

Lesson 1: Why Plan for HazMat Incidents?

Course Welcome

This course introduces you to the Hazardous Materials (HazMat) planning process. At the end of this course, you should be able to:

- Determine who should be involved in the HazMat planning process.
- Identify and rate HazMat risks in your jurisdiction.
- Assess response resources to determine limitations and shortfalls.
- Explore potential sources for needed resources.
- Develop a HazMat planning strategy.
- Develop a strategy for training and exercising the plan.

Getting Ready To Take This Course

This course is divided into six instructional lessons and a summary and final exam lesson.

A lesson list will be presented at the beginning and end of each lesson to help you keep track of your place within the course.

Lesson 1: Why Plan for HazMat Incidents?

Hazardous materials have become a part of everyday life. When produced, stored, transported, and used properly, hazardous materials make our lives easier. When mishandled or when accidents occur, hazardous materials can present a deadly threat to public health and safety.

Lesson 1 will introduce the benefits of and reasons for HazMat planning.

Lesson 2: The Basis for HazMat Planning

The basis for HazMat planning lies in Federal and State regulations and local ordinances. It is important that you understand the requirements of regulations and ordinances so that your plan meets all necessary requirements.

HazMat planning should not “start from scratch” but should be based on your jurisdictions Emergency Operations Plan.

Lesson 2 describes the main regulatory requirements for HazMat planning and the organization of an all-hazard EOP.

Lesson 3: Beginning the Planning Process

Where should you begin your planning process? What types of incidents should you plan for? What hazards does your jurisdiction face, and what are the risks? Who should be involved? What resources does your jurisdiction have? What might you need?

Lesson 3 will help you work through all of these questions so that you can approach the planning process with a strategy that meets your jurisdiction’s needs.

Lesson 4: Identifying Hazards

Before you can plan, you need to know the types of incidents to plan for. Identifying the hazards—the chemicals in and around your jurisdiction—will provide information about the types of incidents that could occur.

Lesson 4 will describe the steps required to identify the hazards and suggest sources that can help you gather the information you need.

Lesson 5: Analyzing Vulnerabilities

After identifying the chemicals that could pose a threat to your jurisdiction, you will need to analyze your jurisdiction's vulnerability to the hazards. In other words, how vulnerable is your jurisdiction to an incident involving one of these chemicals?

Lesson 5 will present the steps required to identify your jurisdiction's vulnerabilities.

Lesson 6: Establishing Response Priorities

After identifying the chemicals that could pose a threat to your jurisdiction and analyzing your jurisdiction's vulnerability, you will need to analyze the overall risk and determine which areas require the most immediate response should an incident occur.

Lesson 6 will present the steps to follow to analyze your jurisdiction's overall level of risk and establish response priorities.

Lesson 7: Assessing Resources

A critical part of your planning process is identifying what resources and capabilities within the jurisdiction are available to respond to a HazMat incident. With this knowledge, you can develop a HazMat Appendix with an understanding of what resources you have and where your resource gaps are.

Lesson 7 will cover the purpose and benefits of assessing resources for a HazMat response.

Lesson 8: Developing the HazMat Appendix

Developing the HazMat Appendix is cyclical and involves the continuous process of training, exercising, and revising.

Lesson 7 will describe the steps required to develop your jurisdiction's HazMat Appendix. The lesson will also cover the types of training that may be required and strategies for exercising the appendix.

Lesson 9: Course Summary

The course summary reviews the information presented and gives you an opportunity to assess what you have learned.

Lesson Overview

Local and State Governments develop plans for almost everything. Nearly every jurisdiction has a fiscal plan, a development plan, a transportation plan, and of course, an emergency operations plan.

Jurisdictions plan now to determine what must be done to prepare for the future. Because of the risks posed by hazardous materials—or HazMat—it only makes sense to plan for emergencies involving them. This lesson describes:

- Reasons for planning for HazMat incidents.
- The costs of **not** planning.

Why Plan?

Communities need HazMat planning to:

- Respond effectively and efficiently to HazMat incidents.
- Reduce the risk of injury and loss of life.
- Prevent or minimize property damage.
- Protect the environment.

Most outcomes of a HazMat incident are bad—but some can be **very** bad if the response is not timely or well managed.

Planning To Manage Resources

To contain the consequences of a HazMat incident, jurisdictions must use their resources wisely and have a framework for response that helps to ensure that the resources can be directed where they are needed most.

Effective resource management is accomplished through planning.

Other Benefits of Planning

HazMat planning:

- Enables community leaders to think through the decisions and alternatives available should a HazMat incident occur.
- Provides awareness about consequences that the planning team may not otherwise have.
- May inspire the community to take long-term action to minimize identified risks.

For example, planning for a possible train derailment involving several tank cars with toxic materials may serve as a reminder that an elementary school is in a high-risk area.

The Costs of Not Planning

The consequences of not planning for a HazMat incident are grim. Citizens and responders could be killed or injured. The environment could be contaminated. Property could be damaged.

Each of these consequences has a single bottom line—cost. Whether the cost is in rebuilding, opportunity cost, or liability, the costs of inattention to HazMat planning can be enormous.

Lesson Summary

There are many benefits to HazMat planning as part of comprehensive emergency planning, and the costs for not planning are potentially high.

HazMat planning can help you to identify the threats you face, the resources you have to respond, and other resources that you may need. It can also help you ensure that those who respond to HazMat incidents do so safely.

Lesson 2: The Basis for HazMat Planning

Lesson Overview

This lesson introduces you to the regulatory basis for HazMat planning and to the organization of an all-hazard Emergency Operations Plan (EOP). At the end of this lesson, you should be able to:

- Identify the key Federal regulations governing HazMat planning.
 - Describe how Federal, State, and local regulations affect how you plan.
 - Describe where HazMat fits into an all-hazard EOP.
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Regulatory Requirements for HazMat Planning

To reduce the consequences of HazMat incidents, all levels of government have established regulations.

- **Federal regulations** provide a baseline for hazardous materials production, storage, use, handling, and disposal.
 - Many **States** have passed laws that provide additional clarity for regulatory requirements, enforcement provisions, and unique requirements not covered by Federal law.
 - **Local regulations** cover requirements that are specific to the jurisdiction and to the materials that may be present within the jurisdiction.
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Federal Regulations

Several agencies have developed regulations to cover specific aspects of HazMat. The three most important agencies regulating HazMat include the:

- Environmental Protection Agency (EPA).
- Department of Transportation (DOT).
- Occupational Health and Safety Administration (OSHA).

Other agencies, such as the Coast Guard, regulate specific aspects relating to HazMat.

EPA Regulations

The EPA administers three major acts that directly affect HazMat:

The **Comprehensive Emergency Response, Compensation, and Liability Act of 1980 (CERCLA)** established notification procedures for HazMat emergencies, provided funding for cleanup and emergency-response actions for contaminated sites, and established compensation procedures for those injured at chemical sites.

The **Superfund Amendments and Reauthorization Act of 1986 (SARA)** reauthorized and amended CERCLA. Title III of SARA, the **Emergency Planning and Community Right-to-Know Act (EPCRA)**, outlines the emergency planning actions and employee notifications required by local, State, and Federal agencies and certain industries.

The **Resource Conservation and Recovery Act (RCRA)** gave the EPA the authority to control hazardous waste generation, transportation, treatment, storage, and disposal.

RCRA also set forth a framework for the management of nonhazardous wastes.

RCRA was amended in 1984 by the Hazardous and Solid Waste Amendments (HSWA). HSWA required the phasing out of land disposal of hazardous waste, increased the EPA's enforcement authority, provided more stringent hazardous waste management standards, and stipulated a comprehensive underground storage tank program.

Summary of CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Over 5 years, \$1.6 billion was collected, and the tax went to a trust fund for cleaning up abandoned or uncontrolled hazardous waste sites. CERCLA:

- Established prohibitions and requirements concerning closed and abandoned hazardous waste sites.
- Provided for liability of persons responsible for releases of hazardous waste at these sites.
- Established a trust fund to provide for cleanup when no responsible party could be identified.

CERCLA authorizes two kinds of response actions:

- Short-term removals, where actions may be taken to address releases requiring prompt response.
- Long-term remedial response actions that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious but not immediately life threatening. These actions can be conducted only at sites listed on the EPA's National Priorities List (NPL).

CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants.

CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

Superfund Amendments and Reauthorization Act of 1986 (SARA) Summary

The Superfund Amendments and Reauthorization Act (SARA) amended CERCLA on October 17, 1986. SARA reflected the EPA's experience in administering the complex Superfund program during its first 6 years and made several important changes and additions to the program. SARA:

- Stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites.
- Required Superfund actions to consider the standards and requirements found in other State and Federal environmental laws and regulations.
- Provided new enforcement authorities and settlement tools.
- Increased State involvement in every phase of the Superfund program.
- Increased the focus on human health problems posed by hazardous waste sites.
- Encouraged greater citizen participation in making decisions on how sites should be cleaned up.
- Increased the size of the trust fund to \$8.5 billion.

SARA also required the EPA to revise the Hazard Ranking System to ensure that it accurately assessed the relative degree of risk to human health and the environment posed by uncontrolled hazardous waste sites that may be placed on the National Priorities List.

