, conduct hazardous materials facility inspections and enforcement activities as assigned.

F INSP/EF - 3.1

Demonstrate the ability to gather data, categorize risks, identify violations, and establish priorities among inspection requirements.

F INSP/EF - 3.2

Demonstrate the ability to implement hazardous materials inspection procedures, addressing such factors as:

- Forms, checklists, questionnaires, etc.
- Scheduling and planning inspections
- Briefing facility managers, operating personnel, transporters, etc.
- Gathering inspection data and identifying violations
- Identifying safety deficiencies and concerns
- Documenting and reporting results

F INSP/EF - 3.3

Demonstrate the ability to implement enforcement procedures (consultation, violation notices, citations, personnel actions, audits, legal actions, etc.) designed to ensure compliance with inspection results.

Hazardous Materials Incident Response Curriculum Guidelines

Hazardous Materials Transportation Investigation and Inspection

Source of these Training Performance Standards

All of the content for this training area is directly from the November 2014 publication *Hazardous Materials Transportation Investigator/Inspector Uniform Training Performance Standards* (*HMT Standards*), by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), and by the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, and the Federal Aviation Administration.

In order to ensure consistency with these standards, all of the material below is a direct and verbatim extract from that publication. More information about these training standards is available from PHMSA at *http://phmsa.dot.gov/hazmat*.

Background [of the *HMT Standards*]

The Federal hazardous materials transportation law (Federal Hazmat Law) and the Hazardous Materials Regulations (HMR) provide for the safe and secure transportation of hazardous materials (hazmat) in commerce. Enforcement of the Federal Hazmat Law and HMR has been delegated to designated Department of Transportation (DOT or Department) officials within four Operating Administrations (OAs): Federal Aviation Administration (FAA), Federal Motor Carrier Safety Administration (FMCSA), Federal Railroad Administration (FRA) and Pipeline and Hazardous Materials Safety Administration (PHMSA).

Recognizing the need to continually improve hazardous material transportation safety, Congress enacted the ‘‘Moving Ahead for Progress in the 21st Century Act’’ or ”MAP–21.” This Act directs the Secretary to establish uniform training performance standards for hazardous material inspectors and investigators (HMII). Specifically, MAP-21 directs the Secretary to establish standards for HMII training in the following areas:

1. The identification of noncompliance with the provisions of Chapter 51 of Title 49, United States Code;
2. The collection, analysis and publication of findings related to hazardous material transportation accidents and incidents; and
3. The implementation of appropriate enforcement action.

Purpose [of the *HMT Standards*]

To address the complexities of the hazardous material transportation system, the training standards outlined in this document have been subdivided into six competencies. The standards described within each of the competencies are intended to identify specific skill sets for HMII and assist in the establishment of training curriculum for all agents of the Secretary. The specific competencies for HMII training are:

1. Core Competencies for Hazardous Material Transportation Inspectors and Investigators

2. Advanced Competencies for Hazardous Material Inspectors and Investigators
3. Competencies for Supervisory Hazardous Material Inspectors and Investigators
4. Competencies for Hazard Class Specialists
5. Competencies for Hazardous Material Packaging Specialists
6. Competencies for Modal Hazardous Material Specialists

Standards

The “Core Competencies” listed in this document are minimum training standards for all HMII conducting enforcement activities as authorized in 49 CFR, part 107, subpart D. The additional competencies listed are designed to address unique training requirements associated with complex accident or incident investigations, HMII supervisory responsibilities, specific classes or hazardous materials and hazardous material packaging.

All are intended to support the safe and secure transportation of hazardous materials in commerce.

Applicability

The standards, described in this document, apply to all DOT personnel, State employees or contractor employees who conduct federally funded hazardous material transportation inspections, investigations or compliance reviews on behalf of the Secretary. In order to meet these standards, HMII must demonstrate the ability to meet each of the elements within the specific competency in accordance with the policies and procedures of the OA overseeing the activities of the HMII. The Core Competency standards are minimum standards for all HMII conducting HM transportation inspections, investigations or enforcement activities on behalf of the Secretary. HMII may pursue one or more of the advanced competencies described in Section 5 through Section 9 at the discretion of their agency, in accordance with its policies, authorities and jurisdiction. The standards described within a particular competency are minimum standards and must be met for an HMII to hold that competency. An OA may supplement the standards associated with a competency to address program needs.

The enhanced enforcement authority granted under the statute and detailed in 49 CFR, part 109, is granted only to Federal agents. Training standards associated with this authority apply only to Federal agents and do not apply to other HMII.

Definitions

Terms found in this document are defined as found in 49 CFR §§ 109.1 and 171.8. Specific terms found herein and not defined in §§ 109.1 or 171.8 are defined below. These definitions are limited to this document and are intended for clarification only.

Competency – a set of knowledge, skills or abilities necessary to be considered qualified to accomplish a specific job task.

Core Competencies – a set of primary knowledge, skills or abilities upon which more advanced job task skill sets are based.

Emergency Response Information (ERI) - information that can be used in the mitigation of an incident involving hazardous materials in transportation.

Hazardous Material Inspector / Investigator (HMII) - person who as a part of their routine duties inspects or investigates the transportation of hazardous materials in commerce in order to verify compliance with the Federal Hazmat Law or the HMR (49 CFR, Parts 105 to 180) on behalf of the Secretary of Transportation.

Independent Inspection Agency (IIA) - A person who provides services as an independent inspector performing the cylinder inspections and verifications required by Parts 178 and 180 of 49 CFR for an entity that manufactures cylinders for use in the transportation of hazardous materials. An IIA may not be engaged in the manufacture of such cylinders or be directly or indirectly controlled by the manufacturer and is not a PHMSA agent or representative.

Tank Car – A rail car with tanks mounted on or forming part of it used for the transportation of a hazardous material and subject to the requirements of the HMR.

UN Third-Party Packaging Certification Agency – A person authorized by PHMSA to issue certificates and certifications for types of packaging designed, manufactured, tested, or maintained in conformance with the requirements of 49 CFR, subchapter C, and the standards set forth in the United Nations (U.N.) Recommendations (Transport of Dangerous Goods).

Training Requirements

4, HM Transportation Inspectors And Investigators

The competencies described in this section are core competencies for all hazardous material transportation inspectors and investigators. They represent the minimum standard for all HMII. The objective of these core competencies is to provide a baseline level of training for all HMII. All HMII will be trained to accurately interpret and apply regulations issued under chapter 51, of title 49 as described in this section.

Section 4.1 – Regulatory Knowledge

4.1.1. Acquire and maintain an appropriate level of knowledge of the Federal Hazmat Law and HMR (49 CFR, Parts 105 to 180), relevant regulations, policies, standards and procedures.

4.1.2. Interpret and apply laws, regulations, policies, standards, procedures and interpretations associated with the Federal Hazmat Law and HMR to ensure compliance and enhance public safety. Specifically, HMII will be trained to:

4.1.2.1. Serve documents in accordance with 49 CFR, §105.35.

4.1.2.2. Serve a subpoena as authorized in 49 CFR, §105.50.

4.1.2.3. Confirm the compliance of any person with the provision of 49 CFR, subchapters A or C, or a special permit, approval, or order issued thereunder, or any court decree relating thereto.

4.1.2.4 Enforce compliance orders issued as a result of violations of the HMR.

4.1.3. Accurately communicate and disseminate information relating to the Federal Hazmat Law, HMR and associated interpretations to regulated entities and government agency representatives.

4.1.4. Understand the classification process and significance of packing group assignment for hazardous materials transported in commerce.

Section 4.2 – Hazardous Material Transportation Registration Requirements

4.2.1. Confirm that persons, who offer, cause to be transported or transport hazardous materials in commerce and who are required to register in accordance with 49 CFR, part 107, subpart G, have registered with PHMSA.

4.2.2. Verify that registrations issued by PHMSA are valid at the time of the activity requiring registration.

4.2.3. Determine that any change in principle place of business by a hazardous material offeror or transporter is reported to PHMSA within 30 days after the change.

4.2.4. Document the extent and duration of any hazardous material transportation conducted without a required registration.

Section 4.3 – Use of the Hazardous Material Table (HMT) and Special Provisions

4.3.1. Accurately interpret and apply the information presented in the HMT.

4.3.2. Identify hazardous substances regulated as hazardous materials during transportation.

4.3.3. Identify marine pollutants or severe marine pollutants regulated as hazardous materials during transportation as indicated in Appendix B to §172.101.

Section 4.4 – Hazard Communication

4.4.1. Verify that shipping documents conform to the provisions of 49 CFR, part 172 subpart C, or the applicable international standard.

4.4.2. Confirm that hazardous material package markings conform to 49 CFR, part 172 subpart D, or the applicable international standard.

4.4.3. Confirm that hazardous material package labeling conforms to 49 CFR, part 172 subpart E, or the applicable international standard.

4.4.4. Verify that hazardous material placarding confirms to 49 CFR, part 172 subpart F, or the applicable international standard.

Section 4.5 – Emergency Response Information (ERI)

4.5.1. Verify that ERI provided during transportation can be used in the mitigation of an incident involving hazardous materials and contains the minimum information required by 49 CFR, part 172, subpart G, or the applicable international standard.

4.5.2. Confirm that ERI is printed legibly in English and is available for use away from the package containing the hazardous material.

4.5.3. Ensure that ERI is available on shipping papers or as authorized in 49 CFR, § 172.602(b).

4.5.4. Confirm that carriers and facility operators maintain ERI as specified in 49 CFR, § 172.602(c).

4.5.5. Ensure that shipping documents include emergency response telephone numbers as required in 49 CFR, § 172.604.

Section – 4.6 Hazardous Material Employee Training

4.6.1 Verify that hazardous material employees subject to the training requirements of 49 CFR have been trained and evaluated by an appropriate means as required by 49 CFR, part 172, subpart H.

4.6.2. Confirm that hazardous material employee training is current.

4.6.3. Verify that all records of hazardous material training contain the required information and are retained for 90 days after employment or change of job function.

Section 4.7 – Hazardous Material Security

4.7.1. Verify that persons required to develop a transportation security plan as detailed in

49 CFR, part 172, subpart I, develop and adhere to a security plan.

4.7.2. Ensure that security plans include a written transportation security risk assessment.

4.7.3. Confirm that security plans are available through a principal place of business and are available upon request.

Section 4.8 – Identify Authorized Hazardous Material Packagings

4.8.1. Confirm that packagings intended for use in hazardous material service and packages containing hazardous material:

4.8.1.1. Are packagings authorized in the HMT.

4.8.1.2. Comply with any applicable special provision(s).

4.8.1.3. Conform to all applicable general requirements for packaging and packages specified in 49 CFR, § 173.24.

Section 4.9 – Collecting Evidence

4.9.1. Collect and retain information necessary to support or refute alleged violations of 49 CFR or an authorized international standard in accordance with applicable OA and parent organization procedures.

