

Publication 9200.5-01B
EPA/540/8-91/003
June 1991

The Superfund Program: Ten Years of Progress

Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
Washington, DC 20460



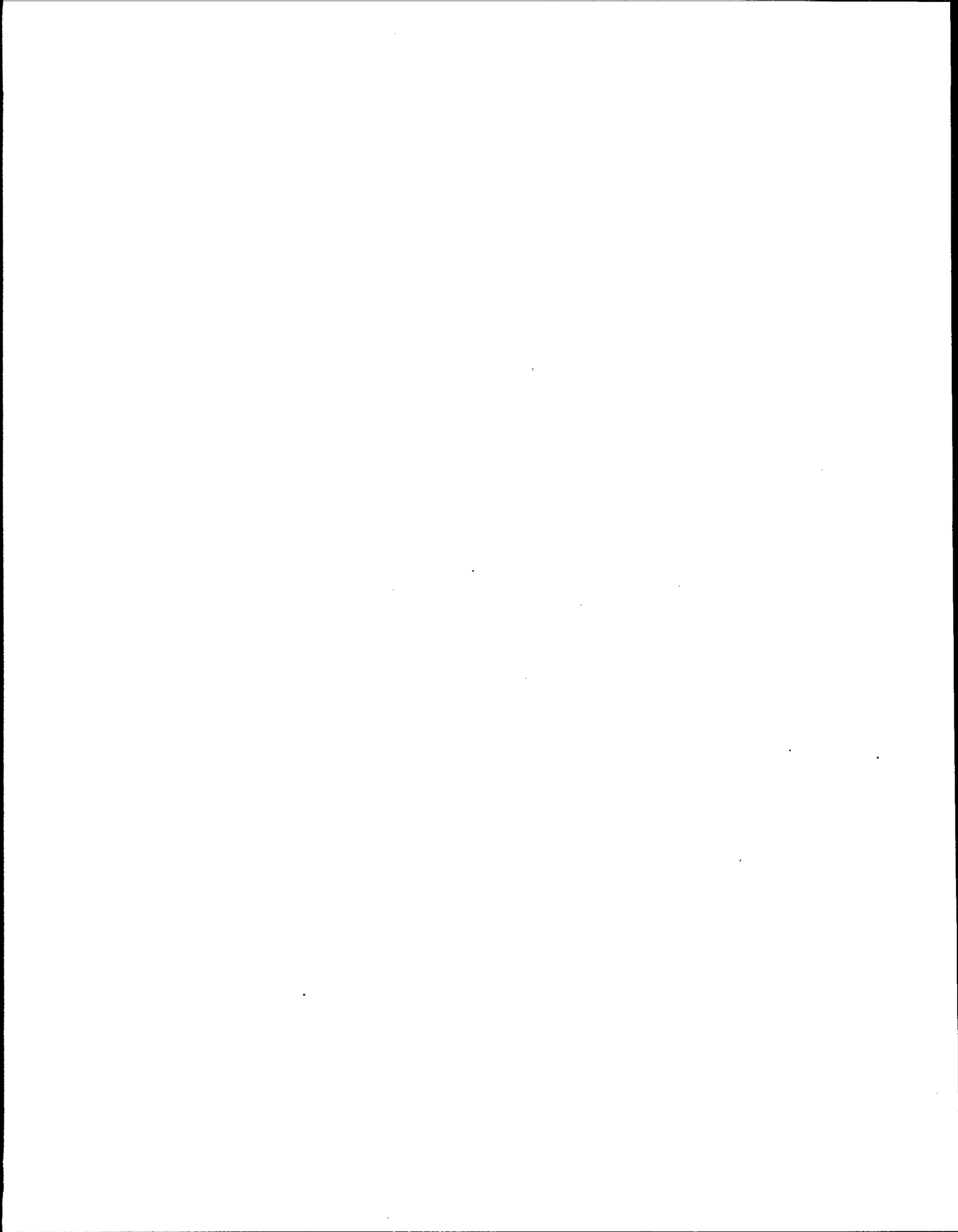
Printed on Recycled Paper

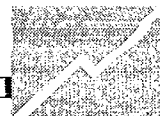
Additional copies of this report may be obtained
from the National Technical Information Service
(NTIS) at:

NTIS
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650
















Table Of Contents

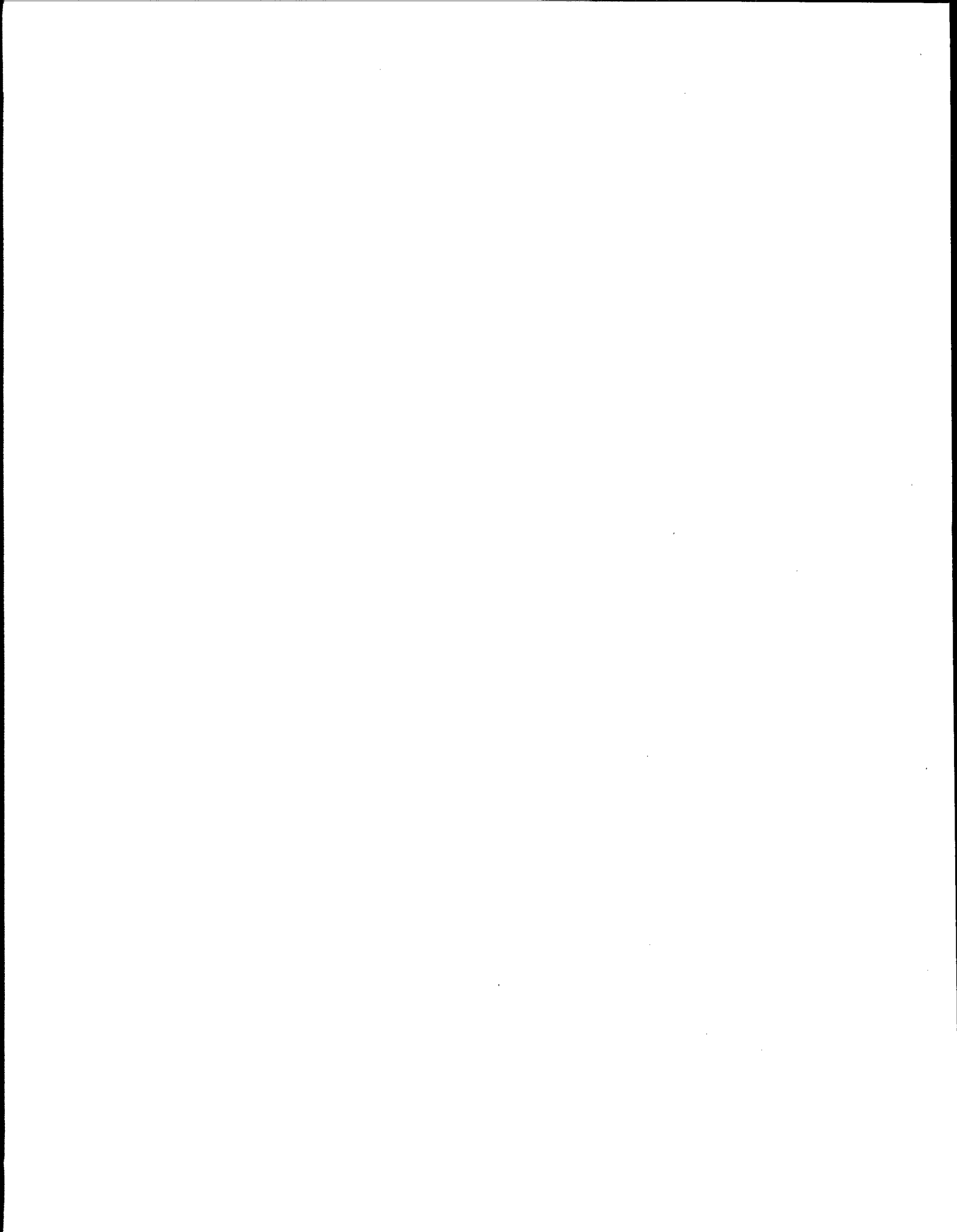
Executive Summary	iv
Legislative And Regulatory Framework	1
Removal Actions	4
Site Assessment Activities	10
Remedial Activity	14
The Enforcement Program	22
Public Participation In Decisionmaking	26
Roles Of States And Indian Tribes	30
Management Infrastructure	33
Future Directions And Challenges	36
EPA Superfund Offices	37
For More Information	38
Glossary Of Terms	40





The Superfund program is up and running, and the accomplishments have been many:

-  The **legislative and regulatory framework has been developed**, tested and enhanced, and today provides a solid blueprint for Superfund program operations.
-  Removal actions continue to provide **rapid and flexible response** to health and environmental threats wherever and whenever they occur.
-  **More than 2,300 removal actions** have been started and more than 1,950 completed since 1980, making the removal program the most rapidly productive component of Superfund.
-  EPA has revised its screening mechanism for Superfund sites to portray more accurately the degree of **relative risk to both human health and the environment** at National Priorities List sites.
-  EPA has **met all measurable goals** for Superfund site assessment and inspection set forth by Congress.
-  **Permanent, cost-effective solutions** to the most serious hazardous waste sites have begun at more than 1,000 remedial sites during the last 10 years.
-  EPA has made remedial action a top priority; today there are **more sites in the construction pipeline** than ever before.
-  Many of these **remedies have used innovative treatment technologies** to reduce the toxicity, mobility, or volume of waste.
-  The **"One Superfund Program—Enforcement First"** concept has resulted in a seven-fold increase during the last four years in responsible party settlements with a total value of \$3.7 billion.
-  The Agency uses a variety of **enforcement tools** to encourage responsible parties to settle, but still maintains authority to force private party response when necessary. PRPs now conduct more than 60 percent of Superfund remedial actions.
-  **EPA listens to citizen concerns** and fully involves the public in the Superfund decisionmaking process "early, often and always."
-  **States, Territories, and Indian Tribes continue to take lead responsibility** for Superfund response at many sites, and that number is expected to increase significantly as individual State hazardous waste programs mature. For example, States have completed more than 58 percent of preliminary assessments and 32 percent of site inspections in the Superfund program.
-  The Superfund program **management systems and procedures are in place** and are continually being refined.
-  EPA's knowledge of how contaminants enter and travel through environmental media has increased, leading to **better solutions to complex waste management problems**.
-  The Superfund program continues to improve the quality of the program over time, **building public confidence**.



A Snapshot of the Superfund Program

Hazardous waste, improperly disposed over time . . . complex chemical combinations . . . contamination that may affect surface water, soil or ground water . . . properties that change hands leaving indistinct records . . . pioneer technology . . . and evolving scientific knowledge . . . These are some of the challenges confronting Federal, State, and local Superfund program officials in identifying, evaluating, and cleaning up abandoned or uncontrolled hazardous waste sites. Site ownership and operational histories are not always clear, making it difficult to determine responsible parties. Several media—components of the environment, including surface water, ground water, soil, and air—may be contaminated and the pathways of exposure may threaten sensitive ecosystems as well as human health and welfare. Treatment technologies are evolving constantly to address more effectively the broad spectrum of contaminants found at multi-use facilities. At the same time, the costs of cleanup are expanding, and the affected public at hazardous waste sites must have opportunities to be involved in the cleanup process.

Study). This review provides a candid self-evaluation of past program activities and achievements, identifies conflicting mandates and needs for program enhancements, and makes a commitment to following a practical plan for the future. This plan is based on a set of eight strategic goals:

- **Control acute threats immediately.** EPA will get into the field fast, size up the scope of the problem, and undertake appropriate action right away to ensure protection from immediate threats to people and the environment.
- **Emphasize enforcement.** EPA will encourage or compel responsible parties to conduct more site work to increase the total number of cleanups.
- **Address worst sites/worst problems first.** After attacking the immediate threat, the Agency will begin the earliest remedial work to address

Historical Goals

The Superfund program is one of the nation's most ambitious and complex environmental programs. Launched in 1980, with the passage of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Superfund's primary goal is to protect human health and the environment. This goal is achieved in several ways.

- First, CERCLA provides unparalleled enforcement powers based on the belief that polluters should take responsibility for cleaning up their own wastes.
- Second, CERCLA's authority for Federal response enables EPA to protect human health and the environment in the event responsible parties do not take timely, adequate action.
- Finally, CERCLA establishes a Hazardous Substances Response Trust Fund to cover the costs of enforcement and cleanup activities.

The Challenge

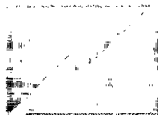
At the outset of the Superfund program, EPA's primary challenge was to respond to cleanup requests while building an organizational structure and staff, developing program policies and guidance, and accumulating money in the Trust Fund to support program operations. Today, EPA has a solid infrastructure in place to manage this complex program. In ongoing efforts to enhance its management systems and engineering capabilities, EPA is exploring new frontiers in science and technology. Total Quality Management (TQM) approaches, which are revolutionizing the business world, are being implemented and EPA is sharing with the public tangible environmental improvements.

In 1989, the Administrator of EPA completed a Management Review of the Superfund Program (commonly known as the 90-Day

... the Agency has a clear plan for the second decade of Superfund and beyond ...

problems that remain high priority when compared to competing problems at other sites.

- **Monitor and maintain sites over the long-term.** EPA will monitor Superfund sites over the long-term to ensure that the remedy remains protective of human health and the environment.



Executive Summary

- **Develop and use new technologies.** EPA will develop, demonstrate, and use permanent technologies to achieve final site cleanups, to the maximum extent practical.
- **Improve efficiency of program operations.** EPA will improve the efficiency of program operations by pursuing a "one Superfund" approach to site cleanup activity and enforcement against polluters.
- **Encourage full public participation.** EPA will increase the role of citizens in Superfund decisions and encourage clear and consistent two-way communication with the public.

... resources are directed toward the worst problems first to minimize risk and maximize protection ...

- **Foster cooperation with other Federal and State agencies.** EPA will work with State agencies, natural resource trustees, Indian Tribal Governments, and other Federal agencies to ensure an effective and cooperative relationship.

EPA developed these eight goals based on the lessons learned during the first 10 years of the program, and will build upon those lessons to chart the course for the future.

The Turning Point: A New Strategy

From these goals, a strategy for the next decade of Superfund has emerged. Simply stated, that strategy is to:

- **Enforce aggressively**
- **Make sites safe**
- **Make sites clean**
- **Bring new technology to bear in solving hazardous waste problems.**

The Superfund program's theme of solving the worst problems at the worst sites first is right in step with the Agency's overall policy for prioritized risk reduction. Under this policy, resources are directed toward the worst problems first to minimize risk and maximize protection of human health and the environment.

Today, a decade after CERCLA's enactment, the guiding principles of the original Superfund program remain intact. In fact, the Superfund Amendments and Reauthorization Act of 1986 (SARA) adopted the majority of policies and procedures the Agency had developed during the first 5 years of the program, and provided a number of changes to

strengthen and fine tune the program. In November of 1990, Congress passed a 3-year extension of the taxing authority for Superfund, ensuring uninterrupted implementation of the program through 1994.

The Future Is Built On The Past

EPA recognizes that the hazardous waste problem in the United States remains large, complex, and long-term. There are no easy solutions, but the Agency has a clear plan for the second decade of Superfund and beyond. EPA is conducting studies that will help define the total universe of Superfund sites, how much it will cost to clean up those sites, and the future role of enforcement and States in reaching the ultimate goal of protecting human health, welfare, and the environment.

This 10-year perspective report is designed to provide an overview of Superfund program activities, to illustrate the clear progress that has been made in addressing uncontrolled hazardous waste sites nationwide, and to point the direction for the future of the program.

Responses to hazardous substance releases under the Superfund program are guided by the:

- Comprehensive Environmental Response, Compensation, and Liability Act of 1980
- Superfund Amendments and Reauthorization Act of 1986
- National Oil and Hazardous Substances Pollution Contingency Plan (March 1990)

Rules And Tools

Superfund was created by Congress in 1980 with the passage of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). CERCLA arose out of the need to protect citizens from the dangers posed by abandoned or uncontrolled hazardous waste sites. Most Americans can remember nightly news broadcasts in the late 1970s describing the thousands of leaking drums

and ground water threats discovered at the Love Canal site in Niagara Falls, New York. CERCLA gave the Federal government broad authority to respond to hazardous substance emergencies, and to develop long-term solutions for the nation's most serious hazardous waste problems like Love Canal.

The term "Superfund" referred to a \$1.6 billion Hazardous Substance Response Trust Fund established to pay for cleanup and enforcement activities at waste sites. This fund was financed primarily with a tax on crude oil and 42 commercially used chemicals. The tax supported the concept that those responsible for environmental pollution should assume the cost. The original law also enabled the Federal government to recover the costs of its actions from those responsible for the problem, or to force them to clean up the hazardous site at their own expense.

On October 17, 1986, the Superfund Amendments and Reauthorization Act of 1986 (SARA) was enacted. SARA reflected EPA's

experience in administering the complex Superfund program during its first 6 years. The reauthorized law made several important changes and additions to the program:

- Increased the size of the Trust Fund from \$1.6 billion to \$8.5 billion
- Stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites

... those responsible for environmental pollution should assume the cost.

- Established specific cleanup goals and schedules
- Required Superfund actions to consider the standards and requirements found in other Federal and State environmental laws and regulations
- Expanded the statutory cost and duration limits on removal actions
- Provided new enforcement authorities and settlement tools
- Increased State involvement in every phase of the Superfund program
- Increased the focus on human health problems posed by hazardous waste sites
- Encouraged greater citizen participation in making decisions on how sites should be cleaned up



Legislative And Regulatory Framework

- Expanded research and training activities to promote the development of alternative and innovative treatment technologies
- Required cleanup of Federal facilities to meet Superfund requirements.

In response to the tragic toxic chemical release in Bhopal, India, and a subsequent serious incident in Institute, West Virginia, Congress also established new reporting requirements for facilities that handle hazardous chemicals. Title III of SARA, the Emergency Preparedness and Community Right-to-Know Act of 1986, established a four-part program to define an emergency planning structure at the State and local levels; require emergency notification of hazardous chemical releases; require notification of chemical use, storage, or production activities; and define annual emissions reporting requirements.

The Superfund response effort is guided by the National Oil and Hazardous Substances Pollution Contingency Plan, commonly referred to as the National Contingency Plan (NCP). This plan outlines the steps that EPA, the U.S. Coast Guard, and other Federal agencies must follow in responding to situations in which hazardous substances or oil are released into the environment. Fourteen Federal agencies are members of the National Response Team (NRT), which is responsible for planning and coordinating preparedness and response actions.

The NCP, which actually predates Superfund, was originally written to implement provisions in the Clean Water Act having to do with spills of oil and hazardous

substances into navigable waters. It has been revised three times: first to incorporate the 1980 Superfund program, then later in 1985 to streamline the Superfund process, and most recently in March 1990 to address significant changes in the Superfund program resulting from the enactment of SARA. The NCP is currently being revised to include the new requirements of the Oil Pollution Act of 1990.

The national goal described in the NCP is to select remedies that are protective of human health and the environment, that maintain protection over time, and that minimize untreated waste. The Superfund program expects to achieve this goal in several ways:

- Use treatment technology on principal threats, wherever practical
- Consider isolation and containment for wastes posing mini-

mal threats or where treatment is impractical

- Combine treatment with containment, as necessary
- Supplement engineering solutions with institutional controls such as deed restrictions wherever appropriate
- Consider innovative treatment technologies
- Return ground waters to their beneficial uses as soon as possible.

The Superfund Process

The process established by the NCP for meeting these expectations and handling hazardous waste problems begins with learning where a hazardous waste site might exist (see Superfund Process Flowchart, Figure 1). If, based on a preliminary

Two Types Of Response: Removal And Remedial Actions

Every Superfund site is unique, and cleanups must be tailored to the specific needs of each site or release of hazardous substances. From the beginning of the process, EPA makes a concerted effort to encourage those responsible to pay for cleanup. However, if an immediate problem threatens human health, welfare, or the environment, EPA will take action. EPA can respond to hazardous substance releases in two ways as defined by CERCLA:

- **Removal Actions**—short-term actions which stabilize or clean up a hazardous site that poses a threat to human health or the environment. Typical removal actions include removing tanks or drums of hazardous substances from the surface, excavating contaminated soil, installing security measures at a site, or providing a temporary alternate source of drinking water to local residents.
- **Remedial Actions**—the study, design, and construction of longer-term and usually more expensive actions aimed at permanent remedy. EPA can take remedial actions only at sites on the National Priorities List (NPL)—EPA's list of the nation's most serious hazardous waste sites. Typical remedial actions include removing buried drums from a site, constructing underground walls to control the movement of ground water, incinerating wastes, or applying bioremediation techniques or other innovative technologies to contaminated soil.

evaluation there is an emergency requiring immediate action, the next step is to act as quickly as possible to remove or stabilize the threat. These actions are known as removals (see box on previous page).

Even after the necessary emergency action has been taken to control the immediate threat, in some cases contamination may remain at the site. A more detailed analysis of the contamination may be necessary to determine if further work needs to be done to find a

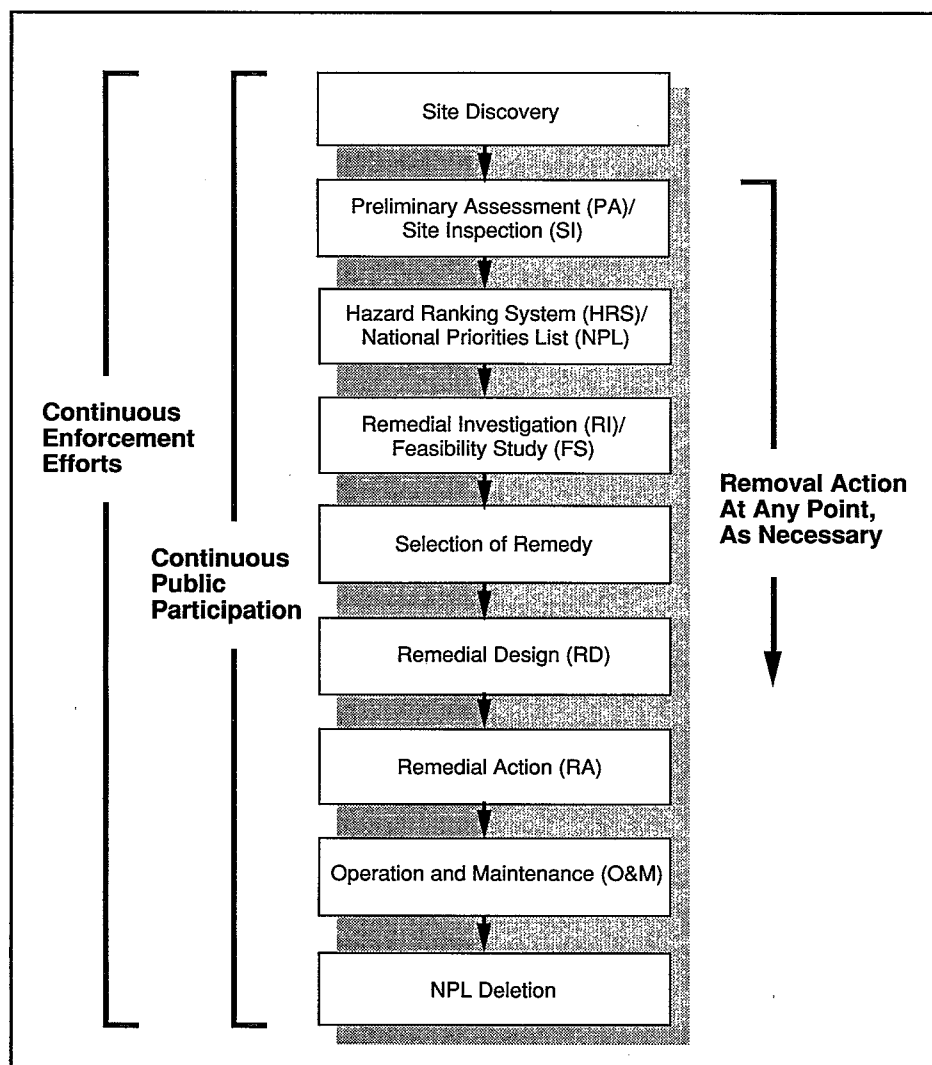
permanent solution at the site. If long-term action is necessary, a decision must be made regarding the relative national priority of that particular site. These long-term actions are known as remedial actions (see box on previous page). An investigation of the extent of contamination and analysis of the range of alternative remedial actions Superfund might take is then conducted. Concerns of the State and local community are seriously considered in determining which alternative to select. Efforts also are

made to find individuals or companies responsible for the contamination and make them pay for and/or conduct the cleanup.

After the remedial action has been selected, it must be designed and constructed. Once action has been completed, the site often must be monitored and maintained, a responsibility which is assumed by the State or responsible party.

Typically, a Superfund cleanup action follows this sequence of events, but not always. For example, an emergency requiring immediate attention can occur at a site which already is undergoing a long-term remedial action.

**Figure 1
Superfund Process Flowchart**



At all stages of response, work can be done by a State or EPA using the Trust Fund, or by responsible parties as a result of enforcement efforts. In addition, community relations activities and enforcement actions take place throughout the cleanup process to ensure optimal use of Trust Fund resources and the involvement of all interested parties in the decisionmaking process.

The following sections of this report examine in detail each step of the decisionmaking process for Superfund removal and remedial responses, highlight the major accomplishments in each program area, and provide an overview of new Superfund program initiatives.

Removal Actions

Fires, explosions, contaminated drinking water, and toxic fumes. These are just some of the situations the removal program regularly confronts. When there is no time for lengthy analysis of a hazardous substance release and no one else is available who has the technical and financial capability to respond, Superfund removal program personnel are on the scene responding as quickly as possible to reduce immediate threats to human lives and the environment.

The removal program has been the most rapidly productive component of the Superfund program, with more than 2,300 cleanups started and 1,900 cleanups completed since 1980 (see Figure 2). Virtually every day in 1990, a removal action was started somewhere in the U.S. and its territories. That rate has been remarkably consistent since 1987 when the Superfund Amendments and Reauthorization Act (SARA) doubled its limits on time and cost for removals to 12 months and \$2 million. While remedial actions are usually more expensive, extensive, and often receive more media coverage, the removal program has been a key contributor to the overall success of the Superfund program in responding to hazardous substance threats across the country.