Emergency Planning and Community Right-To-Know Act (SARA Title III) Summary

EPCRA, also known as SARA Title III, establishes requirements for Federal, State, and local governments, Tribal authorities, and industry regarding emergency planning and "Community Right-To-Know" reporting on hazardous and toxic chemicals. The "Community Right-To-Know" provisions help increase the public's knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment.

EPCRA has four major provisions:

- Emergency planning (§301-303)
- Emergency release notifications (§304)
- Hazardous chemical storage reporting requirements (§311-312)
- Toxic chemical release inventory (§313)

Information from these requirements helps States and communities develop a broad perspective of chemical hazards for the entire community as well as for individual facilities.

Emergency Planning (§301-303)

Emergency response contains information that community officials can use at the time of a chemical accident. Community emergency response plans must:

- Identify facilities and transportation routes of extremely hazardous substances.
- Describe emergency response procedures, on and off site.
- Designate a community coordinator and facility coordinator(s) to implement the plan.
- Outline emergency notification procedures.
- Describe how to determine the probable area(s) and population(s) affected by releases.
- Describe local emergency equipment and facilities and the persons responsible for them.
- Outline evacuation plans.
- Provide a training program for emergency responders (including schedules).
- Provide methods and schedules for exercising emergency response plans.

Emergency Release Notifications (§304)

Facilities must notify the Local Emergency Planning Committee (LEPC) and State Emergency Response Commission (SERC) if there is a release into the environment of a hazardous substance that is equal to or exceeds the minimum **reportable quantity** set in the regulations. This requirement covers the 356 extremely hazardous substances and more than 700 hazardous substances subject to the emergency notification requirements under CERCLA. Initial notification can be made by telephone, radio, or in person. Emergency notification requirements involving transportation incidents can be met by dialing 911 or, in the absence of a 911 emergency number, by calling the operator. Emergency notification must include:

- The chemical name.
- An indication of whether the substance is extremely hazardous.
- An estimate of the quantity released into the environment.
- The time and duration of the release.
- Whether the release occurred into air, water, and/or land.
- Any known or anticipated acute or chronic health risks associated with the emergency, and where necessary, advice regarding medical attention for exposed individuals.
- Proper precautions, such as evacuation or sheltering in place.
- Name and telephone number of a contact person.

Hazardous Chemical Storage Reporting Requirements (§311-312) “Right To Know”

Under Occupational Safety and Health Administration (OSHA) regulations, employers must maintain a Material Safety Data Sheet (MSDS) for any hazardous chemicals stored or used in the workplace. SARA Title III, §311 requires facilities that have MSDSs for chemicals held above certain quantities to submit either copies of their MSDSs or a list of MSDS chemicals to the SERC, LEPC, and local fire department. If the facility owner or operator chooses to submit a list of MSDS chemicals, the list must include the chemical or common name of each substance and must identify the following applicable hazard categories:

- Immediate (acute) health hazard
- Delayed (Chronic) health hazard
- Fire hazard
- Sudden release of pressure hazard
- Reactive hazard

Facilities covered by §311 must, under §312, submit an emergency and hazardous chemical inventory form annually to the LEPC, the SERC, and the local fire department.

Toxic Chemical Release Inventory (§313)

EPCRA §313 requires the following facilities to complete a Toxic Chemical Release Inventory (TCRI) Form annually for specified chemicals:

- Manufacturing
- Metal mining
- Coal mining
- Electrical utilities that combust coal and/or oil
- Resource Conservation and Recovery Act (RCRA) Subtitle C hazardous waste treatment and disposal facilities
- Chemicals and allied products wholesale distributors
- Petroleum bulk plants and terminals
- Solvent recovery services

The form must be submitted to the EPA and the State on July 1 and cover releases and other waste management of toxic chemicals that occurred during the preceding calendar year. One purpose of this reporting requirement is to inform the public and government officials about releases and other waste management of toxic chemicals.

In addition, the Pollution Prevention Act of 1990 requires collection of information on source reduction, recycling, and treatment. EPA maintains a national TRI database.

When facilities fail to comply with reporting requirements, EPCRA allows for civil and administrative penalties ranging from \$10,000 to \$75,000 per violation per day. Criminal penalties of up to \$50,000 or 5 years in prison apply to any person who knowingly and willfully fails to provide emergency release notification. Penalties of not more than \$20,000 and/or up to 1 year in prison apply to any person who knowingly and willfully discloses any information entitled to protection as a trade secret.

Resource Conservation and Recovery Act (RCRA) Summary

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976. RCRA focuses on active and future facilities and does not address abandoned or historical sites, which are regulated under CERCLA.

Although the primary objective of RCRA is to protect human health and the environment, the Act also provides assistance to State and local governments in prohibiting open dumping; regulating the management of hazardous wastes; encouraging recycling, reuse, and treatment of hazardous wastes; providing guidelines for solid waste management; and promoting beneficial solid waste management, resource recovery, and resource conservation systems.

RCRA, as amended by the Hazardous and Solid Waste Amendments (HSWA) and several Executive Orders, gives the EPA the authority to control hazardous waste generation, transportation, treatment, storage, and disposal.

HSWA required the phasing out of land disposal of hazardous waste and increased the EPA's enforcement authority by providing more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

RCRA requires the issuance of operating permits to hazardous waste treatment, storage, and disposal facilities and requires "cradle-to-grave" tracking of hazardous waste through a recordkeeping and labeling system that requires the manifesting of hazardous waste shipments for point of generation to the ultimate point of disposal. Under the Act, hazardous wastes accumulating for more than 90 days requires a storers' permit. Also, generators of hazardous waste must certify that they have implemented a hazardous waste minimization program.

Under RCRA, hazardous waste is defined as wastes that exhibit certain characteristics (e.g., burn readily, reactivity) or contain more than specified amounts of toxic chemicals. In line with these definitions, EPA developed a list of more than 500 specific hazardous wastes.

Underground storage tanks are managed by EPA or by States with EPA-approved programs. RCRA requires written records demonstrating compliance of the design and operations of underground storage tanks and notification to the EPA or State agency of any release from an underground storage tank within 24 hours.

RCRA also controls some nonhazardous solid waste, including municipal solid waste, some sludges, some semisolid and liquid wastes, construction waste, household hazardous waste, and old and gas waste.

RCRA requirements must be integrated with other laws and regulations to the degree practical.

DOT Regulations

DOT regulations govern the transportation of HazMat throughout the United States and in U.S. territorial waters. These regulations cover:

- Placards, labels, and marks.
- Licenses (both shippers' licenses and drivers' licenses).
- Documentation.

Placarding Requirements

Title 49 of the U.S. Code of Federal Regulations (49 CFR) requires the use of hazardous materials placards when shipping hazardous materials cargo and dangerous goods in the United States. Canada and Mexico also have similar regulations that require the use of these placards. Placards must be displayed on the front, back, and both sides of a truck, trailer, or tanker carrying hazardous materials.

The DOT placarding system has been established for nine hazard classes:

- Class 1, Explosives
- Class 2, Flammable or Poisonous Gases
- Class 3, Flammable Liquids
- Class 4, Flammable Solids
- Class 5, Oxidizers
- Class 6, Poisonous Liquids
- Class 7, Radioactive Materials
- Class 8, Corrosive Liquids
- Class 9, Miscellaneous
 - Division 9.1, Miscellaneous dangerous goods (Canada)
 - Division 9.2, Environmentally hazardous substances (Canada)
 - Division 9.3, Dangerous Wastes (Canada)

Placards are diamond shaped. Each class of placard is distinctive in color and is labeled in three ways:

- A symbol representing the hazard class is displayed at the top of the placard.
- Words describing the hazard class are printed in block letters across the middle of the placard.
- The class number (including subclass, where appropriate) is displayed at the bottom of the placard.

In cases where loads are mixed, the load may be placarded as Class 9, Miscellaneous, with a Dangerous Goods placard, or the placard representing the most dangerous or predominant chemical in the load may be displayed. Typically chemicals in shipment display only one placard.

Labeling Requirements

Placards are placed on vehicles. Labels are placed on the goods or containers themselves. Labeling is required for all:

- Nonbulk packages.
- Bulk packaging other than a cargo tank, portable tank, or tank car with a capacity of less than 640 cubic feet, unless placarded.
- Portable tanks of less than 1,000 gallons, unless placarded.
- Multicar tanks, unless placarded.
- Overpacks, freight containers, or unit load devices of less than 640 cubic feet capacity that contain materials that are required to be placarded.
- Hazardous materials meeting one or more hazard class definitions in Table 1 (49 CFR § 172.101).

These requirements are very specific. Penalties may be assessed for misuse of labels including labeling a material as hazardous when it is not.

Labeling specifications include:

- **Visibility.** Labels must be clearly visible and not obscured by markings or other attachments to the package.
- **Durability.** Labels must be able to withstand a 30-day exposure to conditions without deterioration or a substantial change in color.
- **Design.** Labels must conform to those shown in 49 CFR, §§ 172.411 through 172.448 (except for color and size).
- **Size.** Labels must be at least 3.9 inches on each side, and each side must have a solid line as an inner border.
- **Color.** Background colors are specified in §§ 172.411 through 172.448. With few exceptions, the symbol, text, numbers, and border must be black.
- **Form identification.** Labels may contain form identification, including the maker's name, but this information must be printed outside the label border.