Section 4.10 – Taking Appropriate Enforcement Action

4.10.1. Document and record alleged violations of the HMR in sufficient detail to clearly identify deviations from applicable regulatory requirement(s). Documentation should be sufficient to facilitate enforcement and/or corrective action in accordance with applicable OA or organization policies.

5. HM Inspectors and Investigators

Advanced Competencies for hazardous material inspectors and investigators are the knowledge, skills and abilities which enable an inspector or investigator to determine the extent, duration and cause of non-compliance with 49 CFR or an international standard. HMII who possess Advanced Competencies investigate known or suspected noncompliance that poses a significant risk to public safety or the transportation infrastructure. An HMII who is considered to hold Advanced Competencies must demonstrate and maintain proficiency in all Core Competencies and be trained to:

Section 5.1 – Detecting Unauthorized Hazardous Material Packages and Packagings

5.1.1. Stop the movement of package(s) in transportation as authorized in 49 CFR, part 109, and in accordance with the *DOT Joint Operations Manual for 49 CFR Part 109 Enforcement and Administrative Authorities.* (Federal Agents Only)

5.1.2. Open hazardous material packages (overpacks, outer packagings or other component which are not immediately adjacent to the hazardous materials contained in a package) as authorized in 49 CFR, part 109. (Federal Agents Only)

5.1.3. Determine if the contents of a package or packages are regulated and the circumstances surrounding their transportation in commerce.

5.1.4. Collect all evidence necessary to support or refute a violation of the HMR.

5.1.5. Close and coordinate the disposition of packages opened in accordance with the provision of 49 CFR § 109.5 as specified in § 109.13. (Federal Agents Only)

5.1.6. Determine whether packages offered for transportation as a limited quantity comply with the limited quantity provisions, for the appropriate class of hazardous material.

5.1.7. Confirm that packages offered under the terms of a valid Approval or Special Permit, issued by the Associate Administrator for Hazardous Material Safety, comply with all provisions of the Approval or Special Permit.

5.1.8. Identify hazardous material packaging and packages which are unauthorized in transportation due to:

5.1.8.1. Failure to test, certify, requalify, recondition or re-test the packaging in accordance with the applicable specification, UN standard, Special Permit or Approval issued by the Associate Administrator for Hazardous Material Safety.

5.1.8.2. Failure to close the UN standard package in accordance with closure instructions.

5.1.8.3. Overfilling or underfilling a package so that its effectiveness is substantially reduced.

5.1.8.4. The package leaks under conditions normally incident to transportation.

Section 5.2 – Collecting and Analyzing Findings of HM Accidents or Incidents

5.2.1. Investigate reportable hazardous material accidents or incidents as defined in § 171.15(b) using appropriate investigative or research and analytical methods and techniques.

5.2.2. Verify compliance with all pre-transportation functions as defined in § 171.8.

5.2.3. Consolidate information from multiple sources.

5.2.4. Determine the relevance of information gathered during the course of an inspection or investigation.

5.2.5. Resolve discrepancies between conflicting elements of information.

5.2.6. Analyze and interpret facts, circumstances and complex technical data obtained during an inspection or investigation to substantiate or refute claims, determine causes, and recommend action where appropriate.

5.2.7. Determine the extent of non-compliance with 49 CFR or the applicable international standard present or contributing to a hazardous material accident or incident.

5.2.8. Demonstrate an understanding of the rules of evidence and evidentiary sufficiency.

5.2.9. Collaborate with federal, state and local government partners to investigate complaints, accidents, or incidents and enhance public safety.

Section 5.3 – Analyzing Corrective Actions Following HM Inspections, Accidents or Incidents

5.3.1. Determine what corrective actions, if any, have been implemented following a hazardous material inspection, accident or incident.

5.3.2. Analyze corrective actions to determine if they correct violations of 49 CFR, are likely to prevent a recurrence of the noncompliance, and mitigate any ongoing safety risks created as a result of the noncompliance.

Section 5.4 – Taking Appropriate Enforcement Action

5.4.1. Prepare comprehensive and well documented reports of investigations or inspections.

5.4.2. Review processes and identify deficiencies and enhancements as appropriate.

5.4.2. Brief supervisors on the results of inspections or investigations.

5.4.3. Recommend enforcement options consistent with the level of non-compliance and risk to the transportation infrastructure.

5.4.4. Provide subject matter expertise to law enforcement organizations conducting criminal investigations into noncompliance of the HMR in accordance with DOT, OA and organizational policy and procedures.

5.4.5. Testify during hearings or judicial proceedings as required.

6. Supervisory HM Inspectors And Investigators

Supervisory hazardous material inspectors and investigators are those supervisors who exercise authority over HMII holding any of the competencies in hazardous material transportation inspection and investigation described in Sections 4, 5, 7, 8 or 9 of this document. These supervisors review findings of hazardous material inspections and accident or incident investigations. They evaluate corrective actions, publish findings of hazardous material transportation inspections and investigations and initiate or take appropriate enforcement action. Supervisory HMII have demonstrated proficiency in HMII Core and Advanced Competencies as well as those described within this section.

Section 6.1 – Reviewing the findings of HM Transportations Inspections, Compliance Reviews and Investigations

6.1.1. Determine that reports of HM accidents or incidents are accurate and complete.

6.1.2. Confirm that evidence alleging non-compliance with the HMR or an international standard is legally sufficient and well documented.

6.1.3. Ensure that any mitigating or aggravating factors are supported by documented evidence.

Section 6.2 – Evaluating Corrective Action

6.2.1. Evaluate corrective actions implemented following a hazardous material transportation inspection, investigation, accident or incident to determine:

6.2.1.1. if corrective actions taken mitigate or eliminate the risk to public safety.

6.2.1.2. if corrective actions are likely to prevent a reoccurrence of the non-compliance.

6.2.1.3. if mitigation of proposed sanctions in accordance with established Administration policy or procedures is appropriate.

6.2.1.4. if additional corrective actions are necessary to ensure the safety and security of the transportation system.

6.2.2. Recommend corrective actions as necessary to mitigate ongoing or emerging risks to the safe transportation of hazardous materials in commerce.

Section 6.3 – Taking Appropriate Enforcement Action

6.3.1. Evaluate the extent of non-compliance with the HMR or applicable modal standard.

6.3.2. Consider the gravity of documented noncompliance, the resulting risk to public safety and compliance history of the entities involved.

6.3.2.1. Recommend or take administrative action in accordance with OA policies or procedures as necessary to ensure the public safety.

6.3.2.2. Recommend or issue civil penalties which reflect factors in aggravation or mitigation in accordance with applicable OA or organization guidelines.

6.3.2.3. Prepare enforcement recommendations which correspond to the degree of noncompliance for the appropriate OA or Department officials.

7. Hazard Class Specialists

Section 7.1 – Class 1 (Explosive) Hazardous Material Transportation Specialist

Explosive hazardous material transportation specialists are hazardous material inspectors and investigators trained to inspect and investigate the transportation in commerce of explosive hazardous materials and their associated requirements as specified in the HMR or applicable international standard. Explosive HM transportation specialists are trained in all Core Competencies and are trained to:

7.1.1. Confirm that all hazard communication requirements unique to Class I hazardous materials have been met in accordance with 49 CFR or the applicable international standard.

7.1.2. Confirm that Class I hazardous materials offered for or transported in commerce have been approved for transportation by the Associate Administrator for Hazardous Material Safety.

7.1.3. Identify Class I hazardous materials forbidden in transportation.

7.1.4. Identify a new explosive as defined 49 CFR, § 173.56.

7.1.5. Confirm that packages containing Class I hazardous materials conform to applicable general packaging requirements specified in 49 CFR or the appropriate international standard.

7.1.6. Confirm that packages containing Class I hazardous materials conform to all specific packaging requirements.

7.1.7. Recognize authorized exceptions to Class I hazardous materials packaging requirements.

7.1.8. Verify compliance by Fireworks Certification Agencies approved by the Associate Administrator for Hazardous Material Safety to examine fireworks in accordance with 49 CFR, part 173.

Section 7.2 – Class 7 (Radioactive) Hazardous Material Transportation Specialist

Radioactive hazardous material transportation specialists are hazardous material inspectors and investigators trained to inspect, evaluate and investigate the operations of persons who offer or transport in commerce packages containing radioactive hazardous materials in accordance with the HMR, the International Atomic Energy Agency (IAEA) regulations or an applicable international standard. These specialists also evaluate radioactive hazardous material packaging to determine if they are authorized packaging for transportation of Class 7 hazardous materials in commerce. Radioactive HM transportation specialists are trained in all Core Competencies and are trained to:

7.2.1. Interpret and apply Table 2 to Appendix A of the Hazardous Material Table.

7.2.2. Confirm compliance with 49 CFR, part 173, subpart I, pertaining to general requirements for shipments, packaging and packages of Class 7 (Radioactive) hazardous materials.

7.2.3. Verify compliance with 49 CFR, part 174, subpart K pertaining to the requirements relating to the carriage of Class 7 HM by rail.

7.2.4. Verify compliance with 49 CFR, part 175, §§175.700 - 706 and the ICAO Technical Instructions for the Transport of Dangerous Goods by Air, pertaining to the requirements relating to the carriage of Class 7 HM by aircraft.

7.2.5. Verify compliance with 49 CFR, part 176, subpart M and the International Maritime Dangerous Goods Code pertaining to the requirements relating to the carriage of Class 7 HM by vessel.

7.2.6. Verify compliance with 49 CFR, part 177, §177.842 pertaining to the requirements relating to the carriage of Class 7 HM by public highway.

8. Hazardous Material Packaging Specialists

Section 8.1 – Broad-Spectrum Packaging Specialist

A broad-spectrum packaging specialist is a hazardous material transportation inspector or investigator who has been trained to conduct inspections or investigations of Non-Bulk Packaging, Intermediate Bulk Containers, Large Packaging and Flexible Bulk Containers used in hazardous material transportation. This packaging specialist inspects and investigates persons who: offer, manufacture, fabricate, test, certify, retest, recondition, requalify, repair, mark, maintain, distribute or sell non-bulk, intermediate bulk, flexible bulk or large packaging and packages as a part of their regular duties in order to verify compliance with the HMR. Broad-Spectrum packaging specialists are trained in all Core Competencies and are trained to:

8.1.1. Examine inner packaging(s) or packaging components as necessary to determine whether the package is an authorized package and identify unauthorized variations.