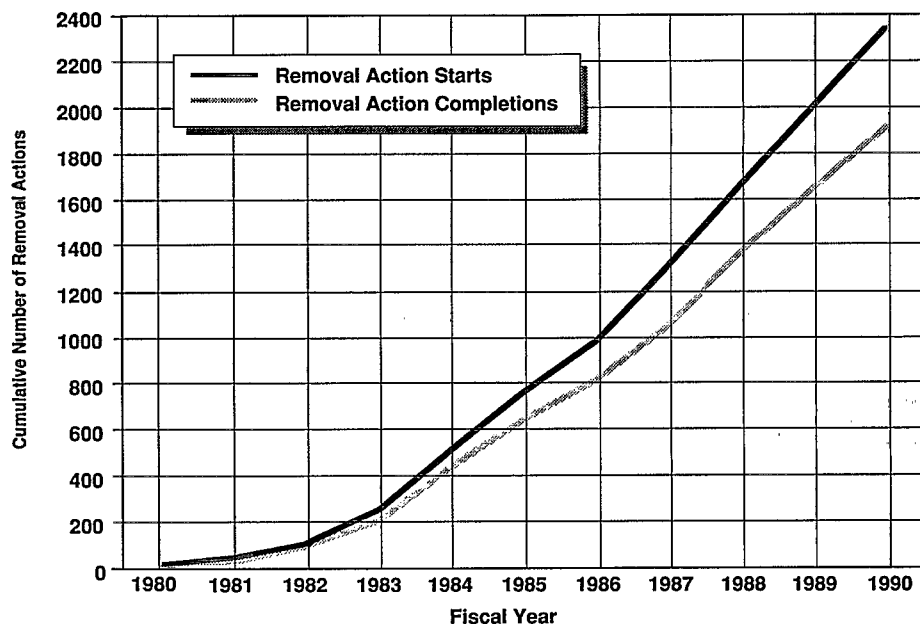
Removal actions are taken at all types of sites including inactive waste facilities such as open dumps or landfills that have been closed

... the most rapidly productive component of the Superfund program.

A removal action provides a rapid and flexible response to reported health and environmental hazards, wherever and whenever they occur. Removals are:

- Investigated and assessed within hours of being reported, 24 hours a day, 365 days a year
- Conducted at both National Priorities List (NPL) and non-NPL sites
- Conducted by On-Scene Coordinators (OSCs) from EPA or the U.S. Coast Guard (USCG)
- Kept consistent with any potential long-term remedial actions
- Limited, unless specially exempted, to 12 months for completion and \$2 million in costs.

Figure 2
Removal Action Starts and Completions*



* Totals are for combined EPA, U.S. Coast Guard, and Potentially Responsible Party-lead removal actions

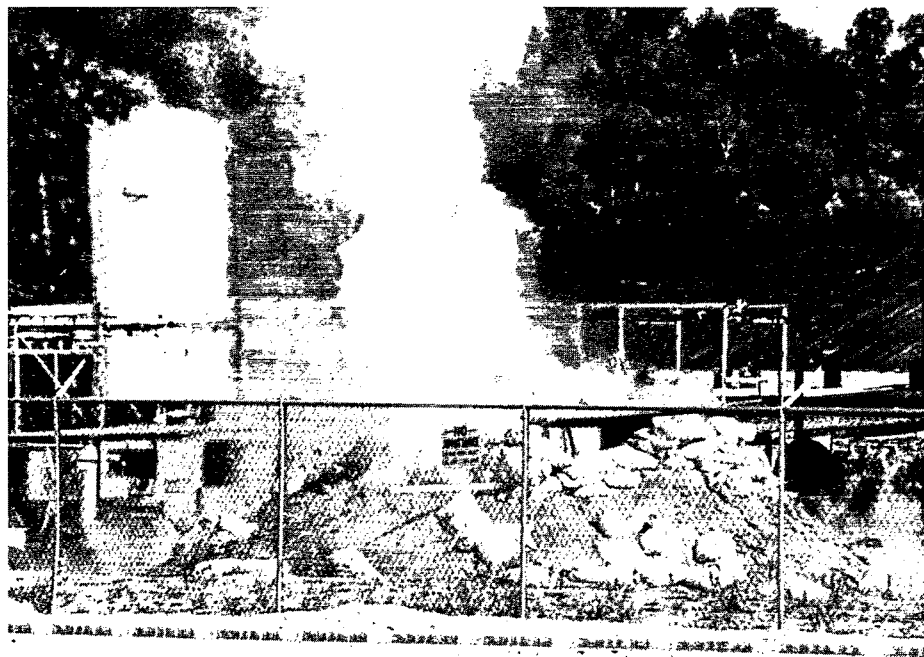
down or abandoned; "midnight dumps" where drums or other containers have been illegally disposed of in secluded woods, open fields, or other locations; active manufacturing or waste disposal facilities, chemical manufacturers, and operating landfills; and transportation-related accidents such as toxic chemical releases from derailed

trains or overturned trucks. Covering a wide range of situations, removal actions typically include a variety of substances and health and environmental threats. For example, removal actions address threats to communities and ecosystems from fire and explosion; human direct contact risks due to drinking water or soil contamination; improper

Removal Actions Address A Variety Of Threats

In 1983-1984, EPA conducted an assessment of the Fike/Artel Chemical site, a chemical manufacturing plant in Nitro, West Virginia. The owners agreed to clean up the site. Hazardous conditions remained, however, and when the site was abandoned in June 1988, the West Virginia Department of Natural Resources requested EPA's further assistance. The four-acre site contained approximately 5,000 drums above ground, cylinders, laboratory chemicals, buildings, and a lagoon of processed waste water, all in various stages of deterioration. Nearly the same number of drums was suspected to be buried on site. Two bunkers holding an estimated 100,000 pounds of highly incendiary elemental sodium, located only 500 yards from downtown Nitro, presented an immediate threat to public safety. A tank with deteriorating valves, containing methyl mercaptan (a chemical that attacks the respiratory and central nervous systems) also remained on site.

The OSC initiated an emergency removal. Activities included 24-hour site security and new fencing; detonating potentially explosive cylinders containing hydrogen cyanide; sampling, packing, and removing drums; remote crushing of unidentified lab containers; draining, backfilling, and reseeding the waste water lagoon; and building decontamination, treatment, and storage structures. Further investigation is currently underway to determine the nature and extent of soil and ground water contamination.



storage of hazardous substances in drums, tanks, and other containers; and deterioration of site conditions

due to bad weather. Generally, removal actions include one or more of the following activities:

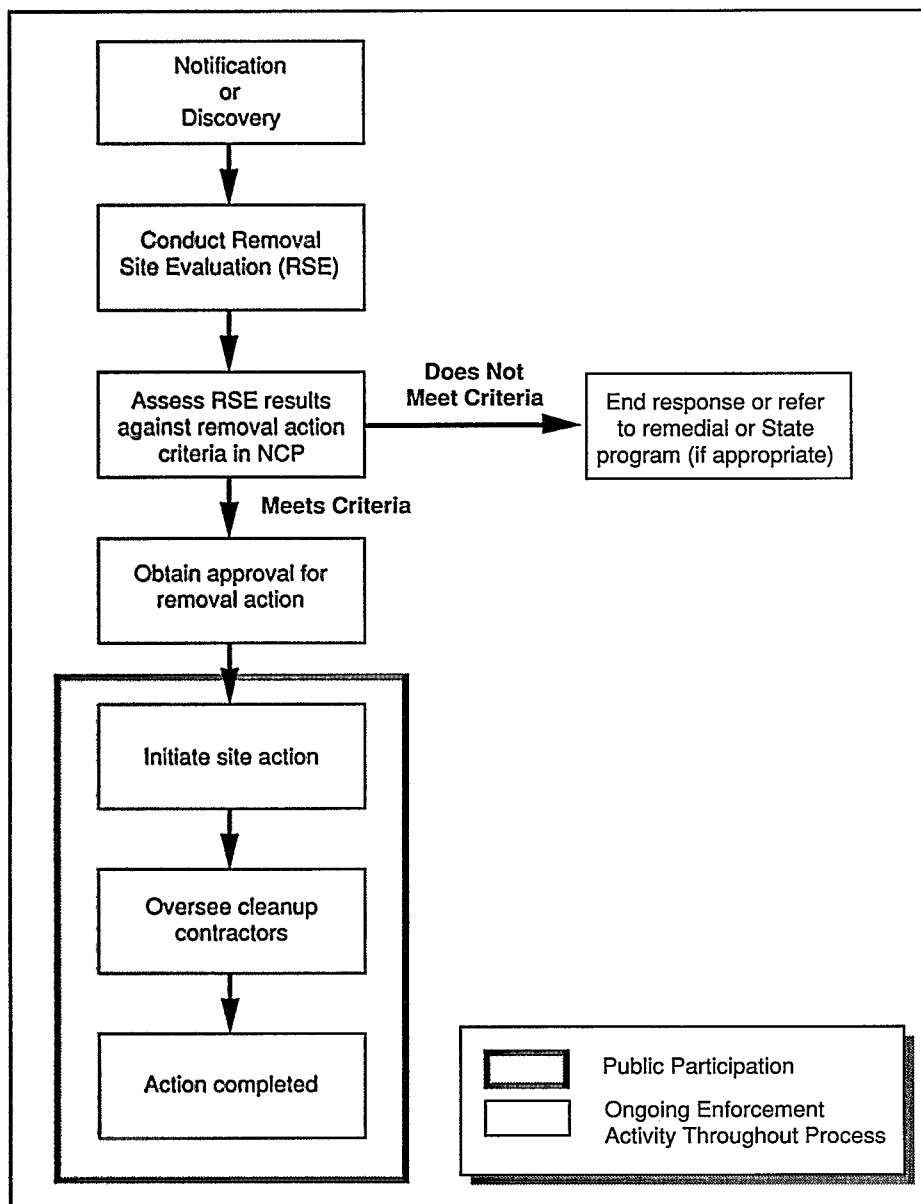
- Evacuating or temporarily relocating people to protect human health
- Stabilizing or detonating hazardous materials to prevent fires and explosions
- Providing site security—signs, fences, guards—to limit access and prevent direct contact with hazardous substances
- Providing an alternate water supply
- Containing, removing, or treating hazardous substances by:
 - Controlling drainage
 - Stabilizing berms or dikes
 - Closing or draining lagoons
 - Capping soils or sludge
 - Excavating and removing contaminated soil
 - Removing drums or other containers
 - Using chemical stabilization.

While remedial actions require that a site be on the NPL, removal actions do not. To date, 29 percent of all completed removal actions have taken place at NPL sites; 71 percent have involved non-NPL sites.

Of the 351 removal actions begun in 1990, about two-thirds were managed directly by EPA Regional offices. The remainder were managed either by the USCG, which has responsibility for oil discharges and hazardous substance releases in coastal waters and some inland waterways, or by potentially

Removal Actions

Figure 3
Overview of Removal Process



responsible parties (PRPs), whose cleanup activity is monitored by EPA or USCG. In light of Superfund's increased emphasis on enforcement, it is significant that the number of PRP-managed removal actions has steadily increased, accounting for 98 of the 351 starts in 1990.

Organization And Procedures For Rapid Response

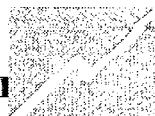
The National Response Center (NRC), operated by the USCG in Washington, D.C., is the official clearinghouse for all reports of oil and hazardous substance releases. The Comprehensive Environmental

Response, Compensation, and Liability Act (CERCLA) requires that any manufacturer, waste facility operator, or common carrier immediately report releases of hazardous substances (above substance-specific thresholds known as "reportable quantities") to the NRC.

When the release or potential release is from an inactive waste facility or from an illegal dump, however, reporting is less routine. The amount of the release—and even the substance being released—may not be known immediately, and the NRC may receive only partial information from State or local public safety officials or the general public.

Whether information is complete or partial, the NRC alerts the appropriate EPA or USCG Regional OSC as well as State officials and other Federal agencies with a potential interest. The NRC also alerts the EPA Emergency Response Division in Washington, D.C., which sets policy for and manages the removal program; but the NRC's primary responsibility is the immediate notification of the designated Regional OSC. OSCs are on call 24 hours a day to respond to reports of releases that may require a Superfund removal action.

The first task of the OSC may be to assist public safety officials in their efforts to protect the public. This may include emergency efforts to secure the site, ensure fire control, provide emergency alternate water supplies, or assist in temporary evacuation.



Major Removal Action Participants

In addition to EPA and USCG, many other Federal, State, and local agencies frequently take an active role in the removal program:

- **Agency for Toxic Substances and Disease Registry (ATSDR):** An agency of the Department of Health and Human Services, ATSDR is responsible under CERCLA for conducting health assessments after the release of hazardous substances.
- **Department of Defense (DOD):** The U.S. Army Corps of Engineers has specialized equipment and personnel available to assist in removal actions.
- **Department of Energy (DOE) and Nuclear Regulatory Commission (NRC):** DOE and NRC provide specialized assistance when radioactive substances are involved.

In addition, DOD and DOE are specially authorized under CERCLA to conduct emergency removal actions at their own facilities.

- **State and local governments:** State and local public safety agencies are often the first responders to a release. They are responsible for initiating public safety measures and directing evacuations according to existing State or local procedures. EPA has established a program to reimburse local governments for some of the costs associated with their emergency responses. In addition, all States have representation on Regional Response Teams. Finally, individual States may enter into agreements to conduct Fund-financed removal actions.

After public safety has been secured, the OSC begins a removal site evaluation. The objective is to determine the potential for or source of the release, the threat to human health, whether another party is conducting a proper response, and the appropriate course of action. Regional and National Response Teams are available to provide technical assistance to the OSC during this evaluation. With this assistance, the OSC is responsible for documenting the situation and determining whether a short-term, relatively low-cost response—a removal action—is sufficient to stabilize or clean up the site.

If the OSC determines that the situation does not require a removal action, the site may be referred to

the Hazardous Site Evaluation Division of EPA to be evaluated for inclusion on the NPL and possible remedial action, or it may be referred to another interested Federal or State agency for action.

While the site is being evaluated, the OSC also must determine whether one or more PRPs are capable and willing to assume responsibility, under EPA supervision, for the appropriate course of action. If the PRPs are unknown, unwilling, or incapable of assuming timely responsibility, the OSC initiates a CERCLA-funded removal action. Identified PRPs are not released from responsibility, however. Throughout the course of the removal action, the OSC or enforcement personnel continue efforts for

PRP involvement and cost recovery. Throughout the planning and execution of a removal action, opportunity for public participation is mandated by CERCLA. Information must be provided and public response solicited. Only the requirements of public safety are allowed to override this policy. Figure 3, on the previous page, presents an overview of the removal process.

New Directions For The Removal Program

The most sweeping changes to the removal program have occurred as a result of expanded statutory and regulatory authorities. Among the most significant changes implemented as a result of SARA, and reflected in subsequent revisions to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), are:

- **Expanded response authority:** The limitations on removal actions were increased from 6 to 12 months, and from \$1 million to \$2 million, to reflect actual time and cost constraints encountered during the first 6 years of the program. These expanded limits increase the flexibility of the removal program to respond to various threats and help achieve greater coordination with the remedial program.
- **Contribution to remedial performance:** Removal actions must be designed to contribute to the efficient performance of any subsequent long-term remedial action.

Removal Actions

Expanded Authority And State-Of-The-Art Technology

Southeastern Wood Preserving in downtown Canton, Mississippi operated from 1928 until early 1979, when its owners filed for bankruptcy and abandoned the site. EPA initiated an emergency removal action in June 1986 to stabilize three unlined, over-flowing surface impoundments containing creosote sludge and water. Thirty-thousand gallons of water were pumped from the flooded areas of the site. EPA proposed that the second phase of cleanup consist of either on-site treatment or off-site disposal of the stabilized sludge.

In December 1988, the Department of Agriculture's Soil Conservation Service (SCS) contacted EPA. While surveying a creek that borders the site, SCS had noticed oily waste leaching into the creek. Through an Interagency Agreement, SCS worked with EPA to excavate the contaminated soils.

In August 1989, EPA approved an exemption from the 12-month statutory limit on removal actions. The Region approved additional funds to continue excavations and to conduct on-site treatment of the contaminated sludges. The sludges threaten to contaminate soil and drinking water (a municipal well is within 100 feet of the site) and continue leaching into the creek (children playing in a park a mile downstream from the site have complained of creosote burns). EPA is proposing to use biological remediation to treat the 8,000 cubic yards of contaminated soil left on the site. In August 1990, the EPA Region obtained an exemption from the \$2 million statutory limit to cover additional costs to meet stringent land disposal and air emission standards. Bioremediation is scheduled to begin in 1991.



- **Use of alternative technologies:** When possible, EPA considers cost-effective removal action alternatives that use recycling or treatment of

waste rather than land disposal. This requirement promotes the use of cleanup technologies that reduce the toxicity, mobility, or volume of waste.

- **Compliance with applicable or relevant and appropriate requirements (ARARs):** On-site removal activities are expected to identify and comply with all Federal (beyond CERCLA) and State environmental and human health laws to the extent possible given the circumstances of the removal. This ensures that removal actions are conducted in a way that best prevents damage to human health, welfare, and the environment.
- **Off-site disposal:** If a removal action requires off-site disposal of hazardous wastes, those wastes must be sent to environmentally-sound (RCRA-approved) facilities. This helps to ensure that wastes from removal actions will not create future Superfund sites.

These changes in authority and program emphasis have increased the removal program's flexibility to respond to hazardous substance releases while also promoting environmentally sound technologies and practices that reduce threats to human health and welfare. The removal program continues to evolve in its flexibility and responsiveness as the Agency endeavors to control immediate threats to people and the environment.

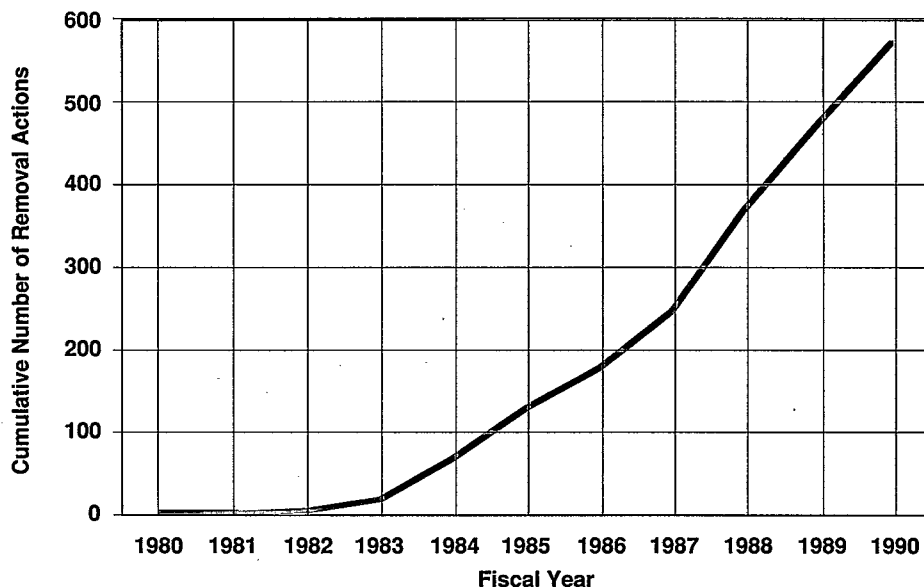
Recently, the Superfund Management Review set forth a comprehensive, long-term strategy for the Superfund program. Three elements of the eight-part strategy have especially important implications for the removal program:



- Control acute threats immediately
- Address the worst sites and worst problems first
- Emphasize enforcement to induce private party cleanup.

Progress towards these goals had already begun within the removal program prior to the Superfund Management Review. For example, the Regions expanded an evaluation effort already underway concerning the need to control acute threats immediately at existing NPL sites. EPA also established timeframes for conducting assessments at newly proposed NPL sites and for follow-up. Additionally, EPA is focusing on methods to accelerate response at NPL sites that use removal and remedial program coordination to make sites safer and address the worst sites first. While the majority of threats at NPL sites are addressed through the remedial program, certain sites may benefit from the flexibility and streamlined response options offered by the removal program. Finally, EPA is emphasizing a strong "enforcement first" approach for the Superfund program in order to promote more private party cleanups through the use of enforcement and settlement authorities.

The strength of the removal program lies in its ability to mobilize expertise and resources to respond to immediate, critical hazardous substance threats. Remedial actions often receive more attention, as local sites are scored and evaluated for inclusion on the NPL. They also



* Figures shown are for enforcement-lead removal action starts at NPL and non-NPL sites.

generally receive more resources, as long-awaited, full cleanups are planned and implemented. But the removal program is fast, flexible, and operates whenever and wherever a release or a potential for a release of hazardous substances poses a threat to human health, safety, or the environment.

The increase in cost limits for removal actions does not mean, of course, that the removal program has been exempted from national and EPA fiscal constraints. Priorities have been set—addressing immediate threats at NPL and non-NPL sites first. Less immediate threats at NPL sites will be addressed only as resources permit. Enforcement has steadily improved, as well. Overall, there were 98 PRP-led removal actions in 1990, up from 47 in 1986. Enforcement is now making it

possible to address a greater number of sites each year (see Figure 4).

Over the last 10 years, the removal program has developed an organization and procedures in keeping with its mission. It has been able to maintain the speed and flexibility of a decentralized program while cultivating crucial health and safety expertise. The expanded response authority granted under SARA is not only an indication of rising response costs but an acknowledgment of the importance of the program within Superfund. The removal action program has been successful in creating an effective EPA presence at non-NPL sites and in stabilizing and mitigating the worst problems at NPL sites until the remedial program can implement complete cleanups.

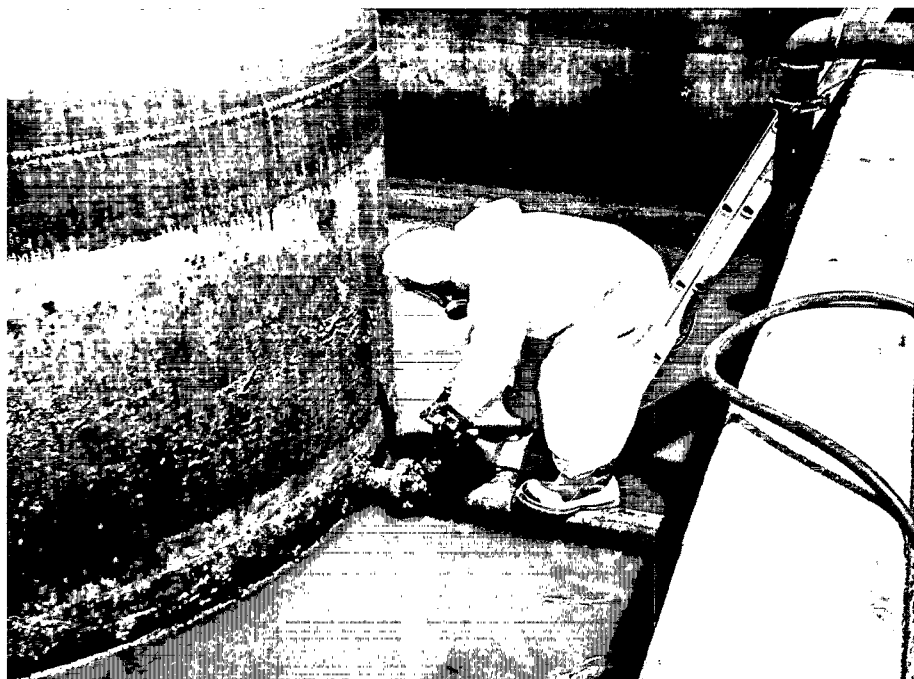
Site Assessment Activities

The primary goal of the site assessment program is to identify the most serious hazardous waste sites in the nation and list them on the National Priorities List (NPL), a catalogue of those sites with a potential need for remedial action. Site assessment is the initial phase of Superfund response, and the process by which EPA and the States identify, evaluate, and rank hazardous waste sites. Within this framework, however, specific objectives for the program have shifted over the course of Superfund's 10-year history. In part, this is because the scope and magnitude of the problem of neglected hazardous waste sites was vastly underestimated when the Superfund program began.

The Superfund program was originally conceived as a 5-year effort that would address the 400 worst abandoned hazardous waste sites in the nation, and gradually be phased out of existence. Since 1980, however, it has become clear that the total number and distribution of hazardous waste sites far exceeds any of the original estimates.

Between 1980 and 1986, the major emphasis for the site assessment program was on establishing program requirements and developing the Hazard Ranking System (HRS), which enables EPA to evaluate numerically the relative risk of each site listed in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), the official information system for the Superfund program. EPA then established a cut-off point for sites that would be eligible for Federal cleanup funds. It was the Agency's goal at that time to place a minimum of 400 of the nation's worst sites on the NPL, based on their HRS scores.

With the 1986 enactment of the Superfund Amendments and Reauthorization Act (SARA), Congress



Site assessment activities help identify and assess the most serious hazardous waste sites in the nation. These activities include the following steps:

- **Site discovery**—identifying hazardous substance releases through formal and informal channels
- **Preliminary assessment (PA)**—evaluating existing site-specific data for early determination of need for further action
- **Site inspection (SI)**—assessing on-site conditions and characteristics to determine if an HRS score should be developed
- **Hazard Ranking System (HRS) score**—applying a mathematical approach to assessment of relative risks posed by sites
- **NPL listing**—determining those sites that are eligible for Superfund-financed remedial action.

developed measurable goals for the Superfund site assessment program. Specifically, SARA mandated that for all sites listed in CERCLIS as of October 17, 1986, preliminary assessments (PAs) must be completed by January 1, 1988, and site inspections (SIs) must be completed by January 1, 1989. In addition, SARA required that EPA revise the HRS to emphasize potential human health risks and damage to ecosys-

tems. These changes demonstrated that a new emphasis was being placed on the site assessment program, not just as a preliminary phase to the remedial program but as a rigorous screening program designed to determine which sites should continue through the process to NPL listing. The site assessment program is critical because once a site is listed on the NPL it becomes eligible for Federal cleanup funding.

