

**Risk Management  
Planning for  
Hazardous Materials:  
What It Means  
for Fire Service  
Planning**

**SPECIAL REPORT**



**FEMA**



U.S. Fire Administration

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## **United States Fire Administration Major Fire Investigation Program**

The United States Fire Administration develops reports on selected major fires throughout the country. The fires usually involve multiple deaths or a large loss of property. But the primary criterion for deciding to write a report is whether it will result in significant 'lessons learned.' In some cases these lessons bring to light new knowledge about fire – the effect of building construction or contents, human behavior in fire, etc. In other cases, the lessons are not new, but are serious enough to highlight once again because of another fire tragedy. In some cases, special reports are developed to discuss events, drills, or new technologies or tactics that are of interest to the fire service.

The reports are sent to fire magazines and are distributed at national and regional fire meetings. The reports are available on request from USFA. Announcements of their availability are published widely in fire journals and newsletters.

This body of work provides detailed information on the nature of the fire problem for policymakers who must decide on allocations of resources between fire and other pressing problems, and within the fire service to improve codes and code enforcement, training, public fire education, building technology, and other related areas.

The Fire Administration, which has no regulatory authority, sends an experienced fire investigator into a community after a major incident only after having conferred with the local fire authorities to insure that USFA's assistance and presence would be supportive and would in no way interfere with any review of the incident they are themselves conducting. The intent is not to arrive during the event or even immediately after, but rather after the dust settles, so that a complete and objective review of all the important aspects of the incident can be made. Local authorities review USFA's report while it is in draft form. The USFA investigator or team is available to local authorities should they wish to request technical assistance for their own investigation.

For additional copies of this report write to the United States Fire Administration, 16825 South Seton Avenue, Emmitsburg, Maryland 21727 or via USFA WEB Page at <http://www.usfa.fema.gov>

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## **RISK MANAGEMENT PLANNING FOR HAZARDOUS MATERIALS: WHAT IT MEANS FOR FIRE SERVICE PLANNING**

On April 16, 1947, a fire broke out in the cargo hold of a French cargo ship moored in the harbor of Texas City, TX. Despite the efforts of her crew and of the local fire department, the fire spread to the cargo of 2,300 tons of ammonium nitrate fertilizer, resulting in a catastrophic explosion that killed the ship's crew, the firefighters, and several bystanders. The explosion destroyed or severely damaged buildings throughout the city, and generated a small tidal wave that brought further devastation. The ensuing fire spread to a nearby chemical plant, refineries, and other ships in the harbor. Explosions from these fires occurred on April 17, destroyed two more ships plus several warehouses, and spawned even more fires in the city. When the incident was over, more than 600 people were dead or missing, and 2,000 people were injured. The harbor in Texas City was all but destroyed.

It is the perception of many that significant chemical accidents do not occur anymore. While it is true that chemical accidents of the type and magnitude of Texas City happen only rarely, hazardous materials incidents – some of them serious—occur dozen of times a week in the United States. While no comprehensive recent data are available, an analysis of data from multiple Federal databases over a five-year period (1988-1992) indicates that an average of at least 19 known chemical incidents occurred daily. (There were probably more unreported.) There is no indication that this trend may have decreased in the past 10 years: in fact, the most recent Toxics Release Inventory Overview published by the Environmental Protection Agency shows that there were 23,484 facilities reporting chemical releases in the year 2000. Table 1 illustrates the types of releases and the quantity of materials released.

**Table 1. Toxics Release Inventory Data Overview, 2000<sup>1</sup>**

<b>Release</b>	<b>Pounds</b>	<b>Percent of National Total</b>
On-site air emissions	1,904,406,293	26.8
On-site surface water	255,348,200	3.7
On-site underground discharge	279,036,646	3.9
On-site land	4,131,402,086	58.2
Off-site landfill/surface impoundments	321,110,621	4.5
Other off-site	203,978,233	2.9
<i>Total</i>	<i>7,095,282,079</i>	<i>100.0</i>

<sup>1</sup> Information courtesy of the United States Environmental Protection Agency, Office of Environmental Information 2000 Toxics Release Inventory (TRI) Public Data Release Report, EPA-260-S-02-001, May 2002.

An important fact to note about this data is that it represents only a portion of all releases nationwide. As the report states, “The [reporting] program does not cover all sources of releases and other...activities of Toxic Release Inventory (TRI) chemicals.” One of the challenges currently faced by local fire and rescue departments in risk management planning: trends and information on hazardous material incidents are difficult to track because many chemical release reports and national databases are temporarily off-line, out of concern over potential terrorist interest in the information.

The Federal government monitors chemical safety, but does so in a fragmented way. Over a dozen agencies gather data, enforce regulations, and administer programs related to hazardous chemicals, and each does so for different purposes and constituencies. The agencies themselves acknowledge that there are overlaps, inefficiencies, and gaps in the laws and regulations that govern hazardous materials safety.<sup>2</sup>

Though exact data on chemical releases is difficult to come by, it has been estimated that an average of 60,000 accidents involving chemicals occur in this country every year, and cause over 200 deaths and many injuries. As a Board Member of the U.S. Chemical Safety Hazard Investigation Board noted recently, “...that chemical accidents occur too often and cause unnecessary deaths, injuries, and disruption—surely is true.”<sup>3</sup> Managing this risk at the local level and in conjunction with the sources of risk needs to be a priority.