8.1.2. Verify that shippers have performed all functions necessary to bring packages containing hazardous material into compliance with 49 CFR parts 173 and 178 or the appropriate international standard.

8.1.3. Verify that persons who represent, mark, certify, sell, or offer cylinders or non-bulk packages as meeting the requirements of the HMR or an international standard, transfer and retain copies of the manufacturer's notification,

including closure instructions as required, unless the instructions are permanently embossed or printed on the package.

8.1.4. Confirm that non-bulk DOT Specification or UN performance oriented packaging, intermediate bulk containers, large packaging or flexible bulk containers marked as meeting the requirements of 49 CFR or an international standard have been manufactured, fabricated, tested, marked, maintained, reconditioned, repaired, or retested in accordance with the requirements of the applicable standard or specification to include authorized variations.

8.1.5. Confirm that records of non-bulk packaging, intermediate bulk container, large packaging or flexible bulk container manufacture and testing are complete, accurate and retained as required.

8.1.6. Verify that Independent Inspection Agencies (IIAs) and UN Third-Party Packaging Certification Agencies conduct regulated activities in accordance with the HMR.

Section 8.2 – Portable Tank Specialist

A Portable Tank Specialist is a hazardous material transportation inspector or investigator who has been trained to conduct inspections or investigations of persons who perform functions subject to the HMR involving Portable Tanks or Multi Element Gas Containers (MEGC) and MEGC Certification Agencies. Portable Tank Specialists are trained in all Core Competencies and are trained to:

8.2.1. Verify that persons who offer bulk hazardous material packages for transportation in commerce retain copies of the manufacturer's notification, including closure instructions as required, unless the instructions are permanently embossed or printed on the package.

8.2.2. Confirm that portable tanks marked as meeting the requirements of 49 CFR, subpart H or an international standard for use in hazardous material service have been manufactured, fabricated, tested, marked, maintained, repaired, or retested in accordance with the requirements of the applicable standard or specification to include authorized variations.

8.2.3. Confirm that records of portable tank testing are complete, accurate and retained as specified in 49 CFR or the applicable international standard.

8.2.4. Verify compliance by portable tank or MEGC certification agencies for periodic testing, inspection and repair of portable tanks in accordance with § 180.605(k) and the approval of MEGC's in accordance with § 178.74.

Section 8.3 – Cargo Tank Specialist

A cargo tank specialist is a hazardous material transportation inspector or investigator who has been trained to conduct inspections or investigations of persons who perform functions subject to the HMR involving the fabrication, manufacture, test, inspection, repair, certification and use of cargo tanks and cargo tank motor vehicles as a part of their regular duties. Cargo tank specialists are trained in all Core Competencies and are trained in accordance with Federal Motor Carrier Safety Administration (FMCSA) policy and procedures to:

8.3.1. Confirm that a person who has engaged in the manufacture, assembly, certification, inspection, repair or operation of a cargo tank or cargo tank motor vehicle under the terms of a DOT specification or special permit issued by the DOT is registered with the DOT.

8.3.2. Verify that persons who offer bulk packages retain copies of the manufacturer's notification, including closure instructions as required, unless the instructions are permanently embossed or printed on the package.

8.3.3. Verify that cargo tanks marked as meeting the requirements of 49 CFR for use in hazardous material service have been manufactured, fabricated, tested, inspected, marked, maintained, repaired, or retested in accordance with the requirements of the applicable standard or specification to include authorized variations as prescribed in 49 CFR, part 178, subpart J or part 180, subpart E.

8.3.4. Verify that persons engaged in the continuing qualification and maintenance of cargo tanks and cargo tank motor vehicles adhere to the requirements set forth in 49 CFR, part 180, subpart E.

8.3.5. Confirm that records of required cargo tank data reports, testing, inspection and certificates are complete, accurate and retained as required in 49 CFR, parts 178 and 180.

Section 8.4 – Tank Car Specialist

A Tank Car Specialist is a hazardous material transportation inspector or investigator who, as a part of their regular duties, conducts inspections or investigations of specification tank cars or tank car owner, manufacturer or repair facilities in accordance with the policies and procedures established by the Federal Railroad Administration (FRA). HMII considered to be Tank Car specialist have been trained in accordance with the FRA's Office of Railroad Safety's *Hazardous Material Compliance Manual* to determine the rail worthiness of tank cars. Tank car specialists are trained in all Core Competencies and are trained to:

8.4.1. Confirm that tank cars marked as meeting the requirements of the HMR for use in hazardous material service have been manufactured, fabricated,

marked, maintained, repaired, or retested in accordance with the requirements of the applicable standard or specification to include authorized variations as specified in 49 CFR, part 179.

8.4.2. Verify that each tank car facility that manufactures, repairs, inspects, tests, qualifies or maintains tank cars subject to requirements of 49 CFR operates in conformance with a quality assurance program and written procedures required by 49 CFR, §179.7.

8.4.3. Confirm that records of tank car manufacture, repair and testing are complete, accurate and maintained as specified in 49 CFR, part 179.

8.4.4. Verify that hazardous material shipments made under the terms of an FRA approval comply with all of the terms of the approval.

8.4.5. Confirm compliance with FRA Rail Worthiness Directives and One-Time Movement Approvals or Emergency Order issued by the FRA.

8.4.6. Verify compliance with the Association of American Railroads, Appendix W.

9. Modal Hazardous Material Specialists

Section 9.1 – Air HM Transportation Specialist

An aviation hazardous material transportation specialist is an inspector or investigator who has been trained to verify compliance with the provisions of 49 CFR, part 175 and the International Civil Aviation Organization's (ICAO) Technical Instructions (TI) for the Transportation of Dangerous Goods by Air. Air HM transportation specialists are trained in all Core Competencies and are trained to:

9.1.1. Verify that the preparation and retention shipping documents conform to the requirements specific to air transportation as specified in 49 CFR or the ICAO TI when authorized.

9.1.2. Confirm that hazardous material package markings conform to the requirements specific to air transportation as specified in 49 CFR or ICAO TI when authorized.

9.1.3. Confirm that hazardous material package labeling conforms to the requirements specific to air transportation as specified in 49 CFR or ICAO TI when authorized.

9.1.4. Verify that freight container and unit load device placarding / tagging confirms to the requirements specific to air transportation as specified in 49 CFR or the ICAO TI.

9.1.5. Verify that each carrier who transports or accepts for transportation by aircraft a hazardous material, for which a shipping paper is required, instructs the operator of the aircraft to contact the carrier (e.g., by telephone or mobile radio) in the event of an incident involving the hazardous material .

9.1.6. Confirm that packages containing hazardous material are packaging authorized in 49 CFR, conform to the requirements of § 173.27 or the ICAO TI when authorized.

9.1.7. Confirm that the offering acceptance, and transport of hazardous materials is consistent with the general requirements and exceptions unique to carriage by aircraft as specified in 49 CFR, part 175, subpart A.

9.1.8. Determine if loading, stowage, segregation, unloading and handling of hazardous materials intended for transportation by aircraft is consistent with the requirements of 49 CFR, part 175, subpart B.

9.1.9. Verify that loading and transport of specific classes of hazardous materials is consistent with the requirements specified in 49 CFR, part 175, subpart C.

Section 9.2 – Highway HM Transportation Specialist

A highway HM transportation specialist is an inspector or investigator trained in the requirements of the HMR applicable to the acceptance and transportation of hazardous materials by private, common, or contract carriers by motor vehicle. Highway HM transportation specialists comply with Federal Motor Carrier Safety Administration (FMCSA) policy and are trained in all Core Competencies. A highway HM transportation specialist is trained to:

9.2.1. Confirm that each motor carrier required to register with the DOT carries a current Certificate of Registration or U.S. DOT Hazmat Reg. No. on board each truck or truck tractor.

9.2.2. Verify that shipping documents conform to the provisions of the applicable international standard when authorized.

9.2.3. Confirm that hazardous material package markings conform to the applicable international standard when authorized.

9.2.4. Confirm that hazardous material package labeling conforms to the applicable international standard when authorized.

9.2.5. Verify that hazardous material placarding confirms to the applicable international standard when authorized.

9.2.6. Ensure that each carrier who transports or accepts for transportation a hazardous material, for which a shipping paper is required, instructs the operator of the motor vehicle to contact the carrier (e.g., by telephone or mobile radio) in the event of an incident involving the hazardous material.

9.2.7. Confirm that packages containing hazardous material are packaging authorized in the appropriate international standard when authorized.

9.2.8. Verify that the regulations regarding the carriage of hazardous material by public highway and detailed in 49 CFR, part 177, subpart A have been met.

9.2.9. Verify that hazardous material loading and unloading is incompliance with 49 CFR, part 177, subpart B.

9.2.10. Confirm that during transportation by public highway hazardous materials segregation and separation is as specified in 49 CFR, part 177, subpart C.

9.2.11. Verify that operators of commercial motor vehicles are properly licensed as specified in 49 CFR, part 383 and hold the appropriate hazardous material and/or tank endorsements when needed.

9.2.12. Ensure that motor carriers transporting hazardous materials in commerce are in compliance with the hazardous materials safety permit requirements specified in 49 CFR, part 385, subpart E

9.2.13. Confirm that persons transporting hazardous materials are in compliance with 49 CFR, parts 392 and 397 regarding the driving and parking of motor vehicles.

9.2.14. Confirm that stowage and segregation requirements of 49 CFR, and applicable to highway transportation have been met.

9.2.15. Confirm minimum levels of public liability insurance are met pursuant to 49 CFR, part 387.

Section 9.3 – Maritime HM Transportation Specialist

A maritime HM transportation specialist is an inspector or investigator trained in the requirements of the HMR applicable to the acceptance and transportation of hazardous materials by vessel and the International Maritime Dangerous Goods Code (IMDG). Maritime HM transportation specialists are trained in all Core Competencies and are trained to:

9.3.1. Verify that shipping documents conform to the provisions of the applicable international standard when authorized.

9.3.2. Confirm that hazardous material package markings conform to the applicable international standard when authorized.

9.3.3. Ensure that hazardous material package labeling conforms to the applicable international standard when authorized.