There are also restrictions on the use of labels:

- **Only hazardous materials may be labeled.** It is unlawful for carriers to represent a nonhazardous material as a hazardous material.
- **Labels must reflect the hazard class of the packaged material.** For example, if the packaged material is an oxidizer, labeling it as a flammable solid is prohibited.
- **Labels used may not conflict with labels prescribed in 49 CFR, Subpart E.** This prohibition includes color, design, and shape. For example, a label that identifies an oxidizer cannot include red and white stripes that are characteristic of flammable solids.

Marking Requirements

Markings include additional information that is required to be placed on:

- Packages.
- Freight containers.
- Transport vehicles.

Markings generally include the:

- Proper shipping name of the hazardous material.
- Identification (UN) number.
- Orientation symbols or other warnings (e.g., hot, inhalation hazard, marine pollutants).

Requirements for markings are included in 49 CFR, Subpart D.

Markings must be:

- **Durable**, in English, and printed on or affixed to the surface of a package or on a label, tag, or sign.
- **Displayed on a background** of sharply contrasting color.
- **Unobscured** by labels or attachments.
- **Located away from other markings** that could reduce its effectiveness.

Licensing Requirements

DOT requires special licenses for the transport and delivery of certain materials, such as radioactive materials, materials with both commercial and military uses, and certain other hazardous materials. These licenses must include:

- The producer's name, address, and phone number.
- The proper chemical name.
- An indication of whether the substance is extremely hazardous.
- Any known or anticipated acute or chronic health risks associated with the emergency, and where necessary, advice regarding medical attention for exposed individuals.
- Proper precautions, such as evacuation or sheltering in place.
- The receiver's name, address, and phone number.
- An emergency contact phone number.

The transport of certain hazardous materials, such as gasoline or propane, require endorsements to the driver's commercial drivers license (CDL).

DOT regulations (49 CFR 177.804) specify that motor carriers and other persons subject to part 177, Carriage by Public Highway, shall also comply with 49 CFR, parts 370 through 397 (also known as the Federal Motor Carrier Safety Regulations) to the extent that those regulations apply.

Documentation Requirements

Shipping papers must be provided for all HazMat being shipped. The shipper is required to present documentation, including shipping papers waybills, airbills, bills of lading, or hazardous waste manifests, if required.

DOT specifies every entry that must be included on shipping papers as well as the order in which the entries must be made.

DOT specifies three ways that shippers can identify hazardous materials on shipping papers:

- List all hazardous materials first.
- Highlight hazardous materials in a contrasting color.
- Mark the hazardous material entry with an “X,” “RQ” (reportable quantity), or “MP” (marine pollutant) to the left of the entry.

Each person who provides a shipping paper must retain a copy of the shipping paper required by § 172.200(a), or an electronic image thereof, that is accessible at or through its principal place of business and must make the shipping paper available, upon request, to an authorized official of a Federal, State, or local government agency at reasonable times and locations. For a hazardous waste, the shipping paper copy must be retained for 3 years after the material is accepted by the initial carrier. For all other hazardous materials, the shipping paper copy must be retained for 375 days after the material is accepted by the initial carrier.

Shipping papers must contain an emergency response telephone number, as part of DOT’s Hazardous Materials Communications Requirements, as outlined in §172.604.

DOT requires a complete description of hazardous materials in transport. This information is also on the waybill:

- The proper shipping name (anhydrous methylamine)
- The hazard class (2.1)
- The UN number (1061)
- Packing group (I)
- The fact that this chemical has an RQ
- The quantity of material being shipped

All shippers are required to certify that hazardous materials being offered for transport are in accordance with DOT regulations (49 CFR). This certification must be printed on the documentation.

OSHA Regulations

OSHA regulations govern hazardous materials in the workplace, including:

- Emergency planning requirements for facilities that produce, store, or use HazMat.
- Training requirements for those working with or around HazMat.
- Emergency response operations.

OSHA also specifies the training and equipment requirements for HazMat response personnel and the implementation of the Incident Command System (ICS) to manage all HazMat responses.

OSHA Emergency Planning Requirements

OSHA requires that all facilities that produce, use, or store toxic and hazardous substances develop a written emergency plan that includes actions employers and employees must take to ensure employee safety from fire and other emergencies. Emergency plans must include:

- Emergency escape procedures and emergency route assignments.
- Procedures to be followed by employees who remain for critical plant operations.
- Procedures to account for all employees after evacuation.
- Rescue and medical duties for employees who are to perform them.
- The preferred means of reporting emergencies.
- Names or regular job titles of persons or departments who can be contacted for additional information or explanation of duties under the plan.

Under this regulation (29 CFR, §1910.38), employers are also required to establish an employee alarm system for use during emergencies.

For employers with more than 10 employees, the plan must be maintained at the workplace and made available for employee review.

OSHA Training Requirements

OSHA requires that, before implementing any emergency response plan, employers must designate and train employees to assist with the evacuation. Employers are also required to review with employees fire hazards and hazardous materials and/or processes to which employees may be exposed.

OSHA regulations (§1910.120) also require training for:

- Equipment operators, laborers, supervisory personnel, and others who are engaged in hazardous substance removal or other activities that expose, or potentially expose them to hazardous substances and health hazards.
- Workers who are on site only occasionally to perform specific, limited tasks and who are unlikely to be exposed over permissible exposure limits.
- Workers who are regularly on site who work in areas that have been monitored and found to be under permissible exposure limits and not at risk of health hazard or the possibility of an emergency developing.
- Onsite managers and supervisors who are directly responsible for hazardous waste operations.
- Employees who are engaged in responding to hazardous emergency situations.

OSHA specifies the amount of initial training and refresher training for each of these groups as well as credentials required for trainers and for training certification. These training requirements are shown below.

29 CFR 1910.120 (e): HAZWOPER Training

Initial training.

General site workers (such as equipment operators, general laborers, and supervisory personnel) engaged in hazardous substance removal or other activities that expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience under the direct supervision of a trained experienced supervisor.

Workers on site only occasionally for a specific limited task (such as, but not limited to, ground water monitoring, land surveying, or geophysical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Workers regularly on site who work in areas that have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

Workers with 24 hours of training who are covered by paragraphs (e)(3)(ii) and (e)(3)(iii) of this standard, and who become general site workers or who are required to wear respirators, shall have the additional 16 hours and two days of training necessary to total the training specified in paragraph (e)(3)(i).

Management and supervisor training. On-site management and supervisors directly responsible for or who supervise employees engaged in hazardous waste operations shall receive 40 hours initial and three days of supervised field experience (the training may be reduced to 24 hours and one day if the only area of their responsibility is employees covered by paragraphs (e)(3)(ii) and (e)(3)(iii) of this standard and at least eight additional hours of specialized training at the time of job assignment on such topics as, but not limited to, the employer's safety and health program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques.

Qualifications for trainers. Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a training program for teaching the subjects they are expected to teach, or they shall have the academic credentials and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.

Training certification. Employees and supervisors that have received and successfully completed the training and field experience specified in paragraphs (e)(1) through (e)(4) of this standard shall be certified by their instructor or the head instructor and trained supervisor as having completed the necessary training. A written certificate shall be given to each person so certified. Any person who has not been so certified or who does not meet the requirements of paragraph (e)(9) of this standard shall be prohibited from engaging in hazardous waste operations.

Emergency response. Employees who are engaged in responding to hazardous emergency situations at hazardous waste clean up sites that may expose them to hazardous substances shall be trained in how to respond to such expected emergencies.

Refresher training. Employees specified in paragraph (e)(1) of this standard, and managers and supervisors specified in paragraph (e)(4) of this standard, shall receive 8 hours of refresher training annually on the items specified in paragraph (e)(2) and/or (e)(4) of this standard, any critique of incidents that have occurred in the past year that can serve as training examples of related work, and other relevant topics.

29 CFR 1910.120 (p) Treatment, Storage and Disposal Facilities

Training program

New employees. The employer shall develop and implement a training program which is part of the employer's safety and health program, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not to endanger themselves or other employees. The initial training shall be for 24 hours and refresher training shall be for 8 hours annually. Employees who have received the initial training required by this paragraph shall be given a written certificate attesting that they have successfully completed the necessary training.

Current employees. Employers who can show by an employee's previous work experience and/or training that the employee has had training equivalent to the initial training required by this paragraph, shall be considered as meeting the initial training requirements of this paragraph as to that employee. Equivalent training includes the training that existing employees might have already received from actual site work experience. Current employees shall receive eight hours of refresher training annually.

Trainers. Trainers who teach initial training shall have satisfactorily completed a training course for teaching the subjects they are expected to teach or they shall have the academic credentials and instruction experience necessary to demonstrate a good command of the subject matter of the courses and competent instructional skills.