Fire departments, in addition to being first responders to a chemical accident, are an important part of the planning process. Fire departments are responsible for performing hazardous materials risk/hazard assessments, capability assessments, and detailed response planning. To that end, this report is intended as a source of information about hazards in the community that need to be considered by the fire service in response planning. Further, it is intended to be a vehicle to identify responsibilities in planning for a collaborative response between facility-based technical response teams and the local fire service. The information provided can be used as a tool for properly incorporating individual facility risk management plans and information into an overall community response plan.

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<sup>2</sup> EPA Report Number 550-R-93-002, December 1993.

<sup>3</sup> “Investigations and News” at [www.chemsafety.gov/news/2000](http://www.chemsafety.gov/news/2000).

## **RISK MANAGEMENT PLANNING**

Quantities of chemicals are stored in every community. At industrial sites, dry cleaning businesses, service stations, swimming pools, manufacturing plants and other fixed-site facilities, hazardous materials present a real and present danger that must be managed responsibly. Hazardous materials also pass through our cities and towns on trucks, trains, and ships, as well as via pipelines. The fire service prepares for potential incidents involving hazardous materials by training in hazardous materials incident response, acquiring personal protective equipment, and having special foams and containment supplies at their disposal.

Some communities plan containment and evacuation strategies in advance. Many jurisdictions maintain local inventories on the high-risk facilities where hazardous materials are located, as well as the types and quantities of chemicals stored. Such planning is even more critical now as the United States examines the potential for the offensive use of chemicals by terrorists, along with other terrorist threats. Our vulnerability to acts of terrorism, and how we would respond if one were to occur, refocuses our attention on preparing for hazardous materials incidents—only now we must consider scenarios where chemical releases are planned, not just accidental.

The fire service and other community stakeholders need to assess their risk from dangerous chemicals if they have not already done so. They should determine the potential likelihood and severity of a large-scale hazardous materials incident (accidental as well as covert), and set forth measures for responding to and mitigating the incident and its impact. In essence, communities are advised to engage in “risk management” (that is, activities that involve the evaluation or comparison of risks and the development of approaches that can change the probability or consequences of a deleterious action). Risk management encompasses the entire process of identifying and evaluating risks along with the identification, selection, and implementation of control measures that might alter risk.<sup>4</sup> The process can be carried out for all types of risks and threats, from natural disasters to bombings, and is inherently related to emergency management planning. For the purpose of this report, risk management planning is presented in the context of chemical incidents and the impact they can have on communities.

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<sup>4</sup>Risk Management Practices in the Fire Service, United States Fire Administration, Federal Emergency Management Agency, December 1996.

Risk evaluation and disaster planning are tedious and time-consuming tasks. One must dissect potential emergencies and then detail what resources would be needed, in what configuration, and under whose command and control. Short-staffed first responder agencies often struggle just to stay on top of immediate service demands, so setting aside time to hammer out strategies and tactics for potential events in the future is a challenge. However, when leaders do make risk assessment and response planning a priority, the benefits to the community and its first responders are significant.

For communities located in non-industrial, suburban, or rural areas, the level of risk from hazardous materials may appear to be practically nil. However, farms, neighborhood swimming pools, and even country clubs store chemicals that may, depending on the time of year, exceed Threshold Quantity (TQ)<sup>5</sup> levels. There are many common and potentially dangerous chemicals used in these facilities, including ammonia, chlorine, and propane. Rail lines and highways enable other hazardous materials to appear, if only temporarily.

Hazardous materials accidents can occur anywhere. Response planning, therefore, is necessary not only in urbanized areas, but in less populated areas, too. A situation in Pasadena, Texas, demonstrates why communities, and the fire departments that protect them, need to be involved in risk management planning for chemical accidents.

### **Chemical Complex in Pasadena, Texas**

On October 23, 1989, an explosion and ensuing fire raced through the 800-acre Phillips Petroleum Houston Chemical Complex in Pasadena, Texas, a city located about 10 miles southeast of Houston. These events resulted in 23 dead, 1 missing, more than 100 injured, and extensive damage to the manufacturing facility as well as nearby structures.

The explosion, which measured 3.5 on the Richter scale, is believed to have been caused by a failure in either a line or valve that carried ethylene or isobutane (or both), to a polyethylene reactor. The reactor was supposed to have been shut down by a contractor for routine maintenance; however, post-incident investigators determined that one or more valves may have been accidentally left open, thereby allowing the substances contained in the lines to leak. The line was reported as being approximately 10 inches in diameter and possibly carrying as much as 700 pounds per square inch of

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<sup>5</sup> EPA has established a list of toxic, flammable, and explosive chemicals, and their respective threshold quantities, over which, a facility must meet certain accident prevention regulations.

pressure. It is not known if a mechanical failure occurred or whether human error was a factor. Regardless, a vapor cloud developed very quickly after a failure in the line, which sent workers running. The reactor ignited the vapor cloud and caused an explosion. It was estimated that workers had between 60 and 90 seconds to evacuate before the explosion occurred.<sup>6</sup>