9.3.4. Verify that hazardous material placarding confirms to the applicable international standard when authorized.

9.3.5. Verify that each carrier who transports or accepts for transportation by vessel a hazardous material, for which a shipping paper is required, instructs the operator of the vessel to contact the carrier (e.g., by telephone or mobile radio) in the event of an incident involving the hazardous material.

9.3.6. Confirm that packages containing hazardous material are packagings authorized in 49 CFR or the appropriate international standard when authorized.

9.3.7. Confirm that all stowage and segregation requirements applicable to maritime transportation have been met.

Section 9.4 – Rail HM Transportation Specialist

A rail HM transportation specialist is an inspector or investigator trained in the requirements of the HMR applicable to the acceptance and transportation of hazardous materials by rail and has been trained in accordance with the FRA's Office of Railroad Safety's *Hazardous Material Compliance Manual*. Rail HM transportation specialists are trained in all Core Competencies and are trained to:

9.4.1. Verify that shipping documents conform to the provisions of the applicable international standard when authorized.

9.4.2. Confirm that hazardous material package markings conform to the applicable international standard when authorized.

9.4.3. Ensure that hazardous material package labeling conforms to the applicable international standard when authorized.

9.4.4. Verify that hazardous material placarding confirms to the applicable international standard when authorized.

9.4.5. Ensure that each carrier who transports or accepts for transportation by rail a hazardous material, for which a shipping paper is required, has instructed the operator of the train to contact the carrier (e.g., by telephone or mobile radio) in the event of an incident involving the hazardous material.

9.4.6. Determine if carriers responsible for transport vehicles which contain hazardous material for which a shipping paper is required and are separated from their motive power and are parked at a location other than a facility operated by the consignor or consignee have complied with § 172.606(b).

9.4.7. Ensure that transportation security plans meet the requirements of § 172.820 for transportation by rail.

9.4.8. Determine if all general requirements unique to carriage by rail and specified in 49 CFR, part 174, subpart A have been met.

9.4.9. Confirm that shipping papers, the notice to train crews and actions relating to leaking packages are in accordance with 49 CFR, part 174, subpart B.

9.4.10. Verify that all “General Handling and Loading Requirements” of 49 CFR, part 174, subpart C have been met.

9.4.11. Confirm that the handling of placarded rail cars, freight containers and transport vehicles are in accordance with 49 CFR, part 174, subpart D when carriage is by rail.

9.4.12. Specific requirements for hazardous materials in Classes I, 2, 3, 7 and Division 6.1 are as specified in 49 CFR, part 174, subparts E-K.

9.4.13. Confirm that stowage and segregation requirements applicable to rail transportation have been met.

Hazardous Materials Incident Response Curriculum Guidelines

Appendix: Summaries of Hazardous Materials Prevention/Mitigation Standards and Regulations

Table of Contents

Federal Transportation Authorities

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act (HMTA, Public Law 93-633, as amended) is the basic statute pertaining to the transportation of hazardous materials in the United States. The law strengthened regulatory and enforcement activities by providing the Secretary of Transportation with broad authority to set regulations for all modes of transportation. Specifically, the Act:

Authorized DOT to issue regulations related to placarding, handling, packing, repacking, marking, routing, and labeling;

Expanded the regulated community to include container manufacturers;

Authorized establishment of a shipper registration program;

Provided DOT with authority to conduct surveillance activities and assess penalties; and

Defined the relationship between federal, state, and local government regulations.

HMTA requires the training of all hazardous materials employees in order to reduce incidents by improving safety awareness. It separated the National Transportation Safety Board from the DOT structure, making it an independent body reporting directly to Congress.

Hazardous Materials Transportation Uniform Safety Act

In 1990, Congress enacted the Hazardous Materials Transportation Uniform Safety Act (HMTUSA, Public Law 101-65, as amended). The statute required that DOT issue rules to:

Regulate hazardous materials transport in intrastate commerce;

Create shipping manifests;

Regulate training for handlers of hazardous materials;

Require certain hazardous materials carriers to hold safety permits;

Issue procedures and waivers for preemptions;

Develop and implement a grant program for local emergency planning and first responder training, and develop a national curriculum;

Improve hazardous materials identification systems;

Determine the costs and benefits of a continually monitored emergency response telephone system; and

Require certain shipper and carrier registration fees.

HMTUSA also required DOT and other organizations to conduct certain studies related to hazardous materials transportation. The law amended HMTA to require the Secretary

of Transportation to participate in international forums that establish or recommend mandatory standards and requirements for the transportation of hazardous materials in international commerce.

Hazardous Materials Regulations

To ensure public safety and minimize risks posed by hazardous materials in transportation, Congress requires the Secretary of Transportation to prescribe regulations for safe transportation of hazardous materials. The Hazardous Materials Regulations (49 CFR Parts 171-180) govern the classification, shipper and carrier operations, hazard communication requirements, and packaging and container specifications for the various modes of transportation (air, water, rail, and highway). Related training and incident reporting requirements are also defined. In addition, the regulations explain DOT policies on hazardous materials inspections and enforcement, which focus on compliance with classification, description, marking, labeling, and packaging requirements.

The Hazardous Materials Regulations consist of the following Parts:

- Part 171: General Information, Regulations and Definitions
- Part 172: Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
- Part 173: Shippers—General Requirements for Shipment and Packagings
- Part 174: Carriage By Rail
- Part 175: Carriage By Aircraft
- Part 176: Carriage By Vessel
- Part 177: Carriage By Public Highway
- Part 178: Specifications For Packagings
- Part 179: Specifications For Tank Cars
- Part 180: Continuing Qualifications and Maintenance of Packagings

Federal Worker Protection Authorities

Occupational Safety and Health Act of 1970

The Occupational Safety and Health Act of 1970 (Public Law 91-596, as amended) was designed to assure safe and healthful employment conditions for all workers in the United States. The Act mandates that each employer provide a place of employment that is free from recognizable hazards that may cause death or physical harm. It establishes authority and procedures for the development, promulgation, and enforcement of occupational safety and health standards, including those dealing with toxic materials and harmful physical agents.

- Among other purposes, the Act establishes conditions for:

- Encouraging employers and employees in their efforts to reduce occupational safety and health hazards, and to develop and refine related safety programs.
- Authorizing the Secretary of Labor to set mandatory occupational safety and health standards and guidelines for businesses.
- Establishing procedures for inspections, investigations, and enforcement of the standards, including variations, citations, penalties, etc.
- Providing for research in the field of occupational safety and health, and for the development of innovative methods, techniques, and approaches to reduce injuries and exposures on the job.
- Providing grants to encourage states to assume the fullest responsibility for the administration and enforcement of their occupational safety and health laws.
- Establishing medical criteria and reporting procedures to help achieve the objectives of the Act.

Standards promulgated under the Act are intended to address "the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure." Where appropriate, standards should also prescribe suitable protective equipment, controls or technological procedures, methods for monitoring and measuring employee exposure, and the type and frequency of medical examinations or other tests for persons who may become exposed to hazards.

Process Safety Management

OSHA's Process Safety Management of Highly Hazardous Chemicals standard (29 CFR 1910.119) contains requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, fire, or explosion hazards. Its major objective is to prevent unwanted releases of hazardous chemicals especially into locations that could expose employees and others to serious hazards. The standard covers processes involving listed (highly hazardous) chemicals at specified quantities and flammable liquids or gases in quantities of 10,000 pounds or more (except products used solely for heating or fuel).

The Process Safety Management Standard addresses requirements and nonmandatory guidelines in the following areas, each of which is explained in more detail later in the appendix:

- Employee involvement
- Process safety information
- Process hazard analysis
- Operating procedures and practices
- Employee training
- Contractors
- Pre-startup safety reviews

- Mechanical integrity
- Non-routine work authorizations
- Managing change
- Investigation of incidents
- Emergency Preparedness
- Compliance audits

Hazard Communication

OSHA's Hazard Communication Standard (29 CFR 1910.1200/1926.59) is designed to ensure that the hazards of all chemicals used in the workplace are properly evaluated, and that the resulting information is transmitted to employers and employees. This knowledge will help employers provide safer workplaces, and help employees protect themselves. The result should be a reduction in chemical source illnesses and injuries.

The standard's design is simple. Chemical manufacturers and importers must evaluate the hazards of the chemicals they produce or import. Using that information, they must then prepare labels for containers and safety data sheets (SDSs). Manufacturers, importers, and distributors of hazardous chemicals are then required to provide these labels and SDSs to their customers. Employers that "use" the chemicals must obtain the information and provide it to their own employees through the following activities:

- Identify and list hazardous chemicals in the workplace.
- Obtain SDSs and labels for each hazardous chemical.
- Develop and implement a written hazard communication program, including labels, SDSs, and employee training.
- Communicate hazard information and appropriate protective measures to their employees through labels, SDSs, and formal training programs.

Safety and Health Program Management Guidelines

Effective management of worker safety and health protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and their costs. To assist employers and employees in developing effective safety and health programs, OSHA published recommended Safety and Health Program Management Guidelines (Federal Register 54(18):3908-3916, January 26, 1989). These voluntary guidelines apply to all places of employment covered by OSHA. The guidelines recommend specific actions under each of four general elements that are critical to the development of a successful safety and health management program:

- Management commitment and employee involvement
- Worksite analysis
- Hazard prevention and control
- Safety and health training

Federal Environmental Safety Authorities

During the last three decades, general public awareness and concern resulting from major accidents have contributed to the enactment of new laws that establish current federal environmental policy. Hazardous materials prevention policy has been included in and derived from the statutory language of this legislation. Recent laws include:

- Water Quality Improvement Act of 1970
- 1972 Amendments to the Federal Water Pollution Control Act (Clean Water Act)
- Safe Drinking Water Act of 1974
- Toxic Substances Control Act of 1976
- Resource Conservation and Recovery Act of 1976
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980
- Emergency Planning and Community Right-to-Know Act of 1986
- Oil Pollution Act of 1990

Of particular importance in this framework of federal environmental safety and hazardous materials prevention authorities are the Clean Air Act Amendments of 1990 and EPA's Accidental Release Prevention standard.