29 CFR 1910.120 (q): Emergency Response Training

Training. Training shall be based on the duties and functions to be performed by each responder of an emergency response organization. The skill and knowledge levels required for all new responders, those hired after the effective date of this standard, shall be conveyed to them through training before they are permitted to take part in actual emergency operations on an incident. Employees who participate, or are expected to participate, in emergency response, shall be given training in accordance with the following paragraphs:

First responder awareness level. First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. First responders at the awareness level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:

- An understanding of what hazardous substances are, and the risks associated with them in an incident.
- An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.
- The ability to recognize the presence of hazardous substances in an emergency.
- The ability to identify the hazardous substances, if possible.
- An understanding of the role of the first responder awareness individual in the employer's emergency response plan including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook.
- The ability to realize the need for additional resources, and to make appropriate notifications to the communication center.

First responder operations level. First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least 8 hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer shall so certify:

- Knowledge of the basic hazard and risk assessment techniques.
- Know how to select and use proper personal protective equipment provided to the first responder operational level.
- An understanding of basic hazardous materials terms.
- Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.
- Know how to implement basic decontamination procedures.
- An understanding of the relevant standard operating procedures and termination procedures.

Hazardous materials technician. Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level does in that they will approach the point of release in order to plug, patch, or otherwise stop the release of a hazardous substance. Hazardous materials technicians shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:

- Know how to implement the employer's emergency response plan.
- Know the classification, identification, and verification of known and unknown materials by using field survey instruments and equipment.
- Be able to function within an assigned role in the Incident Command System.
- Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician.
- Understand hazard and risk assessment techniques.
- Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit.
- Understand and implement decontamination procedures.
- Understand termination procedures.
- Understand basic chemical and toxicological terminology and behavior.

Hazardous materials specialist. Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician; however, those duties require more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists shall have received at least 24 hours of training equal to the technician level and in addition have competency in the following areas and the employer shall so certify:

- Know how to implement the local emergency response plan.
- Understand classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment.
- Know the State emergency response plan.
- Be able to select and use proper specialized chemical personal protective equipment provided to the hazardous materials specialist.
- Understand in-depth hazard and risk techniques.
- Be able to perform specialized control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.
- Be able to determine and implement decontamination procedures.
- Have the ability to develop a site safety and control plan.
- Understand chemical, radiological, and toxicological terminology and behavior.

On scene incident commander. Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas, and the employer shall so certify:

- Know and be able to implement the employer's incident command system.
- Know how to implement the employer's emergency response plan.
- Know and understand the hazards and risks associated with employees working in chemical protective clothing.
- Know how to implement the local emergency response plan.
- Know of the State emergency response plan and of the Federal Regional Response Team.
- Know and understand the importance of decontamination procedures.

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

Refresher training. Those employees who are trained in accordance with paragraph (q)(6) of this section shall receive annual refresher training of sufficient content and duration to maintain their competencies, or shall demonstrate competency in those areas at least yearly.

A statement shall be made of the training or competency, and if a statement of competency is made, the employer shall keep a record of the methodology used to demonstrate competency.

OSHA Emergency Response Requirements

OSHA also stipulates response requirements in the event of a release or spill of hazardous materials. These response requirements specify a written emergency response plan that must address the requirements below (if they are not included under other response plans):

- Preemergency planning and coordination with outside parties (e.g., local government, response agencies)
- Personnel roles, lines of authority, training, and communication
- Emergency recognition and prevention
- Safe distances and places of refuge
- Site security and control
- Evacuation routes and procedures
- Decontamination
- Emergency medical treatment and first aid
- Emergency alert and response procedures
- Critique of response and followup
- PPE and emergency equipment

Section 1910.120 of 29 CFR specifies that local and/or State emergency operations plans may be incorporated into site response plans to avoid duplication.

Under OSHA regulations, responding organizations **must** use the Incident Command System (ICS) to manage the response. Additionally, the regulations specify that all emergency responders and their communications **must** be coordinated through the Incident Commander.

State Regulations

States pass regulations that often have more stringent requirements than the Federal regulations. These regulations range from requiring State agencies to compile lists of substances that are harmful to humans and the environment to requiring employers to release information to the public about hazardous materials used and their possible effects on humans, animals, and the environment.

State regulations vary in scope. You will need to familiarize yourself with State requirements before beginning the planning process.

Local Laws and Ordinances

Often, local governments pass ordinances geared specifically to the jurisdiction. These ordinances usually deal with hazard- or situation-specific conditions in the local area. For example, a local government may restrict the transport of hazardous materials to certain routes or may require local industries to develop disclosures about the chemicals that they use and their potential harmful effects.

Be sure to check with local officials for copies of local ordinances that may be in force.

HazMat Planning as Part of Comprehensive Emergency Planning

You now know that hazardous materials are subject to specific emergency planning requirements. Planning for HazMat incidents, however, should not be separate from other emergency planning activities. To minimize duplication of effort, planning for HazMat incidents should be incorporated into the jurisdiction's all-hazard emergency planning effort.

The Basic Plan

The Basic Plan describes how the jurisdiction will do business in an emergency, and includes:

- The plan's purpose, the presumed situation, and any assumptions that affect how the plan is developed.
 - The jurisdiction's overall approach to an emergency.
 - The emergency organization.
 - The administrative and logistical support requirements for incident response.
 - How and how often the plan will be revised.
 - The authorities under which the plan was prepared.
-

Annexes

Annexes describe key emergency functions that the plan will address. FEMA recommends that all plans include the following eight functions:

- Direction and Control
- Communications
- Warning
- Emergency Public Information (EPI)
- Evacuation
- Mass Care
- Health and Medical Services
- Resource Management

Some jurisdictions have included additional functions, such as damage assessment or radiological protection in their plans. The selection of functions to be included as annexes depends entirely on the needs of your jurisdiction.

Appendixes

Appendixes are used to describe the unique planning requirements for specific hazards that require special attention in planning or response. Information included in appendixes should focus on the **special planning needs** of the hazard and should not duplicate information found in functional annexes.

Given the special regulatory and response requirements, HazMat incident response plans should be included in a separate appendix.

Implementing Documents

Implementing documents:

- Include special procedures, instructions, recordkeeping, and other requirements for responders.
- Are developed at the agency level based on the requirements of the basic plan, annexes, and appendixes.

For example, specific procedures for diking a contaminated stream would be included as implementing documents.

Lesson Summary

The Federal Government establishes the basic requirements for HazMat planning, training, and emergency response. Federal requirements are augmented by State laws and local ordinances. Being aware of these requirements will help you develop a HazMat Appendix that is compliant.

HazMat planning should be part of a comprehensive emergency operations planning effort. FEMA recommends that jurisdictions organize their EOPs into a basic plan, functional annexes, and hazard-specific appendixes. Using this approach, HazMat planning would be included as an appendix to the EOP.

Lesson 3: Beginning the Planning Process

Lesson Overview

If you are new to the planning process, you probably have a lot of questions. Where should you begin? What incidents should you plan for? Who should be involved?

This lesson will help you answer these questions.

At the end of this lesson, you should be able to:

- Identify who should be involved in HazMat planning.
- Develop a strategy for completing HazMat planning.

Who Should Be Involved?

Because of the importance and complexity of HazMat planning, participation in the planning process should be broad based. Consider including the following stakeholders in the planning process:

- The State Emergency Response Commission (SERC)
- The Local Emergency Planning Committee (LEPC)
- Those within the jurisdiction with responsibility for HazMat response
- Those with whom the jurisdiction will interact during a HazMat emergency

The State Emergency Response Commission

SARA Title III requires that the Governor of each State designate a State Emergency Response Commission (SERC). The SERC must be broad based and include agencies and departments concerned with:

- The environment and natural resources.
- Emergency management.
- Public health.
- Occupational safety.
- Transportation.

Some States also include public and private groups and associations with interest and/or expertise in Title III issues.

Local Emergency Planning Committees

One SERC responsibility is to designate local planning districts and appoint Local Emergency Planning Committees (LEPCs). LEPCs must include:

- Elected State and local officials.
- Police, fire, emergency management, public health, environmental, hospital, and transportation officials.
- Representatives of facilities that produce, store, or use hazardous materials.
- Community groups with an interest in SARA Title III issues.
- The media.

LEPC Responsibilities

The primary responsibilities of LEPCs include conducting a hazard analysis, reviewing existing plans, and evaluating available resources that could be made available in the event of a chemical accident. Within these broad tasks, LEPCs must:

- Identify facilities that have extremely hazardous substances and transportation routes over which they are carried.
- Develop methods for determining the occurrence of a release and the probable affected area and population.
- Develop emergency response procedures, including evacuation and shelter-in-place plans.
- Designate a community coordinator and facility coordinator(s) to implement the plan.
- Develop and schedule a training program for emergency response to chemical emergencies.
- Determine the methods and develop schedules for exercising the plan.

Internal Stakeholders

Internal stakeholders represent agencies that have responsibility in a HazMat response. To determine internal stakeholders, start by including those specified by LEPCs. There may be others who should participate in HazMat planning.

Consider the officials and agencies listed below as you identify internal stakeholders to the HazMat planning process. Don't limit yourself to this list, though. Consider it a starting point.

- Elected officials
- Fire department
- Police department
- Emergency management
- Environmental agency
- Health department
- Transportation agency
- Public Works department

Other groups and/or agencies that you may want to consider for your planning team include:

- The local agricultural extension agent.
- The local planning and zoning commission.
- The jurisdiction's legal council.