Since 1986, 10,700 sites have had PAs and 6,300 of these sites have undergone SIs. The NPL, which began in 1981 as an "Interim Priorities List" of 115 sites, now

locating sites that would otherwise go unnoticed. For example, Region X has an active site discovery program that uses geographic information systems and makes use of historical industrial business lists and EPA program lists to identify sensitive or vulnerable areas where releases would be significant.

Congress developed measurable goals for the Superfund site assessment program.

contains nearly 1,200 sites. Based on past rates of listing, the Agency expects to list approximately 100 sites per year. The NPL will likely contain 2,100 sites by the year 2000.

The Site Assessment Process

Site Discovery

EPA learns of releases that potentially warrant Superfund response through both formal and informal channels. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) notification requirements mandate that any person who knows of a hazardous substance release notify the Federal government. Moreover, under SARA, owners or operators of facilities that produce, use, or store extremely hazardous substances are required to notify the local emergency planning committee and State emergency response commission if at any time a release exceeds reportable quantities, as described in the Removal chapter.

In addition to these mandatory reporting requirements, EPA has also relied on public petitions and informal citizen reports to learn about existing or potential hazardous waste sites. From time to time, Regions have taken an active role in

Preliminary Assessments

The first step the Agency takes after learning of a potential site or release is to obtain and review all available reports and documentation about the site. As originally conceived, the PA was a desk-top evaluation of existing site-specific data designed to determine whether a site merits further action under CERCLA.

Recently, however, the scope of the PA has been expanded to provide more information and expedite the decisionmaking process. The expanded PA, which includes site reconnaissance and a projected numerical rating for the relative hazards posed, enables EPA to identify priorities more accurately and consistently, and allows for early identification of sites that need no further action by the Federal government.

About half of all sites are eliminated from further CERCLA consideration at this step, with a decision of no further remedial action planned (NFRAP). Sites that present a clear and immediate danger to human health and the environment and, therefore, require immediate action may be referred to the Superfund removal program. Other sites may be referred to other environmental programs, as appropriate. The remaining sites move on

to the SI stage in the site assessment process. Approximately 5 percent of those sites receiving an HRS score go on to be included on the NPL. At any stage in the site assessment process, a site may be referred to the removal program, referred to another environmental program, or determined to need no further action.

As of January 1990, 94 percent of the 33,000 sites currently in CERCLIS have been assessed, meaning that more than 31,000 PAs have been conducted over the course of Superfund's 10-year history. To prevent a backlog, and to comply with the intent of SARA, EPA's policy is to conduct a PA within 1 year of a site's listing in CERCLIS.

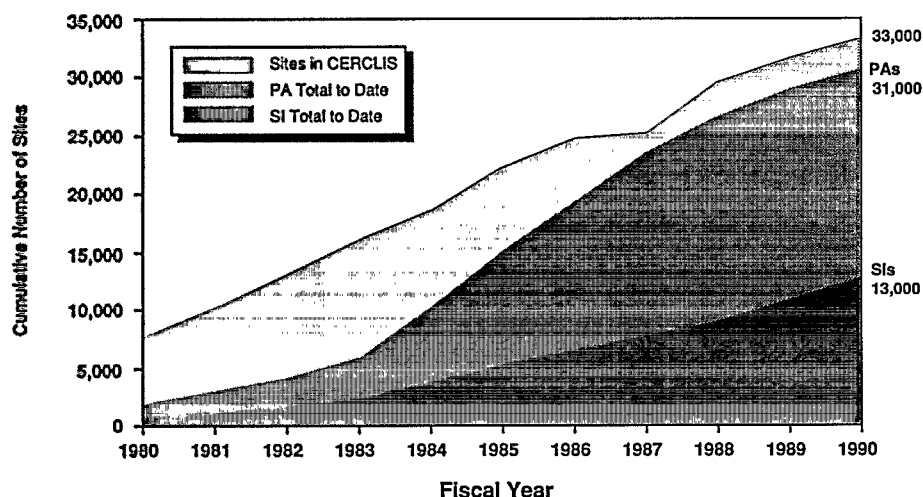
Site Inspections

If the preliminary assessment indicates a suspected release of hazardous substances that may threaten human health or the environment, EPA requires an inspection. The purpose of the SI is to investigate the site firsthand and determine if an HRS score should be developed. The inspection begins with a site visit and sample collection to define and characterize further the problems at a site. The primary objective of this in-depth assessment of site characteristics is to collect sufficient information to document an HRS score to the extent required for NPL listing. At times, an expanded site inspection has been necessary to fill data gaps and to serve as a bridge between the site assessment and remedial processes.

Approximately 12,800 SIs have been conducted since Superfund's inception. Figure 5 presents a summary of accomplishments in the site assessment program.

Site Assessment Activities

Figure 5
Historical Superfund Site Assessment Accomplishments



- The potential for ecosystem destruction
- Damage that may affect the human food chain
- Actual or potential contamination of ambient air.

The rHRS affects every stage of the site assessment process. The purpose of the HRS, however, remains unchanged. It remains a screening tool used to evaluate a site's risk and determine its eligibility for the NPL. The HRS score does not, however, provide an indication of the feasibility, desirability, or nature of the cleanup action that will ultimately be undertaken.

Hazard Ranking System

In response to a CERCLA mandate to establish a screening mechanism, EPA developed a mathematical approach to rate the hazards of sites. This model, known as the HRS, enables EPA to assess the relative risk posed by sites in the CERCLIS data base, and thereby determine which sites should be listed on the NPL. To evaluate risk, the original HRS examined three pathways of exposure: ground water, surface water, and air. A composite score for each site was developed by considering three factors for each pathway: likelihood of release, waste characteristics, and targets.

EPA develops and refines the score at each step of the site assessment process, with the percentage of hard data increasing as more samples are taken. The score at each stage of the process determines whether or not a site will continue to be considered for inclusion on the NPL.

A revised HRS (rHRS) was proposed in December of 1988, and finalized in December of 1990. The system was revised to portray more accurately the degree of relative risk

to both human health and the environment. The key changes in this revision take into account, to the extent possible:

- The population at risk
- The potential for drinking water contamination
- The potential for direct human contact

NPL Listing Process

Sites of hazardous releases must be included on the NPL in order to be eligible for Superfund-financed remedial action. The listing of sites on the NPL is accomplished in one of three ways. The most common is for the site to score at least 28.50 on the HRS. Second, each State is given the opportunity to designate



one site, which it considers its highest priority, for the NPL. Although less frequently used, the third approach is to list sites for which the Agency for Toxic Substances and Disease Registry (ATSDR) has issued a health advisory, that EPA determines pose a significant threat to human health and that EPA expects will be more effectively addressed under the remedial program, as opposed to using its removal authority.

The promulgation of the revised HRS is perceived as an opportunity to implement far-reaching changes in the NPL listing process and to incorporate Total Quality Management (TQM) tenets into the process. The primary goal is to move sites from discovery to listing in the 4-

year timeframe mandated by SARA. The change most visible to the general public will be the publication of two NPL Updates per year. These offer the public an opportunity to comment on a site and receive responses from EPA, before actually placing the site on the NPL.

Site Assessment Accomplishments

The Agency has made substantial progress in the past few years in standardizing and streamlining the site assessment process. These efforts have resulted not only in an overall improvement in the quality and timeliness of assessment activities, but also in more effective State involvement and greater consistency nationwide.

Remedial Activity

The Superfund remedial program has evolved into a mature, revitalized program aimed at prompt action to address threats to human health and the environment. Once EPA places a site on the National Priorities List (NPL), it becomes eligible for long-term remedial activity. Cleaning up these sites is a long, complex process that may take millions of dollars and many years to complete. Remedial sites typically have multi-media contamination (soils, surface water, ground water) by many different types of chemicals. The sites often must be broken up into several individual projects to address all of the problems at the site, which may encompass acres, or even miles. EPA is developing new, innovative technologies to provide permanent, cost-effective solutions at NPL sites.

The Remedial Process

The 1986 amendments to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) brought new challenges to the remedial program. EPA now strives toward permanent remedies using alternative technologies to land disposal to protect human health and the

Remedial actions at NPL sites provide permanent, cost-effective solutions to the most serious hazardous waste sites. The primary goals of the remedial program are to:

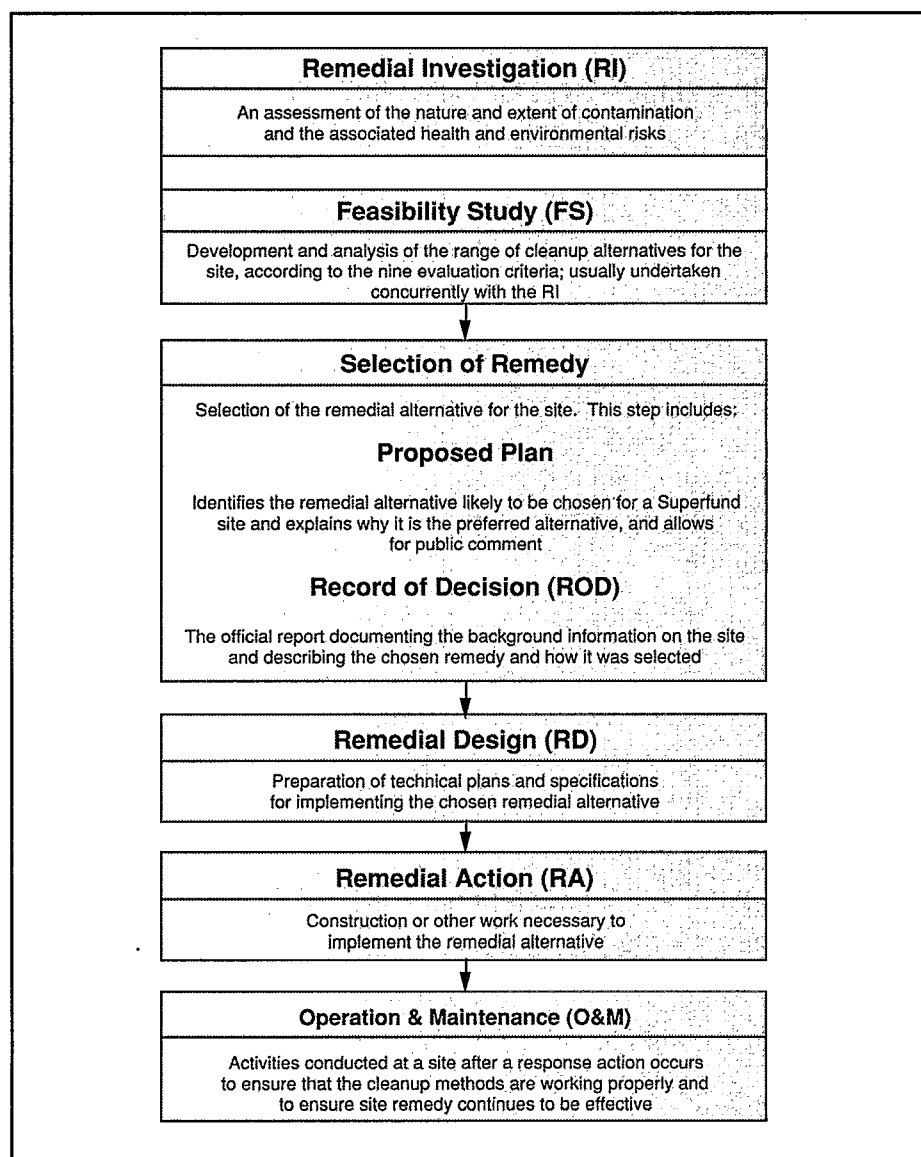
- Protect human health and the environment
- Address worst sites/worst problems first
- Emphasize permanent remedies using innovative treatment technologies.

... an established, action-oriented program for cleaning up the highest priority sites.

environment. EPA is meeting this challenge by creating systems for information exchange, technology development programs, and a streamlined remedial process that has addressed more than 1,000 remedial sites during the last 10 years.

The remedial process is complex, requiring extensive data gathering and analysis to characterize the scope of the problem and potential threats to human health and the environment, and to develop and implement workable solutions to the

Figure 6
The Remedial Process



problem. During the first phase of the remedial process, the approach to eliminating, reducing, or controlling risks at the site is conceived, evaluated, and selected. Once this remedy is approved, it is designed, implemented, and monitored. The five major steps that make up the remedial process are shown in Figure 6. Developing a workable, permanent solution for a hazardous waste site requires care—and involvement from the community—at each step of the process. The overall remedial program goal is to select a remedy that reduces or eliminates the risks to people and the environment, now and in the future.

Although the majority of remedial activity in the past has been funded through the Trust Fund, EPA is aggressively pursuing responsible parties to undertake and finance the cleanup activities. Responsible parties now conduct more than 60 percent of remedial actions, and that percentage is expected to continue to increase. In some cases, the responsible parties clean up the sites voluntarily, under the supervision of EPA or the State. If no responsible

parties have been found, or if there are problems getting them to act, EPA will proceed using Trust Fund monies and recover costs later.

The State may decide to conduct and finance the cleanup by itself, or may enter into a Cooperative Agreement with EPA whereby the State undertakes certain remedial activities financed by the Fund. In either case, EPA provides oversight throughout the remedial action. While the Hazardous Site Control Division at EPA Headquarters manages the overall remedial program, the Remedial Project Managers (RPMs) in each EPA Region provide the day-to-day direction and oversight of site activity. Whether EPA or the State has the lead in cleaning up a site, CERCLA requires that the State contribute 10 percent of the cleanup costs for sites that were privately owned or operated and 50 percent of costs for sites that were owned or operated by the public. In addition, once EPA and the State have certified that the remedy is working properly, the State finances further operation and maintenance.

Remedial Investigation

Once a site is placed on the NPL, the lead agency must further assess the site problems. Similar to the initial site inspection prior to listing on the NPL, this involves an examination of site characteristics in order to better define the problem. The remedial investigation (RI), however, is much more detailed and comprehensive than the initial site inspection. The RI is designed to define the nature and extent of the problem and to provide information needed to develop and evaluate cleanup alternatives. It is carried out by a team of health and environmental scientists to determine the existence and nature of any actual or potential threat that may be posed to human health or the environment, and defines the boundaries or extent of any contamination found at a site. The Stauffer Chemical example (see box, next page) illustrates the complexity of site problems and data collection needs.

Feasibility Study

EPA develops more than one possible approach for Superfund remedial action at a site, and carefully compares the advantages and disadvantages of each approach. These analyses of alternatives are called feasibility studies (FSs).

In an FS, environmental engineers and other technical staff consider, describe, and evaluate options for cleaning up the site, using the data collected in the RI as a basis and collecting additional information as needed. Once the cleanup alternatives are defined, the feasibility study examines each alternative according to nine criteria, and portrays their effectiveness. The kinds of questions an FS answers are:



Remedial Activity

1. **Overall protection of human health and the environment.** Will the remedy protect human health and the environment; how are risks eliminated or controlled by the remedy?
2. **Compliance with applicable or relevant and appropriate requirements (ARARs).** Does the remedy meet all of the applicable requirements of State and Federal environmental laws and regulations?

These first two criteria are categorized into a group called "threshold criteria" because they are the minimum requirements that each alternative must meet to be eligible for selection as a remedy. After these criteria are applied, the FS reviews:

3. **Long-term effectiveness and permanence.** Does the remedy protect human health and the environment over time?
4. **Reduction of toxicity, mobility, or volume.** How well do the treatment technologies perform in reducing the threats at a site?
5. **Short-term effectiveness.** How well are the community and cleanup workers protected during the remedial action?
6. **Implementability.** What is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution?
7. **Cost.** How much will the remedy cost, including estimated capital (e.g., supplies and equipment, and contractor costs) and operation and maintenance costs?

Remedial Investigation At Stauffer Chemical

The Stauffer Chemical site in Mobile County, Alabama, was the location of chemical company operations from two adjacent plants. Waste from the plants included plant refuse, used samples, and solid wastes containing a variety of herbicides and pesticides. The waste was placed in unlined landfills and waste ponds, some of which drained into a local pond. The disposal practices at both sites contributed to ground water contamination. The owners installed monitoring wells and a system to treat the ground water in the 1970s. Because the ground water was not getting cleaner, in 1982 the State installed monitoring wells, data from which formed the basis for EPA placing the site on the NPL. EPA then informed the previous owner that an RI must be initiated at the site.

During the RI, EPA examined the type and extent of the contamination on the surface, and how the ground water was affected by the site contamination. The surface contamination was characterized by sampling of soils around the landfills and ponds and sampling of the liquids in the ponds and other surface water in the area. To investigate the ground water contamination, EPA sampled and analyzed the data from more than 40 water and monitoring wells. The results of the RI showed a range of threats, including ground water contaminated with carbon tetrachloride and other contaminants, ponds containing contaminated soils and sludges, landfills containing a combination of wastes that could be leaching into the ground water, and mercury detected in the sediments of a nearby wetland.

Based on the RI, EPA had the information it needed to develop alternate solutions to the problems posed by the site. EPA discovered what contaminants existed, where they were located, and the level of contamination in each area. It was a long, difficult task of collecting the needed information. It took more than 3 years from when EPA informed the previous owner of the site that an RI was necessary to when the RI report was completed. During the final phases of the RI, however, EPA began to conduct the next step in the remedial process, the feasibility study.



Evaluation criteria 3 through 7 are known as the "primary balancing criteria" that are used to identify major trade-offs among the alternatives. The last two criteria are:

8. **State acceptance.** Does the State concur with, oppose, or have no comment on the preferred alternative?
9. **Community acceptance.** Does the affected community concur with, oppose, or have no comment on the preferred alternative?

These final two criteria, which are determined after the proposed plan, are called "modifying criteria" because new information or comments from the State or the community may modify the preferred alternative or lead to another response action being considered. Then the alternatives are compared against each other to identify the most effective remedy.

The public has the opportunity to review the RI and FS reports. These reports are placed in the site information repository, which is usually located at a local library.

RI/FS Accomplishments

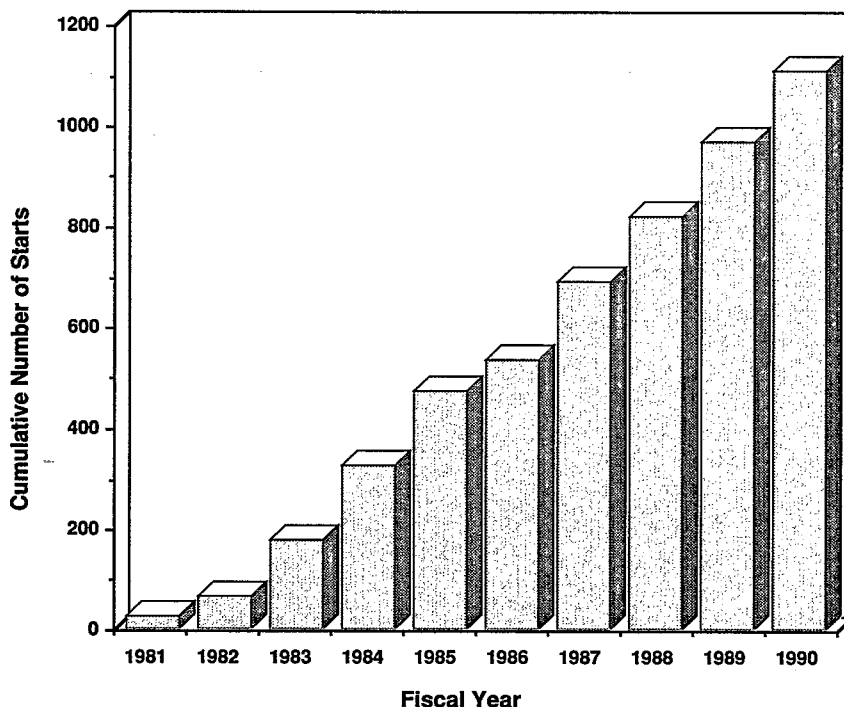
The Superfund Amendments and Reauthorization Act (SARA) set mandatory deadlines for the commencement of RI/FSs: by October 1989, EPA had to have started at least 275 RI/FSs. EPA more than met this ambitious goal as the mandated number of RI/FSs were underway 3 months ahead of the deadline. By the end of FY90, EPA had started RI/FSs at more than 1,000 sites and completed RI/FSs at more than 600 sites. Figure 7 shows the trend in RI/FS starts over the past 10 years.

Feasibility Study At Stauffer Chemical

As with many Superfund sites, the problems at the Stauffer site are complex. A wide variety of contaminants were detected in the ground water, in ponds, in landfills, and in a nearby swamp. To address the worst problems at the site first, EPA divided the cleanup into smaller units or phases, referred to as operable units. Operable units are separate actions that are incremental steps toward completely cleaning up the site. They may be actions that address all problems on one geographic part of a site, or they may address a specific problem throughout the entire site (e.g., contaminated soil or ground water). The operable units at this site were divided into five areas: the sludge ponds, waste water pond, landfills, swamp, and ground water. From this point, the operable units may be analyzed separately and cleanup alternatives selected in separate FS reports. EPA first chose to develop a remedy for the ground water contamination at Stauffer. Human health and the environment were threatened by contaminated ground water in the aquifer that serves as the principal source of water for people living in the area.

The following alternatives for ground water remediation were developed in the FS, based on the results of the RI: 1) take no action (used for comparative purposes at every site); 2) use the present ground water treatment system; 3) modify the present system to include additional extraction wells off-site, and include the testing of treatment alternatives later in the cleanup process (pilot-scale or other treatability tests); and 4) use the present system with the addition of a soil treatment system. EPA analyzed each of these alternatives against the nine evaluation criteria and against each other to allow EPA officials to determine a preferred alternative.

Figure 7
First RI/FS Starts



The Stauffer Chemical site illustrates the complexity of the RI/FS process. Several initiatives, however, are underway to streamline and expedite the RI/FS process. EPA is limiting the number of remedial alternatives considered in the RI/FS to those with clear potential effectiveness. This will reduce resources spent on evaluating alternatives that are impracticable. In addition, EPA is in the process of developing prototype RI/FSs and remedy-selection models for site situations that occur frequently, such as municipal landfills, polychlorinated biphenyls (PCB) sites, and wood-treating facilities. Such prototypes will be used as a starting point for planning and conducting studies. RPMs can start with the prototype and adapt it to the specifics of their site.

Deciding Upon A Course Of Action

Once the alternatives for cleanup at a site have been evaluated and a preferred alternative has been decided, EPA formally requests comment from the public by presenting this information in the Proposed Plan. The Proposed Plan summarizes the alternatives analyzed in the detailed analysis of the FS, the preferred remedy and the rationale for that preference, any proposed waivers to cleanup standards, and the position of the support agency (e.g., the State) on the Proposed Plan and preferred alternative.

In the Stauffer Chemical Proposed Plan, EPA documented the analysis of the four alternatives against the nine evaluation criteria and against each other. EPA concluded that Alternative #3—a modified treatment system—passed the first two criteria and provided

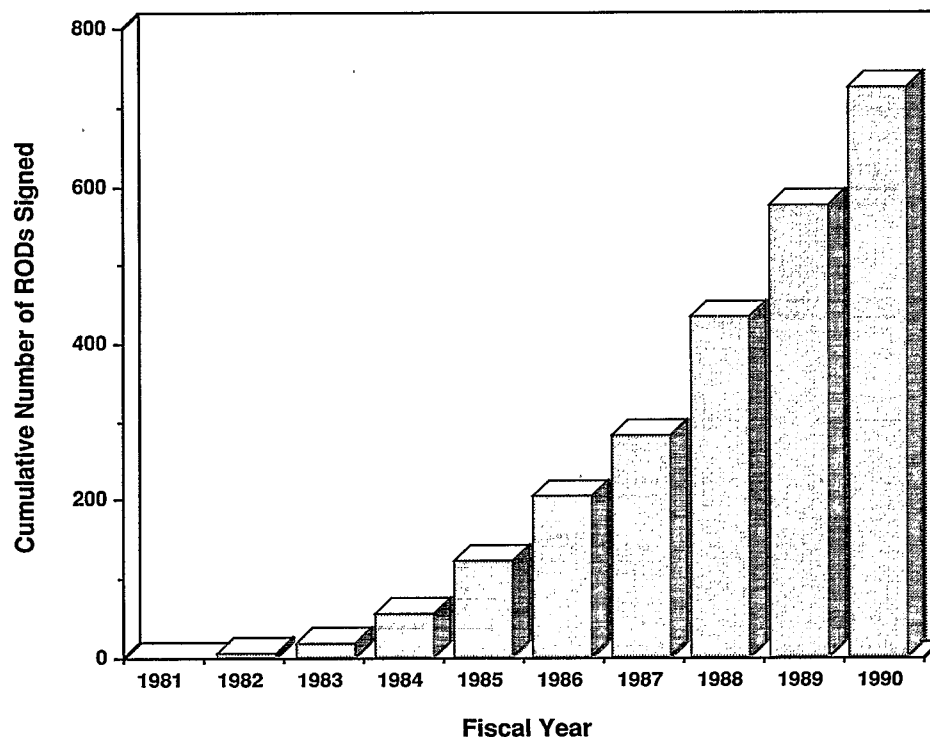
the best balance among the remaining criteria, compared to the other alternatives.

The public is given the opportunity for a public meeting to discuss issues related to the site and to submit oral and written comments to EPA during the 30-day public comment period. Following receipt of public comments and any final comments from the support agency, the remedial action is selected and the rationale is documented in the Record of Decision (ROD). The ROD details the remedial action plan for a site or operable unit, certifies that the remedy selection process followed the requirements in CERCLA and the National Contingency Plan (NCP), discusses the technical details of the remedy, and provides the public with a consolidated source of information about

the site. Once the Regional Administrator or the Assistant Administrator of the Office of Solid Waste and Emergency Response signs the ROD, it is released for informational purposes and placed in the administrative record for the site. More than 700 RODs have been signed since the program began. Figure 8 shows the number of RODs that have been signed since FY81.