Repairs to facilities were estimated at more than \$500 million in costs, and took over two years to complete. Following the explosion, the Occupational Safety and Health Administration investigated the incident, finding more than 500 violations and assessing a penalty of \$5.7 million. A copy of OSHA's report, "The Phillips 66 Company Houston Chemical Complex Explosion and Fire," details the investigation and penalties. This incident was one of the precipitating accidents that led to the OSHA rules for "Process Safety Management of Highly Hazardous Chemicals."<sup>7</sup>

Located in one of the world's largest petrochemical processing centers, the emergency agencies in the Houston area had recognized the high risk presented by the petrochemical processing plants. In 1955, the Houston Ship Channel Industries Disaster Aid Organization was formed; in 1960, it was renamed Channel Industries Mutual Aid (CIMA). The purpose of CIMA was and is to unite all emergency response organizations and equipment (municipal and industrial) lining the Houston Ship Channel. The mutual aid assistance provided through CIMA can be used either for natural or person-caused events. As part of its emergency response plan, CIMA has created a centralized dispatch center for the radio network, an alarm list database for its members, and technical committees. When the Phillips Plant explosion occurred in 1989, more than 80 member organizations of CIMA responded to the emergency. While there was a large loss, the emergency response agencies helped prevent additional casualties and even larger losses.

Most emergency agencies are not as well prepared as were those in the Houston–Pasadena area. Many local fire departments have facility site plans that are out of date. Many departments do not have mutual aid plans for disasters where large volumes of apparatus will be needed. At the time of the Phillips plant explosion, local environmental planning committees (LEPCs) – to be discussed later – had access only to basic information regarding the facilities in their response areas; and even that basic information was very limited.

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<sup>6</sup> For further information see the "Phillips Petroleum Chemical Plant Explosion and Fire, Pasadena, Texas." Technical Report Series 035, United States Fire Administration, Federal Emergency Management Agency, 1990.

<sup>7</sup> CFR 29 Part 1910.119 "Process Safety Management of Highly Hazardous Chemicals; Explosives and Blasting Agents," Section I Title I.

Indeed, industries affected by EPA's regulation were only required to disclose certain, limited information. Communities had enough information to plan emergency response plans to the sites, but lacked other important information—including the extended hazards and worst-case scenarios.

## **Community Awareness**

While the Phillips Plant explosion was dramatic, the United States fortunately has not been subjected to a disaster on the same scale as the toxic release in Bhopal, or petroleum plant explosions in Mexico City (both are discussed later in this report). Still, for many years emergency responders have sought additional information regarding sources of hazardous materials. They want to know what potential hazards are stored in their first-due areas, and how their response could be affected by incidents involving hazardous materials. While large, industrial facilities obviously contain hazardous material, the exact types and quantities often are not common knowledge. The general public tends not to consider that the neighborhood pool, local quarries, and even hardware stores contain hazardous materials. Five-gallon containers of chlorine, one-gallon containers of muriatic and other acids, other types of corrosives, and even paint thinner are common chemicals found in these types of establishments.

To help protect the public from these hazards, Congress has passed laws and Federal agencies have enacted standards that seek greater health protection from the risks of toxic chemicals. Three items in particular strengthen the hand of local government: being informed about the hazardous materials risks in their area, knowing how they are characterized, and knowing what industry is doing to ensure safety. These regulations and standards also help affected industries to meet their health and safety goals regarding safe storage, use, and transport of hazardous materials.

In the next section, the Environmental Protection Agency's (EPA) Risk Management Program and the Emergency Planning and Community Right-to-Know Act are described. These two EPA initiatives and their related requirements and regulations give fire departments, planning agencies, industry, and citizen groups opportunities for cooperation that should be used to advantage. A corollary standard implemented by the Occupational Safety and Health Administration – the Process Safety Management (PSM) of Highly Hazardous Chemicals, Explosives, and Blasting Agents – protects employees from chemical accidents. There are parts of the standard that all but invite fire service involvement with the industrial facility.

When communities develop and implement a risk management program, the very process engenders communication among citizens, businesses, and local government. Representatives from

these groups have the opportunity to work together to reduce the risks presented by the presence of hazardous materials. This knowledge and awareness also helps public safety agencies, as well as the public, to be better prepared in the event of an emergency.

### **EPA's Risk Management Program<sup>8</sup>**

The Environmental Protection Agency (EPA) was created in December 1970 to reduce environmental risks to U.S. citizens. Among its responsibilities was implementation and oversight of the provisions of the Clean Air Act, first adopted in 1963 and amended several times.

On December 4, 1984, a cloud of toxic material was accidentally released from a chemical manufacturing facility in Bhopal, India. The release killed more than 3,000 people and injured more than 10,000. Just two weeks earlier, several explosions destroyed a petroleum plant in Mexico City, claiming more than 500 lives. In November 1990, partly in the wake of the Bhopal and Mexico City incidents, Congress enacted some of the most far-reaching revisions ever made to the Clean Air Act. In these amendments [Section 112 (r)], Congress included regulations governing the prevention of and response to the accidental release of chemical agents. The final version of the 1990 Clean Air Act amendments was not published until June 20, 1996, after protracted debate and heavy lobbying by both environmentalists and industry. Included in the amendments is a regulation that requires facilities designated to develop and implement Risk Management Programs.