External Stakeholders

Even if you think that a HazMat response will be handled entirely by jurisdiction personnel, there may be some external stakeholders that should be involved in the planning process. For example:

- With what jurisdictions does your jurisdiction have mutual aid agreements?
- Does your jurisdiction have standby contracts for critical supplies?

These are some of the questions that you should ask when determining who your external stakeholders are.

Consider representatives from the organizations below as you begin identifying external stakeholders for HazMat planning. Consider this list a starting point. Feel free to add other organizations that have a stake in HazMat planning.

- Coast Guard (if appropriate)
 - EPA representative (if appropriate)
 - Hospitals and emergency medical service providers
 - Local business leaders
 - Local industry
 - Media representatives
 - Public interest groups
 - School district officials
 - Technical experts
 - Transportation providers
 - Tribal representatives (if appropriate)
-

Planning Challenges

HazMat planning is not simple. The planning process itself requires some planning. You can give yourself a “boost” by doing some work up front to get your planning off on the right foot.

Involve the Jurisdiction’s Leadership

Planning is a form of decisionmaking. When leaders don’t take time to understand and get involved, there is little likelihood of success. More importantly, there is little likelihood that the plan will work when implemented.

Decisionmakers need to contribute their guidance and support, especially in the area of integrating the plan among different agencies and organizations.

Tips for Getting Decisionmakers Involved

To gain the support of local leaders, try the tips listed below:

- ✓ **Do your homework first.** Become familiar with the requirements for HazMat planning and response—what needs to be done, by whom, and when. Be sure that you are able to explain and answer questions about the requirements. Present some examples of good and poor responses from your jurisdiction or from the surrounding area to help make your point.
 - ✓ **Get leaders involved early.** Early involvement by leaders will tell those on your planning team that HazMat planning is important to the jurisdiction. Getting their buy-in will add emphasis to the overall planning process.
 - ✓ **Keep leaders informed.** Keeping leaders informed and involved (if possible) will help to focus the planning team’s efforts. It will also help you to avoid “springing the bad news” on the leader if equipment shortages or other issues arise during the planning process.
 - ✓ **Involve leaders in training and exercises.** Involving leaders in training and exercises brings home the importance of HazMat planning—and allows the leader to see first-hand how the plan is implemented.
-

Develop an Orderly Approach to Planning

Enthusiasm and drive are important to HazMat planning, but consistency of effort and an orderly approach produce the best results.

The planning process must focus on progress made and how to overcome obstacles.

Remember that to be successful, the focus of planning must be on the plan's implementation!

Tips for Developing an Orderly Approach to Planning

Some tips for ensuring that your planning approach is orderly and systematic are listed below.

- ✓ **Review the existing plan** so that you are aware of how your jurisdiction currently approaches emergency response, what hazards are currently covered, and what response resources are in place. The existing plan will provide the basis for HazMat planning.
- ✓ **Talk to experienced emergency managers.** If you are new to HazMat planning, talk to several emergency managers from adjacent jurisdictions about the planning process, the types of incidents that have occurred, the lessons learned from those incidents, and what those lessons learned mean for planning.
- ✓ **Review the existing hazard analysis** to identify obvious gaps. Pay particular attention to when the hazard analysis was completed or updated. If it is relatively recent (i.e., within the past year), it may be up to date. If the hazard analysis is more than a year old, you will need to identify new threats to the jurisdiction. For example, has a new residential area been approved downwind of an existing industrial area? Has road construction or other changes to the transportation system altered the types or amounts of chemicals passing through or near your jurisdiction?
- ✓ **Don't reinvent the wheel.** Use the jurisdiction's existing plan, and build on it. Plan for response gaps—the aspects of a response that are unique to HazMat incidents.
- ✓ **Make discreet work assignments and milestones for completion.** Emergency planning can seem overwhelming when taken as a whole. Breaking the planning process into discreet steps can help make the process seem more manageable. Assigning completion dates helps the planning team focus its efforts.
- ✓ **Assign the planning team to task forces to develop specific aspects of the plan.** Your planning team may be relatively large and have varying areas of expertise. Assigning team members to task forces that tackle specific aspects of the plan takes advantage of the expertise available and allows the overall planning process to proceed faster and more efficiently. (Be sure to bring the entire team together, as necessary, to talk through issues and ensure coordination of effort.)
- ✓ **Refer to SLG-101.** FEMA has developed SLG-101, All-Hazard Guide to Emergency Planning as a tool to help you through the planning process. The guide provides a good model for planning, describing the types of information that should be included in emergency operations plans and the steps to follow when developing a plan.

Keep the Plan Realistic

Plans should be realistic. During the planning process, you should consider:

- Only those resources that you know will be available given your planning assumptions.
- The most probable response times and consequences for all likely threat conditions.

Being unrealistic will result in a plan that doesn't work—and could result in injury or loss of life. Emergency plans are not “wish lists,” and they should not be used as a basis for purchasing new equipment. There are other processes for that.

Work Toward Community Consensus

Emergency plans are not secret documents—although there may be certain aspects that should not be released for security or other reasons. Wherever possible, give the public time to review at least the Basic Plan and pertinent functional annexes. Try to gain consensus on:

- The hazards faced (e.g., from facilities or along transportation routes).
- The hazards that constitute the highest risk that will receive the highest priority.

When the community is a partner in the planning process, there is a higher probability that the public will take necessary preparedness measures and respond as asked during an actual incident.

Tips for Gaining Community Consensus

- ✓ **Include key community groups on the planning team.** Every jurisdiction has a core group that is interested in public safety. Identifying who is involved and inviting one or more members of the group to participate on the planning team will help to get buy-in from a broader group of citizens.
 - ✓ **Plan during public meetings whenever possible.** There will undoubtedly be meetings that involve information that should not be released to the public, and these meetings should be private. Wherever possible, though, public meetings (or public hearings at key points in the planning process) should be held. Public meetings can help gain the buy-in of the larger community by attaching value to public opinions. Holding public meetings or hearings also lets the public know that the jurisdiction is taking HazMat planning seriously and helps the public understand what is involved in the planning process.
 - ✓ **Invite the public and the media to participate in exercises.** Inviting the public to participate in exercises makes citizens more aware of what is involved in a HazMat response. Inviting the media helps them understand their role in HazMat responses—and sends the message to a broader audience that the jurisdiction takes HazMat responses seriously.
 - ✓ **Make HazMat part of overall public preparedness.** Build public preparedness into the planning process. Make the public aware of what they should do during a HazMat incident.
-

Developing a Planning Strategy

The best way to ensure a successful planning process is to develop a planning strategy up front. Experts recommend following a process similar to that used for strategic planning.

What Is Strategic Planning?

Strategic planning:

- Is a future-oriented process of diagnosis, objective setting, and strategy building that is essential to quality management.
- Relies on careful consideration of an organization's capacities and environment and leads to significant resource allocation decisions.

As with strategic planning, HazMat planning is focused on results. The following screens will provide a brief overview of key steps in strategic planning.

Step 1: Determine Needs and Expectations

The first step in strategic planning is to develop a list of needs and expectations. This list should answer the questions below:

- What is the motivation to develop this plan at this time? For example, has the jurisdiction received new or additional resources?
 - What do you want to achieve?
 - How will you know when you have achieved it?
 - What are the fiscal, political, or other parameters surrounding this planning effort?
-

Step 2: Conduct Internal and External Assessments

Conducting internal and external assessments of your organization helps to identify performance problems and potential.

Internal assessment will help to identify clear lines of authority and will help to answer the following questions:

- Who's in charge of what? When?
- What are management's goals and objectives?
- Is there full support for planning from top management?
- What are the organizational strengths and weaknesses?

External assessment involves collecting and analyzing important information about threats and trends that could limit or enhance the jurisdiction's ability to implement its plan. Recommended areas for external assessment include the:

- Public's support for preparedness.
 - Demographic makeup of the jurisdiction.
 - Social considerations in the jurisdiction that could affect HazMat planning.
 - Cooperation and support that can be expected from business and industry, surrounding jurisdictions, etc.
-

Step 3: Define the Mission

“Mission” is a short, comprehensive statement of purpose. It involves the formulation of a “driving premise” for the jurisdiction and describes:

- What must be accomplished.
- How it will be accomplished.
- For whom.

The goal of developing a mission statement is to help maintain focus by preventing isolated issues from getting in the way of the planning team’s performance.

Step 4: Develop Goals and Objectives

You will derive your planning goals and objectives from your mission statement.

- **Goals** indicate the general changes that need to be made and what the plan will look like in the long term. Goals provide a framework for more detailed levels of planning.
 - **Objectives** describe specifically **what** will be done and **how you will know** when it has been done properly. Objectives are measurable and provide a basis for evaluating your efforts.
-

Step 5: Develop a Planning Schedule

The last step in the “planning to plan” process is to develop a planning schedule. Developing a schedule will help the planning team stay on task by providing definite milestones to strive for.

One common technique for developing a schedule is to:

1. Develop a list of the tasks that need to be done to develop a draft plan that is ready for training.
 2. Then, select an “end date” as a goal and work backwards, filling in each of the tasks and completion dates.
 3. Finally, do a “reality” check on the schedule to ensure that it is realistic.
-

Lesson Summary

One key factor to successful planning is identifying and involving key internal and external stakeholders in the process. Gaining the involvement of your jurisdiction’s leadership is an important step to gaining support from other stakeholders.