The ROD has become much more valuable than simply documenting the remedy selected at one site. It is a record of what to do in a given set of conditions. EPA has developed a detailed data base of RODs, called the Records of Decision System (RODS). RODS serves as an information base for similar site conditions and to promote national consistency among RODs.

Figure 8
RODs Signed





Designing And Constructing The Cleanup

Once the course of action has been selected and approved, it is time to design the remedial action and carry it out. These are the last phases of the remedial process: remedial design (RD), remedial action (RA), and operation and maintenance (O&M). Unlike other EPA programs which regulate activities of the private sector, here EPA actually manages the construction projects, designing the selected remedy and implementing that design.

RD is an engineering phase in which technical drawings and specifications are developed for the subsequent RA, based on the selected remedy documented in the ROD. EPA assigns RD and RA work to either the Alternative Remedial Contract Strategy (ARCS) contractors, the U.S. Corps of Engineers, or the U.S. Bureau of Reclamation, depending on the type of remedy and the estimated cost of the project. States and responsible

parties continue to manage the design and construction of those Superfund actions for which they have lead responsibility. EPA RPMs provide environmental oversight.

Remedial action projects may appear to be like any other major construction project, but in fact, the presence of hazardous substances at the site demands specially trained engineers, scientists, and other personnel; complex treatment equipment; and special construction planning and health and safety procedures. In fact, a crucial element of the RD/RA phase is the development and implementation of the Site Safety and Contingency Plans to protect on-site personnel and surrounding communities from the physical, chemical, and/or biological hazards of the site. These plans include information on chemicals present, equipment being used, precautions to be taken, and steps to take in the event of an emergency situation at the site, including decontamination procedures. Remedial action projects also differ from the usual construction project in that the

large volume of wastes to be treated at many sites extends the RA performance period over several years and results in costs of tens of millions of dollars.

After the RPM certifies that the remedial action is complete and the remedy is operational and functional, the O&M phase begins. O&M activities include ground water and air monitoring, inspection and maintenance of the treatment equipment remaining on site, and maintenance of any security measures such as signs and fencing. The State or responsible party usually assumes responsibility for these activities, while EPA is responsible for oversight to ensure the site is maintained and remains safe.

Remedial Action Accomplishments

SARA set ambitious goals for beginning remedial actions at Superfund sites: by October 1989, the program had to have started RAs at 175 sites, and by 1991, another 200 RAs must be started. EPA met the goal for RA starts in 1989. Figure 9 shows the trend of RD and RA starts over the past 10 years.

EPA has made remedial action a top priority and has taken several steps for continuous improvement in the pace and quality of RAs at Superfund sites. By streamlining the RI/FS and remedy selection processes—through the use of prototype RI/FS and remedy selection models, an up-to-date ROD data base, technical support from Headquarters, and a peer review process—today there are more sites in the construction pipeline than ever before. To address SARA mandates for permanent remedies and the use of alternative technologies where possible, EPA has set up technical

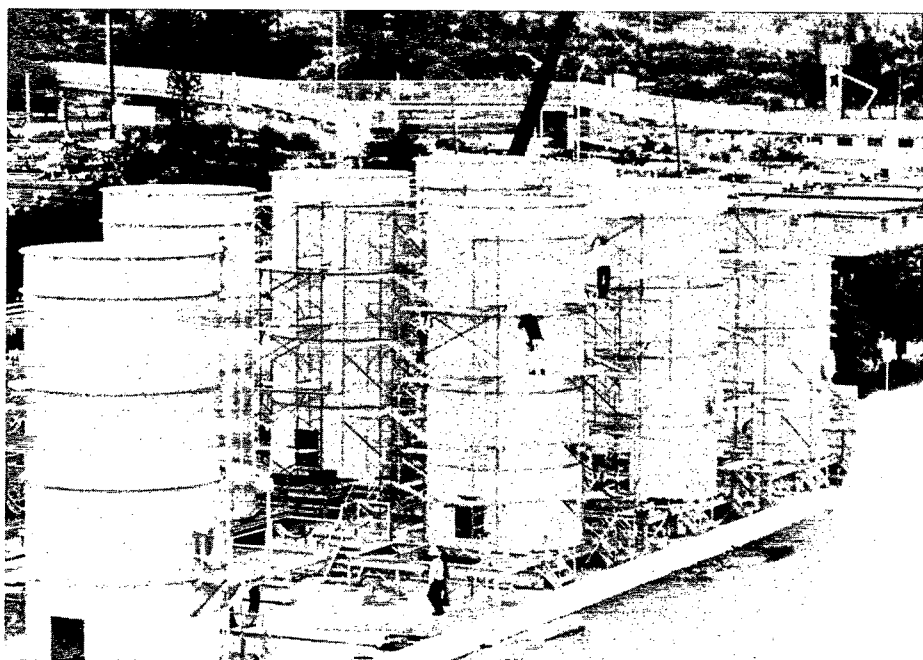
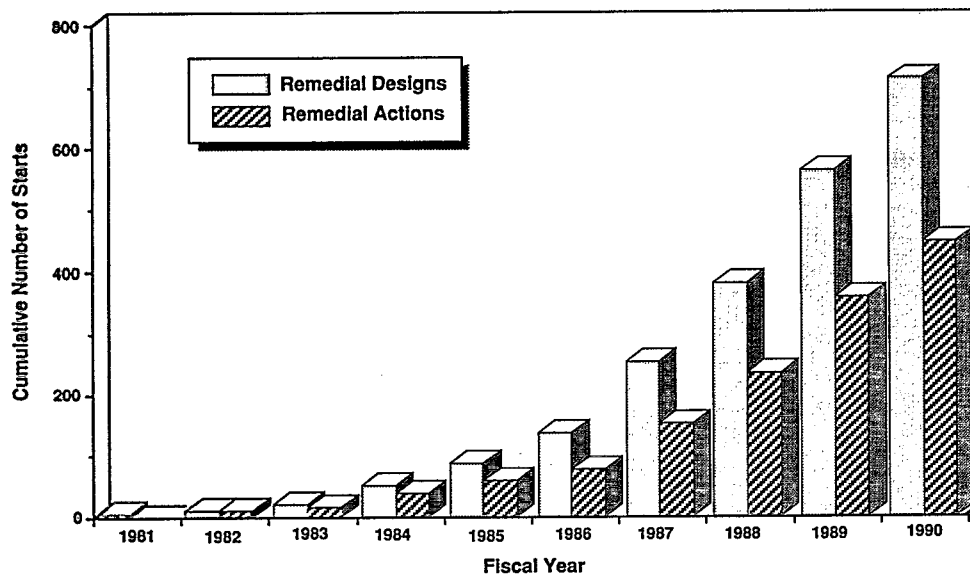


Figure 9
RD and RA Starts



Use Of Technologies At French Limited Site

Innovative technologies are being moved out of the laboratories and into the field, as illustrated by the remedial alternative selected for the French Limited site in Crosby, Texas. More than 300,000 cubic yards of industrial wastes from local petrochemical companies were deposited in an unlined pit at this site. Sludge and soil from the waste pit were contaminated with PCBs, organics, and metals. A removal action was conducted at the site in 1982 to contain the wastes and to eliminate the immediate threats. The potentially responsible parties (PRPs) for the site then funded and prepared an RI/FS. In deciding among the various alternatives for remedial action at the site, EPA had to choose one that provided the best balance among the nine evaluation criteria. In addition, EPA gave serious consideration to alternatives that met the preferences outlined in SARA: cleanup alternatives that foster recycling or treatment of waste rather than land disposal; and remedies that employ treatment technologies that permanently and significantly reduce the threats posed by the waste.

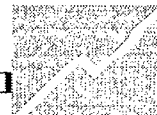
EPA concluded that a new treatment technology called bioremediation best met all of the above criteria. Bioremediation uses micro-organisms to detoxify organic matter. As a condition to selecting the remedy, EPA required the PRPs to conduct a pilot study at the site before applying this treatment on the entire site. The pilot study had to prove that bioremediation was at least as effective as the other alternatives at the site (mainly, incineration) and did not pose additional significant threats during the process. The pilot study, which was conducted on a half-acre section of the site, was very successful, reducing the threats posed by the waste while posing no significant health threats during treatment. In addition to being an effective remedy, bioremediation was supported by the State and community and was half as costly as incineration. The site is presently in the RD phase, with the RA anticipated to begin in 1991. Almost 50 percent of the treatment remedies approved in RODs over the last 2 years involve innovative technologies, and that percentage is expected to continue to rise in the coming years.

expert support systems and technology evaluation programs to ensure that existing knowledge and creative ideas are being shared around the country.

New Remedial Program Initiatives

The remedial program is now an established, action-oriented program for identifying and cleaning up the highest priority sites. The main principles driving the program today are:

- **Address worst sites/worst problems first.** After abating immediate threats, EPA will initiate the earliest remedial work to address the highest priority problems (e.g., imminent threat to human health, highly toxic, highly mobile contaminants). In many cases, EPA is taking action in deliberate stages that will result in continuous improvements until the site is finally cleaned up to human health and environmental standards. This may



include dividing the site into operable units so that immediate attention is given to the highest priority areas at a site. Depending on site conditions, EPA will take actions to initially prevent exposure and control risk; further actions will be taken to reduce or eliminate the risk. EPA is making sites "cleaner"—while ensuring that the stages of site cleanup are consistent with the final remedy—at as many NPL sites as soon as possible.

- **Monitor and maintain sites.** In addition to quick action at a site, EPA will monitor and maintain sites over the long-term to ensure that the remedy at each site is fully protective of human health and the environment. As part of the effort to monitor site conditions, EPA will conduct, at least every 5 years after the initiation of the response action, a review of all sites where hazardous substances remain on site. EPA also will maintain the effectiveness of the remedy over the long-term by promptly correcting any

problems that are identified. EPA will report annually to Congress the results of all 5-year reviews.

- **Emphasize permanent remedies using innovative technologies.** The ultimate success of the Superfund program depends on the selection of remedies that reduce risks to human health and the environment in the short term, and eliminate the risks in the long term. This initiative involves seeking alternative technologies to land disposal, developing new technologies for more effective cleanup, and ensuring that these technologies provide permanent protection to the extent possible. SARA requires that EPA give strong preference to such remedies in cleaning up Superfund sites.

EPA has been successful in creating an environment conducive to providing such remedies. This has involved reducing regulatory and policy barriers to the use of treatment technologies and providing extensive technical assistance,

expert advice, and information transfer to make the best use of the information that is available now and that is under development. EPA is aggressively supporting the research, development, demonstration, and evaluation of new treatment technologies to provide state-of-the-art protection at Superfund sites.

EPA has made great strides in advancing the pace and quality of long-term cleanup at Superfund sites since the response to hazardous chemicals found at Love Canal, New York. The future of hazardous waste cleanup is a challenge that can and will be met. The Superfund program has built up a sizeable reservoir of knowledge in its first 10 years. The remedial program is in place and information on effective remedies is being developed and shared throughout the program. Cleanup activity at NPL sites is at every stage of the remedial "pipeline"—sites that are in the Superfund study and cleanup process. The program will continue to grow and address site problems through aggressive goals, effective communication, and shared responsibility.

The Enforcement Program

One of Superfund's major goals is to have responsible parties pay for and conduct cleanups at abandoned or uncontrolled hazardous waste sites. The foundation of Superfund's enforcement program is the Comprehensive Environmental Response, Compensation, and Liability Act's (CERCLA) strict, joint and several liability standard. Under this standard, each potentially responsible party (PRP)—those owners and operators, waste generators, and transporters at a site—may be fully liable for all site cleanup costs, regardless of waste share or fault.

In getting responsible parties to pay for or conduct site cleanups, EPA uses three, broad enforcement authorities to:

- Reach settlements
- Issue orders
- Recover costs.

When CERCLA was reauthorized and amended by the Superfund Amendments and Reauthorization Act (SARA) in 1986, Congress reinforced and significantly strengthened the law's enforcement provisions. SARA provided enforcement "tools" to facilitate settlement negotiations, and enhanced the enforcement measures available to EPA in the event that responsible parties do not settle. In addition, the Superfund Management Review established the "One Superfund Program—Enforcement First" concept to encourage or compel responsible party cleanups rather than using the Trust Fund, and to integrate all EPA response and enforcement activities. The result has been a seven-fold increase, over the last 4 years, in the total value of settlements to \$3.7 billion (as shown

in Figure 10). PRPs now conduct more than 60 percent of Superfund remedial actions.

enforcement tools and reach settlement agreements with responsible parties.

One Superfund Program—Enforcement First.

EPA can negotiate settlements with responsible parties to have them conduct or pay for site cleanups. If negotiations fail, EPA issues orders to responsible parties to compel site cleanup. EPA also can use Trust Fund monies to cover cleanup costs and attempt to recover the costs later through litigation. To conserve Trust Fund dollars for "orphan" sites, those where no liable, financially-viable PRPs exist, EPA's top priority is to use all its

The Enforcement Process

The enforcement process begins immediately after a site is proposed for listing on the National Priorities List (NPL) (see Figure 11). At the start of the NPL listing process, EPA begins looking for PRPs who may be liable for contamination at a site. These PRP identification activities are known as a PRP search. When EPA has enough information to identify a party as potentially

Figure 10
Total Value and Number of PRP Settlements

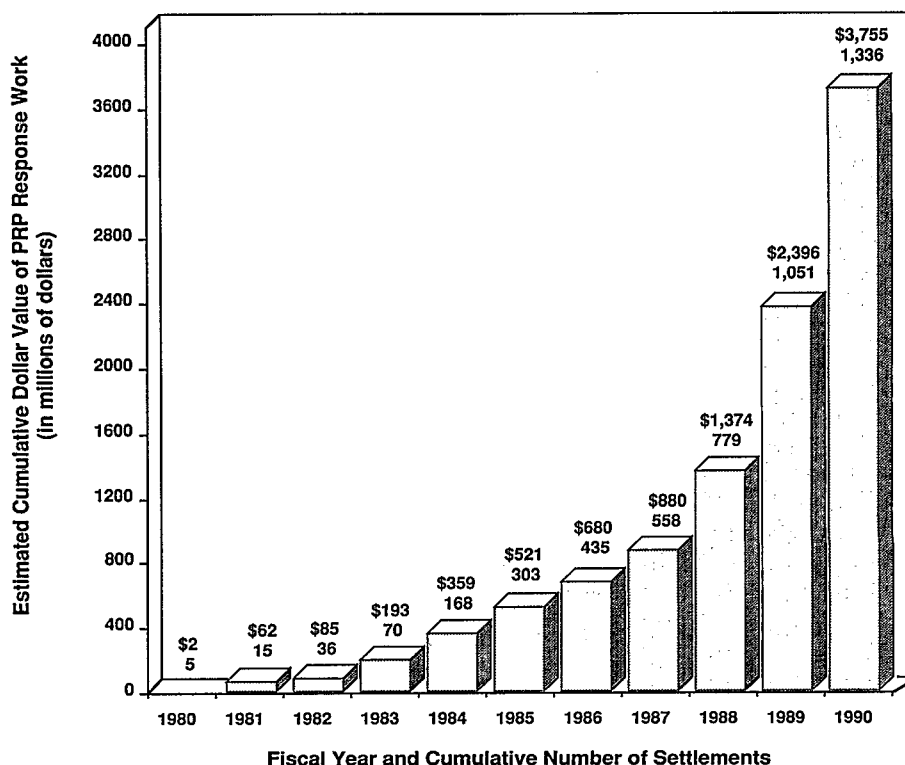
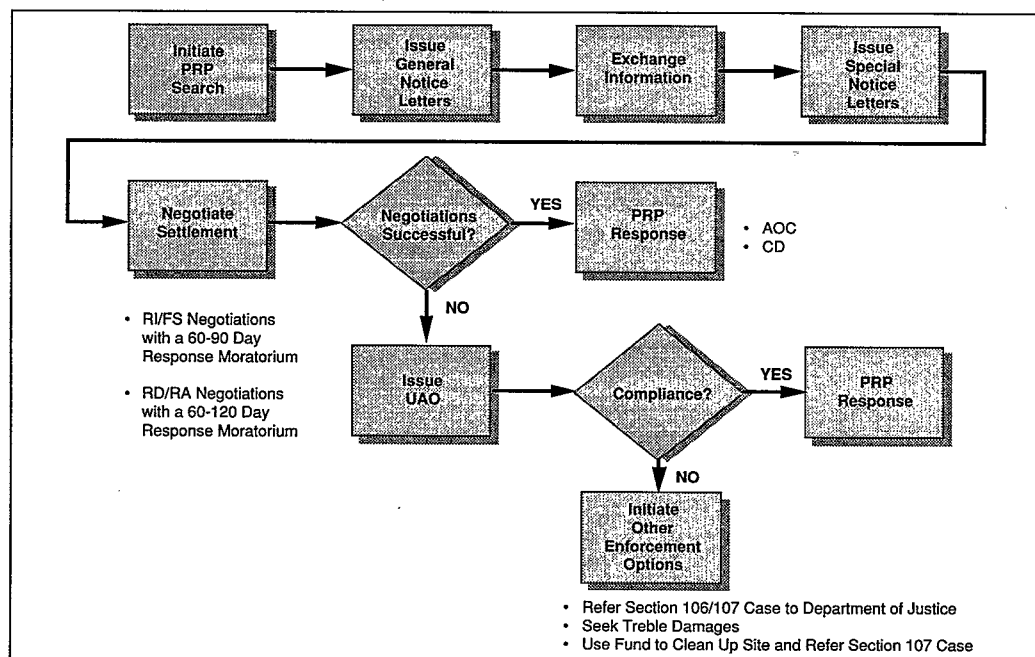




Figure 11
Basic Enforcement Process



responsible for the site, EPA issues a general notice letter to each PRP notifying them of their potential liability. As soon as PRPs are identified, EPA begins exchanging information with them concerning site conditions, PRP connections to the site, and other potentially responsible parties.

Based on information obtained during the PRP search and information exchange process, EPA also may issue special notice letters to PRPs. The special notice letter begins a formal negotiation period and establishes a moratorium (60-90 days for RI/FS negotiations, 60-120 days for RD/RA negotiations) on certain response and enforcement activities. If within 60 days, PRPs make a "good-faith offer" to conduct the response action, the moratorium may be extended to provide additional time for reaching a final settlement. An administrative

Enforcement Tools

- **Covenant Not to Sue:** EPA may grant a "covenant not to sue" to settling PRPs who agree to conduct an RD/RA. This covenant releases settling PRPs from either "present" or "future" liability, or both. "Present" liability refers to a PRP's obligation to pay response costs already incurred by the government and to complete remedial activities set forth in the Record of Decision (ROD) or consent decree. "Future" liability covers additional response activities beyond those specified in the ROD or consent decree. These covenants typically are issued in conjunction with de minimis settlements.
- **De minimis Settlements:** EPA may enter into de minimis settlements where the settlement includes only a minor portion of the response costs, and where wastes contributed represent a relatively minor amount and are not highly toxic, compared to other wastes present at the site. De minimis settlements allow contributors of small amounts of waste to resolve their liability.
- **Mixed Funding Settlements:** Under mixed funding, EPA and settling PRPs share the costs of a response action.
- **Nonbinding Preliminary Allocations of Responsibility (NBARs):** EPA may use an NBAR, which is an allocation of total response costs, to assist PRPs in allocating liability among themselves. NBARs are not binding on the Government and may not be admitted as evidence in court. However, an EPA-prepared NBAR may help a large number of PRPs reach a settlement.

The Enforcement Program

record for a site, which includes all documentation relating to the selected remedy, is usually established as soon as the site is discovered. The administrative record is the basis for any judicial review of a settlement or the selected remedy by the court.

Settlement agreements may be reached to conduct a remedial investigation/feasibility study (RI/FS) or a remedial design/remedial action (RD/RA). EPA has a variety of enforcement tools provided by SARA to encourage PRPs to settle (see box on previous page). If PRPs do not agree to conduct the RI/FS, they may settle at a later date to conduct the RD/RA. However, PRPs who are actively involved in site work from the time they receive a general notice letter, and who conduct the feasibility study, can have more input on the remedy that

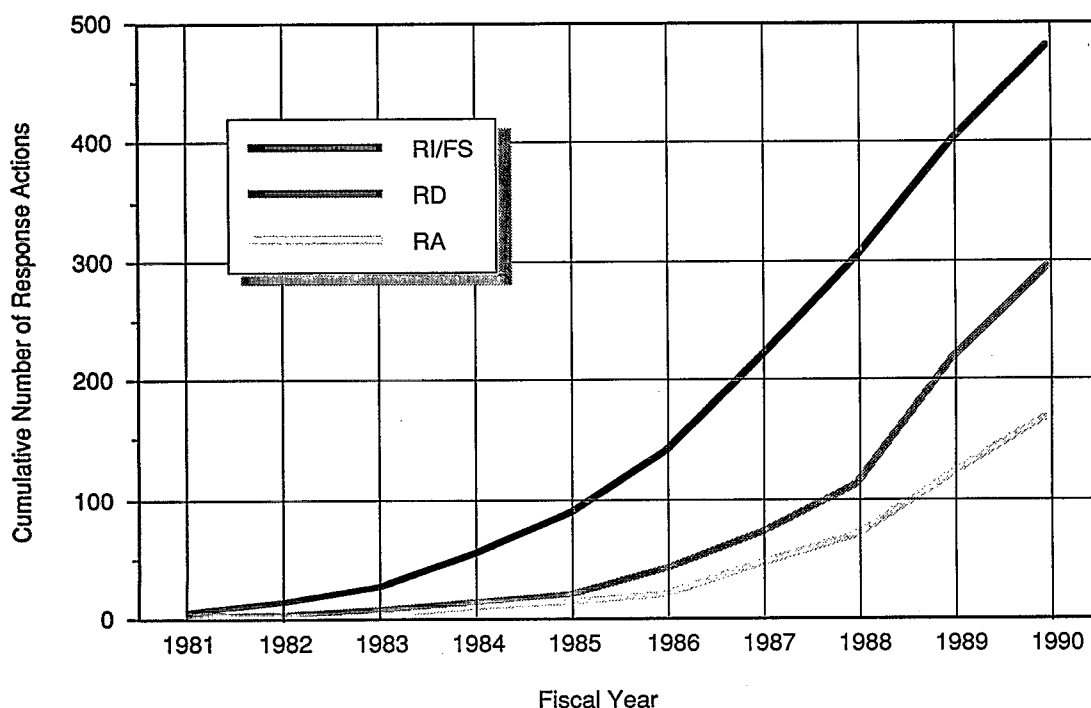
is selected. Figure 12 summarizes PRP involvement in response actions since Superfund's inception.

A settlement agreement to conduct an RI/FS is usually formalized in an administrative order on consent (AOC). AOCs are issued under EPA's administrative authority and legally bind both EPA and the settling PRPs. Although AOCs are not lodged in court, the Department of Justice (DOJ) may review certain RI/FS settlements. RD/RA settlements, however, must be lodged in court by DOJ, in the form of a consent decree. For all settlements, DOJ represents EPA in actions brought by responsible parties.

If PRPs do not settle, EPA can either issue orders to force liable, financially viable PRPs to conduct the response action, or spend Trust Fund monies and recover the costs

from the PRPs later. For RD/RAs, EPA routinely issues unilateral administrative orders (UAOs) to force non-settling PRPs to implement the remedy themselves. UAOs are legally binding and do not require EPA to sue PRPs in court to become effective. In addition, UAOs do not provide PRPs some of the advantages of settlements, such as protection from other PRPs or other third parties seeking contribution for response costs. Non-compliance with a UAO can result in civil penalties of \$25,000 per day, and if Trust Fund monies are spent, EPA may seek triple the cost of the response action (treble damages) in cost recovery litigation. Finally, if PRPs do not comply with a UAO, EPA may sue in court and obtain a court order forcing them to conduct the response action and to reimburse EPA for its oversight costs.

Figure 12
Trend in PRP-Financed Response Actions

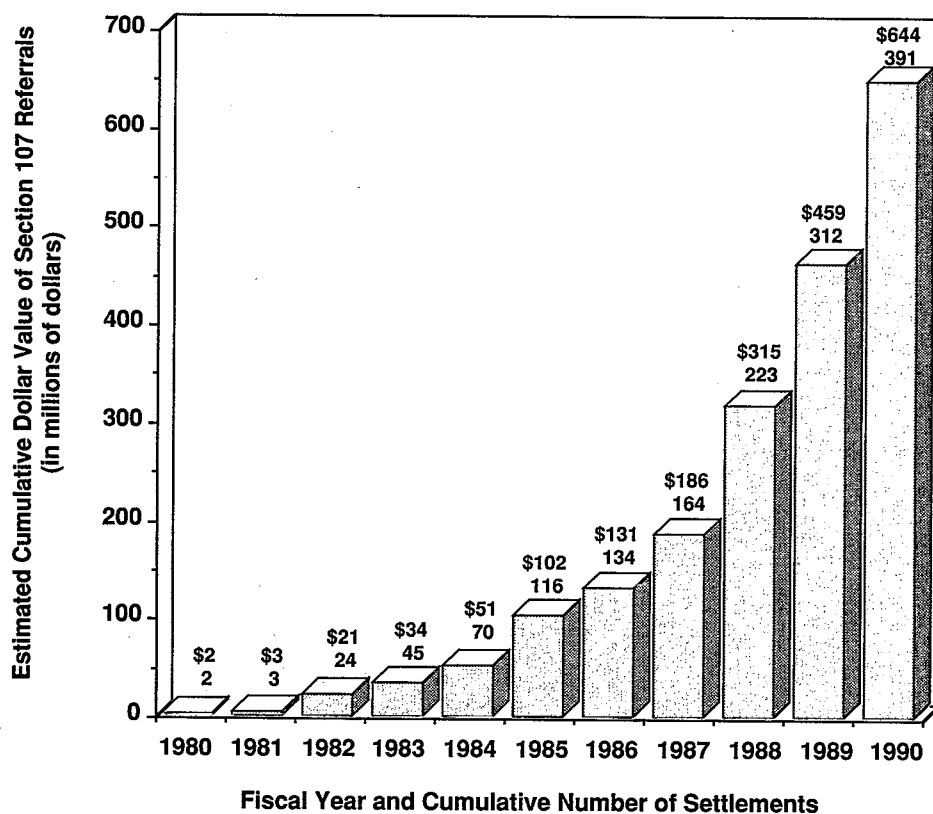




EPA also has the option to spend Trust Fund monies to conduct the cleanup, and then recover the costs from the responsible parties. Under CERCLA, any past and present owner and operator at a site, as well as waste generators and transporters, can be held fully liable by the courts for complete cleanup costs. During a response action, EPA develops a cost recovery case and refers it to DOJ for litigation. Since 1980, EPA has referred 391 civil cases seeking \$644 million in past costs to DOJ (see Figure 13).

