3. Tasks of the Planning Team

3.1 Introduction

The major tasks of the planning team in completing hazardous materials planning are:

- **Review of existing plans**, which prevents plan overlap and inconsistency, provides useful information and ideas, and facilitates the coordination of the plan with other plans;
- **Hazards analysis**, that includes hazards identification, vulnerability analysis, and risk analysis;
- **Assessment of preparedness, prevention, and response capabilities**, that identifies existing prevention measures and response capabilities (including mutual aid agreements), and assesses their adequacy;
- **Completion of hazardous materials planning** that describes the personnel, equipment, and procedures to be used in case of accidental release of a hazardous material; and
- **Development of an ongoing program** for plan implementation/maintenance, training, and exercising.

This chapter discusses the planning tasks that are conducted prior to the preparation of the emergency plan. Chapters 4 and 5 provide guidance on plan format and content. Chapter 6 discusses the team's responsibilities for conducting internal and external reviews, exercises, incident reviews, and training. This chapter begins with a discussion of the organizational responsibilities of the planning team.

3.2 Review of Existing Plans

Before undertaking any other work, steps should be taken to search out and review all existing emergency plans. The main reasons for reviewing these plans are (1) to minimize work efforts by building upon or modifying existing emergency planning and response information and (2) to ensure proper coordination with other related plans. To the extent possible, currently used plans should be amended to account for the special problems posed by hazardous materials, thereby avoiding redundant emergency plans. Even plans that are no longer used may provide a useful starting point. More general plans can also be a source of information and ideas. In seeking to identify existing plans, it will be helpful to consult organizations such as:

- State and local emergency management agencies;
- Fire departments;
- Police departments;

- ☐ State and local environmental agencies;
- ☐ State and local transportation agencies;
- ☐ State and local public health agencies;
- ☐ Public service agencies;
- ☐ Volunteer groups, such as the Red Cross;
- ☐ Local industry and industrial associations; and
- ☐ Regional offices of Federal agencies such as EPA and FEMA.

When reviewing the existing plans of local industry and industrial associations, the planning team should obtain a copy of the CAER program handbook produced by CMA. (See Section 1.5.4.) The handbook provides useful information and encourages industry-community cooperation in emergency planning.

In addition to the above organizations, planning teams should coordinate with the RRTs and OSCs described in Section 1.4.1. Communities can contact or obtain information on the RRT and OSC covering their area through the EPA Regional office or USCG district office. (See Appendix F for a list of these contacts.)

3.3 Hazards Analysis: Hazards Identification, Vulnerability Analysis, Risk Analysis

A hazards analysis is a critical component of planning for hazardous materials releases. The information developed in a hazards analysis provides both the factual basis to set priorities for planning and also the necessary documentation for supporting hazardous materials planning and response efforts.

There are several concepts involved in analyzing the dangers posed by hazardous materials. Three terms -- hazard, vulnerability, risk -- have different technical meanings but are sometimes used interchangeably. This guidance adopts the following definitions:

- ☐ **Hazard.** Any situation that *has the potential* for causing injury to life, or damage to property and the environment.
- ☐ **Vulnerability.** The *susceptibility* of life, property, and the environment to injury or damage if a hazard manifests its potential.
- ☐ **Risk.** The *probability* that injury to life, or damage to property and the environment will occur.

A hazards analysis may include vulnerability analysis and risk analysis, or it may simply identify the nature and location of hazards in the community. Developing a complete hazards analysis that examines all hazards, vulnerabilities, and risks may be neither possible nor desirable. This may be particularly true for smaller communities that have less expertise and fewer resources to contribute to the task. The planning team must determine the level of thoroughness that is appropriate. In any case, planners should ask local facilities whether they have already completed a facility hazards analysis. Title III requires facility owners or operators to provide to local emergency planning committees information needed for the planning process.

As important as knowing how to perform a hazards analysis is deciding how detailed an analysis to conduct. While a complete analysis of all hazards would be informative, it may not be feasible or practical given resource and time constraints. The value of a limited hazards analysis should not be underestimated. Often the examination of only major hazards is necessary, and these may be studied without undertaking an elaborate risk analysis. Thus, deciding what is really needed and what can be afforded is an important early step in the hazards analysis process. In fact, the screening of hazards and setting analysis priorities is an essential task of the planning team.

The costs of hazards analysis can and often should be reduced by focusing on the hazards posed by only the most common and/or most hazardous substances. A small number of types of hazardous materials account for the vast majority of incidents and risk. The experience from DOT's *Lessons Learned* is that the most prevalent dangers from hazardous materials are posed by common substances, such as gasoline, other flammable materials, and a few additional chemicals. The CEPP technical guidance presents a method that may be used to assist in ranking hazards posed by less prevalent but extremely hazardous substances, such as liquid chlorine, anhydrous ammonia, and hydrochloric and sulfuric acids.