The EPA Risk Management Program is an important ally for local communities that are concerned about the risks presented by chemical facilities in their area. One of the primary objectives of the program is to make information about chemical facilities available to state and local governments and to the public. The goal is to increase communications between facilities and the public so that, should an accident occur, all stakeholders are prepared to respond in a way that reduces the number of injuries and deaths.

EPA's Risk Management Program (RMP) requirements apply to owners and operators of stationary sources that have more than a given threshold quantity of regulated substances. EPA estimates that nearly 66,000 facilities nationwide are affected by the new regulation. The most obvious industries involved are chemical plants, oil refineries, and other chemical manufacturers.

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<sup>8</sup> Federal regulations pertaining to the EPA's Risk Management Program can be found under Title 40 of the Code of Federal Regulations, "Protection of Environment," Chapter I, "Environmental Protection Agency," Subchapter J.

However, EPA estimates that the new rule will also cover many facilities not currently regulated under OSHA's Process Safety Management standard, including 30,000 propane distributors and over 7,000 public and private drinking water and wastewater treatment systems. EPA has identified 77 acutely toxic chemicals and 63 flammable and explosive substances that are subject to the requirements of the Program. Maximum Threshold Quantity (TQ) levels are listed. The TQs for toxic materials range from 500 to 20,000 pounds, depending on the material. For flammable materials, the TQ is 10,000 pounds. The facilities include chemical and other manufacturers, cold storage facilities with ammonia refrigeration systems, and federal facilities.

EPA's Program requires all "covered sources" – those locations to which the law applies—to prepare a written plan that includes public notification, emergency medical treatment for persons exposed to released agents, and procedures for emergency response. The latter aspect has the most applicability to the fire service.

EPA designated three tiers of requirements, in other words, the level of compliance is scaled: the higher the risk of off-site impact, the more rigorous the requirements. These tiers are designated as Programs 1, 2, and 3. Program designation is based on "the potential for offsite consequences associated with a worst-case accidental release, accident history, or compliance with the prevention requirements under OSHA's Process Safety Management Standard."<sup>9</sup>

Sources that, in the case of an accident, would have no impact on the public or the environment have minimal requirements and are designated as Program 1. Depending on the substance, covered sources that have the potential to affect the public or the environment face stricter requirements and are designated as either Program 2 or 3. Program 3 facilities are subject to OSHA's Process Safety Management standard, either under state or federal OSHA programs or in the specified North American Industry Classification System (NAICS) codes. The following must be included in a covered source's RMP:

- Executive summary
- Registration for the facility
- Certification statement

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<sup>9</sup>40 CFR Part 68: Accidental Release Prevention Requirements: Risk Management Programs. Clean Air Act, Section 112 (r)(7); Environmental Protection Agency.

- A worst-case scenario for each Program 1 process; at least one worst-case scenario to cover all Program 2 and 3 processes involving regulated toxic substances; at least one worst-case scenario to cover all Program 2 and 3 processes involving regulated flammable materials
- The five-year accident history for each process
- A summary of the emergency response program for the facility

Any facility with at least one covered process in Programs 2 or 3 must also include:

- At least one alternative release scenario for each regulated toxic substance in Program 2 or 3 processes, and at least one alternative release scenario to cover all regulated flammable materials in Program 2 or 3 processes
- A summary of the prevention program for each Program 2 process
- A summary of the prevention program for each Program 3 process

All affected facilities were required to file a Risk Management Plan with the EPA by June 20, 1999.

### **Disseminating Information on RMPs**

Many individuals in the law enforcement and national security communities as well as the fire service have voiced concern about how publicly accessible the RMP information should be. While adequate disclosure is a goal, so too, is keeping certain information away from would-be terrorists. As part of the Freedom of Information Act, the EPA is required to release the information it receives from chemical sources to the general public. Originally, most of that information was going to be available for public review on the Internet.

Various agencies and organizations, however, lobbied EPA and Congress to limit the information posted on the Internet. Behind the debate was concern that terrorists could potentially access this information and determine which facilities have the most hazardous chemicals, and which pose the greatest risk to the public. The commander of the Hazardous Materials Division of the Chicago Fire Department and chairman of the International Association of Fire Chiefs (IAFC) Hazardous Material Committee stated that posting worst-case scenarios on the Internet would have been a “roadmap for terrorists.”

After much discussion, EPA decided against making sensitive, off-site consequence data available on the Internet. Officials concluded that offering this information on the Internet could create more potential harm than it would do good. The worst-case scenario data is still available, but through a more easily controlled medium.