HazMat planning is similar to strategic planning and involves:

1. Determining needs and expectations.
 2. Conducting internal and external assessments.
 3. Defining the mission.
 4. Developing goals and objectives.
 5. Developing a planning schedule.
-

Lesson 4: Identifying Hazards

Lesson Overview

After completing the preplanning activities, it is time to begin the process of assessing your jurisdiction's risk from HazMat incidents. The first step in this process, identifying hazards, will be covered in this lesson.

At the end of this lesson, you should be able to identify the HazMat hazards that are most likely to affect your jurisdiction.

Identifying Hazards

Your jurisdiction will not be able to plan for every conceivable incident. It is possible to narrow the range of incidents that require planning by identifying the hazards—chemicals—that are produced, stored, used, or transported in your jurisdiction.

Identifying all of the chemicals that pose a threat to your jurisdiction may be difficult because there are so many manufactured under so many names.

There are resources available to help, however. Using the sources available will make identifying the hazards more manageable.

Sources of Hazards Information

There are several key sources of information about chemical hazards in your jurisdiction. These sources include:

- The existing hazard analysis.
- The Local Emergency Planning Committee (LEPC).
- Producers and users of chemicals.
- Information produced by chemical manufacturers, such as Material Safety Data Sheets (MSDSs).
- Information required by Federal agencies.
- Commodity flow studies.

Each of these sources are described in this lesson.

Source of Information: Existing Hazard Analysis

Your jurisdiction should have completed a hazard analysis as part of its earlier planning efforts. The hazard analysis should include hazards posed by chemicals in addition to natural and technological hazards.

Think about what has changed in your jurisdiction since the hazard analysis was completed. Has a new facility opened? Has an obsolete facility shut down? Do new processes require different types and quantities of chemicals?

The answers to each of these questions will help you determine what chemicals may pose a risk.

Source of Information: Existing Hazard Analysis

After identifying the hazards that your jurisdiction faces, the planning team will need to analyze each to determine the degree of risk posed. Conducting a hazard analysis can help you to determine:

- What can occur.
- How bad the incident is likely to get.
- How the incident could affect your jurisdiction.
- How susceptible your jurisdiction is to the hazard.
- How vulnerable your jurisdiction is to the hazard.
- What security measures have been taken to safeguard the materials.

Susceptible means: How likely is it that a given hazardous incident would occur in your jurisdiction?

Vulnerable means: What are the likely consequences **if that incident occurs**?

What Is a Hazard Analysis?

A hazard analysis is a decisionmaking process that provides a basis for site-specific comparison of hazards in a jurisdiction. Hazards can be ranked according to the overall risks each poses.

Because most jurisdictions will not be able to plan for every situation, a hazard analysis will help you set priorities for the types of incidents that **should** be planned for. Completing a hazard analysis will allow you to address higher-priority hazards first, then gradually address lower-priority hazards.

Sources of Information: LEPCs

LEPCs can provide a broad range of technical assistance with regard to the:

- Chemicals in or near your jurisdiction.
 - Characteristics of those chemicals and the risks that they pose.
 - Special response requirements.
 - Decontamination and treatment procedures for people, property, and the environment.
-

Sources of Information: Producers and Users of Chemicals

Ask the facility representatives on your planning team to provide complete information about:

- The **chemicals that they use**, including the chemical name and Chemical Abstracts Service (CAS) number for substances not claimed as trade secrets.
- **Quantities** of extremely hazardous substances normally present at the facility, including the total quantity at the site and the maximum quantity at specific locations at the site.
- The **conditions under which the chemicals are processed**, handled, or stored, including temperature, pressure, and other unique features.

Under OSHA regulations found at 29 CFR 1910.120(c)(8), businesses and industries that produce, use, store, or transport hazardous chemicals must make information about those chemicals available to their workers. A common way to do that is by providing Material Safety Data Sheets—or MSDSs.

Contact businesses and industries to get copies of their MSDSs and other information that they have about the chemicals they have onsite.

Sources of Information: MSDSs

MSDSs are a compilation of information required by OSHA to:

- Identify chemicals.
- Describe the hazards they pose.
- Describe precautions for safe handling.
- Provide response measures for spills or releases.

Chemical manufacturers are responsible for producing MSDSs. Many chemicals are produced by multiple manufacturers, so MSDSs do not all look alike. Even the section titles may be slightly different. All MSDSs **will** include the information **required by OSHA**.

The information contained in all MSDSs includes:

- The chemical name—the generic name, not a trade name.
- Components that are combined to make the chemical.
- Chemical characteristics. For example, is the chemical heavier or lighter than water?
- Fire and explosion hazards posed by the chemical.
- Reactivity data. That is, whether the chemical reacts when exposed to oxygen, water, etc.
- Health hazards, including exposure limits.
- Precautions for safe handling.
- Measures necessary for control and cleanup.

Manufacturers may include other information as well.

MSDS Information

Section 1: Chemical Name	<ul style="list-style-type: none"> ▪ What the chemical is called on the label. ▪ Name and address of the manufacturer. ▪ Emergency contact information.
Section 2: Component Chemicals	<ul style="list-style-type: none"> ▪ The component chemicals and percentages of hazardous ingredients (unless it is a trade secret). ▪ Worker exposure limits (i.e., Permissible Exposure Limit and Threshold Limit Value) or other safe exposure limits for an 8-hour work day.
Section 3: Chemical Characteristics	<ul style="list-style-type: none"> ▪ The chemical's physical characteristics in its natural state. ▪ The chemical's characteristics, including freezing point, boiling point, and melting point; vapor pressure, vapor density, and evaporation rate; solubility and specific gravity; normal appearance; and odor.
Section 4: Fire and Explosion Risk	<ul style="list-style-type: none"> ▪ Fire and explosion risk, including flash point (the minimum temperature at which the vapors from a liquid might be able to ignite) and flammability limits (the concentration of the chemical required for it to ignite). ▪ The type of fire extinguisher to use to put out a fire involving the chemical. ▪ Special hazards or firefighting procedures to follow.
Section 5: Reactivity Information	<ul style="list-style-type: none"> ▪ Reactivity information—what could happen if the chemical was mixed with other chemicals, with water, or with air.
Section 6: Health Hazards	<ul style="list-style-type: none"> ▪ Health hazards. ▪ Exposure routes. ▪ Signs and symptoms of exposure. ▪ Emergency first aid procedures.
Section 7: Handling and Storage Information	<ul style="list-style-type: none"> ▪ What to do if there is a spill, leak, or release. ▪ Handling and use precautions. ▪ Disposal instructions.
Section 8: Control and Cleanup Measures	<ul style="list-style-type: none"> ▪ Personal protective equipment required. ▪ Work and hygiene practices. ▪ Ventilation required to reduce potential for exposure.

Sources of Information: Tier I and Tier II Reports

Tier I and Tier II reports are required of facility owners and operators by SARA Title III. Tier I reports provide a general list of the quantities of listed chemicals onsite for the current reporting period.

Tier II reports provide information from the owner/operator about each chemical that is required to have an MSDS. Tier II reports list:

- Each chemical's description.
- Physical and health hazards.
- Inventory (in ranges).
- Storage locations and conditions.

Sources of Information: Commodity Flow Studies

Fixed facilities receive hazardous materials by highway, ship, and rail. It is important to look at the transportation routes, number of shipments, and quantities of chemicals carried in or near your jurisdiction.

The LEPC should have a commodity flow study for your area. Verify the date that the study was completed. Work with the LEPC to update it, if necessary.

Other Sources of Information

There are several other sources of information that you can access to identify hazards. These sources include:

- Historical data.
- National associations.
- The Federal Government.

Check each source of information until you have a complete list of the chemicals that could pose a risk to your jurisdiction.

Other Sources of Information: Historical Data

You may be able to gather information about hazards in, or passing through, your jurisdiction from historical data. Sources of historical data include:

- Newspapers and media outlets.
- Historical societies.
- Long-time residents.

While these data will be anecdotal, they are useful as a guide to the types of incidents that have occurred in the past, their locations, and their severity.

Other Sources of Information: National Associations

Chemical manufacturers' and distributors' associations and transportation associations may be another good source of information. These associations may be able to provide information about specific chemicals and their risks.

Other Sources of Information: The Federal Government

The Federal Government may also be able to provide information. For example, if your jurisdiction has a military installation nearby, the military should be able to provide information about the HazMat transported to or located at that installation. Government websites may be yet another source. The EPA's website includes the locations and contents of hazardous waste sites and their contents nationwide.

Be sure to check all potential sources of information until you are convinced that you have the HazMat information that you need.

Lesson Summary

Identifying hazards will help you to limit the types of incidents for which you must plan.

There are several key sources of hazard information that are readily available: Key sources include:

- The LEPC.
- Producers and users of chemicals.
- Information produced by chemical manufacturers, such as Material Safety Data Sheets (MSDSs).
- Information required by Federal agencies.
- Commodity flow studies.

There may be other sources of information as well.

Lesson 5: Analyzing Vulnerabilities

Lesson Overview

After identifying the chemicals that could pose a threat to your jurisdiction, you will need to analyze your jurisdiction's vulnerability to the hazards. In other words, how vulnerable is your jurisdiction to an incident involving one of these chemicals?