A hazards analysis can be greatly simplified by using qualitative methods (i.e., analysis that is based on judgment rather than measurement of quantities involved). Smaller communities may find that their fire and police chiefs can provide highly accurate assessments of the community's hazardous materials problems. Other, larger communities may have the expertise and resources to utilize quantitative techniques but may decide to substitute qualitative methods in their place should it be cost effective to do so.

Simple or sophisticated, the hazards analysis serves to characterize the nature of the problem posed by hazardous materials. The information that is developed in the hazards analysis should then be used by the planning team to orient planning appropriate to the community's situation. **Do not commit valuable resources to plan development until a hazards analysis is performed.**

3.3.1 Developing the Hazards Analysis

The procedures that are presented in this section are intended to provide a simplified approach to hazards analysis for both facility and transportation hazards. Communities undertaking a hazards analysis should refer to CEPP technical guidance for fixed facilities and to *Lessons Learned* and *Community Teamwork* for transportation.

The components of a hazards analysis include the concepts of hazard, vulnerability, and risk. The discussion that follows summarizes the basic procedures for conducting each component.

▶ *A. Hazards Identification*

The hazards identification provides information on the facility and transportation situations that have the potential for causing injury to life, or damage to property and the environment due to a hazardous materials spill or release. The hazards identification should indicate:

- ☐ The types and quantities of hazardous materials located in or transported through a community;

- ☐ The location of hazardous materials facilities and routes; and
- ☐ The nature of the hazard (e.g., fire, explosions) most likely to accompany hazardous materials spills or releases.

To develop this information, consider hazardous materials at fixed sites and those that are transported by highway, rail, water, air, and pipeline. Examine hazardous materials at:

- ☐ Chemical plants;
- ☐ Refineries;
- ☐ Industrial facilities;
- ☐ Petroleum and natural gas tank farms;
- ☐ Storage facilities/warehouses;
- ☐ Trucking terminals;
- ☐ Railroad yards;
- ☐ Hospital, educational, and governmental facilities;
- ☐ Waste disposal and treatment facilities;
- ☐ Waterfront facilities, particularly commercial marine terminals;
- ☐ Vessels in port;
- ☐ Airports;
- ☐ Nuclear facilities, and
- ☐ Major transportation corridors and transfer points.

For individual facilities, consider hazardous materials:

- ☐ Production;
- ☐ Storage;
- ☐ Processing;
- ☐ Transportation; and
- ☐ Disposal.

Some situations will be obvious. To identify the less obvious ones, interview fire and police chiefs, industry leaders, and reporters; review news releases and fire and police department records of past incidents. Also, consult lists of hazardous chemicals that have been identified as a result of compliance with right-to-know laws. (Title III of SARA requires facility owners and operators to submit to the local emergency planning committee a material safety data sheet for specified chemicals, and emergency and hazardous chemical inventory forms. Section 303 (d) (3) of Title III states that "upon request from the emergency planning committee, the owner or operator of the facility shall promptly provide information... necessary for developing and implementing the emergency plan.") Use the CEPP technical guidance for help in evaluating the hazards associated with airborne releases of extremely hazardous substances.

The hazards identification should result in compilation of those situations that pose the most serious threat of damage to the community. Location maps and charts are an excellent means of depicting this information.

▶ *B. Vulnerability Analysis*

The vulnerability analysis identifies what in the community is susceptible to damage should a hazardous materials release occur. The vulnerability analysis should provide information on:

- ☐ The extent of the vulnerable zone (i.e., the significantly affected area) for a spill or release and the conditions that influence the zone of impact (e.g., size of release, wind direction);
- ☐ The population, in terms of size and types (e.g., residents, employees, sensitive populations -- hospitals, schools, nursing homes, day care centers), that could be expected to be within the vulnerable zone;
- ☐ The private and public property (e.g., homes, businesses, offices) that may be damaged, including essential support systems (e.g., water, food, power, medical) and transportation corridors; and
- ☐ The environment that may be affected, and the impact on sensitive natural areas and endangered species.

Refer to the CEPP technical guidance or DOT's *Emergency Response Guidebook* to obtain information on the vulnerable zone for a hazardous materials release. For information on the population, property, and environmental resources within the vulnerable zone, consider conducting:

- ☐ A windshield survey of the area (i.e., first hand observation by driving through an area);
- ☐ Interviews of fire, police, and planning department personnel; and
- ☐ A review of planning department documents, and statistics on land use, population, highway usage, and the area's infrastructure.

The vulnerability analysis should summarize information on all hazards determined to be major in the hazards identification

▶ *C. Risk Analysis*

The risk analysis assesses the probability of damage (or injury) taking place in the community due to a hazardous materials release and the actual damage (or injury) that might occur, in light of the vulnerability analysis. Some planners may choose to analyze worst-case scenarios. The risk analysis may provide information on:

- ☐ The probability that a release will occur and any unusual environmental conditions, such as areas in flood plains, or the possibility of simultaneous emergency incidents (e.g., flooding or fire hazards resulting in release of hazardous materials);
- ☐ The type of harm to people (acute, delayed, chronic) and the associated high-risk groups;
- ☐ The type of damage to property (temporary, repairable, permanent); and

- ☐ The type of damage to the environment (recoverable, permanent).