Clean Air Act Amendments

Section 112(r)(7) of the Clean Air Act Amendments of 1990 (CAAA; Public Law 101-549) mandated that EPA promulgate regulations and develop guidance to prevent and mitigate the consequences of accidental releases to the air of chemicals that pose a significant risk to the public and the environment. The law specified that the regulations cover "the use, operation, repair, replacement, and maintenance of equipment to monitor, detect, inspect, and control such releases, including training of persons in the use and maintenance of such equipment and in the conduct of periodic inspections." In addition to operations, regulations should also address emergency response, storage, record keeping, reporting, vapor recovery, and other requirements.

The law requires the owner or operator of a stationary source at which a regulated substance is present in specified quantities to prepare and implement a risk management plan to detect and prevent or minimize accidental releases. The plan must include a hazard assessment of any regulated substance, including an estimate of potential release quantities, possible population exposures, release histories, and an evaluation of worst-case incidents. The law also specifies that EPA describe requirements for employers to develop and implement safety and response programs.

Section 304 of the CAAA required OSHA to promulgate "a chemical process safety standard designed to protect employees from hazards associated with accidental release of highly hazardous chemicals in the workplace" and a "list of highly hazardous chemicals which includes toxic, flammable, highly reactive, and explosive substances." Congress stressed that the standard should be developed in coordination with EPA, and

address, at a minimum, employer requirements for safety information systems, workplace hazard assessments, employee participation, employee information and training, operating procedures, quality assurance programs, maintenance programs, pre-startup safety reviews, management of change, and incident investigations.

Accidental Release Prevention

The Clean Air Act Amendments of 1990 mandated that EPA promulgate regulations and develop guidance to prevent accidental releases to the air of regulated substances and mitigate the consequences of releases that do occur. The resulting rule, Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)(7) (40 CFR Part 68) focuses prevention measures on chemicals that pose the greatest risk to the public and the environment. Chemical processes are divided into three categories based on the potential for off-site consequences associated with a worst-case accidental release, accident history, and compliance with the requirements of OSHA's Process Safety Management Standard.

In summary, the owner or operator of a covered process must (1) prepare and submit a risk management plan (RMP), including registration that covers all affected processes and chemicals; (2) conduct a worst-case release scenario analysis, review accident history, and ensure emergency response procedures are coordinated with community response organizations to determine eligibility for Program 1; (3) if eligible, document the worst case and complete a Program 1 certification for the RMP; (4) for Program 2 processes, conduct a hazard assessment, document a management system, implement a more extensive but still streamlined prevention program, and implement an emergency response program; and (5) for Program 3 processes, conduct a hazard assessment, document a management system, implement a prevention program that is fundamentally identical to the OSHA Process Safety Management Standard, and implement an emergency response program.

National Codes and Standards

Uniform Fire Code Article 80—Hazardous Materials

Article 80 of the Uniform Fire Code defines requirements for the "prevention, control, and mitigation of dangerous conditions related to storage, dispensing, use and handling of hazardous materials and information needed by emergency response personnel" (80001.1.1). The code applies to all hazardous materials (as defined in Article 2) except when specific requirements are provided in other articles.

General requirements addressed in Article 80 include permits; development of hazardous materials management plans and inventory statements; design, construction, and installation of equipment; handling and transport of hazardous materials; safety information (MSDS forms, identification signs, etc.); and general safety precautions. Storage requirements are then defined in detail for the various hazard categories

(compressed gases, flammable solids and gases, organic peroxides, etc.). Finally, section 8004 describes requirements for use, dispensing, and handling of hazardous materials, both for indoor and outdoor applications.

National Fire Protection Association NFPA 1—Fire Code

The Fire Code developed by the National Fire Protection Association (NFPA) includes, but is not limited to, the following: (1) Inspection of permanent and temporary buildings, processes, equipment, systems, and other fire and related life safety situations (2) Investigation of fires, explosions, hazardous materials incidents, and other related emergency incidents (3) Review of construction plans, drawings, and specifications for life safety systems, fire protection systems, access, water supplies, processes, hazardous materials, and other fire and life safety issues (4) Fire and life safety education of fire brigades, employees, responsible parties, and the general public (5) Existing occupancies and conditions, the design and construction of new buildings, remodeling of existing buildings, and additions to existing buildings (6) Design, installation, alteration, modification, construction, maintenance, repairs, servicing, and testing of fire protection systems and equipment (7) Installation, use, storage, and handling of medical gas systems (8) Access requirements for fire department operations (9) Hazards from outside fires in vegetation, trash, building debris, and other materials (10) Regulation and control of special events including, but not limited to, assemblage of people, exhibits, trade shows, amusement parks, haunted houses, outdoor events, and other similar special temporary and permanent occupancies (11) Interior finish, decorations, furnishings, and other combustibles that contribute to fire spread, fire load, and smoke production (12) Storage, use, processing, handling, and on-site transportation of flammable and combustible gases, liquids, and solids (13) Storage, use, processing, handling, and on-site transportation of hazardous materials (14) Control of emergency operations and scenes (15) Conditions affecting fire fighter safety (16) Arrangement, design, construction, and alteration of new and existing means of egress.

National Fire Protection Association NFPA 400—Hazardous Materials Code

NFPA 400 Hazardous Materials Code applies to the storage, use, and handling of the following hazardous materials in all occupancies and facilities:

(1) Ammonium nitrate solids and liquids

(2) Corrosive solids and liquids

(3) Flammable solids

(4) Organic peroxide formulations

(5) Oxidizer — solids and liquids

(6) Pyrophoric solids and liquids

(7) Toxic and highly toxic solids and liquids

(8) Unstable (reactive) solids and liquids

(9) Water-reactive solids and liquids

(10)Compressed gases and cryogenic fluids as included within the context of NFPA 55, Compressed Gases and Cryogenic Fluids Code A.1.1.1(10)

When quantities exceed Occupational Safety and Health Administration (OSHA) or Environmental Protection Agency (EPA) threshold quantities for hazardous materials (or classes of materials), additional federal requirements under the Process Safety Management (29 CFR 1910.119) and Risk Management Program (40 CFR Part 68) regulations may apply. These can be found at www.osha.gov and www.epa.gov.

This code shall not apply to the following: (1) Storage or use of hazardous materials for individual use on the premises of one- and two-family dwellings (2) Explosives or blasting agents, which are regulated by NFPA 495, Explosive Materials Code, and display fireworks, 1.3 G, which are regulated by NFPA 1124, Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles (3) Refrigerants and refrigerant oil contained within closed cycle refrigeration systems complying with the fire code and the mechanical code adopted by the jurisdiction (4) High hazard contents stored or used in farm buildings or similar occupancies and in remote locations for on premises agricultural use (5) Corrosive materials in stationary batteries utilized for facility emergency power or uninterrupted power supply, or similar purposes, in accordance with NFPA 1, Fire Code (6) Aerosols complying with NFPA 30B, Code for the Manufacture and Storage of Aerosol Products (7) Consumer fireworks, 1.4G complying with NFPA 1124, Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles (8) Corrosive materials displayed in original packaging in mercantile occupancies and intended for personal or household use or as building materials (9) Flammable and combustible liquids having no other physical or health hazard properties covered by this code (10) Organic peroxide formulations that are capable of detonation as manufactured or when unpackaged or in authorized shipping containers under conditions of fire exposure, when stored, manufactured, or used in accordance with NFPA 495, Explosive Materials Code (11) Combustible metals, as defined in NFPA484, Standard for Combustible Metals (12) LP-Gas complying with NFPA 58, Liquefied Petroleum Gas Code or NFPA 59, Utility LP-Gas Plant Code (13) When approved, materials that have been satisfactorily demonstrated not to present a potential danger to public health, safety, or welfare, based upon the quantity or condition of storage (14) The off-site transportation of hazardous materials when in accordance with Department of Transportation (DOT) regulations.

Building Codes

Most jurisdictions base their building codes on “model” codes developed by the Building Officials and Code Administrators (BOCA), the Southern Building Code Congress International (SBCCI), or the International Conference of Building Officials (ICBO). For example, the BOCA National Building, Property Maintenance, and Fire Prevention

Codes address safety issues and standards in the construction and operation of buildings, including the administration, organization, and enforcement of related regulations by state and local government units. The three organizations have formed a joint effort, the International Codes Council (ICC), and are working to develop a single International Code that will eventually replace the separate codes.

Hazardous Materials Prevention/Mitigation Training Requirements

OSHA Training Requirements

Many standards promulgated by OSHA explicitly require employers to train employees in the safety and health aspects of their jobs. Other OSHA standards make it the employer's responsibility to limit certain job assignments to employees who are "certified," "competent," or "qualified," meaning that they have had special training in or out of the workplace. These requirements reflect OSHA's belief that training is an essential part of every employer's safety and health program for protecting workers from injuries and illnesses.

General industry training requirements related to hazardous materials prevention are contained throughout 29 CFR Part 1910, addressing, for example, personal protective equipment, employee emergency plans, and fire protection. Other hazardous materials training requirements can be found in standards developed for specific industrial sectors, e.g., maritime (Parts 1915, 1917, 1918), construction (Part 1926), and agriculture (Part 1928).

The Hazard Communication Standard (29 CFR 1910.1200) requires employers to establish training and information programs for employees exposed to hazardous chemicals in the workplace. Training, which must be conducted at the time employees are initially assigned and whenever a new hazard is introduced, should address the following elements:

- How the hazard communication program is implemented in the workplace, and how employees can obtain and use the available hazard information.
- How to read and interpret information on labels and MSDSs.
- The hazards of all chemicals in the work area, and measures employees can take to protect themselves.
- Specific procedures put into effect by the employer to provide protection, such as engineering controls, work practices, and personal protective equipment (PPE).
- Methods and observations—such as visual appearance or smell—that workers can use to detect the presence of hazardous chemicals to which they may be exposed.

Under this rule, an employer can provide employees information and training through whatever means are found to be appropriate and protective. Employee training may be satisfied in part by general training by, for example, trade associations, unions, colleges, and professional schools. In addition, previous training, education, and experience of workers may relieve the employer of some requirements under this regulation. Regardless of the method chosen, however, the employer is always ultimately responsible for ensuring that employees are adequately trained.

OSHA's Process Safety Management of Highly Hazardous Chemicals standard (29 CFR 1910.119) identifies additional training requirements for employers with large-scale chemical processes as defined in the regulation. The requirements cover subjects such as an overview of the process, safety and health hazards, operating procedures and safety work practices, emergency operations including shutdown, routine and non-routine work authorization activities, and other areas pertinent to process safety and health. Refresher training should be provided at least every three years, and more often if necessary. Employers are further required to document that each covered employee has received and understood the training required under the standard. Separate but similar training requirements are specified for contract employees.