### **OSHA's Process Safety Management<sup>10</sup>**

While EPA mandates that affected industries and facilities develop RMPs, OSHA has its own standard that regulates chemical processes. The Process Safety Management (PSM) of Highly Hazardous Chemicals, Explosives, and Blasting Agents standard was developed to manage hazards associated with facilities that store and use such agents. The goal of the standard, like other OSHA regulations, is to protect workers by “preventing or minimizing the consequences of chemical accidents involving highly hazardous chemicals.”<sup>11</sup>

Like RMP, PSM applies to sources where processes meet or exceed threshold quantities of highly hazardous chemicals (HHCs). While the list of HHCs shares several chemicals in common with those listed under RMP, the programs differ in the threshold quantities for the chemicals found on both lists. The OSHA list is shorter, and the TQ ranges from 100 to 15,000 pounds. It is important to point out, however, that this is not a shortcoming in OSHA's program. The regulation also applies to facilities where 10,000 or more pounds of flammable liquids and gases exist, as well as to the process activities associated with the manufacture of explosives or pyrotechnics.

While EPA's RMP allows relatively few exceptions (transportation and storage activities incidental to stationary sources, naturally occurring hydrocarbon reservoirs, and activities on the Outer Continental Shelf), there are numerous possible exceptions to PSM. Retail facilities, facilities with hydrocarbon fuels used solely for workplace consumption, and sites where flammable liquids are kept at temperatures below their boiling points are among the sources subject to exemption from the PSM standard.

Those sources that are regulated by the PSM standard must compile process safety information, which includes hazard information, technology information and equipment information on each covered process. Since the objective of this program is to increase employee safety,

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<sup>10</sup> Federal regulations pertaining to OSHA's Process Safety Management can be found under Title 29 of the Code of Federal Regulations, “Labor,” Part 1910, section 1910.119

<sup>11</sup> 29 CFR 1910.119: *Process Safety Management of Highly Hazardous Chemicals; Explosives and Blasting Agents*. RIN 1218-AB20; Occupational Safety and Health Administration, Labor. Summary.

receiving vital input on hazards from potential accident victims is essential. The PSM standard explicitly requires employee involvement in the development of a written plan of action, and detailing employee participation in the process hazard analyses. The standard also guarantees employees access to all information required under the standard. OSHA does not require facilities to disclose the details of their PSM plan to the *public*; rather, these plans are designed to protect employees who, in some cases, can be required to sign a non-disclosure agreement if the information in a PSM plan is proprietary.

Employees whose job includes operating a covered process must be trained on all operating procedures of that process. This training must emphasize employee safety and health hazards, safe work practices, and emergency operations. Also, facilities must develop emergency action plans that include training employees on procedures for handling minor releases. Further, the standard mandates documented refresher training every three years for each employee at a covered source. Employers must certify that they have evaluated compliance with process safety requirements at least every three years. These requirements should be of interest to the fire service. Fire departments can be excellent sources for the emergency action plans and training on minor releases that employees are required to have.

The PSM standard requires a safety review of newly constructed or renovated facilities that are considered covered sources. Safety reviews ensure that construction and equipment are designed in accordance with specifications. Safety reviews are also performed “to assure that adequate safety, operating, maintenance, and emergency procedures are in place.” Moreover, PSM requires that facilities perform investigations of incidents within 48 hours of their occurrence. Investigative teams must be created following an actual catastrophic release, or a release that could have had the potential to be catastrophic. These teams must consist of individuals who are knowledgeable in the involved process. The team is required to develop a written report, which must be retained for at least five years.

### **EPA’s Emergency Planning and Community Right-to-Know Act**

In 1984, two international incidents involving hazardous materials (the catastrophic event in Bhopal and the disaster in Mexico), prompted the United States to draft additional legislation aimed toward preventing chemical accidents.

Congress adopted the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), which requires facilities to disclose information on chemical processes to the public. The Act itself is a part of Title III of the Environmental Protection Agency’s (EPA) Superfund Amendments and Reauthorization Act (SARA).

SARA amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA—better known as Superfund) by adding new enforcement tools, and by increasing state involvement and the focus on health problems caused by hazardous waste sites. One of the key provisions of CERCLA was to create a tax on chemical and petroleum industries. The monies collected are used to support a fund for cleaning up abandoned or uncontrolled hazardous waste sites. In addition, CERCLA established guidelines concerning closed and abandoned hazardous waste sites, and established liability of those responsible for releases of hazardous waste at these sites. SARA also encouraged greater citizen participation in the decision to clean up sites.

EPCRA was designed to help communities prepare for and respond to chemical accidents. EPCRA required each state to appoint a State Emergency Response Commission (SERC); the SERC then was required to divide its respective state into Emergency Planning Districts (EPD). EPCRA also mandated that communities develop Local Emergency Planning Committees (LEPCs) for each EPD, comprised of representatives from local government, the fire service, law enforcement, the local community, and industry.

The LEPCs are able to develop emergency response plans for large-scale incidents, and to maintain records of hazardous chemical inventories. Certain businesses are required to submit either a list of hazardous substances or Material Safety Data Sheets (MSDS) to the LEPC and to local fire departments regarding the hazardous materials that are used, processed, stored, or manufactured at their facilities. Emergency response plans are based on this information. LEPCs will be further discussed under the *Local Response* section.

## **THE IMPORTANCE OF LEPCS**

As noted previously, LEPCs are mandated by EPCRA, and play a valuable risk management planning role in the community. Currently, there are over 3,900 LEPCs across the country. Depending on the state in which they are located, LEPCs can be organized into partnerships of more than one municipality, city, county, parish, or tribe. For example, Oregon has a statewide LEPC and two tribal LEPCs. Each one of these LEPCs shares several characteristics with the others, but also possesses unique traits based on the needs and resources of the community it serves.