Aggressive enforcement efforts are necessary to the Superfund program because the cost of cleaning up all the sites on the NPL far exceeds the money available in the Trust Fund. For its part, EPA has developed critical guidance and model administrative documents, produced a draft cost recovery regulation to expedite cases, and hired 500 new personnel based on recommendations in the 1989 Superfund Management Review to push sites through to cleanup. With the enforcement program's infrastructure in place and the implementation of the "One Program—Enforcement First" concept, the involvement of PRPs in Superfund cleanups will continue to grow.

Figure 13
Total Value and Number of
Section 107 Cost Recovery Referrals



Public Participation In Decisionmaking



Like every component of the Superfund program, the community relations initiative has grown and matured since Superfund's inception in 1980. From the beginning, EPA recognized the importance of community input and involvement in the hazardous waste site cleanup process. Agency staff at Headquarters and in the field realized that the most innovative cleanup technology could not be considered successful if

it was not accepted by the "affected public"—the people who live and work near the hazardous waste sites. In the early days of the program, community relations activities generally occurred on an informal, site-specific basis. There were no required activities; specific communication and information needs of the interested citizens determined each site's public participation initiative. As the program evolved, the Agency formulated policy statements and developed program guidance. The 1982 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) contained requirements for community relations at all remedial sites and for removals lasting more than 120 days. In 1986, the Superfund Amendments and Reauthorization Act (SARA) added legislative requirements and

in 1989, the Superfund Management Review made recommendations to further improve the community relations program. Throughout the years, one aspect of the program has been maintained—EPA still conducts community relations activities on a site-specific basis. Although today's program has many required activities, each one is tailored to the specific issues of importance to the public, the level of concern, the history of public involvement, and the economic and social structure of the community.

Achieving Public Participation

Community relations activities have occurred at every site at which an RI/FS has been started and at all removal sites where time has allowed. Community relations efforts promote two-way communication among members of the public, State and local officials, other Federal agencies such as the

Community relations efforts promote two-way communication.

U.S. Corps of Engineers, the U.S. Coast Guard, and the Department of Defense, and EPA.

The community relations program encourages communication with affected citizens and participation in decisionmaking. It has three main objectives:

- Give the public the opportunity to comment on and provide input to technical decisions.

Superfund community relations activities are important to:

- Promote two-way communication
- Provide input to technical decisions
- Discover useful site information
- Focus and resolve conflict.



- Inform the public of planned or ongoing actions and keep them apprised of the nature of the environmental problem, the threats it may pose, the responses under consideration, and the progress being made.
- Focus and resolve conflict. Conflict may be unavoidable in some circumstances, but it can be constructive if it brings into the open alternative viewpoints.

Every phase of the technical schedule for site cleanup has corresponding community relations requirements. For a remedial site, a Community Relations Plan (CRP) must be developed before RI/FS field work begins. The CRP is the "work plan" for community relations activities that EPA will conduct during the entire cleanup process. In developing a CRP, Agency staff members conduct interviews with State and local officials and interested citizens. Through this one-on-one interaction, EPA learns about citizen concerns, site conditions, and local history. This information is used to formulate a schedule of activities designed to keep citizens apprised and to keep EPA aware of community concerns. Typical community relations activities include public meetings, at which EPA presents a summary of technical information regarding the site and citizens can ask questions or comment; small, informal public availability sessions at which EPA representatives make themselves available to citizens; and development of fact sheets, which the Agency distributes periodically to keep citizens up-to-date on site activities.

Part of every CRP is the establishment of an information repository. EPA is required to set up a file of information related to the site in a building accessible to citizens. Usually housed in a library or town hall, the repository contains reports, studies, fact sheets, and other documents containing information about the site. EPA continually updates the repository and must ensure that the facility housing the file has copying capabilities.

After the RI/FS is completed and EPA has recommended a preferred cleanup alternative, the Agency sends to all interested parties a Proposed Plan outlining the cleanup technologies that were studied and explaining why EPA prefers one remedy over the others. At this time, EPA also begins a public comment period during which citizens are encouraged to submit comments regarding all alternatives. Once the public comment period ends, EPA develops a Responsiveness Summary, which contains EPA responses to public comments. The Responsiveness Summary becomes part of the Record of Decision (ROD), which provides official documentation of the remedy chosen for the site.

Community relations activities occur at specific points in the remedial process, as shown in Figure 14. In addition to meeting these Federal requirements, EPA makes every attempt to ensure that community relations is a continuing activity designed to meet the specific needs of the community.

What EPA Has Learned

Superfund participants at the Federal, State, and local levels acknowledge the importance of public participation in the Superfund program. Because it is such an integral part of all cleanup operations, EPA is constantly striving to improve its communications with the public. Agency experience over the past 10 years has yielded general conclusions about the nature of public involvement in hazardous waste issues, and, in turn, about the most helpful approaches to public participation. EPA has learned, for example, that its decisionmaking ability is enhanced by actively soliciting comments and information from the public. In addition, experience has shown that the earlier EPA establishes a working relationship with citizens near a site, the greater chance there is for trust and confidence to develop between the parties. EPA also has found that communities often are able to provide valuable information on local history, citizen involvement, and site conditions. Establishing a dialogue between Agency staff and citizens, therefore, allows both the public and EPA access to important information. This dialogue can help identify citizen concerns about the site, enabling EPA to be most responsive to community needs.

By planning at the outset for a high level of citizen involvement, EPA has usually been able to avoid the delays in cleanup which might otherwise arise from uninvolved and disaffected citizens. Consequently,

Public Participation In Decisionmaking

Figure 14
Overview of EPA Community Relations Requirements

Decision Point (Technical Process)	EPA Community Relations Requirements	Opportunities For Participation
NPL Listing	Publish the proposed additions to the NPL in the <u>Federal Register</u> ; solicit comments through a public comment period	Submit comments in support of or opposition to the site being listed on the NPL
RI/FS and Administrative Report	Develop Community Relations Plan (CRP) Establish information repository and administrative record Announce and describe the TAG Program	Participate in on-scene interviews; submit names for mailing list Periodically review site-related information Assess community need for TAG; if appropriate, submit application
Proposed Plan	Notify public of Proposed Plan; make plan available in information repository and administrative record Provide opportunity for public meeting Conduct a minimum 30-day public comment period	Review alternatives Request meeting; gain further insight into cleanup alternatives Submit written or oral comments on the alternatives
ROD	Prepare Responsiveness Summary; make it and ROD available in information repository and administrative record	Review and comment on EPA decision document
RD/RA	Revise CRP, if necessary Make remedial design available in information repository and administrative record Prepare fact sheet on remedial design Provide opportunity for public meeting	Participate in on-scene interviews Review remedial design Read fact sheet Request meeting; gain further insight into design
NPL Deletion	Place copies of information supporting the proposed deletion in the information repository Publish a notice of intent to delete in the <u>Federal Register</u> and solicit comments through a minimum 30-day public comment period Respond to comments and include responses in the final deletion package in the information repository	Review information regarding proposed deletion Submit comments in support of or opposition to the site being deleted Review the final deletion package

Agency staff members are committed to listening to citizen concerns and fully involving the public in the decisionmaking process "early, often and always."

The Technical Assistance Grant (TAG) Program

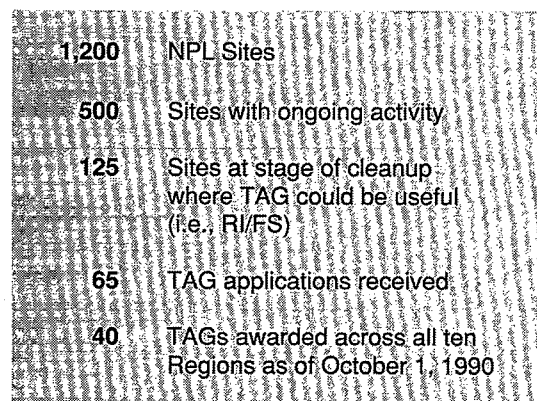
One of the most significant accomplishments of the Superfund community relations program is the awarding of technical assistance grants or TAGs. Established by Congress in 1986, the TAG program helps ensure that affected individuals are well informed about the conditions and activities at Superfund sites in their communities. The program provides groups with grants to hire independent technical advisors who can help them understand technical information related to cleaning up a site. One grant of up to \$50,000 is available for each site as long as the site is listed or has been proposed for listing on the NPL, and EPA has begun its response action at the site. If the site is a complex one, it is possible to receive additional

funding. To date, EPA has awarded 40 grants across all ten EPA Regions, as shown in Figure 15.

Groups eligible to receive TAGs are groups of individuals who live near the site and whose health, economic well-being, or enjoyment of the environment is directly threatened. Such groups could be existing citizens' associations, environmental or health advocacy or similar organizations, or coalitions of such groups formed to deal with community concerns about a hazardous waste site and its impact on the surrounding area.

In general, grant funds may be used to hire technical advisors to increase citizen understanding of existing information about the site, or that is developed during the Superfund cleanup process. Grant monies are often used to pay technical advisors to review site-related documents, meet with the recipient

Figure 15
Technical Assistance Grants Accomplishments



group to explain technical information and interpret technical information for the community.

EPA has Community Relations Coordinators and TAG Coordinators at Headquarters and in each EPA Region. The addresses and telephone numbers of Headquarters and Regional Offices are presented at the end of this document.

Roles Of States And Indian Tribes

States continue to take lead responsibility for Superfund response at many sites, and that number is expected to increase significantly as individual State hazardous waste programs mature. For example, States have led nearly 300 remedial investigation/feasibility studies (RI/FSSs) and more than 80 remedial actions (RAs) since the program's inception, with the most dramatic increase in Superfund activity happening during the last 4 years.

States and political subdivisions (such as county governments) with the necessary technical and management expertise are authorized to lead cleanup efforts. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) also requires EPA to coordinate with States when the Federal government leads site response.

State and Indian Tribal involvement in the Superfund program is based on:

- Requirements found in the Superfund Amendments and Reauthorization Act (SARA),
- Procedures outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Superfund Administrative Regulation, and
- Formal agreements between States, political subdivisions, or Indian Tribes and EPA.

In the earlier days of the Superfund program, EPA focused on involving States in individual remedial activities, while the Agency developed a better understanding of the requirements for effective response. EPA relied on comprehensive guidance for State participation because the original

Superfund law provided few procedures for getting States involved. The enactment of SARA strengthened and broadened State involvement in Superfund by specifying the points at which State participation is required. SARA outlines minimum requirements for involving States in virtually every phase of Superfund decisionmaking. As a result, States can participate in enforcement, removal actions, site assessment, and remedial activities. SARA also enables EPA to help States increase their role in site-specific response by funding their non-site-specific, general Superfund programs.

SARA extends this EPA/State interaction to Indian Tribes, as well. EPA must treat Indian Tribal governments substantially the same as States, which may either lead a response or provide support when EPA leads the activities. To be considered the same as States, an Indian Tribe must be Federally recognized by the Bureau of Indian Affairs, have jurisdiction over a site in EPA's data base of hazardous waste site information or a site on the National Priorities List (NPL), and have a Tribal governing body that is promoting health, safety, and welfare of the affected population.

Local governments also play an important role during a Superfund cleanup. Localities may lead a response action and often provide important public safety measures during emergencies, for which they may receive some financial assistance under the Local Governments Reimbursement (LGR) program. The LGR program is intended to ease the financial burden on local governments from conducting temporary emergency measures in response to a hazardous substance threat. The program offers assistance of up to \$25,000 per response directly to local governments.

Statutory And Regulatory Framework

CERCLA authorizes the Federal government to lead hazardous waste response activities at a site, or to transfer the necessary funds and management responsibility to a State (State-lead), a political subdivision of a State, or a Federally recognized Indian Tribe. Regardless of which level of government leads a response, the State must make certain assurances to EPA. As part of these assurances, the State must pay part of the cleanup costs. If the site was privately operated at the time of the hazardous substance release, the State must pay 10 percent of the costs of the actual cleanup. If the State or a locality operated the site when hazardous substances were disposed there, it must pay 50 percent or more of all Federal response costs.

In addition to helping defray some of the costs, a State must also ensure the availability of a disposal facility for hazardous materials removed from a site during cleanup, as well as ensure its capacity to adequately handle all hazardous wastes generated within the State over 20 years, starting from 1989. Operation and maintenance of the selected remedy once the cleanup is completed and is proven to be running smoothly also is the responsibility of the State as part of its assurances to the EPA.

The NCP (Subpart F) clarifies how EPA will achieve substantial and meaningful involvement by each State and Indian Tribe. The Superfund Administrative Regulation (40 CFR Part 35 Subpart O) defines how EPA can transfer funds for site response to State, political subdivision, and Indian Tribal Superfund programs to support the development of their programs'



goals and maintain their effectiveness to respond to hazardous waste threats.

Promoting State And Indian Tribal Involvement

EPA has developed four ways to involve States, Indian Tribes, and political subdivisions in Superfund:

- **Cooperative Agreements:** Cooperative Agreements transfer funds from EPA to States, political subdivisions, or Indian Tribes to lead site-specific responses or to cover the costs of their participation in Federal-lead or other CERCLA activities. A Cooperative Agreement also is the legally binding document to obtain required State cost shares and CERCLA section 104 assurances when a State or Indian Tribe leads a remedial action. Under a Cooperative Agreement, the State, political subdivision, or Indian Tribe can lead a response at a site or several response actions at one or more sites.
- **Superfund State Contracts (SSCs):** SSCs are joint, legally binding agreements between a State or Indian Tribe and EPA that assure the transfer of cost-sharing funds when EPA is leading a Superfund response action. SSCs document that States or Indian Tribes have made all required assurances under CERCLA, as amended. They also can be used to specify required State involvement during a political subdivision-lead response.
- **Core Program Cooperative Agreements:** EPA created Core Program Cooperative Agreements to provide general Superfund program support

funds to States and Indian Tribes. Core Program funding defrays the cost of essential State and Indian Tribe activities that cannot be accounted for on a site-specific basis, but are essential to an active role in CERCLA implementation. For example, States and Indian Tribes have used Core Program Cooperative Agreements to pay for administrative and clerical salaries, computer resources, program management, recordkeeping, and training.

- **Superfund Memoranda of Agreement (SMOAs):** EPA developed SMOAs to define the working Superfund partnership between EPA and a State or Indian Tribe. A SMOA is an optional document that specifies the procedures that EPA and a State or Indian Tribe will use to implement CERCLA and the NCP. These procedures then serve as the basis for site-specific Cooperative Agreements or SSCs.

State And Indian Tribal Accomplishments

The number of State-lead activities is greatest in the site assessment program. States have identified more than 32 percent of the sites that are currently listed in EPA's inventory of hazardous waste sites. To date, States have assumed responsibility for approximately 20,500 preliminary assessments (PAs), or nearly 60 percent of the national total. They have completed 19,500, or more than 58 percent of all PAs conducted within the Superfund program. States also have completed more than 4,500 site investigations (SIs) and Hazard Ranking System calculations, 32 percent of the total number of SIs that have been completed nationwide. Two Indian Tribal govern-

ments also have been awarded Cooperative Agreements to conduct site assessment activities.

States have made an equally significant contribution to remedial activities at hazardous waste sites (see Figures 16 through 18). Since 1980, States have completed 139 RI/FSs, 51 remedial designs (RDs), and

Each State and Indian Tribe may determine the role it will take in Superfund.

27 RAs. This represents 16 percent, 14 percent, and 15 percent of total nationwide RI/FS, RD, and RA completions, respectively. In addition, the number of ongoing activities led by States has grown steadily over time. This increase suggests a strong State commitment toward long-term cleanup activities. Four Indian Tribes also have been awarded Cooperative Agreements to conduct support agency activities during Federal-lead remedial response activities.

Core Program funds have also made a critical difference in increasing State and Indian Tribal Superfund capabilities. The Core Program began in FY87 with three States participating in pilot activities. Today, all States, Territories, and Federally recognized Indian Tribes are eligible to participate, and 44 States, the Territory of Puerto Rico, and three Indian Tribal governments are active in the program. Through the Core Program, each State, Territory, and Indian Tribal government has the opportunity to determine the long-term role it will take in Superfund.

Roles Of States And Indian Tribes

State Superfund Program Success Stories:

Core Program Funds Make A Difference . . .

Mississippi's State Superfund Program has come a long way since 1987. From the passage of CERCLA until mid-1987, Mississippi had only four full-time staff and one part-time supervisor. Response operations were limited. In 1988, however, the State entered into a Core Program Cooperative Agreement with EPA which allowed Mississippi to expand its program and, therefore, its effect on cleaning up hazardous waste sites. This expansion, which continued with funding provided by Cooperative Agreements with the EPA in 1989 and 1990, included increasing professional staff dedicated to Superfund response four-fold, and subsequent participation in site assessment activities. In addition, the State's ability to take aggressive enforcement actions against individuals or firms responsible for contributing to abandoned hazardous waste sites improved.

Mississippi is currently pursuing enforcement activities under administrative orders at 100 sites, representing nearly one-third of the Mississippi sites listed in the CERCLA Information System (CERCLIS). The State has developed an enforcement action guidance document consistent with the NCP, entered into a SMOA with EPA, signed a Cooperative Agreement to provide funds to review technical documents and actions at its two NPL sites, entered into the nation's first SMOA with the Department of Defense (DOD) to oversee response actions at abandoned DOD facilities, and is in the final stages of negotiating a similar SMOA with the Department of Energy.

Political Subdivisions Can Play A Critical Role . . .

South Adams County, Colorado needed clean water. As part of a remedial action, EPA planned to provide local citizens with a permanent alternate water supply to take the place of contaminated existing sources. Design and construction of this were expected to take a substantial period of time to complete, and EPA was unable to provide an interim alternate water supply until the permanent one was in place. As a result, South Adams County offered to take the lead for the interim cleanup measures. The County entered into a political subdivision-lead Cooperative Agreement with EPA which provided an interim water supply that included hooking up residences and implementing other interim measures to protect the human health and the environment. Through its involvement in the Cooperative Agreement, South Adams County gained significant experience in site remediation activities as well as in the whole Superfund process. The County continued to play an active role in site actions throughout the entire remedial action.

Figure 16
State-Lead Remedial Investigation/
Feasibility Study Starts

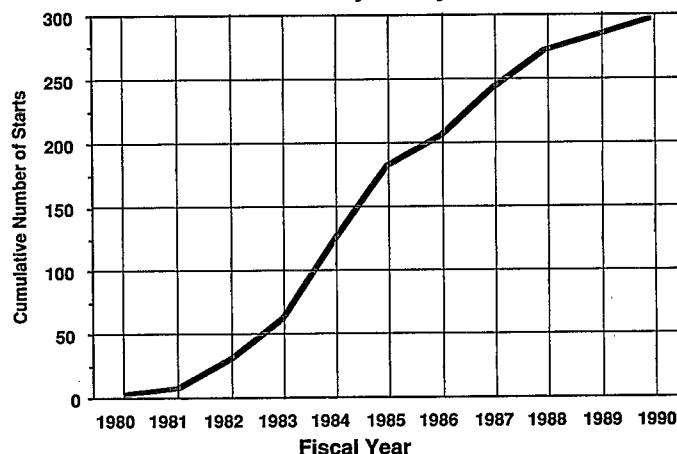


Figure 17
State-Lead Remedial Design Starts

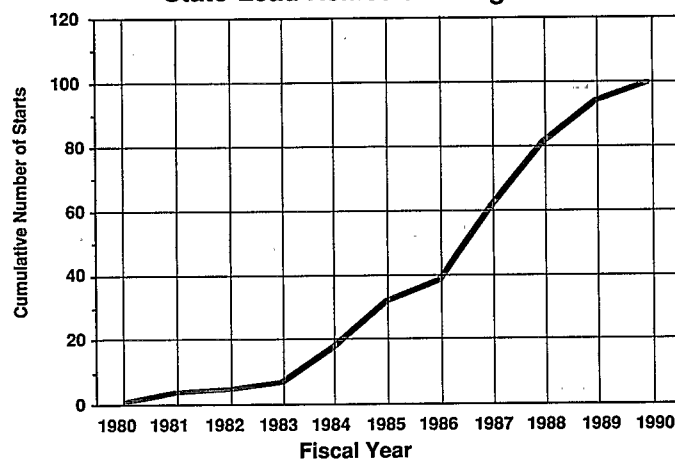
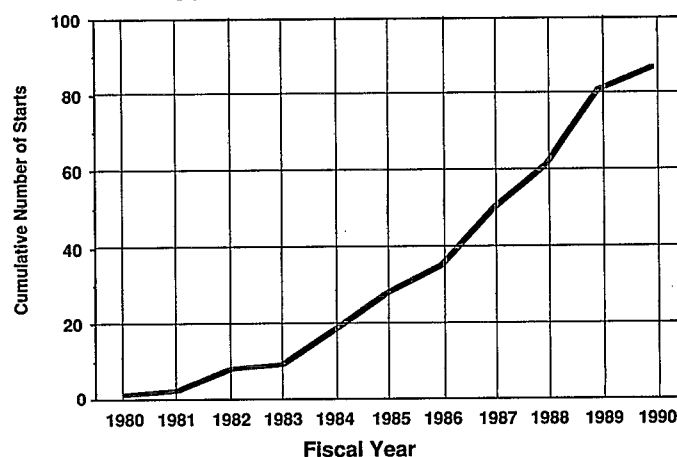
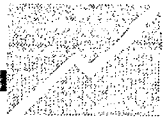


Figure 18
State-Lead Remedial Action Starts





EPA has developed a solid infrastructure for managing the complex Superfund program, including:

- Total Quality Management approaches for achieving program efficiency
- Methods for communicating tangible environmental improvements
- New frontiers in science, engineering, and technology

EPA spent most of the first decade of Superfund getting its house in order, and developing and enhancing the organizational structure and management systems necessary to get the job done, with cleanup progress accelerating by the end of the decade.

Judging the seriousness of potential threats at each Superfund site and determining the best solution is a complex task. It requires a sophisticated infrastructure of management systems and scientific and technological expertise. One of Superfund's most significant accom-

plishments during its first decade has been the development of such a network. EPA has developed and continues to streamline management procedures and policies for administering the Superfund program.

In addition, efforts by the scientific and engineering community to solve the unique problems presented by Superfund sites have resulted in the development of a wide range of new techniques for treating hazardous substances and a greater understanding of their health effects.

Building The Program

In 1980, the nation committed itself to a major Federal effort to tackle its hazardous waste problem. From this mandate, EPA designed, enacted, and put into place the Superfund program—its contracting mechanisms, management information systems, accounting procedures, scientific, legal and technical protocols, and program planning and evaluation measures. The early slow pace of the program stemmed, in part, from the difficulty of moving ahead before program policies, procedures, roles, and responsibili-

ties were clearly defined. Today, the management foundation of Superfund is solidly in place and is continually being refined and enhanced.

Further, the Agency coordinates the efforts of EPA staff in its Washington, D.C., Headquarters, its front-line staff in ten Regional offices across the nation, State government staff, contractors, and private parties who assume responsibility for cleanup. Comprehensive information systems have been developed, not only to manage the large sums of money being spent and the efforts underway at hundreds of projects simultaneously, but also to exchange state-of-the-art technical information on chemicals, technologies, safety procedures, and sources of assistance. The Superfund program also has initiated a new strategic planning system aimed at identifying and prioritizing critical activities over a 5-year period. This system complements the Agency's overall planning activities for achieving cross-program integration and comprehensive risk reduction.

Managing For Continual Improvement

EPA has realized, however, that its infrastructure must continue to evolve, and has taken innovative steps to improve its performance. First, Total Quality Management principles are now being applied in all parts of the Superfund program to clearly define program customers and requirements, produce error-free work, improve operations constantly and forever, and effectively manage the workload by preventing waste and inefficiency. Another significant step was completion of the Agency's Superfund Management Review in 1989. The Management Review of the Superfund Program is providing the strategy for a second decade of increased program integrity and a full "pipeline" of site



activity. This review provided more than 50 recommendations for addressing fundamental issues facing the program:

- Reducing environmental risks from a growing list of sites that present new complexities
- Making defensible cleanup decisions, sometimes without complete knowledge of environmental and health risks
- Maximizing the use of treatment technologies, recognizing that many of these technologies are new and untested in the field
- Making efficient use of limited resources.

Today, EPA has completed nearly all of the more than 120 management improvement measures identified in this self-evaluation.

One of the most significant accomplishments of the Superfund Management Review is the development of a Long-Term Contracting Strategy for the Superfund program. The Agency's purpose in developing this strategy was to analyze the long-term contracting needs of the program, and design a portfolio of Superfund contracts to meet those needs over the next 10 years. Completed in September of 1990, the strategy will help integrate enforcement and site cleanup activities, enhance competition by reducing the size of contracts and creating more opportunities for smaller businesses, and provide greater management flexibility and improved oversight and cost control.

Communicating Program Results

Many have judged the success of the Superfund program by the number of sites removed from the

NPL. While that number reflects one measure of progress, it does not begin to tell the entire story. Success for Superfund is more appropriately measured in terms of the **successive, incremental** cleanup steps that quickly reduce threats to people and the environment and ultimately provide long-term protection.

Instead of concentrating on continuous and complete cleanup of a few major sites, the Agency will now dedicate resources to ensure the greatest degree of public safety at the

... dedicate resources to ensure the greatest degree of public safety at the largest number of sites.

largest number of sites. The longer process of total site cleanup on a national scale will move forward steadily at the same time as incremental progress is being made at sites. Deleting a site from the NPL will become a distant goal, as EPA focuses on the more meaningful task of solving immediate problems that affect human health and safety.