In this standard, OSHA has adopted a performance-oriented approach to training. Employers can determine the amount of training and the content of the training program that best reflects the operation's complexity and the experience and necessary skill level of their employees. A minimum number of training hours is not specified, and previous training and experience can be recognized if the employer certifies in writing that employees have the required knowledge, skills, and abilities to safely carry out their duties and responsibilities. (Note: essentially similar training requirements are identified in EPA's Accidental Release Prevention Requirements: Risk Management Programs (40 CFR Part 68) for designated facilities.)

Transportation Training Requirements

Federal transportation law requires the training of all hazardous materials employees, defined as persons who directly affect hazardous materials transportation safety. The term includes employees and self-employed individuals who:

- Load, unload, or handle hazardous materials;
- Test, recondition, repair, modify, mark, or otherwise represent packagings as qualified for use in the transportation of hazardous materials;
- Prepare hazardous materials for transportation;
- Have responsibility for the safety of transporting hazardous materials; or
- Operate a vehicle used to transport hazardous materials.

Instruction should increase the employee's awareness of safety and ability to perform assigned functions, thereby reducing the number and severity of hazardous materials incidents. Training should include a systematic program that ensures that hazardous materials employees have familiarity with the general provisions of the Hazardous

Materials Regulations (49 CFR Parts 171-180), are able to recognize and identify hazardous materials, have knowledge of specific regulatory requirements applicable to their job functions, and have knowledge of emergency response information, self-protection measures, and accident prevention methods and procedures.

Each hazardous materials employer is responsible for training and testing workers, certifying that they can perform their assigned duties, and developing and retaining records of current training. Instruction must include general awareness/familiarization, function-specific, and safety training. Driver training is also required for hazardous materials employees who will operate a motor vehicle. In addition, the regulations prescribe modal-specific training requirements for the individual modes of transportation (air, vessel, highway, etc.) in 49 CFR Parts 174-177.

The regulations define requirements and exceptions for initial training and recurrent or refresher training, required at least once every three years. Relevant training received from a previous employer or source may be used to satisfy the requirements, provided a current record of training is obtained from the previous employer or source. Employers are required to develop and retain training records for the preceding three years, to include at a minimum:

- Hazmat employee's name
- Completion date of most recent training
- Training materials (copy, description, or location)
- Name and address of hazmat trainer
- Certification that the employee has been trained and tested

Environmental Safety Training Requirements

The Clean Air Act Amendments of 1990 (Public Law 101-549) authorized EPA to promulgate regulations that require the owner or operator of regulated facilities (stationary sources) to prepare a risk management plan that identifies employee training measures. At a minimum, the standard would require employers to:

- Provide written safety and operation information to employees and train employees in operating procedures, emphasizing hazards and safe practices;
- Train and educate employees and contractors in emergency response; and
- Establish maintenance systems for critical process-related equipment, including employee training to ensure ongoing mechanical integrity.

In response to this legislative mandate, EPA promulgated the Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act*,* Section 112(r)(7) (40 CFR Part 68). This rule identified training requirements for Program 3 processes (Section 68.71) that are identical to the OSHA Process Safety Management standard, with minor wording changes to address statutory differences. The requirements address initial training, refresher training, employer certification, and training documentation for larger and more complex hazardous materials operations.

Section 68.54 of the EPA standard describes a streamlined version of OSHA training requirements for Program 2 sources, which generally have more simple processes and fewer employees involved in hazardous materials operations. The primary difference is that training documentation requirements identified for Program 3 processes have been dropped. The rule specifically states that training conducted to comply with other federal or state regulations or industry codes, or training conducted by equipment vendors, may be used to demonstrate compliance if the training covers the standard operating procedures (SOPs) for the process. Workers must be retrained when SOPs are revised as a result of a major change in operations.

The EPA Accidental Release Prevention standard does not specify safety training requirements for Program 1 processes. Program 1 is available to any process that has not had an accidental release with offsite consequences in the five years prior to the submission of the risk management plan and has no public receptors within the distance to a specified toxic or flammable endpoint associated with a worst-case release scenario.

Organizational Structure for Hazardous Materials Prevention

Primary responsibility for the development and implementation of accident prevention measures at the federal level is within DOT, including the U.S. Coast Guard; OSHA within the Department of Labor and EPA. The NRC also maintains regulatory responsibilities for source, by-product, and special nuclear materials. Some of the statutes and regulations administered by NRC, in conjunction with FEMA, particularly in the areas of planning and response to significant radioactive materials emergencies, are discussed in this review. Other laws and regulations pertinent to the safety of commercial nuclear power plants were not considered within the scope of this analysis. Food and Drug Administration authorities for consumer-related hazardous materials safety were not considered within the scope of this review.

DOT/Pipeline and Hazardous Materials Safety Administration (PHMSA)

The administering body for hazardous materials safety within DOT is the Pipeline and Hazardous Materials Safety Administration (PHMSA). The Hazardous Materials Transportation Act (HMTA) of 1975 gave DOT umbrella authority for developing hazardous materials transportation safety policy. It enabled the Office of Hazardous Materials Safety to develop policies pertinent to all modes of transportation. HMTA authorized the Secretary to issue regulations for the safe transportation in commerce of hazardous materials. The Hazardous Materials Transportation Uniform Safety Act (HMTUSA) of 1990 expanded DOT's hazardous materials safety responsibilities and clarified certain provisions contained in the original HMTA.

PHMSA Prevention and Regulatory Programs.

PHMSA's Office of Hazardous Materials Safety has primary responsibility for regulating the transport of hazardous materials across all modes except pipelines. Because of the multiple points of exposure during transportation and the potential for exposure to hazardous material handlers and first responders, the primary goal of these regulations is to prevent accidents from occurring. A secondary goal is to ensure that response personnel can easily identify the materials, so that the appropriate actions and precautions can be taken if an accident does occur. The regulations address: criteria for classifying risks of materials being transported; identification through proper labeling and manifesting of what is being transported; containerization and

packaging for transport; handling of hazardous materials in loading and unloading; and procedures for accident notification and follow-up reports.

Federal hazardous materials regulations (except for penalties and specific relief provisions) apply to all agencies of the federal government with the exception of the U.S. Postal Service. They also apply to all contractors used by federal government agencies.

PHMSA's Office of Pipeline Safety oversees the safe transportation of natural gas to 55 million residential and commercial customers, and the environmentally sound transportation of 25 percent of the nation's intercity freight, more than 605 billion ton miles of petroleum and other hazardous materials by pipeline. This office has jurisdiction over more than 2,000 gas pipeline operators and 155,000 miles of pipeline that transport hazardous liquids, and is authorized under the Natural Gas Pipeline Safety Act of 1968 and the Hazardous Liquid Pipeline Safety Act of 1979 (HLPSA). Following enactment of the Oil Pollution Act of 1990, the Department delegated responsibility for spill prevention and containment of oil and hazardous substances from pipelines to PHMSA. These responsibilities, defined under the Federal Water Pollution Control Act, further expand the role of PHMSA in environmental protection, and cover categories of pipelines currently excepted by the HLPSA or regulations adopted thereunder. Pipeline safety regulations cover criteria for pipe design, joining of materials, construction, customer meters, service regulators and service lines, corrosion control, testing, upgrading, operations, and maintenance. Enforcement of the regulations is shared by 244 state and 24 federal inspectors.

PHMSA Enforcement

PHMSA has the primary federal responsibility for enforcing hazardous materials regulations for transportation. PHMSA's enforcement process includes random inspections of packaging manufacturers, shipper and carrier facilities, and investigations of accidents and incident involving hazardous materials. In addition to PHMSA's enforcement program, the DOT modal administrations (Federal Highway Administration, Federal Aviation Administration, Federal Railway Administration, and U.S. Coast Guard) and the states also enforce the hazardous materials regulations.

PHMSA Training

More recent initiatives, developed in response to HMTUSA, are focusing on providing grants for emergency preparedness planning to states and grants for emergency response training to states and Native American tribes. The Office of Hazardous Materials Safety is administering a planning and training grant program assisted by other federal agencies, including FEMA, EPA, Department of Energy (DOE), OSHA, NIEHS, and the Bureau of Indian Affairs. DOT also offers training through the Transportation Safety Institute and prepares and distributes training modules and other materials. In addition, the Federal Highway Administration provides funds for training to states.

DOT/U.S. Coast Guard

USCG Regulatory Programs

The Coast Guard maintains regulatory authority for bulk carriers by water transport. Because authority for transportation by navigable waters has historically been a federal responsibility, the

Coast Guard exercises a unique and broad authority over the shipping industry. In general, its application of an "umbrella" regulatory structure controls vessel design, operations, pollution prevention, personnel qualification, and a number of other categories. Domestic and foreign vessels operating on the navigable waters of the United States are required to have proper licensing and documentation in order to operate, and in the case of commercial vessels, to take part in their trade. The Coast Guard is responsible for issuing these certificates and endorsing certificates issued by international organizations.

Among the provisions administered by the Coast Guard are regulations concerning:

- The boundaries for Coast Guard jurisdiction;
- Specific requirements for obtaining waivers to inspection laws and regulations;
- The transportation of hazardous materials in vessels, including the carriage of explosives, and port and waterway safety;
- The prevention of pollution from ships and the enforcement of waste reception facility requirements;
- The prevention of oil discharges into the navigable waters of the U.S.;
- The protection and security of vessels, harbors, and waterfront facilities;
- Dry bulk waterfront facilities; and
- The oversight of and prevention of unlawful dumping or transportation of materials for dumping into the ocean (the EPA exercises most of the regulatory authority over this activity).

The Ports and Waterways Safety Act of 1972 provides for the establishment, operation, and maintenance of vessel traffic services, the control of vessel movement, among other matters, and the establishment of vessel operating requirements. The act allows for field level controls that, if not appropriately applied, would result in an unacceptable hazard to the environment or property. Orders regarding these matters can be issued only by the Captain on the Port or the cognizant District Commander.

The Federal Water Pollution Control Act (FWPCA), as amended, delegates to the Coast Guard the enforcement authority and responsibility in cases where oil and hazardous substances are discharged in harmful quantities. The Coast Guard is also tasked with enforcement of the Act to Prevent Pollution From Ships, which is the implementation of the international MARPOL protocol. The Coast Guard also conducts surveillance of Ocean dumping as mandated in the Marine Protection, Research, and Sanctuaries Act of 1972.