LEPCs address issues and devise response plans that build on the framework of local, state, and federal laws and regulations. At the local level, the LEPC performs the frequent reevaluation that is necessary to ensure that a community's response plan is up to date and appropriate for the hazards that the community may face. In most locations, the LEPC comprises a broad variety of individuals to make sure that response planning takes into account the various issues and concerns that may be raised in an actual emergency. Drawing on their respective expertise and experience, these individuals work to create realistic scenarios and then devise appropriate emergency response plans. By modifying generic high-level state and federal guidance to meet community-specific needs, LEPCs play an important role in the emergency response and risk management hierarchy.<sup>12</sup>

### **Harford County, MD**

Harford County, MD, is a rural county located northwest of Baltimore. Volunteers provide all emergency services in the County, although the Emergency Operations Center and 9-1-1 are staffed with paid employees. The LEPC is comprised of 20-30 members who meet once a month, eleven months of the year, to review hazardous materials incidents, SARA Title III Reports, and Chemical Stockpile Emergency Preparedness Program (CSEPP) updates. The LEPC has the full support of the County Executive and the community, who take an active interest in the Committee's mission.

Harford County, in addition to having several farms and a major interstate highway in the middle, is home to the US Army's Aberdeen Proving Ground (APG), and the Soldier, Biological, and Chemical Command. Chemical and biological weapons have been tested, stored, or destroyed

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<sup>12</sup> Environmental Protection Agency. "LEPCs and Deliberate Releases: Addressing Terrorist Activities in the Local Emergency Plan." EPA 550-F-01-005. May 2001.

there—a situation not faced by many other LEPCs. The LEPC has dealt with this challenge by building a good working relationship with the APG; a representative from the APG sits on the committee.

Harford County also has a law that requires that any hazardous material released into the environment be reported. Chapter 146 of the Harford County Code, “The Hazardous Materials Law,” requires that 9-1-1 must be called any time a hazardous material is released into the environment. Failure to do so will result in the issuance of a Notice of Violation that may require the violator to appear before the LEPC. In addition to the hearing, a fine of up to \$1,000 may be assessed.<sup>13</sup>

### **Goochland County, VA**

Located between Richmond and Charlottesville, VA, Goochland County also is a rural county. The many farms in the county are being joined by rapidly growing and expanding bedroom communities. Six volunteer fire/rescue companies, which provide advanced life support care, serve the County. The volunteer corporations rely on neighboring Henrico County for a hazardous materials team.

The Goochland County LEPC not only must address the issue of numerous tanker trucks passing through the county on an interstate highway, but it must operate in relative obscurity as well. Because of the County’s small tax base, the LEPC receives relatively little funding and has learned to improvise to be effective.

One of the key innovations of the Goochland LEPC was the Short-Term Alternate Refugee (STAR) program. As is common across the country, the County’s emergency shelters are in designated schools, but because of the rural nature of the County, the school-based shelters are remote and difficult to access for many residents. The STAR program provides multiple alternate temporary shelters for evacuees. This not only protects the citizens, but also encourages them to evacuate in the event of an emergency.

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<sup>13</sup> Harford County LEPC “The Right-to-know, A Guide for Business.”  
<http://www.co.ha.md.us/lepc/Download/RightToKnowGuide.pdf>

## **Cuyahoga County, OH**

Cuyahoga County is the largest county in Ohio, with approximately 1.4 million people and 59 local political jurisdictions. The LEPC that serves Cuyahoga County is one of 87 in the state. Ohio has chosen to make counties the geographical focus for its local right-to-know requirements, and they are the central resource points for response planning for hazardous substance spills, accidents, and releases. The Cuyahoga County LEPC was formed in 1987 and consists of 24 members representing different community interests. The Cuyahoga County committee's primary responsibilities include

- Processing data for annual chemical inventories for over 3,000 facilities,
- Planning for emergency response to emergency releases of hazardous substances,
- Receiving emergency notifications when hazardous substance releases occur,
- Providing information about local chemical inventories and emergency releases to the public, and
- Coordinating training and exercises for emergency response.<sup>14</sup>

To create, implement, and monitor emergency response policies, the Cuyahoga County LEPC works with the County Division of Emergency Services, the Cuyahoga Emergency Management Advisory Board, and the Board of Cuyahoga County Commissioners, as well as individual commercial contacts. In 1994, the county LEPC introduced its Chemical Accident Prevention and Chemical Emergency Preparedness Program (CAPCEP), which provides a technical advisor to work directly with facilities that handle hazardous substances.