Superfund has made real environmental gains and has developed a new means of portraying progress. These new measures, known as environmental indicators, describe tangible environmental improvements in terms that are useful and familiar. For example, progress in making sites safer can be viewed in terms of efforts to control immediate threats (such as providing an alternate water supply). Progress also can be measured in terms of making sites clean (such as reaching goals for permanent site cleanup). A third way to characterize Superfund progress is EPA's efforts to bring technology to bear on site problems. As shown in Figure 19, on the following page, the Superfund program is using technology to remove contamination from the environment.

Developing The Science Behind The Solutions

The Superfund program has explored new frontiers in the applied sciences. To address hazardous substance problems, Superfund response personnel must understand how complex mixtures of chemicals travel through the soil, ground water, and the air. This has been a long and complex task for environmental scientists, requiring a combination of real world field sampling results and theoretical models.

EPA's knowledge of how contaminants enter and travel through environmental media has increased significantly as the Agency has evaluated more and more sites for possible Superfund response.

Of even greater complexity has been the task of estimating the degree to which human health is endangered by Superfund sites. Typically, people at risk because of a waste site have been exposed to very small quantities of hazardous substances over a prolonged period, and the health effects of these substances usually do not surface until long after the exposure has taken place. During the first decade of the Superfund program, EPA and other Federal agencies, particularly the Agency for Toxic Substances and Disease Registry (ATSDR) within the Department of Health and Human Services, focused on assessing risks at specific sites and refining the risk assessment process. As a result of the 1986 amendments to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), ATSDR also began preparing toxicological profiles for the most frequently

found substances at Superfund sites, and completed health assessments for all National Priorities List (NPL) sites within 1 year of their inclusion on the NPL.

Encouraging New Technology For Risk Reduction

The 1980 Superfund law did not have specific provisions for research and development of engineering techniques and equipment for handling, containing, treating, and disposing of hazardous substances. The Superfund Amendments and Reauthorization Act (SARA) required EPA to establish a formal research and development program, including demonstration programs for technologies that offer alternatives to conventional methods of handling site cleanups, and favoring methods that lead to the destruction or recycling of wastes rather than land disposal. SARA also called for training programs for hazardous substance response and research.

In 1986, EPA began the Superfund Innovative Technology Evaluation (SITE) program to promote the development and use of innovative technologies to clean up Superfund sites across the country. Now in its fifth year, SITE is helping to provide the treatment technologies necessary to implement new Federal and State cleanup standards aimed at permanent remedies rather than quick fixes. The SITE program is really three related programs: the Demonstration Program, the Emerging Technologies Program, and the Measurement and Monitoring Technologies Program.

To date, the major focus of the SITE program has been on the Demonstration Program, which is designed to generate engineering and cost data on selected, innovative technologies. In this program,

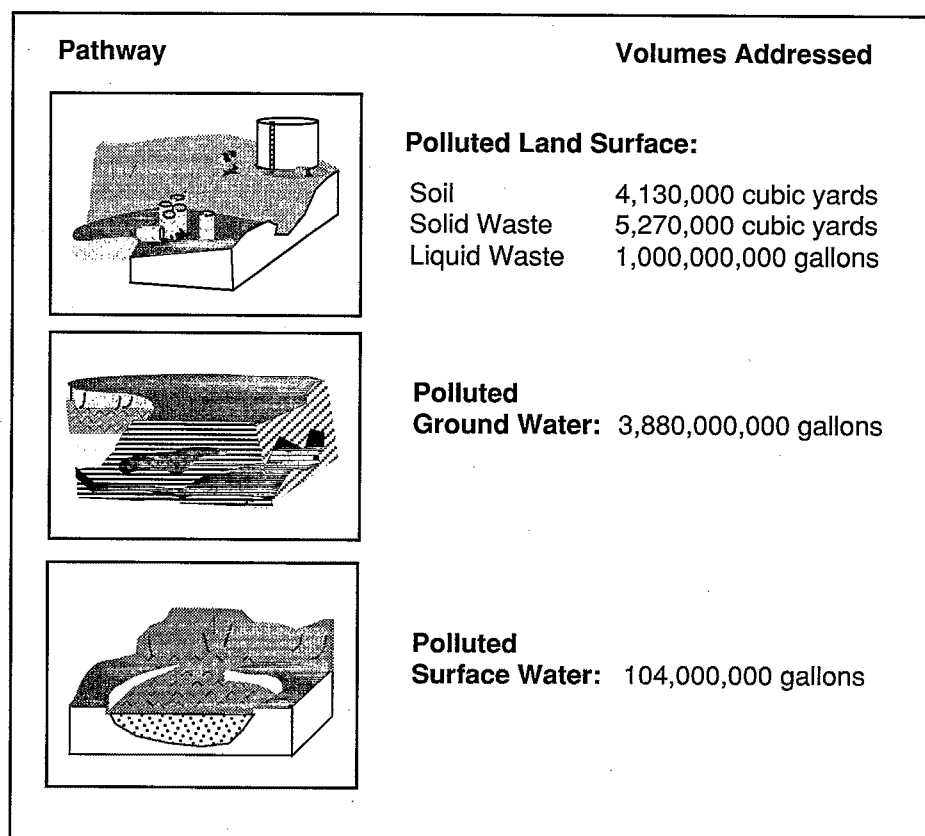
technology developers are responsible for demonstrating their innovative systems at selected sites, while EPA is responsible for sampling, analyzing, and evaluating all test results. The information gathered during the demonstrations is used in combination with other data as a basis for selecting the most appropriate technologies for the cleanup of Superfund sites. More than 52 developers are now active participants in the Demonstration Program for field-scale technologies. They represent a wide variety of innovative technologies, from thermal treatment and bioremediation to soil washing, solvent extraction, and in-situ stripping. Since the first demonstration in 1987, EPA has conducted 19 demonstrations.

The Emerging Technologies Program provides 2-year funding to

developers of emerging technologies to support bench-scale and pilot testing of innovative treatment technologies. EPA has accepted a total of 31 bench- and pilot-scale technologies to date. Laser technology is one method being investigated for use in reducing the toxicity of wastes at Superfund sites.

Lastly, the Monitoring and Measurement Technologies Program supports the development and demonstration of innovative field-ready technologies that detect, monitor, or measure hazardous substances in the air, surface water, soil, subsurface, and in waste materials and biological tissues. This program began in earnest in 1990, and four demonstrations have been completed. EPA continues to seek new information on field methods to measure and monitor contamination and its effects on the environment.

Figure 19
Waste Removed From The Environment





Future Directions And Challenges

Is the Superfund program working? Yes. This complex and challenging program is now up and running.

During the last 10 years, EPA has developed a program which has brought this country to a new level of understanding about hazardous substances and how they can be treated. The Superfund program is comprehensive, yet flexible and innovative. Its mission is both immediate and long-range; its focus is specific enough to handle individual site cleanups with precision, yet broad enough to encourage advances in a relatively new scientific and technical field.

Superfund has resulted in permanent solutions to major hazardous waste problems already. But that is not enough. After 10 years of experience, the most important lesson that all Superfund participants have learned is that the program faces a workload stretching well into the next century. The hazardous waste problem in the United States remains large, complex, and long-term. The job ahead is enormous. It will take technical innovation and competence, management skill and creativity, and

old-fashioned dedication and hard work to clean all the sites currently known to present unacceptable risk. And that number is growing, as new sites continue to be discovered.

The Agency is looking beyond the next 10 years to project a program for the future—Superfund 2000. Superfund 2000 is a concept for long-term program planning. As part of this concept, EPA is

programs, are being assessed. In keeping with the Agency-wide goal of increasing multi-media enforcement efforts by 25 percent, EPA is examining the future role of responsible parties and State and local governments in the Superfund program. All these studies and activities will help ensure that an integrated, pragmatic, and results-oriented Superfund program will continue to evolve.

The hazardous waste problem in the United States remains large, complex, and long-term.

conducting studies of the possible universe of sites to be cleaned up by Superfund or other parties. An outyear liability model will help the Superfund program estimate possible future cleanup costs under different scenarios. The Agency also is looking at past remedy selection decisions and evaluating patterns that may indicate the future success of various technologies. Opportunities for greater program integration, particularly between the Superfund and Resource Conservation and Recovery Act (RCRA)

The Agency is proud of its hard-won accomplishments in the Superfund program, and will continue to use new management and technological approaches to accelerate the pace of cleanup, expand its efficiency and activity, improve the quality of the program over time, and build public confidence. There are no miracle cures for the hazardous waste problem. But EPA has a clear and cogent strategy for meeting this challenge beyond this century and into the next millennium.

EPA Superfund Offices

U.S. Environmental Protection Agency
Office of Emergency & Remedial Response
401 M Street, SW
Washington, D.C. 20460
CML (Commercial): (202) 382-2090
FTS (Federal Telecommunications
System): 382-7883

EPA Region 1
Waste Management Division
JFK Federal Building
Boston, Massachusetts 02203
CML: (617) 565-3715
FTS: 835-3715

EPA Region 2
Emergency & Remedial Response Division
Jacob K. Javitz Federal Building
26 Federal Plaza
New York, New York 10278
CML: (212) 264-2657
FTS: 264-2657

EPA Region 3
Hazardous Waste Management Division
841 Chestnut Building
Philadelphia, Pennsylvania 19107
CML: (215) 597-9800
FTS: 597-9800

EPA Region 4
Waste Management Division
345 Courtland Street, NE
Atlanta, Georgia 30365
CML: (404) 347-4727
FTS: 257-4727

EPA Region 5
Waste Management Division
230 South Dearborn Street
Chicago, Illinois 60604
CML: (312) 353-2000
FTS: 353-2000

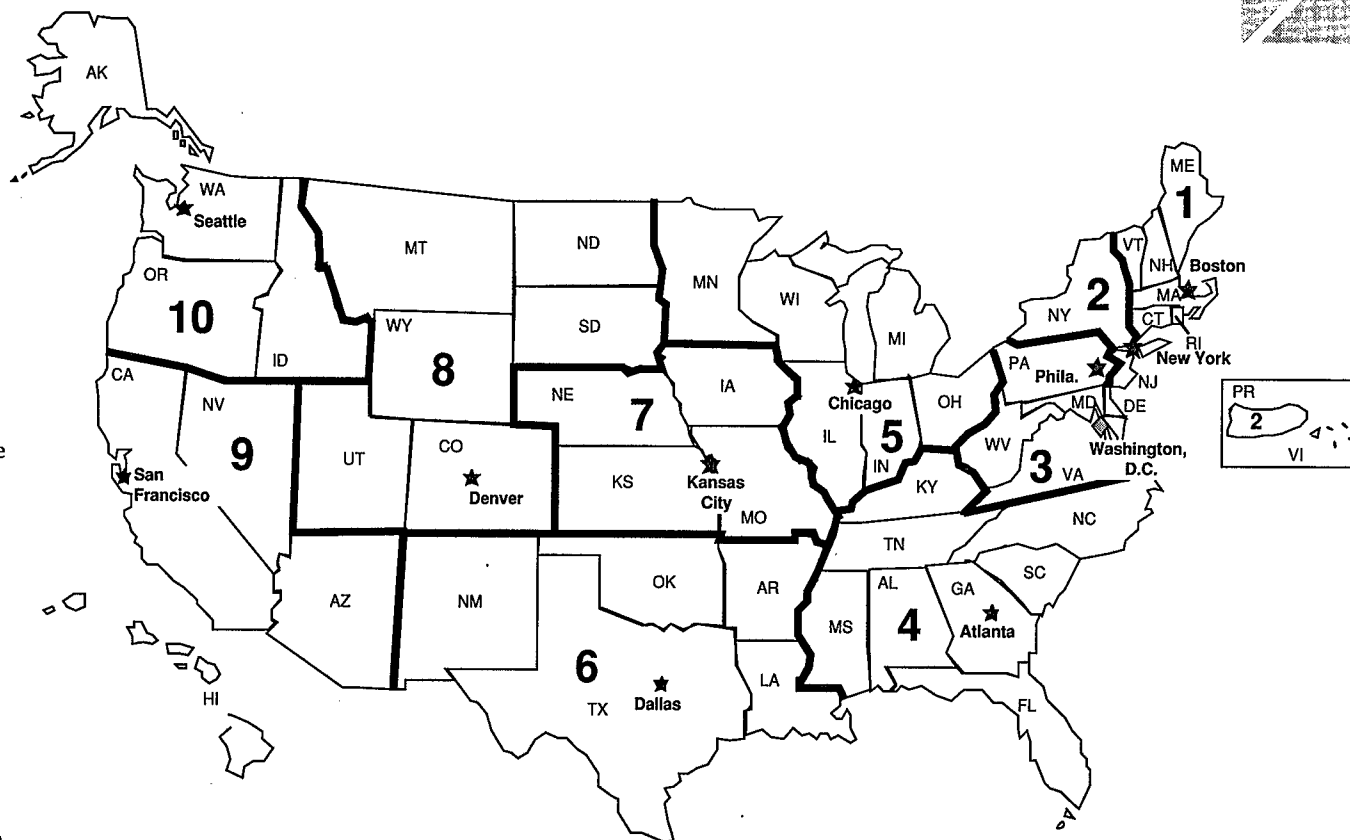
EPA Region 6
Hazardous Waste Management Division
First Interstate Bank Tower at Fountain Place
1445 Ross Avenue, 12th Floor, Suite 1200
Dallas, Texas 75202
CML: (214) 655-6444
FTS: 255-6444

EPA Region 7
Waste Management Division
726 Minnesota Avenue
Kansas City, Kansas 66101
CML: (913) 551-7000
FTS: 276-7003

EPA Region 8
Hazardous Waste Management Division
999 18th Street, Suite 500
Denver, Colorado 80202-2405
CML: (303) 293-1603
FTS: 330-1603

EPA Region 9
Hazardous Waste Management Division
75 Hawthorne Street
San Francisco, California 94105
CML: (415) 744-1500
FTS: 484-1020

EPA Region 10
Hazardous Waste Division
1200 Sixth Avenue
Seattle, Washington 98101
CML: (206) 442-1200
FTS: 399-1200



For More Information

Dockets

Maintain the official rulemaking files, which include official statements of the Administrator's position, transcripts of hearings, litigation records, and public comments.

RCRA Docket And Information Center: Contains rulemaking files, publications, and background documents concerning the Resource Conservation and Recovery Act.
(202) 475-9327

Superfund Docket: Provides rulemaking files, background documents, and viewing copies of Records of Decision concerning the Comprehensive Environmental Response, Compensation, and Liability Act.
(202) 382-3046

Superfund Documents Center: Manages all aspects of document production, distribution, archiving, and maintenance of bibliography. Ensures that the bibliography is available to the public through the National Technical Information Service (NTIS) and provides document inventory service to agency staffs. Write Superfund Documents Center – OS-240.

Public Information Center: Maintains a broad spectrum of EPA program publications of general environmental interest, available to the public upon request.

Public Information Center
U.S. EPA (PM-211B)
401 M Street, SW
Washington, DC 20460
(202) 382-2080 or 475-7751

Hotlines

Provide information to the public and the regulated community in interpreting regulations and policies.

RCRA/CERCLA: Responds to questions from the public and the regulated community on the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund). Hours of operation are Monday through Friday, 8:30 a.m. to 7:30 p.m. Eastern Time.
(800) 424-9346
(703) 920-9810 in the Washington, DC area
(800) 553-7672 TDD

Emergency Planning And Community Right-To-Know: Provides communities and individuals with help in preparing for accidental releases of toxic chemicals.

This hotline is maintained as an information resource rather than an emergency number, and serves to complement the RCRA/CERCLA Hotline.
(800) 535-0202

Libraries

The EPA Headquarters library maintains a variety of reference materials, data bases, and both general and special collections on environmental topics, including hazardous waste.

Headquarters Library
EPA, Room M2904
401 M Street, SW
Washington, DC 20460
(202) 382-5921

In addition to the Headquarters library, there is a library in each of EPA's ten Regional Offices (the addresses appear on the "EPA Superfund Offices" page and the telephone numbers are listed on the next page).

National Response Center (NRC)

Operated by the U.S. Coast Guard, this emergency hotline is used to report spills of oil and other hazardous materials. Calls are accepted 24 hours a day, every day of the year.
(800) 424-8802
(202) 426-2675 in the Washington, DC area

Hazardous Waste Ombudsman

Assists citizens and the regulated community who have had problems voicing a complaint or getting an issue resolved about hazardous waste. There is a Hazardous Waste Ombudsman at EPA Headquarters and one in each of EPA's ten Regional Offices (addresses on page 37).
(703) 557-1938

Center For Environmental Research Information (CERI)

Serves as a central point of distribution for EPA research results and reports. Also conducts workshops and seminars on environmental regulations, new technologies, and the health effects of environmental chemicals. The Center plays a major role in Superfund research, development, and response.

CERI
U.S. Environmental Protection Agency
Cincinnati, OH 45268
(513) 569-7391



For information on training for and response to hazardous materials emergencies, contact the Technical Support Division at (513) 569-7562.

National Technical Information Service (NTIS)

A self supporting agency of the U.S. Department of Commerce, NTIS serves as a repository for more than 1.6 million technical reports, summarizing government, university, and corporate research worldwide. In addition to providing public access to the entire Superfund bibliography, NTIS also maintains Superfund computer datafiles, providing up-to-date information including the names and locations of potential hazardous waste sites reported to EPA.

U.S. Department of Commerce
NTIS
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650

Regional Offices

EPA has ten Regional Offices to provide the public with both general and technical information about specific environmental issues in the States they oversee.

- EPA Region 1:** Connecticut, Massachusetts, Maine, Vermont, New Hampshire, Rhode Island
General Number: (617) 565-3715
Hazardous Waste Ombudsman: (617) 565-3394
- EPA Region 2:** New Jersey, New York, Puerto Rico, Virgin Islands
General Number: (212) 264-2657
Hazardous Waste Ombudsman: (212) 264-4711
- EPA Region 3:** Delaware, Maryland, Pennsylvania, Virginia, West Virginia, District of Columbia
General Number: (215) 597-9800
Hazardous Waste Ombudsman: (215) 597-0982
- EPA Region 4:** Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee
General Number: (404) 347-4727

(800) 282-0239 in GA; (800) 241-1754 in other Region 4 States
Hazardous Waste Ombudsman: (404) 347-3004

EPA Region 5: Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin
General Number: (312) 353-2000
(800) 572-2515 in IL; (800) 621-8431 in other Region 5 States
Hazardous Waste Ombudsman: (312) 353-5821

EPA Region 6: Arkansas, Louisiana, New Mexico, Oklahoma, Texas
General Number: (214) 655-6444
Environmental Emergency Hotline - 24 hours: (214) 655-2222
Hazardous Waste Ombudsman: (214) 655-6765

EPA Region 7: Iowa, Kansas, Missouri, Nebraska
General Number: (913) 551-7000
Hazardous Waste Ombudsman: (913) 551-7051

EPA Region 8: Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
General Number: (303) 293-1603; (800) 759-4372
Hazardous Waste Ombudsman: (303) 294-1111

EPA Region 9: Arizona, California, Hawaii, Nevada, American Samoa, Guam, Commonwealth of the Northern Mariana Islands, Republic of Palau, Federated States of Micronesia, the Republic of the Marshall Islands
General Number: (415) 744-1500
RCRA Hotline: (415) 744-2074
Superfund Hotline: (800) 231-3075
Hazardous Waste Ombudsman: (415) 744-1470

EPA Region 10: Alaska, Idaho, Oregon, Washington
General Number: (206) 442-1200
Hazardous Waste Ombudsman: (206) 442-2871

Glossary of Terms

Administrative Order on Consent (AOC): An administrative legal agreement between EPA and potentially responsible parties (PRPs) whereby PRPs agree to perform or pay the cost of a site response action. The agreement describes actions to be taken at a site and may be subject to a public comment period. Unlike a consent decree, an AOC does not have to be approved by a judge.

Administrative Record: A file that contains all information used by the lead agency to make its decision on the selection of a response action under CERCLA. This file is available for public review and a copy is established at or near the site, usually at one of the information repositories. Also, a duplicate file is held in a central location, such as a Regional or State office.

Affected Public: The people who live and/or work near hazardous waste sites.

Agency for Toxic Substances and Disease Registry (ATSDR): A Federal agency within the Department of Health and Human Services which, in conjunction with EPA, is responsible for implementing health-related authorities of CERCLA, including conducting site-specific health assessments.

Alternative Remedial Contract Strategy (ARCS) Contractors: Government contractors who provide project management and technical services to support remedial response activities at National Priorities List sites.

Applicable or Relevant and Appropriate Requirements (ARARs): ARARs include any State or Federal statute or regulation that pertains to protection of human health and the environment in addressing certain site conditions or using a particular cleanup technology at a Superfund site. A State law to preserve wetland areas is an example of an ARAR. EPA must consider whether a remedial alternative meets ARARs as part of the process for selecting a cleanup alternative for a Superfund site.

Availability Session: An informal meeting in a public location where interested citizens can talk with EPA and State officials on a one-to-one basis.

Bench-Scale Tests: Laboratory testing of potential cleanup technologies (also known as treatability studies).

Bioremediation: The use of living organisms, such as bacteria and fungi, to treat hazardous substances.

Brine Mud: A waste material, often associated with well drilling or mining, composed of mineral salts and other inorganic compounds.

Cap: A layer of clay or other highly impermeable material installed over the top of a closed landfill to prevent entry of rainwater and minimize leakage.

Carbon Tetrachloride: A colorless liquid used in refrigerants, metal degreasers, agricultural fumigants, and as a dry-cleaning agent. Exposure to it can cause damage to the central nervous system, liver, and kidneys.

Clean Water Act: Federal law regulating the discharge of pollutants into surface waters.

Cleanup: Actions taken to deal with a release or threatened release of hazardous substances to protect human health and/or the environment.

Community Relations: EPA's program to inform and involve the public in the Superfund process and respond to community concerns.

Community Relations Coordinator (CRC): The EPA official responsible for overseeing and directing community relations activities.

Community Relations Plan (CRP): The document that outlines specific community relations activities that occur during a remedial response at a site. The CRP outlines how EPA will keep the public informed of work at the site and the ways in which citizens can review and comment on decisions that may affect the final actions at the site.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A Federal law passed in 1980 and amended in 1986 by the Superfund Amendments and Reauthorization Act. CERCLA created a special tax that goes into a Trust Fund, commonly known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous waste sites. Under the program, EPA can either:

- Perform site cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work; or
- Take legal action to force parties responsible for site contamination to clean up the site or pay back the Federal government for the cost of the cleanup.



Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS):

The official information system for the Superfund program, it contains site-specific and general program data, such as site location, technical cleanup process, scheduled activities, and costs to date.

Consent Decree: A legal document, approved and issued by a State or Federal district court, that formalizes an agreement between a State or EPA and potentially responsible parties (PRPs) whereby PRPs will perform all or part of a Superfund site cleanup. The consent decree describes actions that PRPs are required to perform and is subject to a public comment period.

Cooperative Agreement (CA): An assistance agreement whereby EPA transfers money, property, services, or anything of value to a State for the accomplishment of certain activities or tasks as authorized by CERCLA.

Core Program Cooperative Agreement (CPCA): An assistance agreement whereby EPA provides support funds to States and Indian Tribes to help defray the cost of non-site-specific activities, such as administrative and clerical salaries, computer resources, and training.

Cost Recovery: A legal process through which potentially responsible parties can be required to pay back the Federal government for money it spends on any cleanup actions.

Covenant Not to Sue: A written agreement that releases settling potentially responsible parties from present or future liability.

De Minimis Settlements: Settlements that are smaller agreements separate from the larger settlement for the chosen cleanup remedy. Under de minimis settlements, contributors of a relatively small amount of waste to a site, or landowners who bought the site but did not contribute wastes to it, may resolve their liability.

Department of Defense (DOD): The U.S. Army Corps of Engineers within DOD has specialized equipment and personnel available to assist in removal actions. The Corps serves as EPA's primary agent for Federal-lead remedial designs and remedial actions.

Department of Energy (DOE): DOE provides special assistance when radioactive substances are involved at Superfund sites.

Department of Justice (DOJ): DOJ assists EPA in enforcement activities and legally represents EPA when cases go to court.

Emergency Preparedness and Community Right-to-Know Act (EPCRA): A Federal law that established a four-part program to define an emergency planning structure at the State and local levels; require emergency notification of hazardous chemical releases; require notification of chemical use, storage, or production activities; and define annual emissions reporting requirements.

Enforcement: EPA's efforts, through legal action if necessary, to force potentially responsible parties to respond to information requests or perform or pay for a Superfund site cleanup.

Fact Sheet: A document prepared and distributed by EPA to inform the public of Superfund site or program activities.

Feasibility Study (FS): See Remedial Investigation/Feasibility Study.

Future Liability: Refers to potentially responsible parties' obligations to pay for additional response activities beyond those specified in the Record of Decision or consent decree.

Gas Chromatograph/Mass Spectrometer: A highly sophisticated instrument that identifies the molecular composition and concentrations of the various chemicals in water and soil samples.

General Notice Letter: A letter, issued by EPA, advising potentially responsible parties of their potential liability at a Superfund site.

Ground Water: Water found beneath the earth's surface that fills pores between materials such as sand, soil, or gravel. Ground water can occur in sufficient quantities that it can be used for drinking water, irrigation, and other purposes.

Hazard Ranking System (HRS): A scoring system used to evaluate potential relative risks to human health and the environment from releases or threatened releases of hazardous substances. EPA and States use the HRS to calculate a site score, from 0 to 100, based on the actual or potential release of hazardous substances from a site through air, surface water, or ground water.

Glossary of Terms

Hazardous Substance: Any material that poses a threat to human health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.

Hazardous Waste: By-products or wastes that are toxic, corrosive, ignitable, explosive, or chemically reactive. Although the legal definition of hazardous waste is complex, the term more generally refers to any waste that EPA believes could pose a threat to human health and the environment if improperly treated, stored, transported, or disposed.