USCG Enforcement

Inspection, compliance, and enforcement are cornerstones to the Coast Guard's prevention programs. The Officer in Charge of Marine Inspections exercises considerable power in his/her port and is responsible for:

- Inspection of vessels and facilities to determine compliance with applicable laws, rules and regulations related to construction, equipment, manning, and operation;
- Shipyard inspections;

- Factory inspections of materials and equipment;
- Licensing, certification, shipment, and discharge of seamen;
- Investigation of marine casualties and accidents;
- Pollution prevention;
- Investigations of violations of the law;
- Negligence, misconduct, unskillfulness, incompetence of persons holding licenses, certificates, or documents issued by the Coast Guard;
- Initiations of actions seeking suspension or revocation of licenses; and
- Presentation at hearings held by Administrative Law Judges concerning these cases.

New vessels, foreign vessels, waterfront transfer and storage facilities, tankers, and a variety of other vessels are all required to be inspected by the Coast Guard. Certificates of inspection are issued and grant specific rights to each ship. Each class of vessel has unique inspection regulations based on the type of vessel it is and the specific cargo that it carries.

If any equipment is found not to be in compliance with applicable regulations, a form is issued to the master, owner, or operator, which details the problems and mandates the specific circumstances that the cited deficiencies must be corrected. Any vessel may be inspected/reinspected. Certificates of inspection may be revoked if the vessel is found not to comply with the terms of the vessel's certificate of inspection. A vessel or facility may be exempted from complying with any specific regulation by the Commandant.

Investigations are conducted after a marine casualty to determine cause and to determine appropriate proceedings to be taken against those responsible. Investigating officers have the power to administer oaths, subpoena witnesses, etc. At the conclusion of an investigation, recommendations are forwarded to Coast Guard Headquarters program managers for review and further action as appropriate. In investigations where criminal liability is alleged, the case is referred to the U.S. Attorney General for prosecution.

Administrative punishments are intended to be remedial, not penal, with the goal of maintaining competence and safety in the field. Initial recommendations to revoke licenses are set forth by the investigating officer. Investigations are initiated if it appears that the holder of the license was negligent in some manner. An investigating officer can accept voluntary surrender of a license. Upon completion of a case investigation, the case is forwarded to an Administrative Law Judge, who holds hearings and adjudicates the cases.

Prior to the Federal Water Pollution Control Act of 1972, the Coast Guard did not have the kind of authority it needed to enforce against discharges. The Ports and Tanker Safety Act of 1978 expanded many equipment and operating requirements for vessels, with emphasis on tank vessels to coincide with many international initiatives, such as agreements reached by the International Maritime Organization.

Coast Guard Organization

The Coast Guard maintains 47 Captain of the Port operations. The functions performed by the Coast Guard at each of these locations include: port security, port safety, facility inspections,

personnel/merchant mariners documentation, vessel inspections, and accident response and investigation.

Like other transportation modes, the Coast Guard's program is predicated upon prevention. However, unlike other transportation authorities, because of the history, mission, and unique resources of the Coast Guard, it maintains and is responsible for a total safety system including accident prevention, preparedness, and response.

Other Modal Administrations

Federal Aviation Administration (FAA).

The FAA regulates air commerce, controls the use of airspace, and operates air navigation facilities and a common system of air traffic control and navigation for both civil and military aircraft. The Administrator issues and enforces rules, regulations, and minimum standards relating to the manufacture, operation, and maintenance of aircraft, as well as the rating and certification of airmen and the certification of airports. The agency performs flight inspection of air navigation facilities in the United States and, as required, abroad. It also enforces regulations under the Hazardous Materials Transportation Act applicable to shipments by air and investigates accidents involving air carrier.

Federal Highway Administration (FHWA)

The FHWA seeks to coordinate highways with other modes of transportation to achieve the most effective balance of transportation systems and facilities. Under the authority of the motor carrier safety provisions, the agency exercises federal regulatory jurisdiction over the safety performance of all commercial motor carriers engaged in interstate or foreign commerce. The FHWA has jurisdiction over the safe movement on U.S. highways of dangerous cargoes such as hazardous wastes, explosives, flammables, and other volatile materials, and deals with more than 185,000 carriers and approximately 25,000 shippers of hazardous materials.

The FHWA conducts safety reviews at carriers' facilities to determine their safety performance; all carriers must comply with federal safety regulations specifying safe operating practices. Compliance reviews are conducted to follow up on problem areas identified during safety reviews. These reviews may lead to prosecution or other sanctions against violators of the federal motor carrier safety regulations or the hazardous materials transportation regulations.

The FHWA works with states and local government enforcement officers to enforce regulations affecting interstate transportation. It provides grants to assist the states and local governments in enforcing those regulations and encourages slates to adopt regulations compatible with federal standards.

Federal Railroad Administration (FRA)

The FRA promulgates and enforces rail safety regulations, administers railroad financial assistance programs, conducts research and development in support of improved railroad safety and national rail transportation policy, provides for the rehabilitation of Northeast Corridor rail passenger service, and consolidates government support of rail transportation activities. The FRA administers and enforces regulations resulting from the Railroad Safety Act and transportation of

explosives and other hazardous materials under the Hazardous Materials Transportation Act, and the reporting and investigation of railroad accidents.

National Transportation Safety Board (NTSB)

The National Transportation Safety Board is an independent agency that originated within the U.S. Department of Transportation (DOT). Congress passed an Act in 1975, giving the Board increased authority in accident investigation and severing its ties with DOT. The Board's mission is to determine the "probable cause" of transportation accidents and to formulate safety recommendations to improve transportation safety.

DOL/Occupational Safety and Health Administration (OSHA)

Authority for worker protection and hazardous materials prevention programs is housed in the Occupational Safety and Health Administration (OSHA), established within the Department of Labor in 1970. The Occupational Safety and Health Act (OSH Act) gives OSHA authority to promulgate its hazardous materials regulations. In addition, SARA and the 1990 Clean Air Act Amendments included OSHA requirements. OSHA's regulatory system is one that has developed requirements that apply to safety of all industries. OSHA promulgates regulations, inspects workplaces, enforces regulations, conducts workplace safety and health training, disseminates information, collects data, and investigates workplace accidents.

OSHA Regulatory Programs

The specific OSHA hazardous materials program includes standards for: the handling and storage of liquids that are flammable and combustible and of certain chemicals that are reactive and unstable; the design, installation, and use of storage tanks; fire protection within a facility; firefighting operations, including training and equipment; emergency preparedness and evacuation plans; permissible exposure limits for more than 600 air contaminants; employee access to medical records of their workplace exposures to toxic substances or harmful physical agents; medical services and first aid; protection of workers engaged in hazardous waste operations; respiratory protection; use of personal protective equipment; communication of information about hazardous chemicals, including the important requirement that employers train workers in the precautions needed to minimize the risk of potentially dangerous exposures; and, the control of hazardous energy sources, also known as lockout/tagout. OSHA recently issued its chemical process safety standard requiring employers to conduct hazard assessments of chemicals and chemical processes and to develop programs to manage these risks including the training of workers. For hazards not addressed by a particular standard, OSHA enforces the "General Duty Clause" of the OSH Act, which requires employers to provide a place of employment free from recognized hazards that are causing or are likely to cause death or serious physical harm to employees.

OSHA Organization, Accident Investigation and Enforcement.

The OSH Act encourages states to develop and operate, under federal OSHA guidance, state job safety and health plans, including plans for hazardous materials. Once a state plan is approved, OSHA funds up to 50 percent of the program's operating costs, and the state's programs must be at least as effective as the federal OSHA program. Twenty-five states (including two territories)

have OSHA-approved programs. Twenty-three state plans cover both private and public sector employees. Two state plans cover public sector only.

OSHA investigates all serious workplace accidents involving chemical releases to determine whether there has been a violation of the OSH Act or of any regulations under that Act; and to determine whether changes are needed in the OSHA program.

Under the OSH Act, OSHA is authorized to conduct workplace inspections. OSHA inspections, in order of priority, include: imminent danger situations; catastrophes and fatal accidents; employee complaints of violations of standards; and planned inspections of high of high-hazard or targeted industries, including the chemical industry. OSHA is also authorized to issue citations for violations of OSHA regulations and to assess penalties. In 1990 and 1991, OSHA issued unprecedented multimillion dollar penalties against several chemical companies which had willfully violated OSHA regulations. Section 4(b)(1) of the OSH Act is specifically designed to avoid duplication and overlap of federal safety and health regulations. Under section 4(b)(1), OSHA is preempted from applying its regulations to working conditions addressed by other federal agency regulations.

OSHA has placed increased emphasis on chemical accident prevention in the last two to three years. In 1990, OSHA initiated its Special Emphasis Program in the petrochemical industry (PetroSEP), by selecting 28 corporations for inspection. This program targeted corporations of more than 2,500 employers where most petrochemical facilities exist, within the three primary SIC Codes—2821 (plastic materials), 2869 (industrial organic chemicals), and 2911 (petroleum refineries). In addition, OSHA has increased its coordination with other federal agencies, in particular, with EPA, which led to a Memorandum of Understanding governing coordination, sharing information and data, and cooperating in certain enforcement actions in the PetroSEP program. OSHA has supported public and worker training programs at its training facility in Illinois, and has provided materials to the public.

OSHA Training

Although the Occupational Safety and Health Act of 1970 does not address specifically the responsibility of employers to provide safety and health training to employees, Section 5(a)(2) does require that each employer “shall comply with the . . . standards promulgated under this Act.” OSHA standards that contain training requirements for emergency prevention, preparedness, and response cooperation include the Process Safety Management Standard, mentioned above, the Hazardous Waste Operations and Emergency Response Standard (HAZWOPER), and the Hazard Communication Standard.

Under the Hazard Communication Standard, employers must establish a training and information program for employees exposed to hazardous chemicals in their work area at the time of initial assignment and whenever a new hazard is introduced. OSHA’s HAZWOPER standard covers workers employed in clean-up operations at uncontrolled hazardous waste sites and at waste treatment, storage, and disposal facilities licensed by EPA under the Resource Conservation and Recovery Act (RCRA). The standard also covers workers responding to emergencies, including those involving hazardous materials (e.g., spills). State, county and municipal workers such as police, ambulance workers, and firefighters with local fire departments, are covered by the regulations issued by the 23 states that have their own safety and health programs. EPA regulations cover such employees in the other states.