At the end of this lesson, you should be able to identify the areas of your jurisdiction that are most vulnerable to a HazMat incident.

Conducting a Vulnerability Analysis

An important question to ask is: How vulnerable is your jurisdiction to the hazards identified? Conducting a vulnerability analysis will help you to identify:

- The areas that would be most affected by a chemical spill or release.
- At-risk populations within the zone.
- At-risk critical facilities in the area.

Examine a map of your jurisdiction when analyzing vulnerability. Relying on your memory is a sure way to miss something critical. Referring to a map will help you to identify your real risks in terms of people, property, and the environment.

Steps in the Vulnerability Analysis Process

Vulnerability analysis involves four steps:

1. Develop a Hazard Profile.
2. Check Assumptions.
3. Develop a Jurisdiction Profile.
4. Identify vulnerable areas.

At the end of this process, you should know the areas of your jurisdiction that are most vulnerable should a HazMat spill or release occur.

Each of these steps will be described in this lesson.

Step 1: Develop a Hazard Profile

Begin the vulnerability analysis by developing a hazard profile for each type of incident. The hazard profile should include the information below for each:

- **Frequency.** How often has an incident involving this hazard occurred in the past?
 - **Magnitude and potential intensity.** How bad could it get? Is an incident involving this chemical more dangerous or complex depending on the season?
 - **Location.** Are some areas more likely to have an incident?
 - **Probable spatial extent.** Will the incident spread? How and how far?
 - **Speed of onset.** How fast would an incident threaten lives and property?
 - **Availability of warning.** Is there a way to warn against this type of incident?
-

Step 2: Check Assumptions

Vulnerability analyses are based on assumptions about what could happen. When checking assumptions, consider factors such as the:

- **Nature of the hazard posed by the chemical.** For example, will a spill involving chemical X produce a toxic plume?
- **Quantity involved.** For example, is a spill likely to involve 8 gallons or 8,000?
- **Surrounding topography.** For example, is a spill likely to contaminate a nearby river?

Changing the assumptions can significantly alter the area that could be affected.

Assumptions Affect Vulnerability

Altering assumptions, such as the amount of chemical released, the timeframe, weather conditions, or other factors may affect the size of the areas affected by a release. For example:

- If the quantity of a chemical stored onsite is reduced, the total quantity that could be released is also reduced. This results in a smaller vulnerable area.
- If the time period assumed for the release of a specific amount of chemical increases, the vulnerable area will become smaller as a result of the reduced amount of chemical released per minute.

Be sure to check your assumptions when defining vulnerable areas.

Step 3: Develop a Jurisdiction Profile

The next step in identifying vulnerabilities is to develop a jurisdiction profile. A jurisdiction profile facilitates threat determination for the entire jurisdiction or for a specific area.

A [jurisdiction profile](#) is a map that identifies:

- The locations of known hazards.
 - Major structures and geographic features.
 - Areas and features requiring an immediate response (e.g., population concentrations, critical facilities, water supplies).
 - Manmade and natural boundaries for dividing the jurisdiction into sectors.
 - Time of day, day of week, and seasonal shifts for school, work, and/or tourists who are potentially at risk.
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Step 4: Identify Vulnerable Areas

The final step is to identify vulnerable areas. To identify vulnerable areas, you will need information about:

- How toxic the substance is (also called the “level of concern”).
- How much could be released.
- The rate of release.

Mark the vulnerable area(s) on the jurisdiction profile by marking the area with a circle. Be sure to account for conditions, such as the prevailing wind pattern and typical temperatures, when determining vulnerable areas. Then, look at the areas marked to identify critical facilities, topographic features, and other factors that pose special risks should an incident occur in those areas.

Lesson Summary

Analyzing vulnerability will provide information about:

- The areas that would be most affected by a chemical spill or release.
- At-risk populations within the vulnerable area.
- At-risk critical facilities within the vulnerable area.

Vulnerability analysis involves four steps:

1. Developing a hazard profile.
 2. Checking assumptions.
 3. Developing a jurisdiction profile.
 4. Identifying vulnerable areas.
-

Lesson 6: Establishing Response Priorities

Lesson Overview

After identifying the chemicals that could pose a threat to your jurisdiction and analyzing your jurisdiction's vulnerability, you will need to analyze the overall risk and determine which areas require the most immediate response should an incident occur.

At the end of this lesson, you should be able to establish response priorities for your jurisdiction's highest-risk, highest-impact incidents.

Analyzing Risk

The method used to establish response priorities is called **risk analysis**. Risk analysis provides a basis to judge the relative probability or likelihood of a release and the severity of the consequences to humans.

Risk can be quantified in words—catastrophic, critical, limited, or negligible—or by assigning numbers such as 1 representing the highest risk and 4 representing little or no risk.

Risk is determined after evaluating all of the information generated by the vulnerability analysis.

Steps in Risk Analysis

Risk analysis involves four steps:

1. Develop a Risk Index.
2. Develop Response Priorities.
3. Create and Apply Scenarios.
4. Rank the Incidents.

Each of these steps will be described in this lesson, and when you finish, you will have a list of the areas that are most critical for response.

Step 1: Develop a Risk Index

Developing a risk index involves assessing risk-related factors in and around the jurisdiction to develop a composite picture of the overall risk. A risk index may be descriptive or numeric and should be developed based on a combination of:

- Frequency.
- Magnitude.
- Potential severity.

A worksheet or database can help you organize these data.

Assigning Risk Ratings

Using all data collected, assign a risk rating for each factor for each incident. Ratings should quantify the factor, to the degree possible.

Risk ratings generally follow the model shown below.

1. Catastrophic
 2. Critical
 3. Limited
 4. Negligible
-

Step 2: Develop Response Priorities

Based on the severity ratings assigned, develop response priorities. Response priorities generally follow the hierarchy shown below.

- **Priority 1:** Critical facilities, such as fire halls, precinct houses, and hospitals
 - **Priority 2:** Life safety, including hazard areas, high-risk populations, and potential search and rescue operations
 - **Priority 3:** Critical infrastructure, such as utilities, communication, and transportation systems
-

Step 3: Create and Apply Scenarios

After developing initial response priorities, it is useful to develop assumptions and apply realistic but worst-case scenarios to each. Applying scenarios will help you verify your perception of the risk. HazMat scenarios can be developed based on:

- Release of the maximum quantity of the largest vessel.
- Total quantity released within a short timeframe.
- Strong winds or other severe weather conditions.
- Terrain features.
- Location, time or day, and other factors.

After analyzing each scenario, revise response priorities, if needed.

Step 4: Ranking the Incidents

Finally, assign a ranking to each incident. The ranking should quantify, to the degree possible, the damage that can be expected if an incident involving that hazard occurs. The final ranking will establish the jurisdiction's planning priorities.

Lesson Summary

Establishing response priorities is based on overall risk and involves four steps:

1. Developing a Risk Index.
2. Developing Response Priorities.
3. Creating and Applying Scenarios.
4. Ranking the Incidents.

Based on the response priorities, you should be able to focus your HazMat planning on the incidents that present this highest overall risk to your jurisdiction.

Lesson 7: Assessing Resources

Lesson Overview

A critical part of your planning process is identifying what resources and capabilities within the jurisdiction are available to respond to a HazMat incident. With this knowledge, you can develop a HazMat Appendix to the Emergency Operations Plan (EOP) with an understanding of what resources you have and where your resource gaps are.

This lesson will cover the purpose and benefits of assessing resources for a HazMat response. At the end of this lesson, you should be able to conduct an assessment of your jurisdiction's HazMat resources.

Why Assess Resources

There are two main reasons for assessing HazMat response resources.

1. To determine exactly what types of resources are available for different types of incidents, where they are, and how long it will take them to respond.
2. To determine where your resource shortfalls are.

Knowing what resources your jurisdiction has, and what it doesn't, will help you in deployment planning as well as planning to fill the gap—what you can do until help arrives.

Benefits of Resource Assessment

There are many benefits to assessing resources, including:

- Creating a shared vision of emergency management among all key players.
 - Moving toward an emergency management-responder partnership by creating common standards.
 - Providing opportunities to integrate jurisdiction plans with facility plans.
 - Refining the jurisdiction's EOP for strategic planning purposes, thus reducing deficiencies and achieving required response capabilities.
 - Supporting a strategy of total emergency management.
 - Assisting in developing strategies to address deficiencies.
 - Improving communications among local and State agencies and the private sector.
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When to Conduct a Resource Assessment

You can conduct a resource assessment at any time to focus on the needs of the moment.

- **A Preplan assessment** should be conducted to establish baseline capabilities before planning begins.
 - **A Postplan assessment** should be conducted to focus on shortfall functions identified in the plan.
 - **An “As-directed” assessment** should be conducted to establish specific capabilities. For example, if your jurisdiction does not have a HazMat team, an “as-directed” assessment can identify specific requirements—what you have and what you need.
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Resource Questions Answered Through Assessment

The resource assessment should answer three basic questions:

1. Does the jurisdiction's HazMat Appendix and response capability meet the threats posed?
 2. Are the goals, objectives, and mission of the appendix being achieved?
 3. Is the community able to redirect resources to avoid a wide-scale impact from an incident?
-

Types of Resource Assessments

When conducting a resource assessment, you should consider all types of resources—people, equipment, tools, and facilities. For example:

- **Personnel:** Assess personnel resources by identifying and rating the numbers of personnel, their organization and location, and their training levels.
 - **Equipment:** Assess equipment and tools by determining whether personnel have the equipment that they need, in the correct numbers, and that it is in good working order.
 - **Facilities:** Assess facilities by determining whether your jurisdiction has the appropriate facilities in locations that will enable personnel to respond within a given timeframe to the highest-rated threats.
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Conducting a Resource Assessment

Conducting a resource assessment involves two key steps:

1. Determine what resources to assess.
2. Analyze and rate the resource.

These steps will be described in the lesson.