Health Assessment: A study, required by CERCLA and performed by the Agency for Toxic Substances and Disease Registry (ATSDR), that determines the potential risks to human health posed by a site.

In-situ Stripping: A treatment system that removes or "strips" volatile organic compounds from contaminated ground water or surface water by forcing an airstream through the water and causing the compounds to evaporate.

Information Exchange: A phase that occurs early in the negotiation process through which EPA and potentially responsible parties exchange information and knowledge about past activities at a Superfund site.

Information Repository: A file containing current information, technical reports, and reference documents regarding a Superfund site. The information repository is usually located in a public building that is convenient for local residents, such as a public school, library, or city hall.

Innovative Technologies: New or inventive methods to treat effectively hazardous waste and reduce risks to human health and the environment.

Inorganic Compounds: Compounds composed of mineral materials, including elemental salts and metals such as iron, aluminum, mercury, and zinc.

Local Governments Reimbursement (LGR) Program: An EPA program that provides up to \$25,000 directly to local governments to help ease the financial burden of conducting temporary emergency measures in response to a hazardous substance threat.

Long-Term Contracting Strategy: Refers to EPA's efforts to analyze the long-term contracting needs of the Superfund program and design or realign contracts to meet those needs.

Management Review of the Superfund Program (90-Day Study): An EPA report, commissioned by the EPA Administrator and published in May 1989, that provides an assessment of the Superfund program and suggests a practical strategy for realizing the greatest environmental benefit possible, given the long-term, incremental nature of Superfund.

Media: Components of the environment, including surface water, ground water, soil, and air, which are the subject of regulatory concern and activities.

Mercury: A silver, liquid metal that is highly toxic and can be absorbed through the skin. It is used in thermometers, batteries, fluorescent light bulbs, pharmaceuticals, and many other products.

Metals: Compounds such as chromium and lead that can be toxic at relatively low concentrations.

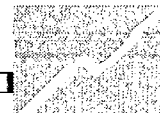
Mixed Funding: Settlements in which potentially responsible parties and EPA share the costs of the response action.

Monitoring Wells: Special wells drilled at specific locations on or off a hazardous waste site where ground water can be sampled at selected depths and studied to determine such things as the direction of ground water flow and the types and amounts of contaminants present.

Moratorium: During the negotiation process, a period of 60 or 90 days during which EPA and potentially responsible parties may reach settlement but no site response activities can be conducted.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The Federal regulation that provides a blueprint for Superfund program operations.

National Priorities List (NPL): EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response using money from the Trust Fund. The list is based primarily on the score a site receives from the Hazard Ranking System. EPA is required to update the NPL at least once a year.



National Response Center (NRC): The center operated by the U.S. Coast Guard that receives and evaluates reports of oil and hazardous substance releases into the environment and notifies the appropriate agency(ies). The NRC can be contacted 24 hours a day, toll-free at 800-424-8802.

National Response Team (NRT): Representatives of 14 Federal agencies that coordinate Federal responses to nationally significant pollution incidents and provide advice and technical assistance to the responding agency(ies).

Negotiations: After potentially responsible parties (PRPs) are identified for a site, EPA coordinates with them to reach a settlement. Negotiated settlements result in PRPs paying for or conducting cleanup activities under EPA supervision. If negotiations fail, EPA can order the PRPs to conduct the cleanup or EPA can pay for the cleanup using Superfund monies and then sue the PRPs to recover costs.

No Further Remedial Action Planned (NFRAP): A determination made by EPA following a preliminary assessment that a site does not pose a significant risk and so requires no further activity under CERCLA.

Non-Binding Allocations of Responsibility (NBAR): Process for EPA to propose a way for potentially responsible parties to allocate costs among themselves.

Non-compliance: If a potentially responsible party (PRP) does not meet the agreement set forth in a negotiated settlement, the PRP is in "non-compliance" and EPA can invoke penalties, usually in the form of fines.

On-Scene Coordinator (OSC): The Federal official who coordinates and directs Superfund removal actions.

Operable Unit (OU): An action taken as one part of an overall site cleanup. For example, a carbon absorption system could be installed to halt rapidly spreading ground water contaminants while a more comprehensive and long-term remedial investigation/feasibility study is underway. A number of OUs can be used in the course of site cleanup.

Operation & Maintenance (O&M): Activities conducted at a site after a response action has concluded, to ensure that the cleanup or containment system is functioning properly.

Organic Compounds: Chemical compounds composed of carbon and hydrogen, including materials such as oils, pesticides, and solvents.

Pilot Tests: Testing of a cleanup technology, performed under actual site conditions, to identify potential problems prior to full-scale implementation.

Political Subdivision: The definition of political subdivision varies from State to State, so each State determines what units of government meet its legislative definition. A political subdivision can participate in Superfund cleanup as a lead or support agency when EPA and the State agree that this enhances the cleanup process and results in an efficient, economical, and well-coordinated use of resources.

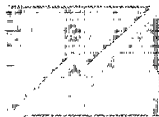
Polychlorinated Biphenyls (PCBs): A family of organic compounds used since 1926 in electric transformers as insulators and coolants, in lubricants, carbon-less copy paper, adhesives, and caulking compounds. PCBs do not break down into new and less harmful chemicals and are stored in the fatty tissues of humans and animals. EPA banned the use of PCBs in 1979.

Potentially Responsible Party (PRP): An individual(s) or company(ies) (such as owners, operators, transporters, or generators) potentially responsible for, or contributing to, the contamination problems at a Superfund site. Whenever possible, EPA requires PRPs, through administrative and legal actions, to clean up hazardous waste sites they have contaminated.

Potentially Responsible Party (PRP) Search: An investigation, conducted by a State or EPA, into the parties who may be liable for the cleanup at a site. The PRP search enhances EPA's success in negotiating with PRPs to conduct a response action under EPA's supervision.

Preliminary Assessment (PA): The process of collecting and reviewing available information about a known or suspected hazardous waste site or release. EPA or States use this information to determine if the site requires further study. If further study is needed, a site inspection is undertaken.

Present Liability: Refers to a potentially responsible party's obligation to pay response costs already incurred by the government and to complete remedial activities set forth in the Record of Decision or consent decree.



Glossary of Terms

Proposed Plan: A plan for site cleanup that is available to the public for comment. It highlights key aspects of the remedial investigation/feasibility study report, provides a brief analysis of remedial alternatives under consideration, identifies the preferred alternative, and provides members of the public with information on how they can participate in the remedy selection process.

Public Comment Period: A time period during which the public can review and comment on various documents and EPA actions. For example, a comment period is provided when EPA proposes to add sites to the National Priorities List. Also, a minimum 30-day comment period is held to allow community members to review and comment on a draft feasibility study and Proposed Plan.

Record of Decision (ROD): A public document that explains which cleanup alternative(s) will be used at a National Priorities List site. The ROD is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns.

Records of Decision System (RODS): A detailed data base of ROD information used to promote national consistency of remedies chosen at similar sites.

Remedial Action (RA): The actual construction or implementation phase that follows the remedial design of the selected cleanup alternative at a site on the National Priorities List.

Remedial Design (RD): An engineering phase that follows the Record of Decision when technical drawings and specifications are developed for the subsequent remedial action at a site on the National Priorities List.

Remedial Investigation/Feasibility Study (RI/FS): Investigative and analytical studies usually performed at the same time in an interactive process, and together referred to as the RI/FS. They are intended to:

- Gather the data necessary to determine the type and extent of contamination at a Superfund site;
- Establish criteria for cleaning up the site;
- Identify and screen cleanup alternatives for remedial action; and
- Analyze in detail the technology and costs of the alternatives.

Remedial Project Manager (RPM): The EPA or State official responsible for overseeing remedial response activities.

Removal Action: A fast track action taken over the short-term to control immediate threats to people and/or the environment from a release or threatened release of hazardous substances.

Removal Site Evaluation (RSE): A document that determines if a removal action is necessary; the evaluation is composed of the preliminary assessment and the site inspection.

Reportable Quantities (RQs): The quantity of a hazardous substance that, if released into the environment, may present substantial danger to the human health or welfare or the environment and must be reported to the National Response Center or EPA.

Responsiveness Summary: A summary of oral and/or written public comments received by EPA during a comment period on key EPA documents, and EPA's responses to those comments. The responsiveness summary is a key part of the Record of Decision, highlighting community concerns for EPA decisionmakers.

Revised Hazard Ranking System (rHRS): Modifications to the HRS, as required by the Superfund Amendments and Reauthorization Act, that became effective March 15, 1991.

Risk Assessment: An evaluation performed as part of the remedial investigation to assess conditions at a Superfund site and determine the risk posed to human health and the environment.

Risk Reduction: EPA's efforts to reduce, control, or eliminate human health, welfare, and ecological risks posed by environmental problems.

Site Assessment Program: A means of evaluating hazardous waste sites, through preliminary assessments and site inspections, to develop a Hazard Ranking System score that is used to determine if a site should be placed on the National Priorities List.

Site Inspection (SI): A technical phase that follows a preliminary assessment designed to collect more extensive information on a hazardous waste site. The information is used to score the site with the Hazard Ranking System to determine whether a remedial action is needed.



Site Safety Plan: A crucial element of all removal actions and the remedial design/remedial action phase of remedial actions, it includes information on equipment being used, precautions to be taken, and steps to take in the event of an emergency situation at the site.

Sludge: A generic term that describes a thickened semi-solid waste byproduct of an industrial or recycling process.

Special Notice Letter: A letter, sent by EPA, that initiates the process of formal enforcement negotiations, and invokes a negotiation moratorium between PRPs and EPA.

Strict, Joint and Several Liability: Strict liability means that the Federal government can hold a potentially responsible party (PRP) liable without showing that the PRP was at fault. Joint and several liability means that any one PRP can be held liable for the entire costs of site cleanup, regardless of the share of waste contributed by that PRP.

Superfund Amendments and Reauthorization Act (SARA): Modifications to CERCLA enacted on October 17, 1986.

Superfund Innovative Technology Evaluation (SITE): An EPA program designed to promote the development and use of innovative treatment technologies to clean up Superfund sites.

Superfund Memorandum of Agreement (SMOA): An optional agreement that specifies the procedures that EPA and a State or Indian Tribe will use to implement CERCLA and the National Oil and Hazardous Substances Contingency Plan (NCP). These procedures then serve as the basis for site-specific Cooperative Agreements or Superfund State Contracts.

Superfund State Contract (SSC): A contract between EPA and a State that is legally binding on both parties. The SSC is used to document EPA and State responsibilities and to obtain any necessary State assurances for response actions.

Superfund: The common name used for the Comprehensive Environmental, Response, Compensation, and Liability Act. Also referred to as the Trust Fund.

Technical Assistance Grant (TAG) Program: A program that provides grants of up to \$50,000 per Superfund site so citizens can hire independent technical advisors to help them understand information related to cleaning up a site.

Thermal Treatment: The use of elevated temperatures to treat hazardous waste by changing the chemical and/or physical composition of the waste.

Total Quality Management (TQM): The application of management techniques and statistical controls to a process in order to improve any product "constantly and forever."

Toxicological Profile: An examination, summary, and interpretation of a hazardous substance to determine levels of exposure and associated health effects.

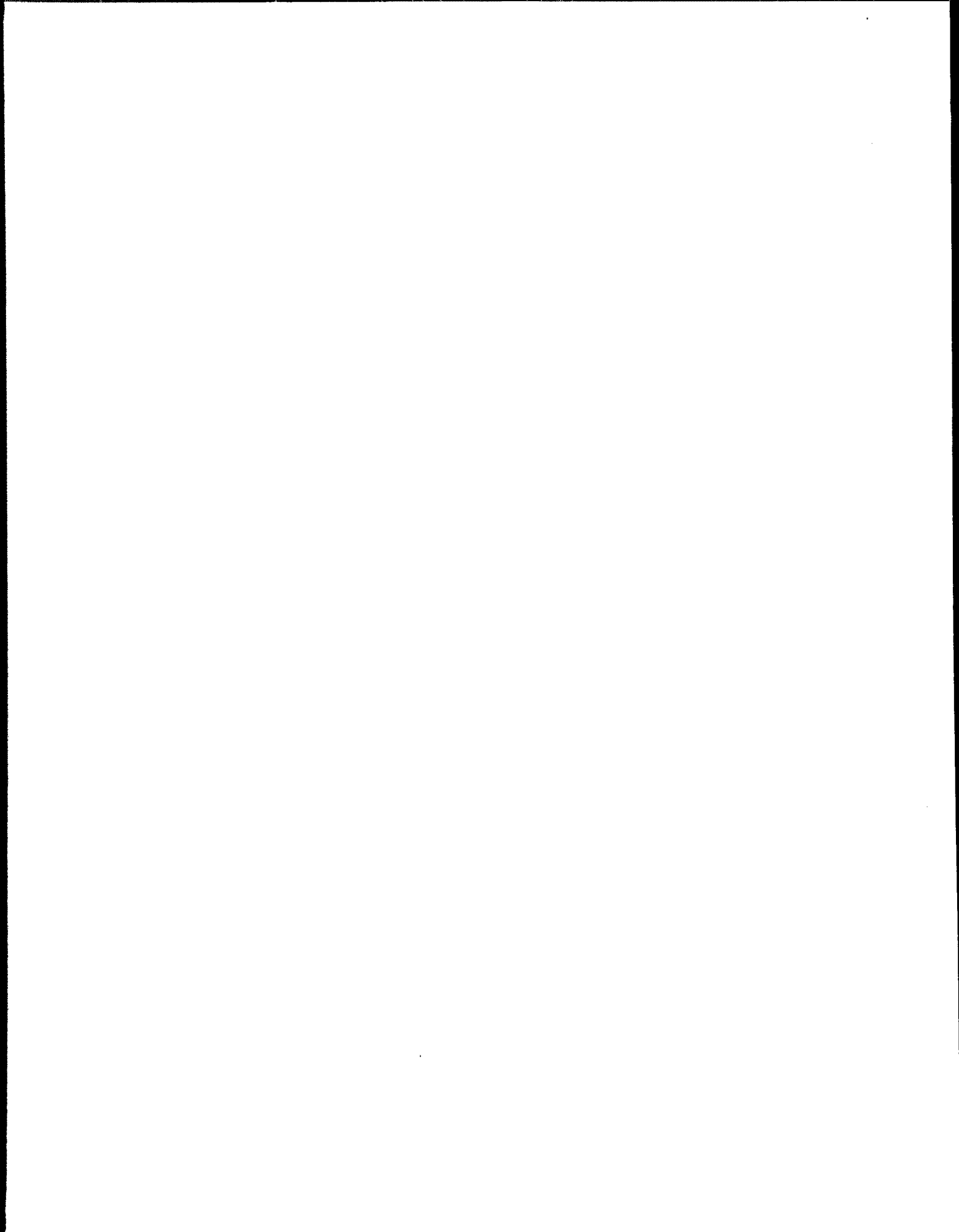
Treatability Studies: Tests of potential cleanup technologies conducted in a laboratory (also known as bench-scale tests).

Treble Damages: CERCLA provides that EPA can sue potentially responsible parties (PRPs) for up to three times the cost of cleanup, if the PRPs consistently do not comply with a negotiated settlement.

Unilateral Administrative Order (UAO): An administrative legal document issued unilaterally by EPA directing a potentially responsible party to perform site cleanup. UAOs are typically issued when negotiations between PRPs and EPA have broken off. It sets forth the liability of the party for the cleanup, describes actions to be taken, and subjects the recipient to penalties and damages for noncompliance. Unilateral orders may be enforced in court through judicial action.

U.S. Coast Guard (USCG): The USCG is responsible for managing responses to oil spills and other hazardous releases in coastal waters and inland waterways. The USCG operates the National Response Center.

Volatile Organic Compounds: Carbon-containing chemical compounds that evaporate (volatilize) readily at room temperature.



- Present physical state of the material (i.e., gas, liquid, solid)
- Total amount of material that may be released
- Other hazardous materials in area
- Amount of material released so far/duration of release
- Whether significant amounts of the material appear to be entering the atmosphere, nearby water, storm drains, or soil
- Direction, height, color, odor of any vapor clouds or plumes
- Weather conditions (wind direction and speed)
- Local terrain conditions
- Personnel at the scene

Comment: Initial information is critical. Answers to some of these questions may be unknown by the caller, but it is important to gather as much information as possible very quickly in order to facilitate decisions on public notification and evacuation. Some questions will apply to fixed facility incidents and others will apply only to transportation incidents. Some questions will apply specifically to air releases, while other questions will gather information about spills onto the ground or into water. **Identification numbers, shipping manifests, and placard information are essential** to identify any hazardous materials involved in transportation incidents, and to take initial precautionary and containment steps. First responders should use DOT's *Emergency Response Guidebook* to help identify hazardous materials. Additional information about the identity and characteristics of chemicals is available by calling CHEMTREC (800-424-9300). CHEMTREC and the Hazard Information Transmission (HIT) program are described in Appendix C.

This emergency response notification section should be:

BRIEF — never more than one page in length.

EASILY ACCESSIBLE — *located on the cover or first page of the plan.* It should also be repeated at least once inside the plan, in case the cover is torn off.

SIMPLE — reporting information and emergency telephone numbers should be kept to a minimum.

Copies of the emergency response notification form could be provided to potential dischargers to familiarize them with information needed at the time of an incident.

Planning Element A.2: Promulgation Document

- ☐ Statement of plan authority

Comment: A letter, signed by the community's chief executive, should indicate legal authority and responsibility for putting the plan into action. To the extent that the execution of this plan involves various private and public-sector organizations, it may be appropriate to include here letters of agreement signed by officials of these organizations.

Planning Element A.3: Legal Authority and Responsibility for Responding

- ☐ Authorizing legislation and regulations

- Federal (e.g., CERCLA, SARA, Clean Water Act, National Contingency Plan, and Disaster Relief Act)
- State
- Regional
- Local

- ☐ Mandated agency responsibilities

- ☐ Letters of agreement

Comment: If there are applicable laws regarding planning for response to hazardous materials releases, list them here. Analyze the basic authority of participating agencies and summarize the results here. The community may choose to enact legislation in support of its plan. Be sure to identify any agencies required to respond to particular emergencies.

Planning Element A.4: Table of Contents

Comment: All sections of the plan should be listed here and clearly labeled with a tab for easy access.

Planning Element A.5: Abbreviations and Definitions

Comment: Frequently used abbreviations, acronyms, and definitions should be gathered here for easy reference.

Planning Element A.6: Assumptions/Planning Factors

- ☐ Geography
 - Sensitive environmental areas
 - Land use (actual and potential, in accordance with local development codes)
 - Water supplies
 - Public transportation network (roads, trains, buses)
 - Population density
 - Particularly sensitive institutions (e.g., schools, hospitals, homes for the aged)
- ☐ Climate/weather statistics
- ☐ Time variables (e.g., rush hour, vacation season)
- ☐ Particular characteristics of each facility and the transportation routes for which the plan is intended
 - On-site details
 - Neighboring population
 - Surrounding terrain
 - Known impediments (tunnels, bridges)
 - Other areas at risk
- ☐ Assumptions

Comment: This section is a summary of precisely what local conditions make an emergency plan necessary. Information for this section will be derived from the hazards identification and analysis. Appropriate maps should be included in this section. Maps should show: water intake, environmentally sensitive areas, major chemical manufacturing or storage facilities, population centers, and the location of response resources.

Assumptions are the advance judgments concerning what would happen in the case of an accidental spill or release. For example, planners might assume that a certain percentage of local residents on their own will evacuate the area along routes other than specified evacuation routes.

Planning Element A.7: Concept of Operations

Planning Element A.7a: Governing Principles

Comment: The plan should include brief statements of precisely what is expected to be accomplished if an incident should occur.

.....

Planning Element A.7b: Organizational Roles and Responsibilities

- ☐ Municipal government
 - Chief elected official
 - Emergency management director
 - Community emergency coordinator (Title III of SARA)
 - Communications personnel
 - Fire service
 - Law enforcement
 - Public health agency
 - Environmental agency
 - Public works
- ☐ County government
- ☐ Officials of fixed facilities and/or transportation companies
 - Facility emergency coordinators (Title III of SARA)
- ☐ Nearby municipal and county governments
- ☐ Indian tribes within or nearby the affected jurisdiction
- ☐ State government
 - Environmental protection agency
 - Emergency management agency
 - Public health agency
 - Transportation organization
 - Public safety organization
- ☐ Federal government
 - EPA
 - FEMA
 - DOT
 - HHS/ATSDR
 - USCG
 - DOL/OSHA

- DOD
 - DOE
 - RRT
- ☐ Predetermined arrangements
 - ☐ How to use outside resources
 - Response capabilities
 - Procedures for using outside resources

Comment: This section lists all those organizations and officials who are responsible for planning and/or executing the **pre-response** (planning and prevention), **response** (implementing the plan during an incident), and **post-response** (cleanup and restoration) activities to a hazardous materials incident. **One organization should be given command and control** responsibility for each of these three phases of the emergency response. The role of each organization/official should be clearly described. The plan should clearly designate who is in charge and should anticipate the potential involvement of State and Federal agencies and other response organizations. (Note: The above list of organizations and officials is not meant to be complete. Each community will need to identify all the organizations/officials who are involved in the local planning and response process.)

This section of the plan should contain descriptions and information on the RRTs and the predesignated Federal OSC for the area covered by the plan. (See Section 1.4.1 of this guidance.) Because of their distant location, it is often difficult for such organizations to reach a scene quickly; planners should determine in advance approximately how much time would elapse before the Federal OSC could arrive at the scene.

This section should also indicate where other disaster assistance can be obtained from Federal, State, or Regional sources. Pre-arrangements can be made with higher-level government agencies, bordering political regions, and chemical plants.

Major hazardous materials releases may overwhelm even the best prepared community, and an incident may even cross jurisdictional boundaries. Cooperative arrangements are an efficient means of obtaining the additional personnel, equipment, and materials that are needed in an emergency by reducing expenditures for maintaining extra or duplicative resources. Any coordination with outside agencies should be formalized through mutual aid and Good Samaritan agreements or memoranda of understanding specifying delegations of authority, responsibility, and duties. These formal agreements can be included in the plan if desired.

.....

Planning Element A.7c: Relationship to Other Plans

Comment: A major task of the planning group is to integrate planning for hazardous materials incidents into already existing plans. In larger communities, it is probable that several emergency plans have been prepared. **It is essential to coordinate these plans.** When more than one plan is put into action simultaneously, there is a real potential for confusion among response personnel unless the plans are carefully coordinated. All emergency plans (including facility plans and hospital plans) that might be employed in the event of an accidental spill or release should be listed in this section. The community plan should include the methods and procedures to be followed by facility owners and operators and local emergency response personnel to respond to any releases of such substances. The NCP, the Federal Regional contingency plan, any OSC plan for the area, and any State plan should be referenced. **Of special importance are all local emergency plans.**

Even where formal plans do not exist, various jurisdictions often have preparedness capabilities. Planners should seek information about informal agreements involving cities, counties, States, and countries.

Planning Element A.8: Instructions on Plan Use

Planning Element A.8a: Purpose

Comment: This should be a clear and succinct statement of when and how the plan is meant to be used. It is appropriate to list those facilities and transportation routes explicitly considered in the plan.

.

Plan Section A.8b: Plan Distribution

- ☐ List of organizations/persons receiving plan

Comment: The entire plan should be available to the public; it can be stored at a library, the local emergency management agency, or some other public place. The plan should be distributed to all persons responsible for response operations. The plan distribution list should account for all organizations receiving such copies of the plan. This information is essential when determining who should be sent revisions and updates to the plan.

Planning Element A.9: Record of Amendments

- ☐ Change record sheet
 - Date of change
 - Recording signature
 - Page numbers of changes made

Comment: Maintaining an up-to-date version of a plan is of prime importance. When corrections, additions, or changes are made, they should be recorded in a simple bookkeeping style so that all plan users will be aware that they are using a current plan.

All that is necessary for this page is a set of columns indicating date of change, the signature of the person making the change, and the page number for identifying each change made.

Planning Element B: Emergency Assistance Telephone Roster

- ☐ List of telephone numbers for:
 - Participating agencies
 - Technical and response personnel
 - CHEMTREC
 - Public and private sector support groups
 - National Response Center

Comment: An accurate and up-to-date emergency telephone roster is an essential item. The name of a contact person (and alternate) and the telephone number should be listed. Briefly indicate the types of expertise, services, or equipment that each agency or group can provide. Indicate the times of day when the number will be answered; note all 24-hour telephone numbers. All phone numbers and names of personnel should be verified at least every six months. When alternate numbers are available, these should be listed. This section of the plan should stand alone so that copies can be carried by emergency response people and others. Examples of organizations for possible inclusion in a telephone roster are as follows:

Telephone Roster

Community Assistance

- Police
- Fire
- Emergency Management Agency
- Public Health Department
- Environmental Protection Agency
- Department of Transportation
- Public Works
- Water Supply
- Sanitation
- Port Authority
- Transit Authority
- Rescue Squad
- Ambulance
- Hospitals
- Utilities:
 - Gas
 - Phone
 - Electricity
- Community Officials
 - Mayor
 - City Manager
 - County Executive
 - Councils of Government

Volunteer Groups

- Red Cross
- Salvation Army
- Church Groups
- Ham Radio Operators
- Off-Road Vehicle Clubs

State Assistance

- State Emergency Response Commission (Title III of SARA)
- State Environmental Protection Agency
- Emergency Management Agency
- Department of Transportation
- Police
- Public Health Department
- Department of Agriculture

Federal Assistance (Consult Regional offices listed in Appendix F for appropriate telephone numbers.)