EPA Hazardous Materials Organization

EPA Organization

A number of different federal environmental statutes establish the regulatory framework for hazardous materials safety for communities and the environment. Safety programs and standards, which address prevention, have been included within statutory language that is often intended to address general environmental degradation, rather than accidents in particular. EPA authority for contingency planning and emergency response is primarily from specific language and statutes, e.g., CERCLA, EPCRA, and Oil Pollution Act (OPA), which also contain other provisions for long-term problems.

The organization of safety programs at EPA is complex. This is due, in part, to the Agency's current structure, which organizes programs by environmental medium, typically by statute, and in part to the fragmentation of safety provisions in multiple laws. The fragmentation occurs when organizational structures are designed to accommodate statutes while sometimes de-emphasizing management of programs by function.

CEPPO and OERR

EPA administers hazardous materials safety provisions primarily through two offices within its Office of Solid Waste and Emergency Response. These two offices are: the Chemical Emergency Preparedness and Prevention Office (CEPPO), and the Office of Emergency and Remedial Response (OERR). Each office manages programs under multiple statutes. CEPPO is primarily responsible for regulations and programs under the 1986 Emergency Planning and Community Right to Know Act (EPCRA), for accident prevention provisions under §112(r) of the Clean Air Act, for EPA's responsibilities under HMTUSA, and for overall emergency coordination within EPA, including acting as chair of the National Response Team (NRT) and National Incident Coordination Team (NICT), the EPA intra-agency emergency coordination mechanism. OERR is responsible for regulatory and response functions required by CERCLA and SARA, and for EPA response to oil spill incidents under the Oil Pollution Act. Specific OERR responsibilities include: reviewing and approving facility Response Plans as required by the Oil Pollution Act (OPA), developing and writing revisions to the National Contingency Plan; developing prevention activities for fixed oil facilities under the Clean Water Act as amended by OPA; development of reportable quantities regulations; training for state and local first responders; developing and maintaining the Emergency Response Notification System; and response to oil spills and other emergencies in the inland zone. OERR also administers remedial programs under CERCLA.

In addition to its regulatory functions, CEPPO undertakes compliance and guidance programs under various statutory authorities. These programs are designed to support state and local planners and to encourage industry, states, and local communities in improving accident prevention, preparedness, and response efforts. Among these efforts are its Accidental Release Information Program; the Chemical Safety Audit Program

under CERCLA authorities, which assists industry through facility visits in improving safety practices, technologies and techniques; and CAMEO, the EPA/NOAA (National Oceanographic Atmospheric Administration) computer software designed to aid in emergency planning and response at the state and local levels.

Two other offices within the Office of Solid Waste and Emergency Response have significant responsibility with respect to hazardous materials that affect safety. The Office of Solid Waste is responsible for developing and administering standards under RCRA. Permitting standards for hazardous waste management facilities, for instance, serve to reduce the probability of accidents. Similarly, the Office of Underground Storage Tanks develops and manages technical standards under Subtitle I of RCRA for underground storage of oil and hazardous substances. Both offices also manage corrective action programs for solid waste management units and leaking underground storage tanks.

The Office of Pesticides, Prevention and Toxic Substances.

This office manages EPA's system of registering new chemicals for commercial use under authority of the Toxic Substance Control Act (TSCA), and annually tracks emergency and non-emergency toxic releases as required by EPCRA through the Toxic Release Inventory. Through a registration system for potentially new chemical products, EPA receives some 3,000 to 4,000 pre-manufacturing notices annually. TSCA also requires immediate notification when accidental releases of a toxic chemical present a substantial risk of injury to health or the environment. This office is also responsible for administering programs under the Federal Insecticide, Fungicide, and Rodenticide Act with regard to pesticide safety and worker protection.

Office of Air and Radiation

EPA's Office of Air and Radiation (OAR) manages programs under the Clean Air Act and leads the EPA response to radiological accidents under the FRERP. Also, through the FRERP, OAR leads the federal response to accidents involving naturally-occurring and accelerator-produced radioactive materials and foreign sources of radiological materials. Recent examples are the 1979 crash of the USSR's nuclear powered COSMOS satellite in Canada, and the 1986 Chernobyl nuclear reactor accident in the Ukraine. Although the FRERP was not activated for these incidents, using the most recent revisions it would be for similar incidents. For smaller radiological incidents that do not require a coordinated federal response, this Office responds with the Office of Solid Waste and Emergency Response using the National Contingency Plan, as occurred in the clean-up of a radium chemical company in Bronx, NY. The Office of Air Quality Programs and Standards develops and implements technical standards under the Clean Air Act to prevent or reduce emergency and non-emergency releases of hazardous materials. Like RCRA standards, those air standards serve, by regulating industry practices, to reduce the probability that accidents will occur.

Office of Water

The Office of Water at EPA, the regional offices, and delegated states, using Clean Water Act authority, establish permitting requirements, and set standards to control the release of pollutants to surface water and to municipal wastewater treatment plants. This Office also contributes to response actions that affect wetlands, coastal areas, and oceans, and overseas implementation of the Safe Drinking Water Act.

As addressed in more detail in Chapter 4, numerous statutory and non-statutory lists of hazardous materials are managed by EPA programs. These lists form the way EPA requirements for accident prevention, preparedness, and response are developed and implemented. The lists, however, have multiple purposes and contain different listed materials based on varying criteria and statutory mandates. Most of EPA's prevention, preparedness, and response regulations, programs and activities require technical expertise and support for development and implementation. In addition, DOT draws on EPA expertise and information in the development of some of its regulations, particularly for hazard classification.

EPA Regional Organization and Enforcement

Within the ten EPA regional offices, implementation of hazardous materials safety provisions mentioned above is typically divided differently among offices. Regional Administrators have primary responsibility for implementing how their region will administer new regulations and programs. Typically, the regions will assign implementation authority to a media office responsible for a given statute. Because hazardous materials safety regulations have been promulgated under a variety of laws, it is increasingly awkward for EPA to administer its safety programs at the regional level, as well as at headquarters, with its current organizational structure.

EPA statutes also include clauses pertinent to adoption of its laws and/or regulations by the states. EPA statutes generally allow states' adoption and expansion of environmental statutes, provided that the federal standards are the minimum. Unlike the funding programs for the states used by OSHA, federal funding may or may not be provided to the states for implementation.

EPA Training

Training courses for first responders are offered by the Environmental Response Team and through the Regional programs. EPA participates with FEMA, OSHA, and DOT, among others on the Training Committee of the National Response Team, in the review and development of courses for contingency planning and responses. Further, EPA develops courses to implement its prevention responsibilities.

Nuclear Regulatory Commission (NRC)

The Nuclear Regulatory Commission controls the handling of nuclear materials through an extensive licensing and regulatory program. This program includes several different requirements for responsible parties to immediately report releases of radionuclides.

The extent of the Commission's regulatory jurisdiction is limited to certain types of nuclear materials and to certain parties who may handle these materials. First, the Commission only

licenses source, byproduct, and special nuclear material as defined by the Atomic Energy Act. The Commission does not license naturally-occurring and accelerator-produced radioactive materials, although exposure to naturally-occurring radioactive materials may be subject to Commission regulation when they are associated with sources, byproduct, or special nuclear material being used under an active license. Second, the Atomic Energy Act exempts certain activities of the Department of Energy and the Department of Defense involving source, byproduct, and special nuclear materials from Commission license requirements.

The Nuclear Regulatory Commission exercises its statutory authority by imposing a combination of design criteria, operating parameters, and license conditions at the time of construction and licensing. It assures that the license conditions are fulfilled through inspection and enforcement. The Nuclear Regulatory Commission and the states that have entered into agreement with the Nuclear Regulatory Commission to assume the regulations of certain programs license more than 20,000 users of radioactive materials.

The NRC and the Department of Transportation (DOT) share responsibility for regulating the transportation of licensed radioactive materials. The NRC regulates the design, construction, use, and maintenance of packagings for larger quantities of radioactive materials. The DOT regulates the carriers of radioactive material, and requires carriers to report to DOT any suspected radioactive contamination involving shipment of radioactive material. The NRC is also responsible for regulating the safeguarding of designated shipments to assure security of nuclear material against theft or sabotage.

Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), Department of Treasury

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) has the authority under 18 U.S.C. 40 “to protect commerce from interruption by reducing the hazards to persons or property arising from the misuse and unsafe or insecure storage of explosives.” ATF regulates “any chemical compound mixture or device having a common or intended purpose of functioning by explosion” by licensing manufacturers. The Bureau also prescribes by regulation the configuration, construction, and location of storage magazines. Section 846 of 18 U.S.C. authorizes the Bureau to inspect any accident or fire when there is any reason to believe that explosive materials were involved. The Bureau maintains four teams and responds within 24 hours of an incident. ATF coordinates closely with DOT and Department of Defense (DOD) on classification of explosives, and with other appropriate agencies on storage.

Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency (FEMA) provides extensive guidance, technical and/or financial assistance to state and local governments for emergency preparedness activities which include: planning, training, exercising, mitigation, and information sharing. Under Presidential Executive Order, FEMA has the responsibility to establish overall policies for emergency planning by federal agencies. It may assess the plans of those agencies and may recommend to the President changes, if necessary.

FEMA is a member of the National Response Team and the Regional Response Teams, which coordinate hazardous materials emergency preparedness, response, and assistance activities

among federal agencies, states, and local governments. FEMA may provide advice and assistance to the on-scene coordinator during an emergency regarding temporary or permanent relocation of citizens. FEMA administers the Emergency Broadcast System and a National Warning System, which are used by governors and mayors to warn of disasters and communicate with the community in natural and technological emergencies. FEMA also administers an extensive program for emergency management training of state and local personnel through its Emergency Management Institute. Eighteen programs, currently managed under FEMA's Comprehensive Cooperative Agreement (CCA) provide funding and technical assistance to state and local governments for emergency management. Five of these programs provide for technical assistance only. FEMA also supports EPA in the implementation of activities under the Emergency Planning and Community Right to Know Act and DOT under the Hazardous Materials Transportation and Uniform Safety Amendments of 1990.

The U.S. Fire Administration (USFA) within FEMA coordinates federal activities related to fire protection in the following areas: fire policy and coordination, firefighter health and safety, fire data and analysis, and fire prevention and arson control. USFA works with federal, state and local governments, fire service organizations, and the private sector to minimize losses of life and property. The USFA may investigate major fire incidents to make recommendations concerning fire safety and prevention. The National Fire Academy, USFA, also provides hazardous materials response training to firefighters, hazardous materials planning training to fire and other emergency preparedness personnel, and training for inspectors for hazardous materials.

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