Use the Chemical Profiles in the CEPP technical guidance or a similar guide to obtain information on the type of risk associated with the accidental airborne release of extremely hazardous substances.

Developing occurrence probability data may not be feasible for all communities. Such analysis can require specialized expertise not available to a community. This is especially true of facility releases which call for detailed analysis by competent safety engineers and others (e.g., industrial hygienists) of the operations and associated risk factors of the plant and engineering system in question (refer to the American Institute of Chemical Engineers' *Guidelines for Hazard Evaluation Procedures*). Transportation release analysis is more straightforward, given the substantial research and established techniques that have been developed in this area (refer to *Community Teamwork* and *Lessons Learned*).

Communities should not be overly concerned with developing elaborate quantitative release probabilities. Instead, occurrence probabilities can be described in relative terms (e.g., low, moderate, high). The emphasis should be on developing reasonable estimates based on the best available expertise.

3.3.2 Obtaining Facility Information

The information that is needed about a facility for hazards analysis may already be assembled as a result of previous efforts. As indicated in Section 1.4.1, industry is required by Title III of SARA to provide inventory and release information to the appropriate emergency planning committee. Local emergency planning committees are specifically entitled to any information from facility owners and operators deemed necessary for developing and implementing the emergency plan. The EPA Administrator can order facilities to comply with a local committee's requests for necessary information; local planning committees can bring a civil suit against a facility that refuses to provide requested information. Some State and local governments have adopted community right-to-know legislation. These community right-to-know provisions vary, but they generally require industry and other handlers of hazardous materials to provide information to State or local authorities and/or the public about hazardous materials in the community. Wisconsin, for example, requires all hazardous materials spills to be reported to a State agency. Such requirements provide a data base that the planning team can use to determine the types of releases that have occurred in and around the community.

Requesting information from a facility for a hazards analysis can be an opening for continuing dialogue within the community. The information should be sought in such a way that facilities are encouraged to cooperate and participate actively in the planning process along with governmental agencies and other community groups. Respecting a commercial facility's needs to protect confidential business information (such as sensitive process information) will encourage a facility to be forthcoming with the information necessary for the community's emergency planning. The planning team can learn what the facility is doing and what measures have been put in place to reduce risks, and also identify what additional resources such as personnel, training, and equipment are needed in the community. Because facilities use different kinds of hazard assessments (e.g., HAZOP, Fault-tree analysis), local planners need to indicate specifically what categories of information they are interested in receiving. These categories may include:

- ☐ Identification of chemicals of concern;

- ☐ Identification of serious events that can lead to releases (e. g., venting or system leaks, runaway chemical reaction);
- ☐ Amounts of toxic material or energy (e. g., blast, fire radiation) that could be released;
- ☐ Predicted consequences of the release (e. g., population exposure illustrated with plume maps and damage rings) and associated damages (e. g., deaths, injuries);
- ☐ Whether the possible consequences are considered acceptable by the facility; and
- ☐ Prevention measures in place on site.

The facilities themselves are a useful resource; the community should work with the facility personnel and utilize their expertise. The assistance that a facility can provide includes:

- ☐ Technical experts;
- ☐ Facility emergency plans;
- ☐ Cleanup and recycling capabilities;
- ☐ Spill prevention control and countermeasures (SPCC);
- ☐ Training and safe handling instructions; and
- ☐ Participation in developing the emergency plan, particularly in defining how to handle spills on company property.

Cooperative programs such as CMA's CAER program are also a source for hazard information. One of the major objectives of the CAER program is to improve local emergency plans by combining chemical plant emergency plans with other local planning to achieve an integrated community emergency plan. The planning team should ask the facility if it is participating in the CAER program; this may stimulate non-CMA members to use the CAER approach. If a facility is participating in the CAER program, the emergency plans developed by the facility will serve as a good starting point in information gathering and emergency planning. The CAER program handbook also encourages companies to perform hazards analyses of their operations. Local planners should ask facilities if they have adhered to this recommendation and whether they are willing to share results with the planning team.

3.3.3 Example Hazards Analysis

Exhibit 3 presents an example of a very simple hazards analysis for a hypothetical community. Hazards A, B, and C are identified as three among other major hazards in the community. Information for the exhibit could have been obtained from windshield surveys of the area; the CEPP technical guidance; information gained from facilities under Title III provisions; and/or interviews with fire, police, county planners, and facility representatives. These interviews also could have provided input into the exhibit's qualitative assessments of hazard occurrence.