Step 1: Determine What Resources To Assess

Determining the resources to assess allows you to approach the assessment systematically. It also allows you to establish a baseline for creating goals to measure resource improvement.

Because you are dealing with HazMat incidents, focus your assessment on the resources used in those incidents. Remember that resources other than HazMat teams will also respond. Be sure to include all resources that could be called on in a HazMat response.

Resource lists should be included in your jurisdiction's basic plan. Use that as your starting point. Then, cull out HazMat resources from the overall list.

Step 2: Analyze and Rate the Resource

After isolating your jurisdiction's HazMat resources, analyze each resource in terms of its response capability. Most jurisdictions use a scaled scoring system (similar to that used in the risk assessment) to ensure that each rating is consistent. An example of a scaled system is provided.

Resource Rating Scale

A typical resource rating scale is shown below. Resource ratings should be assigned based on **how the resource will be used** in a HazMat response.

1. Not capable.
 2. Marginally capable. Substantial effort is required to reach full capability.
 3. Generally capable. A baseline capability is developed, but a significant effort is required for full capability.
 4. Very capable. A high level of capability has been attained, and only a limited effort is required for full capability.
 5. Fully capable. Only maintenance is required.
- N/A. Not applicable to the situation and/or response structure.

Critical resources rated 1, 2, or 3 need special emphasis during planning, training, and exercises.

Lesson Summary

Analyzing resources will help you to determine what you have—and what you need—to respond to a HazMat incident. Resource assessments that are tied to HazMat assignment will ensure that all resources can be assessed and made mission-ready.

Resource assessment involves two steps:

1. Determine what resources to assess.
2. Analyze and rate the resource.

When you complete your analysis and rating, you should know your priorities for training and exercising.

Lesson 8: Developing the HazMat Appendix

Lesson Overview

Now that all of the preparatory work is complete, your jurisdiction can develop its HazMat Appendix. If your planning team has completed all of the steps to this point carefully and accurately, developing the appendix should be relatively easy.

This lesson will describe the steps required to develop a HazMat Appendix. At the end of this lesson, you should be able to:

- Develop a draft HazMat Appendix to your jurisdiction's EOP.
- Develop an implementation plan for training and exercising the Appendix.

Developing the Appendix

Developing a HazMat Appendix involves four steps:

1. Review the Existing EOP.
2. Identify HazMat-Unique Response Elements.
3. Draft the Appendix and Implementing Documents.
4. Train Personnel and Test the Appendix.

Each of these steps will be described in this lesson.

Step 1: Review the Existing EOP

Begin by reviewing your jurisdiction's EOP. The basic plan lays the foundation for functional annexes and hazard-specific appendixes. It establishes the concept of operations during all types of incidents.

Review the basic plan carefully. It will form the basis for the HazMat Appendix.

FEMA recommends a format and contents for EOPs, but some States have **different** requirements, and some jurisdictions have added or deleted certain information based on jurisdiction-specific requirements or needs.

To make developing your jurisdiction's HazMat Appendix easier and to integrate it better with the entire EOP, follow the format and content requirements established by the basic plan.

Step 2: Identify HazMat-Unique Response Elements

Typical response procedures often do not work for HazMat responses. The purpose of a hazard-specific appendix is to develop response procedures that are unique for the hazard while not repeating general response procedures. To identify HazMat-unique response elements, review each of the EOP's functional annexes. As you review each annex, ask yourself: How would a HazMat incident differ in relation to:

- The jurisdiction's general situation?
- Direction and control?
- Responder communications requirements?
- Public warnings?
- Public information?
- Health and medical requirements?
- Mass care?
- Resource management requirements?

Specify unique response procedures in the HazMat Appendix.

Step 3: Draft the Appendix and Implementing Documents

The next step is to draft the HazMat Appendix. When developing the draft HazMat Appendix, check it against the basic plan to ensure that it is:

- Consistent.
- Compatible.
- Realistic.

Even though the HazMat Appendix is developed by stakeholders, distribute it for review. The Appendix will serve as the basis for implementing documents at the agency level, so it must be accurate and acceptable to everyone who will be involved in an incident.

Implementing Documents

Agency personnel will develop implementing documents for HazMat incidents.

Implementing documents **must** be developed at the agency level because only agency personnel are thoroughly familiar with their mission and capabilities. Let the experts develop standard operating procedures, checklists, worksheets, and other documents needed for their part of the response.

Step 4: Train Personnel and Test the Appendix

The process of implementing the HazMat Appendix is a cyclical process that requires:

- Training personnel on the HazMat-unique tasks.
- Exercising the Appendix and rating performance.
- Revising the Appendix based on the exercise results.
- Conducting regular drills and exercises.
- Revising the Appendix based on lessons learned and changing situations (e.g., a new industrial complex opens or an obsolete facility closes).
- Retraining and more exercises.
- And so forth!

Training vs. Exercising

Exercises **test the Appendix**—not personnel. Following each exercise, the lessons learned should be incorporated back into a revision of the Appendix.

Before the Appendix can be tested, some personnel must be trained so that they know what their responsibilities are and have the skills and knowledge necessary to carry out their responsibilities.

Two common types of training are described in this lesson.

Orientations

Orientations are usually the first type of training conducted. They are typically presented as briefings. Orientations are a good way to:

- Introduce the general concepts of the HazMat Appendix.
- Announce staff assignments, roles, and responsibilities.
- Present general procedures.
- Describe how the Appendix will be tested and within what timeframes.

Hands-On Training

After familiarizing personnel with basic policies and procedures, hands-on training can:

- Provide practice in specialized skills (e.g., using the Emergency Response Guide to determine the isolation distance required).
- Allow for practice of newly acquired skills.
- Help maintain proficiency at infrequently used skills.

The Goal of Exercises

When personnel are trained, the Appendix can be tested through exercises. The goal of exercising your HazMat Appendix is to prepare for a real incident—to save lives and limit property damage.

The broad goals of exercises are to:

- Discover planning weaknesses.
- Reveal resource gaps.
- Improve coordination.
- Practice using the communication network.
- Clarify roles and responsibilities.
- Improve individual performance.
- Improve readiness for a real incident.

Types of Exercises

After personnel are trained, you will be able to test the Appendix through exercises. There are several types of exercises that are commonly used to test HazMat Appendixes:

- Tabletop exercises
- Functional exercises
- Full-scale exercises

Each of these will be described in this lesson.

Tabletop Exercises

A tabletop exercise is a simulation activity in which a scenario is presented and participants in the exercise respond as if the scenario was really happening.

The scenario for a tabletop exercise can be presented orally by the exercise controller, in written text, or by audio or video means.

In a tabletop exercise, new information is presented as the situation unfolds, making the participants reconsider their previous decisions and plan their next actions based on the new information.

Typically, a tabletop exercise takes about 2 hours, including the postexercise debriefing.

When to Use Tabletop Exercises

Tabletop exercises are particularly useful to:

- Enable decisionmakers to walk through an incident and make decisions similar to those in an actual incident.
- Provide a forum for discussion of plans, policies, and procedures in a low-stress, low-risk environment.
- Resolve questions of coordination and responsibility.

It is particularly helpful to conduct tabletop exercises on new or newly revised Appendixes before more wide-scale, higher-risk exercises are conducted.

Advanced Exercises

Other types of exercises are more advanced and include:

- **Functional Exercises.** Functional exercises simulate a function (e.g., decontamination, fire suppression) within a real incident. Functional exercises test a single part of a HazMat response to be tested independently of other responders.
- **Full-Scale Exercises.** Full-scale exercises test the jurisdiction's total response capability for HazMat incidents. These exercises are as close to reality as possible, with roleplayers and field equipment being deployed.

A solid, progressive exercise program takes time and careful planning—up to 18 months or more in the case of a full-scale exercise. Be sure to devote the time necessary to developing appropriate exercises to test your Appendix.

What if Data Show Poor Performance?

Let the measurements speak for themselves. Show personnel how they are doing. Ask for, and offer explanations and work as a team to identify the “why” behind the poor performance.

Plan to address the “why” in future training, exercises, and/or other interventions.

Lesson Summary

Developing the HazMat Appendix involves four steps:

1. Review the Existing EOP.
2. Identify HazMat-Unique Response Elements.
3. Draft the Appendix and Implementing Documents.
4. Train Personnel and Test the Appendix.

Training, exercising, and revising the Appendix are cyclical. Personnel must be trained to have the skills and knowledge they need to respond. Exercises will tell you whether or not your HazMat Appendix works. Lessons learned from exercises will tell you what needs to be updated or revised in the Appendix.