Since 1987, the Cuyahoga County LEPC has received thousands of annual chemical inventories, completed planning requirements for over 300 facilities storing hazardous substances, and processed over 1000 emergency release notifications. In addition to planning and response,

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<sup>14</sup> Cuyahoga County, OH LEPC Organizational Website. <http://www.cuyahoga.oh.us/lepc/emergency.htm>. Accessed: September 24, 2002.

however, the Cuyahoga County LEPC has played an active role in community education and exercise planning. In the past two years, it has tested the county's hazardous materials emergency response plan through large-scale exercises at two local sites that store dangerous materials: the Praxair Distribution Center in North Royalton and the National Aeronautics and Space

Administration Glenn Research Center in Brook Park. Though hypothetical and not necessarily representative of incidents that may occur at the selected sites, the exercises have allowed practice of the field coordination, mutual aid response, and hazard mitigation skills necessary in case of an actual emergency substance release.<sup>15</sup>

These are just three of the 3,900 LEPCs located throughout the country. Because procedures and policies vary from place to place, local first responders should familiarize themselves with the LEPC in their area and seek to become active participants in the RMP process. Regardless of how an LEPC is set up, it is critical that fire departments maintain open and constant lines of communication.

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<sup>15</sup> Cuyahoga County, OH LEPC Press Releases. <http://www.cuyahoga.oh.us/lepc/05242001.htm> and <http://www.cuyahoga.oh.us/lepc/pdf/NASA051702.PDF>. Accessed: September 24, 2002.

## **THE FIRE SERVICE: ACTIVE LEADERSHIP WITH LEPC'S FOR RISK MANAGEMENT PLANNING**

Fire departments are a critical element of Local Emergency Planning Committees. In fact, they are in an excellent position to lobby for an LEPC if one has not been established, and to help ensure that facilities are meeting the requirements of EPA's RMP. In the event of an accidental release at a covered facility, local fire departments are likely to be intimately involved in the primary emergency response. (As noted earlier, a required element of a RMP is a summary of the emergency response plan for sources of hazardous materials.)

According to the Code of Federal Regulations:

- a) The owner or operator must attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations:
  - 1) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;
  - 2) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;
  - 3) Agreement with state emergency response teams, emergency response contractors, and equipment suppliers; and
  - 4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.
- b) Where State or local authorities decline to enter into such arrangements, the owner or operator must document the refusal in the operating record.<sup>16</sup>

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<sup>16</sup> 40 CFR Chapter I Part 265, Section 265.37 "Arrangements with local authorities"  
[http://www.access.gpo.gov/nara/cfr/cfrhtml\\_00/Title\\_40/40cfr265\\_00.html](http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_40/40cfr265_00.html)

LEPC's are an important coordination tool for local fire department response planning, and an important source of information through their risk management planning efforts. Within the risk management plans, fire departments will be able to find detailed information on the types and quantities of hazardous materials, as well as facility plans for dealing with an accident, should one occur. It is important to remember that much of the information contained in risk management plans is sensitive; as a result, it may be 'locked down' by the facilities owner or the LEPC.

Local fire departments should be involved in the process to develop an emergency response plan. Should the local department determine that a release at a facility is outside its expertise or beyond the capability of its staffing, mutual aid agreements should be incorporated into the emergency response plan (as in Houston). Since many large industrial facilities have their own, in-house, fire departments/brigades, these agencies should take the lead in developing the response plan. Their personnel are likely to have the training and familiarity with the facility necessary to quickly mitigate an incident. Having access to a facility's RMP will facilitate how emergency responders prepare, act upon, and critique incidents involving hazardous materials facilities.

By creating a blueprint for meeting with all businesses in a department's response area, fire departments not only protect citizens and augment the department's information for response planning, but they also educate local business owners and citizens about their responsibility to protect the public.

Close coordination with managers and operators of facilities that contain hazardous chemicals and biological materials is even more critical in light of our vulnerabilities to acts of domestic and foreign terrorism. The increased threat to domestic security has increased the need for responders to be aware of the possible targets in their response areas. Responders must also monitor changes made at a facility, such as increased security and any impact that has on fire department access, and incorporate those changes into their response plans.

Fire departments should be cognizant of transient hazards in their area. Transportation risk is half of the risk data that, combined with RMP information, drives response capability planning, including number of personnel on a shift, analyzing the adequacy of response times, and addressing mutual aid response concerns. All communities have roads passing through their area. These roads, whether small two-lane streets or large eight-lane highways, provide major routes for tankers. While it may be impossible for fire departments to be aware of every single tanker that passes through their area and the cargo that tanker is carrying, departments should make an effort to become familiar with the type of tankers *typically* passing through their response area. Personnel could then be

briefed or trained on hazardous materials responses involving the chemicals most likely to be found in a truck accident. Underground gas lines are present in our everyday lives and run through our communities; we seldom give them a second thought. Awareness and training on the challenges present in a gas line rupture, along with awareness of who owns the right-of-way of the line, where the shut-offs are located, and contact information for the corporation that owns the line are invaluable in preparing for a response. Departments can find information about transient hazards in their area through locally or federally commissioned Commodity Flow Surveys. For example, the United States Department of Transportation Bureau of Transportation Statistics conducts a commodity flow survey every four years. This survey contains a wide variety of information on methods of hazardous materials transportation, and identifies state-to-state flow, individual state information, a national summary, and a report on exports. The reports for 1997 and 1993 can be found at <http://www.bts.gov/ntda/cfs/prod.html>.

Fire departments should incorporate the information from an RMP into their response scenarios (e.g. mutual aid agreements), training schedules, and personnel apparatus deployments. Departments should familiarize themselves with covered facilities in their first-due response areas by touring the facility and perhaps training with their facilities' in-house fire department or brigade. Familiarity with the facility, through yearly tours and thorough pre-plans, can help to produce a successful emergency response to a covered facility. Response plans and procedures should be updated annually.