Once completed, the hazards analysis is an essential tool in the planning process. It assists the planning team to decide:

Exhibit 3

EXAMPLE HAZARDS ANALYSIS FOR A HYPOTHETICAL COMMUNITY

	Hazard A	Hazard B	Hazard C
1. HAZARDS IDENTIFICATION (MAJOR HAZARDS)			
a. Chemical	Chlorine	Ammonia	Liquid methyl isocyanate (MIC)
b. Location	Water treatment plant	Tank truck on local interstate highway	Pesticide manufacturing plant in nearby semi-rural area
c. Quantity	2000 lbs	5000 lbs	5000 lbs
d. Properties	Poisonous; may be fatal if inhaled. Respiratory conditions aggravated by exposure. Contact may cause burns to skin and eyes. Corrosive. Effects may be delayed.	Poisonous; may be fatal if inhaled. Vapors cause irritation of eyes and respiratory tract. Liquid will burn skin and eyes. Contact with liquid may cause frostbite. Effects may be delayed. Will burn within certain vapor concentration limits and increase fire hazard in the presence of oil or other combustible materials.	Causes death by respiratory distress after inhalation. Other health effects would include permanent eye damage, respiratory distress, and disorientation. Explosive. Extremely flammable.
2. VULNERABILITY ANALYSIS			
a. Vulnerable zone	A spill of 2000 lbs of chlorine from a storage tank could result in an area of radius 1650 feet (0.3 miles) where chlorine gas may exceed the level of concern.	A spill of 5000 lbs of ammonia resulting from a collision of a tank truck could result in an area of radius 1320 feet (0.25 miles) where ammonia exceeds its level of concern.	A spill of 5000 lbs of methyl isocyanate could affect an area of radius 3300 feet (0.6 miles) with MIC vapors exceeding the level of concern (assuming that the liquid is hot when spilled, the tank is not diked, and the MIC is at 100% concentration).
b. Population within vulnerable zone	Approximately 500 residents of a nursing home; workers at small factory.	Up to 700 persons in residences, commercial establishments, or vehicles near highway interchange. Seasonal influx of visitors to forest preserve in the fall.	Up to 200 workers at the plant and 1000 children in a school.
c. Private and public property that may be damaged	Facility equipment, vehicles, and structures susceptible to damage from corrosive fumes. Community's water supply may be temporarily affected given that the facility is its primary supplier. Mixture with fuels may cause an explosion.	25 residences, 2 fast food restaurants, one 30 room motel, a truck stop, a gas station and a mini-market. Highway and nearby vehicles may be susceptible to damage from a fire or explosion resulting from the collision.	Runoff to a sewer may cause an explosion hazard as MIC reacts violently with water.
d. Environment that may be affected	Terrestrial life.	Adjacent forest preserve is highly susceptible to forest fires especially during drought conditions.	Nearby farm animals.

Exhibit 3 (Continued)

EXAMPLE HAZARDS ANALYSIS FOR A HYPOTHETICAL COMMUNITY

	Hazard A	Hazard B	Hazard C
3. RISK ANALYSIS			
a Probability of hazard occurrence	Low -- because chlorine is stored in an area with leak detection equipment in 24 hour service with alarms. Protective equipment is kept outside storage room	High -- Highway interchange has a history of accidents due to poor visibility of exits and entrances.	Low -- facility has up to date containment facilities with leak detection equipment, and an emergency plan for its employees. There are good security arrangements that would deter tampering or accidents resulting from civil uprisings.
b. Consequences if people are exposed	High levels of chlorine gas in the nursing home and factory could cause death and respiratory distress Bedridden nursing home patients are especially susceptible.	Release of vapors and subsequent fire may cause traffic accidents. Injured and trapped motorists are subject to lethal vapors and possible incineration. Windblown vapors can cause respiratory distress for nearby residents and business patrons.	If accident occurs while school is in session, children could be killed, blinded, and/or suffer chronic debilitating respiratory problems Plant workers would be subject to similar effects at any time.
c Consequences for property	Possible superficial damage to facility equipment and structures from corrosive fumes (repairable).	Repairable damage to highway. Potential destruction of nearby vehicles due to fire or explosions	Vapors may explode in a confined space causing property damage (repairable). Damage could result from fires (repairable)
d Consequences of environmental exposure	Possible destruction of surrounding fauna and flora.	Potential for fire damage to adjacent forest preserve due to combustible material (recoverable in the long term).	Farm animals and other fauna could be killed or suffer health effects necessitating their destruction or indirectly causing death.
e. Probability of simultaneous emergencies	Low	High	Low
f. Unusual environmental conditions	None	Hilly terrain prone to mists, thus creating adverse driving conditions.	Located in a 500 year river flood plan.

- ☐ The level of detail that is necessary;
- ☐ The types of response to emphasize; and
- ☐ Priority hazards or areas for planning.

The examples presented in Exhibit 3 illustrate the basic fact that there are no hard and fast rules for weighing the relative importance of different types of hazards in the context of the planning process. Compare example hazards B and C in the exhibit. Hazard C involves a substance, methyl isocyanate (MIC), whose lethal and severe chronic effects were evident at Bhopal. As described in the example, an MIC release could affect 200 plant workers and 1000 children in a nearby school. By contrast, the ammonia in example hazard B is less lethal than MIC and threatens fewer people. With just this information in mind, a planner might be expected to assign the MIC a higher planning priority than he would the ammonia. Consider now the "probability of occurrence." In example C, plant safety and prevention measures are excellent, and an MIC incident is correspondingly unlikely to occur. On the other hand, poor highway construction and weather conditions that affect visibility make an ammonia incident (example hazard B) far more probable. Planners must balance all factors when deciding whether to give planning priority to B or C. Both situations are dangerous and require emergency planning. Some would argue that the lethality of MIC outweighs the presence of good safety and prevention procedures; others would argue that the frequency of highway interchange accidents is reason enough to place greater emphasis on planning to deal with an ammonia incident. Each planning team must make such judgments on priorities in light of local circumstances.

Before initiating plan development, the planning team should complete an assessment of available response resources, including capabilities provided through mutual aid agreements. Guidance for conducting such an assessment is presented in the following section.

3.4 Capability Assessment

This section contains sample questions to help the planning team evaluate preparedness, prevention, and response resources and capabilities. The section is divided into three parts. The first part covers questions that the planning team can ask a technical representative from a facility that may need an emergency plan. The second part includes questions related to transportation.

The third part addresses questions to a variety of response and government agencies, and is designed to help identify all resources within a community. This information will provide direct input into the development of the hazardous materials emergency plan and will assist the planning team in evaluating what additional emergency response resources may be needed by the community.

3.4.1 Facility Resources

What is the status of the safety plan (also referred to as an emergency or contingency plan) for the facility? Is the safety plan consistent with any community emergency plan?

- ☐ Is there a list of potentially toxic chemicals available? What are their physical and chemical characteristics, potential for causing adverse health effects, con-

trols, interactions with other chemicals? Has the facility complied with the community right-to-know provisions of Title III of SARA?

- ☐ Has a hazards analysis been prepared for the facility? If so, has it been updated? Has a copy been provided to the local emergency planning committee?
- ☐ What steps have been taken to reduce identified risks?
- ☐ How does the company reward good safety records?
- ☐ Have operation or storage procedures been modified to reduce the probability of a release and minimize potential effects?
- ☐ What release prevention or mitigation systems, equipment, or procedures are in place?
- ☐ What possibilities are there for safer substitutes for any acutely toxic chemicals used or stored at the facility?
- ☐ What possibilities exist for reducing the volume of the hazardous materials in use or stored at the facility?
- ☐ What additional safeguards are available to prevent accidental releases?
- ☐ What studies have been conducted by the facility to determine the feasibility of each of the following approaches for each relevant production process or operation: (a) input change, (b) product reformulation, (c) production process change, and (d) operational improvements?
- ☐ Are on-site emergency response equipment (e.g., fire fighting equipment, personal protective equipment, communications equipment) and trained personnel available to provide on-site initial response efforts?
- ☐ What equipment (e.g., self-contained breathing apparatus, chemical suits, unmanned fire monitors, foam deployment systems, radios, beepers) is available? Is equipment available for loan or use by the community on a reimbursable basis? (Note: Respirators should not be lent to any person not properly trained in their use.)
- ☐ Is there emergency medical care on site?
- ☐ Are the local hospitals prepared to accept and provide care to patients who have been exposed to chemicals?
- ☐ Who is the emergency contact for the site (person's name, position, and 24-hour telephone number) and what is the chain of command during an emergency?
- ☐ Are employee evacuation plans in effect and are the employees trained to use them in the event of an emergency?
- ☐ What kinds of notification systems connect the facility and the local community emergency services (e.g., direct alarm, direct telephone hook-up, computer hook-up) to address emergencies on site?
- ☐ What is the mechanism to alert employees and the surrounding community in the event of a release at the facility?

- ☐ Is there a standard operating procedure for the personal protection of community members at the time of an emergency?

- ☐ Does the community know about the meaning of various alarms or warning systems? Are tests conducted?

- ☐ How do facility personnel coordinate with the community government and local emergency and medical services during emergencies? Is overlap avoided?

- ☐ What mutual aid agreements are in place for obtaining emergency response assistance from other industry members? With whom?

- ☐ Are there any contacts or other pre-arrangements in place with specialists for cleanup and removal of releases, or is this handled in-house? How much time is required for the cleanup specialists to respond?

- ☐ What will determine concentrations of released chemicals existing at the site? (Are there toxic gas detectors, explosimeters, or other detection devices positioned around the facility? Where are they located?)

- ☐ Are wind direction indicators positioned within the facility perimeter to determine in what direction a released chemical will travel? Where are they located?

- ☐ Is there capability for modeling vapor cloud dispersion?

- ☐ Are auxiliary power systems available to perform emergency system functions in case of power outages at the facility?

- ☐ How often is the safety plan tested and updated? When was it last tested and updated?

- ☐ Does the company participate in CHEMNET or the CAER program?

- ☐ Does the company have the capability and plans for responding to off-site emergencies? Is this limited to the company's products?

What is the safety training plan for management and employees?