Fire departments should also consider applying the risk management planning model to other hazards in their area, such as high-rise occupancy or a small biotech company. While no law mandates that these types of facilities follow the same standard set forth by the EPA or OSHA, modifying the RMP guidelines provides an excellent framework for creating an all-hazards emergency plan. Just because a facility is not required to file under the Community Right-to-Know Act does not mean that there are not chemical or biological hazards contained in the structure. Small companies can grow to a point where they become a covered source or process. They are then required to change their status and implement an RMP.

The existence of fire department and environmental agency hazardous materials teams ensures that well-trained professionals will be available to respond to a large hazardous materials incident. However, it is vital that firefighters and other first responders not rely solely on the presence of the team. First responders will still arrive first to the scene and may often have to wait from ten minutes to over two hours for the closest hazmat team to arrive. At least another half hour will be added to that time for the team to perform its size-up, prepare decontamination showers, and

suit up a primary and back up crew for entry. Decisions made and information gleaned by first-in units are essential. Therefore, fire department personnel, regardless of location or rank, should receive at a minimum Hazardous Materials-First Responders training. This course, while not a substitute for detailed Hazardous Materials Technician training, at least provides all first responders with the training necessary to make a basic evaluation of the scene. Familiarity with the use of the North American Emergency Response Guidebook and the type of information contained on a standard Material Safety Data Sheet is also necessary.

## **Hospitals and LEPCs**

Several communities have developed emergency response plans that delineate responsibility for patients affected by bioterrorism. In addition, hospitals throughout the country are updating their decontamination systems as a means of preparing for a potential chemical weapons attack. The plans and procedures created for these WMD scenarios could be incorporated into any community response plan for any chemical release from a facility. An RMP could include a list of primary care facilities, their patient capacity for contaminated victims, decontamination capabilities, and a listing of other public health facilities in the area that could be utilized. This section of the plan also could show a list of medical resources from the county, state, and/or Federal level, including contact information. It is important to foster contacts and enhance relationships with these resources before an event occurs, rather than waiting until a crisis. For example, state and Federal representatives can be invited to participate in community response drills or asked to attend planning meetings.

It is also important for local emergency responders to become familiar with the roles of hospitals in the event of a chemical accident. While emergency responders have ample practice in transporting patients to hospitals, and interfacing with them in a standard patient-care capacity, a chemical accident at a processing facility may necessitate a change in the normal routine. EMS providers and transportation agencies should provide drivers with the list of designated decontamination and care facilities, along with a hard copy of emergency procedures for dealing with contaminated victims. These procedures should be practiced through full-scale exercises using as many potential responders as possible

## **Resources**

Several resources are available to local fire departments to assist them in the creation and application of a Risk Management Plan. While some of these resources are aimed at the LEPC, they provide useful information to the fire service as well.

The United States Fire Administration's website (<http://www.usfa.fema.gov>) provides several major fire reports concerning incidents in facilities covered under SARA Title III. In addition, the website provides links to reports by Fire Officers at the Executive Fire Officer Institute that discuss incidents in the creation and implementation of an RMP.

In addition, the USFA administers the Assistance to Firefighters Grant Program. The purpose of the program is to award one-year grants directly to fire departments of a State to enhance their abilities with respect to fire and fire-related hazards. This program seeks to identify departments that lack the basic tools and resources necessary to protect the health and safety of the public and their firefighting personnel. Through this program, Departments lacking appropriate equipment necessary for response to a chemical accident could apply for a grant. For 2002, grants were available in the areas of Firefighter Operations and Firefighter Safety; Fire Prevention; Emergency Medical Services, and Firefighting Vehicles. More information on this grant program can be found at <http://www.usfa.fema.gov/dhtml/inside-usfa/grants.cfm>.

The EPA provides several pamphlets and guides concerning chemical safety on its website (<http://www.epa.gov>). Included is *Chemical Safety in Your Community: EPA's New Risk Management Program*, May 1999. This pamphlet provides a summary of the Risk Management Program and a list of important links to other RMP sites.

The Environmental Health Watch (<http://www.ehw.org>) provides a "report card" on chemical accidents for the LEPC. Under number 4, *Emergency Response Planning*, the EHW provides a 13-point list of steps to be taken by the LEPC in planning its emergency response.

There are also several websites providing information (on) LEPCs. Among these are the LEPC Information Exchange (<http://www.lepcinfoexchange.com/>), LEPC/SERC Net (<http://www.rtk.net/lepc/>), the Local Emergency Planning Committee (LEPC) Database (<http://www.epa.gov/ceppo/lepclist.htm>), and the LEPC Web Network (<http://www.lepcweb.com/>).

Finally, the National Fire Protection Association (NFPA) addresses RMP in NFPA 1500—Standard on Fire Department Occupational Safety and Health Program. It provides a template for the creation of a Risk Management Plan. The sample plan is comprehensive, covering not only the federal regulations governing information sharing and planning, but also the training and capabilities necessary on the part of the fire department. Copies of this standard are available from the NFPA at <http://www.nfpa.org>.