- ☐ Are employees trained in the use of emergency response equipment, personal protective equipment, and emergency procedures detailed in the plant safety plan? How often is training updated?

- ☐ Are simulated emergencies conducted for training purposes? How often? How are these simulations evaluated and by whom? When was this last done? Are the local community emergency response and medical service organizations invited to participate?

- ☐ Are employees given training in methods for coordinating with local community emergency response and medical services during emergencies? How often?

- ☐ Is management given appropriate training? How frequently?

Is there an emergency response equipment and systems inspection plan?

- ☐ Is there a method for identifying emergency response equipment problems? Describe it.

- ☐ Is there testing of on-site alarms, warning signals, and emergency response equipment? How often is this equipment tested and replaced?

3.4.2 Transporter Resources

What cargo information and response organization do ship, train, and truck operators provide at a release?

- ☐ Do transport shipping papers identify hazardous materials, their physical and chemical characteristics, control techniques, and interactions with other chemicals?
- ☐ Do transports have proper placards?
- ☐ Are there standard operating procedures (SOPs) established for release situations? Have these procedures been updated to reflect current cargo characteristics?
- ☐ Who is the emergency contact for transport operators? Is there a 24-hour emergency contact system in place? What is the transport operation's chain of command in responding to a release?

What equipment and cleanup capabilities can transport operations make available?

- ☐ What emergency response equipment is carried by each transporter (e.g., protective clothing, breathing apparatus, chemical extinguishers)?
- ☐ Do transports have first-aid equipment (e.g., dressings for chemical burns, and water to rinse off toxic chemicals)?
- ☐ By what means do operators communicate with emergency response authorities?
- ☐ Do transport operations have their own emergency response units?
- ☐ What arrangements have been established with cleanup specialists for removal of a release?

What is the safety training plan for operators?

- ☐ Are operators trained in release SOPs and to use emergency response equipment? How often is training updated?
- ☐ How often are release drills conducted? Who evaluates these drills and do the evaluations become a part of an employee's file?
- ☐ Are safe driving practices addressed in operator training? What monetary or promotional incentives encourage safety in transport operation?

Is there a transport and emergency response equipment inspection plan?

- ☐ What inspections are conducted? What leak detection and equipment readiness tests are done? What is the schedule for inspections and tests?
- ☐ Are problems identified in inspections corrected? How are maintenance schedules established?

3.4.3. Community Resources

What local agencies make up the community's existing response preparedness network? Some examples include:

- ☐ Fire department;
- ☐ Police/sheriff/highway patrol;
- ☐ Emergency medical/paramedic service associated with local hospitals or fire and police departments;
- ☐ Emergency management or civil defense agency;
- ☐ Public health agency;
- ☐ Environmental agency;
- ☐ Public works and/or transportation departments;
- ☐ Red Cross; and
- ☐ Other local community resources such as public housing, schools, public utilities, communications.

What is the capacity and level of expertise of the community's emergency medical facilities, equipment, and personnel?

Does the community have arrangements or mutual aid agreements for assistance with other jurisdictions or organizations (e.g., other communities, counties, or States; industry; military installations; Federal facilities; response organizations)? In the absence of mutual aid agreements, has the community taken liability into consideration?

What is the current status of community planning and coordination for hazardous materials emergency preparedness? Have potential overlaps in planning been avoided?

- ☐ Is there a community planning and coordination body (e.g., task force, advisory board, interagency committee)? If so, what is the defined structure and authority of the body?
- ☐ Has the community performed any assessments of existing prevention and response capabilities within its own emergency response network?
- ☐ Does the community maintain an up-to-date technical reference library of response procedures for hazardous materials?
- ☐ Have there been any training seminars, simulations, or mock incidents performed by the community in conjunction with local industry or other organizations? If so, how frequently are they conducted? When was this last done? Do they typically have simulated casualties?

Who are the specific community points of contact and what are their responsibilities in an emergency?

- ☐ List the agencies involved, the area of responsibility (e.g., emergency response, evacuation, emergency shelter, medical/health care, food distribution, control access to accident site, public/media liaison, liaison with Federal and State responders, locating and manning the command center and/or emer-

gency operating center), the name of the contact, position, 24-hour telephone number, and the chain of command.

- ☐ Is there any specific chemical or toxicological expertise available in the community, either in industry, colleges and universities, poison control centers, or on a consultant basis?

What kinds of equipment and materials are available at the local level to respond to emergencies? How can the equipment, materials, and personnel be made available to trained users at the scene of an incident?

Does the community have specialized emergency response teams to respond to hazardous materials releases?

- ☐ Have the local emergency services (fire, police, medical) had any hazardous materials training, and if so, do they have and use any specialized equipment?

- ☐ Are local hospitals able to decontaminate and treat numerous exposure victims quickly and effectively?

- ☐ Are there specialized industry response teams (e.g., CHLOREP, AAR/BOE), State/Federal response teams, or contractor response teams available within or close to the community? What is the average time for them to arrive on the scene?

- ☐ Has the community sought any resources from industry to help respond to emergencies?

Is the community emergency transportation network defined?

- ☐ Does the community have specific evacuation routes designated? What are these evacuation routes? Is the general public aware of these routes?

- ☐ Are there specific access routes designated for emergency response and services personnel to reach facilities or incident sites? (In a real incident, wind direction might make certain routes unsafe.)

Does the community have other procedures for protecting citizens during emergencies (e.g., asking them to remain indoors, close windows, turn off air-conditioners, tune into local emergency radio broadcasts)?

Is there a mechanism that enables responders to exchange information or ideas during an emergency with other entities, either internal or external to the existing organizational structure?

Does the community have a communications link with an Emergency Broadcast System (EBS) station? Is there a designated emergency communications network in the community to alert the public, update the public, and provide communications between the command center and/or emergency operating center, the incident site, and off-scene support? Is there a back-up system?

- ☐ What does the communications network involve (e.g., special radio frequency, network channel, siren, dedicated phone lines, computer hook-up)?

- ☐ Is there an up-to-date list, with telephone numbers, of radio and television stations (including cable companies) that broadcast in the area?

- ☐ Is there an up-to-date source list with a contact, position, and telephone number for technical information assistance? This can be Federal (e.g., NRC, USCG CHRIS/HACS, ATSDR, OHMTADS), State, industry associations (e.g., CHEMTREC, CHLOREP, AAR/BOE, PSTN), and local industry groups (e.g., local AIChE, ASME, ASSE chapters).

Is there a source list with a contact, position, and telephone number for community resources available?

- ☐ Does the list of resources include: wreck clearing, transport, cleanup, disposal, health, analytical sampling laboratories, and detoxifying agents?

Have there been any fixed facility or transportation incidents involving hazardous materials in the community? What response efforts were taken? What were the results? Have these results been evaluated?

3.5 Writing an Emergency Plan

When the team has reviewed existing plans, completed a hazards identification and analysis, and assessed its preparedness, prevention, and response capabilities, it can take steps to make serious incidents less likely. Improved warning systems, increased hazardous materials training of industry and local response personnel, and other efforts at the local level, can all make a community better prepared to live safely with hazardous materials. The team should also begin to write an emergency plan if one does not already exist, or revise existing plans to include hazardous materials. Chapter 4 describes two approaches to developing or revising an emergency plan. Chapter 5 describes elements related to hazardous materials incidents that should be included in whichever type of plan the community chooses to write.

4. Developing the Plan

4.1 Introduction

Most communities have some type of written plan for emergencies. These plans range from a comprehensive multi-hazard approach as described in FEMA's CPG 1-8 (Guide for Development of State and Local Emergency Operations Plans) to a single telephone roster for call-up purposes, or an action checklist. Obviously the more complete and thorough a plan is, the better prepared the community should be to deal with any emergency that occurs.

As noted in Chapter 1, the "Emergency Planning and Community Right-to-Know Act of 1986" requires local emergency planning committees to develop local plans for emergency responses in the event of a release of an extremely hazardous substance. Those communities receiving FEMA funds are required to incorporate hazardous materials planning into their multi-hazard emergency operations plan (EOP). Other communities are encouraged to prepare a multi-hazard EOP in accord with CPG 1-8 since it is the most comprehensive approach to emergency planning. Not every community, however, may be ready for or capable of such a comprehensive approach. Because each community must plan in light of its own situation and resources, a less exhaustive approach may be the only practical, realistic way of having some type of near-term plan. Each community must choose the level of planning that is appropriate for it, based upon the types of hazard found in the community.

This chapter discusses two basic approaches to writing a plan: (1) development or revision of a *hazardous materials appendix (or appendices to functional annexes)* to a multi-hazard EOP following the approach described in FEMA's CPG 1-8, and (2) development or revision of a *plan covering only hazardous materials*. Each approach is discussed in more detail below.

4.2 Hazardous Materials Appendix to Multi-Hazard EOP

The first responders (e.g., police, fire, emergency medical team) at the scene of an incident are generally the same whatever the hazard. Moreover, many emergency functions (e.g., direction and control, communications, and evacuation) vary only slightly from hazard to hazard. Procedures to be followed for warning the public of a hazardous materials incident, for example, are not that different from procedures followed in warning the public about other incidents such as a flash flood. It is possible, therefore, to avoid a great deal of unnecessary redundancy and confusion by planning for all hazards at the same time. A multi-hazard EOP avoids developing separate structures, resources, and plans to deal with each type of hazard. Addressing the general aspects of all hazards first and then looking at each potential hazard individually to see if any unique aspects are involved result in

efficiencies and economies in the long run. Multi-hazard EOPs also help ensure that plans and systems are reasonably compatible if a large-scale hazardous materials incident requires a simultaneous, coordinated response by more than one community or more than one level of government.

A community that does not have a multi-hazard plan is urged to consider seriously the advantages of this integrated approach to planning. In doing so, the community may want to seek State government advice and support.

CPG 1-8 describes a sample format, content, and process for State and local EOPs. It recommends that a multi-hazard EOP include three components -- a basic plan, functional annexes, and hazard-specific appendices. It encourages development of a *basic plan* that includes generic *functional annexes* applicable to any emergency situation, with unique aspects of a particular hazard being addressed in *hazard-specific appendices*. It stresses improving the capabilities for simultaneous, coordinated response by a number of emergency organizations at various levels of government. Local communities that receive FEMA funds must incorporate hazardous materials planning into their multi-hazard EOP. In most of these communities, there are paid staff to do emergency operations planning as well as related emergency management tasks.

CPG 1-8 provides flexible guidance, recognizing that substantial variation in planning may exist from community to community. A community may develop a separate hazardous material appendix to each functional annex where there is a need to reflect considerations unique to hazardous materials not adequately covered in the functional annex. On the other hand, a community may develop a single hazardous materials appendix to the EOP, incorporating all functional annex considerations related to hazardous materials in one document. The sample plan format used in CPG 1-8 is a good one, but it is not the only satisfactory one. It is likely that no one format is the best for all communities of all sizes in all parts of the country. Planners should, therefore, use good judgment and common sense in applying CPG 1-8 principles to meet their needs. The community has latitude in formatting the plan but should closely follow the basic content described in CPG 1-8.

CPG 1-8 should be used in preparing the basic plan and functional annexes. This guide should be used as a supplement to CPG 1-8 to incorporate hazardous materials considerations into a multi-hazard EOP. Communities that want to develop Standard Operating Procedures (SOP) manuals could begin with information included in the functional annexes of a multi-hazard EOP.

A community that is incorporating hazardous materials into a multi-hazard EOP should turn to Chapter 5 of this guide for a discussion of those elements which need to be taken into account in hazardous materials planning.

4.3 Single-Hazard Emergency Plan

If a community does not have the resources, time, or capability readily available to undertake multi-hazard planning, it may wish to produce a single-hazard plan addressing hazardous materials.

Exhibit 4 identifies sections of an emergency plan for hazardous materials incidents. **The sample outline is not a model. It is not meant to constrain any community. Indeed, each community should seek to develop a plan that is best suited to its own circumstances, taking advantage of the sample outline where appropriate.**

The type of plan envisioned in the sample outline would affect all governmental and private organizations involved in emergency response operations in a particular community. Its basic purpose would be to provide the necessary data and documentation to anticipate and coordinate the many persons and organizations that would be involved in emergency response actions. As such, the plan envisioned in this sample outline is intended neither to be a "hip-pocket" emergency response manual, nor to serve as a detailed Standard Operating Procedures (SOP) manual for each of the many agencies and organizations involved in emergency response actions, although it could certainly be used as a starting point for such manuals. Agencies that want to develop an SOP manual could begin with the information contained under the appropriate function in Plan Section C of this sample outline. If it is highly probable that an organization will be involved in a hazardous materials incident response, then a more highly detailed SOP should be developed.

Exhibit 4

SAMPLE OUTLINE OF A HAZARDOUS MATERIALS EMERGENCY PLAN

(NOTE: Depending upon local circumstances, communities will develop some sections of the plan more extensively than other sections. See page 39 for how the sample outline relates to SARA Title III requirements.)

A. Introduction
   1. Incident Information Summary
   2. Promulgation Document
   3. Legal Authority and Responsibility for Responding
   4. Table of Contents
   5. Abbreviations and Definitions
   6. Assumptions/Planning Factors
   7. Concept of Operations
      a. Governing Principles
      b. Organizational Roles and Responsibilities
      c. Relationship to Other Plans
   8. Instructions on Plan Use
      a. Purpose
      b. Plan Distribution
   9. Record of Amendments

B. Emergency Assistance Telephone Roster

C. Response Functions*
   1. Initial Notification of Response Agencies
   2. Direction and Control

*These "Response Functions" are equivalent to the "functional annexes" of a multi-hazard emergency operations plan described in CPG 1-8.

(continued on next page)

Exhibit 4 (Continued)

SAMPLE OUTLINE OF A HAZARDOUS MATERIALS EMERGENCY PLAN

3. Communications (among Responders)
4. Warning Systems and Emergency Public Notification
5. Public Information/Community Relations
6. Resource Management
7. Health and Medical Services
8. Response Personnel Safety
9. Personal Protection of Citizens
    a. Indoor Protection
    b. Evacuation Procedures
    c. Other Public Protection Strategies
10. Fire and Rescue
11. Law Enforcement
12. Ongoing Incident Assessment
13. Human Services
14. Public Works
15. Others

D. Containment and Cleanup
    1. Techniques for Spill Containment and Cleanup
    2. Resources for Cleanup and Disposal

E. Documentation and Investigative Follow-up

F. Procedures for Testing and Updating Plan
    1. Testing the Plan
    2. Updating the Plan

G. Hazards Analysis (Summary)

H. References
    1. Laboratory, Consultant, and Other Technical Support Resources
    2. Technical Library