- Federal On-Scene Coordinator
- U.S. Department of Transportation
- U.S. Coast Guard
- U.S. Environmental Protection Agency

Response Personnel

- Incident Commander
- Agency Coordinators
- Response Team Members

Bordering Political Regions

- Municipalities
- Counties
- States
- Countries
- River Basin Authorities
- Irrigation Districts
- Interstate Compacts
- Regional Authorities
- Bordering International Authorities
- Sanitation Authorities/Commissions

Industry

- Transporters
- Chemical Producers/Consumers
- Spill Cooperatives
- Spill Response Teams

Media

- Television
- Newspaper
- Radio

Federal Emergency Management Agency	24 hours	202-646-2400
U.S. Department of Agriculture		
Occupational Safety and Health Administration		
Agency for Toxic Substances and Disease Registry	24 hours	404-452-4100
National Response Center	24 hours	800-424-8802
	in Washington, DC area	202-426-2675
	or	202-267-2675
U.S. Army, Navy, Air Force		
Bomb Disposal and/or Explosive		
Ordnance Team, U.S. Army		
Nuclear Regulatory Commission	24 hours	301-951-0550
U.S. Department of Energy		
Radiological Assistance	24 hours	202-586-8100
U.S. Department of the Treasury		
Bureau of Alcohol, Tobacco, and Firearms		
Other Emergency Assistance		
CHEMTREC	24 hours	800-424-9300
CHEMNET	24 hours	800-424-9300
CHLOREP	24 hours	800-424-9300
NACA Pesticide Safety Team	24 hours	800-424-9300
Association of American Railroads/ Bureau of Explosives	24 hours	202-639-2222
Poison Control Center		
Cleanup Contractor		

Planning Element C: Response Functions

Comment: Each function should be clearly marked with a tab so that it can be located quickly. When revising and updating a plan, communities might decide to add, delete, or combine individual functions.

Each response "function" usually includes several response activities. Some communities prepare a matrix that lists all response agencies down the left side of the page and all response activities across the top of the page. Planners can then easily determine which response activities need inter-agency coordination and which, if any, activities are not adequately provided for in the plan.

Function 1: Initial Notification of Response Agencies

- ☐ 24-hour emergency response hotline telephone numbers
 - Local number to notify area public officials and response personnel
 - Number to notify State authorities
 - National Response Center (800-424-8802; 202-426-2675 or 202-267-2675 in Washington, DC area)
- ☐ Other agencies (with telephone numbers) to notify immediately (e.g., hospitals, health department, Red Cross)

Comment: The local 24-hour emergency response hotline should be called first and therefore should have a prominent place in the plan. Provision should be made for notifying nearby municipalities and counties that could be affected by a vapor cloud or liquid plumes in a water supply.

Normally, the organization that operates the emergency response hotline will inform other emergency service organizations (e.g., health department, hospitals, Red Cross) once the initial notification is made. The plan should provide a method for notifying all appropriate local, State, and Federal officials and agencies, depending upon the severity of the incident. To ensure that the appropriate Federal On-Scene Coordinator (OSC) is notified of a spill or release, the NRC operated by the U.S. Coast Guard should be included in the notification listing. CERCLA requires that the NRC be notified by the responsible party of releases of many hazardous materials in compliance with the reportable quantity (RQ) provisions. The NRC telephone number is 800-424-8802 (202-426-2675 or 202-267-2675 in the Washington, DC, area). If there is an emergency notification number at the State or Regional level, it should be called before the NRC, and then a follow-up call made to the NRC as soon as practicable.

The plan should indicate how volunteer and off-duty personnel will be summoned. Similarly, there should be a method to notify special facilities (e.g., school districts, private schools, nursing homes, day care centers, industries, detention centers), according to the severity of the incident.

Function 2: Direction and Control

- ☐ Name of on-scene authority
- ☐ Chain of command (illustrated in a block diagram)
- ☐ Criteria for activating emergency operating center
- ☐ Method for establishing on-scene command post and communications network for response team(s)
- ☐ Method for activating emergency response teams
- ☐ List of priorities for response actions
- ☐ Levels of response based on incident severity

Comment: Response to a hazardous materials spill or release will involve many participants: police, firefighters, facility personnel, health personnel, and others. It is also possible to have more than one organization perform the same service; for example, local police, the county sheriff and deputies, as well as the highway patrol may respond to perform police functions. Because speed of response is so important, coordination is needed among the various agencies providing the same service. It is essential to identify (by title or position) the one individual responsible for each participating organization, and the one individual responsible for each major function and service. The plan might require that the responsible person establish an Incident Command System (ICS).

Work out, in advance, the following:

- (1) Who will be in charge (lead organization)
- (2) What will be the chain of command
- (3) Who will activate the emergency operating center, if required
- (4) Who will maintain the on-scene command post and keep it secure
- (5) Who will have advisory roles (and what their precise roles are)
- (6) Who will make the technical recommendations on response actions to the lead agency
- (7) Who (if anyone) will have veto power
- (8) Who is responsible for requesting assistance from outside the community

This chain of command should be clearly illustrated in a block diagram.

Response action checklists are a way of condensing much useful information. They are helpful for a quick assessment of the response operation. If checklists are used, they should be prepared in sufficient detail to ensure that all crucial activities are included.

Planners should consider whether to have categories of response actions based on severity. The severity of an incident influences decisions on the level (or degree) of response to be made. This will determine how much equipment and how many personnel will be called, the extent of evacuation, and other factors.

The following chart summarizes who and what are involved in three typical emergency conditions. Information about the three response levels should be provided to special facilities (e.g., school districts, private schools, day care centers, hospitals, nursing homes, industries, detention centers).

Response Level	Description	Contact:
I. Potential Emergency Condition	An incident or threat of a release which can be controlled by the first response agencies and does not require evacuation of other than the involved structure or the immediate outdoor area. The incident is confined to a small area and does not pose an immediate threat to life or property.	Fire Department Emergency Medical Services Police Department Partial EOC Staff Public Information Office CHEMTREC National Response Center
II. Limited Emergency Condition	An incident involving a greater hazard or larger area which poses a potential threat to life or property and which may require a limited evacuation of the surrounding area.	All Agencies in Level I HAZMAT Teams EOC Staff Public Works Department Health Department Red Cross County Emergency Management Agency State Police Public Utilities
III. Full Emergency Condition	An incident involving a severe hazard or a large area which poses an extreme threat to life and property and will probably require a large scale evacuation; or an incident requiring the expertise or resources of county, State, Federal, or private agencies/ organizations.	All Level I and II Agencies plus the following as needed: Mutual Aid Fire, Police. Emergency Medical State Emergency Management Agency State Department of Environmental Resources State Department of Health EPA USCG ATSDR FEMA OSC/RRT

Function 3: Communications (among Responders)

- ☐ Any form(s) of exchanging information or ideas for emergency response with other entities, either internal or external to the existing organizational structure.

Comment: This aspect of coordination merits special consideration. Different response organizations typically use different radio frequencies. Therefore, specific provision must be made for accurate and efficient communication among all the various organizations during the response itself. Several States have applied for one "on-scene" command radio frequency that all communities can use. At a minimum, it may be beneficial to establish radio networks that will allow for communication among those performing similar functions. The plan might specify who should be given a radio unit, and who is allowed to speak on the radio. In order to avoid possible explosion/fire hazards, all communications equipment (including walkie-talkies) should be intrinsically safe.

Function 4: Warning Systems and Emergency Public Notification

- ☐ Method for alerting the public
 - Title and telephone number of person responsible for alerting the public *as soon as word of the incident is received*
 - List of essential data to be passed on (e.g., health hazards, precautions for personal protection, evacuation routes and shelters, hospitals to be used)

Comment: This section should contain precise information on how sirens or other signals will be used to alert the public in case of an emergency. This should include information on what the different signals mean, how to coordinate the use of sirens, and the geographic area covered by each siren. (If possible, a back-up procedure should be identified.) While a siren alerts those who hear it, an emergency broadcast is necessary to provide detailed information about the emergency and what people should do.

Sample Emergency Broadcast System messages should be prepared with blank spaces that can be filled in with precise information about the accident. One sample message should provide fundamental information about the incident and urge citizens to remain calm and await further information and instructions. Another sample message should be for an evacuation. Another sample message should describe any necessary school evacuations so that parents will know where their children are. Another sample message should be prepared to tell citizens to take shelter and inform them of other precautions they may take to protect themselves. The message should clearly identify those areas in which protective actions are recommended, using familiar boundaries. Messages might be developed in languages other than English, if customarily spoken in the area.

This section could be of urgent significance. When life-threatening materials are released, speed of response is crucial. It is not enough to have planned for alerting the community; one organization must be assigned the responsi-

bility of alerting the public as soon as word of the accidental release is received. Delay in alerting the public can lead to the loss of life. In addition to sirens and the Emergency Broadcast System, it may be necessary to use mobile public address systems and/or house-by-house contacts. In this case, adequate protection must be provided for persons entering the area to provide such help.

Function 5: Public Information/Community Relations

- ☐ Method to educate the public for possible emergencies
- ☐ Method for keeping the public informed
 - Provision for one person to serve as liaison to the public
 - List of radio and T.V. contacts

Comment: Many communities develop a public information program to educate citizens about safety procedures during an incident. This program could include pamphlets; newspaper stories; periodic radio and television announcements; and programs for schools, hospitals, and homes for the aged.

It is important to provide accurate information to the public in order to prevent panic. Some citizens simply want to know what is happening. Other citizens may need to be prepared for possible evacuation or they may need to know what they can do immediately to protect themselves. Because information will be needed quickly, radio and television are much more important than newspapers in most hazardous materials releases. In less urgent cases, newspaper articles can provide detailed information to enhance public understanding of accidental spills and procedures for containment and cleanup. **One person should be identified to serve as spokesperson.** It is strongly recommended that the individual identified have training and experience in public information, community relations, and/or media relations. The spokesperson can identify for the media individuals who have specialized knowledge about the event. The chain of command should include this spokesperson. Other members of the response team should be trained to direct all communications and public relations issues to this one person.

Function 6: Resource Management

- ☐ List of personnel needed for emergency response
- ☐ Training programs, including schedules for training of local emergency response and medical personnel
- ☐ List of vehicles needed for emergency response
- ☐ List of equipment (both heavy equipment and personal protective equipment) needed for emergency response

Comment: This section should list the resources that will be needed, and where the equipment and vehicles are located or can be obtained. A major task in the planning process is to identify what resources are already available and what must still be provided. For information on the selection of protective equipment, consult the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* prepared by NIOSH, OSHA, USCG, and EPA; and the EPA/Los Alamos "Guidelines for the Selection of Chemical Protective Clothing" distributed by the American Conference of Governmental Industrial Hygienists (Building B-7, 6500 Glynway Ave., Cincinnati, OH 45211).

This section should also address funding for response equipment and personnel. Many localities are initially overwhelmed by the prospect of providing ample funding for hazardous materials response activities. In large localities, each response agency is usually responsible for providing and maintaining certain equipment and personnel; in such cases, these individual agencies must devise funding methods, sources, and accounting procedures. In smaller localities with limited resources, officials frequently develop cooperative agreements with other jurisdictions and/or private industries. Some communities stipulate in law that the party responsible for an incident should ultimately pay the cost of handling it.

For a more detailed discussion of response training, consult Chapter 6 of this guide.

Function 7: Health and Medical

- ☐ Provisions for ambulance service
- ☐ Provisions for medical treatment

Comment: This section should indicate how medical personnel and emergency medical services can be summoned. It may be appropriate to establish mutual aid agreements with nearby communities to provide backup emergency medical personnel and equipment. The community should determine a policy (e.g., triage) for establishing priorities for the use of medical resources during an emergency. Medical personnel must be made aware of significant chemical hazards in the community in order to train properly and prepare for possible incidents. Emergency medical teams and hospital personnel must be trained in proper methods for decontaminating and treating persons exposed to hazardous chemicals. Planners should include mental health specialists as part of the team assisting victims of serious incidents. Protective action recommendations for sanitation, water supplies, recovery, and reentry should be addressed in this section.

Function 8: Response Personnel Safety

- ☐ Standard operating procedure for entering and leaving sites
- ☐ Accountability for personnel entering and leaving the sites

- ☐ Decontamination procedures
- ☐ Recommended safety and health equipment
- ☐ Personal safety precautions

Comment: Care must be taken to choose equipment that protects the worker from the hazard present at the site without unnecessarily restricting the capacities of the worker. Although the emphasis in equipment choices is commonly focused on protecting the worker from the risks presented by the hazardous material, impaired vision, restricted movements, or excessive heat can put the worker at equal risk. After taking these factors into account, the planner should list the equipment appropriate to various degrees of hazard using the EPA Levels of Protection (A, B, C, and D). The list should include: the type of respirator (e.g., self-contained breathing apparatus, supplied air respirator, or air purifying respirator) if needed; the type of clothing that must be worn; and the equipment needed to protect the head, eyes, face, ears, hands, arms, and feet. This list can then be used as a base reference for emergency response. The specific equipment used at a given site will vary according to the hazard. In addition, the equipment list should be reevaluated and updated as more information about the site is gathered to ensure that the appropriate equipment is being used. Responders should receive ongoing training in the use of safety equipment.

This section can also address liability related to immediate and long term health hazards to emergency responders. State and local governments may want to consider insurance coverage and/or the development of waivers for employees and contractors who may be on site during a hazmat incident.

Function 9: Personal Protection of Citizens

Function 9a: Indoor Protection

- ☐ Hazard-specific personal protection

Comment: The plan should clearly indicate what protective action should be taken in especially hazardous situations. **Evacuation is sometimes, but not always, necessary.** (See Function 9b.) For some hazardous materials it is safer to keep citizens inside with doors and windows closed rather than to evacuate them. It is perhaps appropriate to go upstairs (or downstairs). Household items (e.g., wet towels) can provide personal protection for some chemical hazards. Frequently a plume will move quickly past homes. Modern housing has adequate air supply to allow residents to remain safely inside for an extended period of time. Because air circulation systems can easily transport airborne toxic substances, a warning should be given to shut off all air circulation systems (including heating, air conditioning, clothes dryers, vent fans, and fire places) both in private and institutional settings.

In order for an indoor protective strategy to be effective, planning and preparedness activities should provide:

- An emergency management system and decision-making criteria for determining when an indoor protection strategy should be used;
- A system for warning and advising the public;
- A system for determining when a cloud has cleared a particular area;
- A system for advising people to leave a building at an appropriate time; and
- Public education on the value of indoor protection and on expedient means to reduce ventilation.

.....

Function 9b: Evacuation Procedures

- ☐ Title of person and alternate(s) who can order/recommend an evacuation
- ☐ Vulnerable zones where evacuation could be necessary and a method for notifying these places
- ☐ Provisions for a precautionary evacuation
- ☐ Methods for controlling traffic flow and providing alternate traffic routes
- ☐ Shelter locations and other provisions for evacuations (e.g., special assistance for hospitals)
- ☐ Agreements with nearby jurisdictions to receive evacuees
- ☐ Agreements with hospitals outside the local jurisdictions
- ☐ Protective shelter for relocated populations
- ☐ Reception and care of evacuees
- ☐ Re-entry procedures

Comment: Evacuation is the most sweeping response to an accidental release. The plan should clearly identify under what circumstances evacuation would be appropriate and necessary. DOT's *Emergency Response Guidebook* provides suggested distances for evacuating unprotected people from the scene of an incident during the initial phase. It is important to distinguish between general evacuation of the entire area and selective evacuation of a part of the risk zone. In either case, the plan should identify how people will be moved (i.e., by city buses, police cars, private vehicles). Provision must be made for quickly moving traffic out of the risk zone and also for preventing outside traffic from entering the risk zone. If schools are located in the risk zone, the plan must identify the location to which students will be moved in an evacuation and how parents will be notified of this location. Special attention must also be paid to evacuating hospitals, nursing homes, and homes for the physically or mentally disabled.

Maps (drawn to the same scale) with evacuation routes and alternatives clearly identified should be prepared for each risk zone in the area. Maps should indicate precise routes to another location where special populations (e.g., from schools, hospitals, nursing homes, homes for the physically or

mentally disabled) can be taken during an emergency evacuation, and the methods of transportation during the evacuation.

Consideration of when and how evacuees will return to their homes should be part of this section.

This section on evacuation should include a description of how other agencies will coordinate with the medical community.

Copies of evacuation procedures should be provided to all appropriate agencies and organizations (e.g., Salvation Army, churches, schools, hospitals) and could periodically be published in the local newspaper(s).

.....

Function 9c: Other Public Protection Strategies

- ☐ Relocation
- ☐ Water supply protection
- ☐ Sewage system protection

Comment: Some hazardous materials incidents may contaminate the soil or water of an area and pose a chronic threat to people living there. It may be necessary for people to move out of the area for a substantial period of time until the area is decontaminated or until natural weathering or decay reduce the hazard. Planning must provide for the quick identification of a threat to the drinking water supply, notification of the public and private system operators, and warning of the users. Planners should also provide sewage system protection. A hazardous chemical entering the sewage system can cause serious and long-term damage. It may be necessary to divert sewage, creating another public health threat and environmental problems.

Function 10: Fire and Rescue

- ☐ Chain of command among firefighters
- ☐ List of available support systems
- ☐ List of all tasks for firefighters

Comment: This section lists all firefighting tasks, as well as the chain of command for firefighters. This chain of command is especially important if firefighters from more than one jurisdiction will be involved. Planners should check to see if firefighting tasks and the chain of command are mandated by their State law. Firefighters should be trained in proper safety procedures when approaching a hazardous materials incident. They should have copies of DOT's *Emergency Response Guidebook* and know how to find shipping manifests in trucks, trains, and vessels. Specific information about protective equipment for firefighters should be included here. (See Function 6, "Resource Management," and the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*.)

This section should also identify any mutual aid or Good Samaritan agreements with neighboring fire departments, hazmat teams, and other support systems.

Function 11: Law Enforcement

- ☐ Chain of command for law enforcement officials
- ☐ List of all tasks for law enforcement personnel

Comment: This section lists all the tasks for law enforcement personnel during an emergency response. Planners should check to see if specific law enforcement tasks are mandated by their State law. Because major emergencies will usually involve State, county, and local law enforcement personnel, and possibly the military, a clear chain of command must be determined in advance. Because they are frequently first on scene, law enforcement officials should be trained in proper procedures for approaching a hazardous materials incident. They should have copies of DOT's *Emergency Response Guidebook* and know how to find shipping manifests in trucks, trains, and vessels. Specific information about protective equipment for law enforcement officials should be included here. (See Function 6, "Resource Management," and the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*.)

This section should include maps that indicate control points where police officers should be stationed in order to expedite the movement of responders toward the scene and of evacuees away from the scene, to restrict unnecessary traffic from entering the scene, and to control the possible spread of contamination.

Function 12: Ongoing Incident Assessment

- ☐ Field monitoring teams
- ☐ Provision for environmental assessment, biological monitoring, and contamination surveys
- ☐ Food/water controls

Comment: After the notification that a release has occurred, it is crucial to monitor the release and assess its impact, both on and off site. A detailed log of all sampling results should be maintained. Health officials should be kept informed of the situation. Often the facility at which the release has occurred will have the best equipment for this purpose.

This section should describe who is responsible to monitor the size, concentration, and movement of leaks, spills, and releases, and how they will do their work. Decisions about response personnel safety, citizen protection (whether indoor or through evacuation), and the use of food and water in the

area will depend upon an accurate assessment of spill or plume movement and concentration. Similarly, decisions about containment and cleanup depend upon monitoring data.

Function 13: Human Services

- ☐ List of agencies providing human services
- ☐ List of human services tasks

Comment: This section should coordinate the activities of organizations such as the Red Cross, Salvation Army, local church groups, and others that will help people during a hazardous materials emergency. These services are frequently performed by volunteers. Advance coordination is essential to ensure the most efficient use of limited resources.

Function 14: Public Works

- ☐ List of all tasks for public works personnel

Comment: This section lists all public works tasks during an emergency response. Public works officials should also be familiar with Plan Section D ("Containment and Cleanup").

Function 15: Others

Comment: If the preceding list of functions does not adequately cover the various tasks to be performed during emergency responses, additional response functions can be developed.

Planning Element D: Containment and Cleanup

Planning Element D.1: Techniques for Spill Containment and Cleanup

- ☐ Containment and mitigation actions
- ☐ Cleanup methods
- ☐ Restoration of the surrounding environment

Comment: Local responders will typically emphasize the containment and stabilization of an incident; State regulatory agencies can focus on cleanup details. Federal

RRT agencies can provide assistance during the cleanup process. It is the releaser's legal and financial responsibility to clean up and minimize the risk to the health of the general public and workers that are involved. The Federal OSC or other government officials should monitor the responsible party cleanup activities.

A clear and succinct list of appropriate containment and cleanup countermeasures should be prepared for each hazardous material present in the community in significant quantities. This section should be coordinated with the section on "Response Personnel Safety" so that response teams are subjected to minimal danger. Planners should concentrate on the techniques that are applicable to the hazardous materials and terrain of their area. It may be helpful to include sketches and details on how cleanup should occur for certain areas where spills are more likely.

It is important to determine whether a fire should be extinguished or allowed to burn. Water used in firefighting could become contaminated and then would need to be contained or possibly treated. In addition, some materials may be water-reactive and pose a greater hazard when in contact with water. Some vapors may condense into pools of liquid that must be contained and removed. Accumulated pools may be recovered with appropriate pumps, hoses, and storage containers. Various foams may be used to reduce vapor generation rates. Water sprays or fog may be applied at downwind points away from "cold" pools to absorb vapors and/or accelerate their dispersal in the atmosphere. (Sprays and fog might not reduce an explosive atmosphere.) Volatile liquids might be diluted or neutralized.

If a toxic vapor comes to the ground on crops, on playgrounds, in drinking water, or other places where humans are likely to be affected by it, the area should be tested for contamination. Appropriate steps must be taken if animals (including fish and birds) that may become part of the human food chain are in contact with a hazardous material. It is important to identify in advance what instruments and methods can be used to detect the material in question.

Restoration of the area is a long-range project, but general restoration steps should appear in the plan. Specific consideration should be given to the mitigation of damages to the environment.

Planning Element D.2: Resources for Cleanup and Disposal

- ☐ Cleanup/disposal contractors and services provided
- ☐ Cleanup material and equipment
- ☐ Communications equipment
- ☐ Provision for long-term site control during extended cleanups
- ☐ Emergency transportation (e.g., aircraft, four-wheel-drive vehicles, boats)
- ☐ Cleanup personnel

- ☐ Personal protective equipment
- ☐ Approved disposal sites

Comment: This section is similar to the yellow pages of the telephone book. It provides plan users with the following important information:

- What types of resources are available (public and private);
- How much is stockpiled;
- Where it is located (address and telephone number); and
- What steps are necessary to obtain the resources.

Organizations that may have resources for use during a hazardous materials incident include:

- Public agencies (e.g., fire, police, public works, public health, agriculture, fish and game);
- Industry (e.g., chemical producers, transporters, storers, associations; spill cleanup contractors; construction companies);
- Spill/equipment cooperatives; and
- Volunteer groups (ham radio operators, four-wheel-drive vehicle clubs).

Resource availability will change with time, so keep this section of the plan up-to-date.

Hazardous materials disposal may exceed the capabilities of smaller cities and towns; in such cases, the plan should indicate the appropriate State and/or Federal agency that is responsible for making decisions regarding disposal.

Disposal of hazardous materials or wastes is controlled by a number of Federal and State laws and regulations. Both CERCLA and RCRA regulate waste disposal and it is important that this section reflect the requirements of these regulations for on-site disposal, transportation, and off-site disposal. The plan should include an updated list of RCRA disposal facilities for possible use during an incident.

Many States have their own regulations regarding transport and ultimate disposal of hazardous waste. Usually such regulations are similar and substantially equal to Federal regulations. Contact appropriate State agency offices for information on State requirements for hazardous waste disposal.

Planning Element E: Documentation and Investigative Follow-Up

- ☐ List of required reports
- ☐ Reasons for requiring the reports
- ☐ Format for reports
- ☐ Methods for determining whether the response mechanism worked properly
- ☐ Provision for cost recovery

Comment: This section indicates what information should be gathered about the release and the response operation. Key response personnel could be instructed to maintain an accurate log of their activities. Actual response costs should be documented in order to facilitate cost recovery.

It is also important to identify who is responsible for the post-incident investigation to discover quickly the exact circumstances and cause of the release. Critiques of real incidents, if handled tactfully, allow improvements to be made based on actual experience. The documentation described above should help this investigation determine if response operations were effective, whether the emergency plan should be amended, and what follow-up responder and public training programs are needed.

Planning Element F: Procedures for Testing and Updating Plan

Planning Element F.1: Testing the Plan

- ☐ Provision for regular tabletop, functional, and full-scale exercises

Comment: Exercises or drills are important tools in keeping a plan functionally up-to-date. These are simulated accidental releases where emergency response personnel act out their duties. The exercises can be tabletop and/or they can be realistic enough so that equipment is deployed, communication gear is tested, and "victims" are sent to hospitals with simulated injuries. Planners should work with local industry and the private medical community when conducting simulation exercises, and they should provide for drills that comply with State and local legal requirements concerning the content and frequency of drills. After the plan is tested, it should be revised and retested until the planning team is confident that the plan is ready. The public should be involved in or at least informed of these exercises. FEMA, EPA, and CMA provide guidance on simulation exercises through their training programs complementing this guide.

This section should specify:

- (1) The organization in charge of the exercise;
- (2) The types of exercises;

- (3) The frequency of exercises; and
- (4) A procedure for evaluating performance, making changes to plans, and correcting identified deficiencies in response capabilities as necessary. (See Chapter 6 of this guide.)

Planning Element F.2: Updating the Plan

- ☐ Title and organization of responsible person(s)
- ☐ Change notification procedures
- ☐ How often the plan should be audited and what mechanisms will be used to change the plan

Comment: Responsibility should be delegated to someone to make sure that the plan is updated frequently and that all plan holders are informed of the changes. Notification of changes should be by written memorandum or letter; the changes should be recorded in the RECORD OF AMENDMENTS page at the front of the completed plan. Changes should be consecutively numbered for ease of tracking and accounting.

Following are examples of information that must regularly be checked for accuracy:

- (1) Identity and phone numbers of response personnel
- (2) Name, quantity, properties, and location of hazardous materials in the community. (If new hazardous materials are made, used, stored, or transported in the community, revise the plan as needed.)
- (3) Facility maps
- (4) Transportation routes
- (5) Emergency services available
- (6) Resource availability

This topic is considered in greater detail in Chapter 6 of this guidance.

Planning Element G: Hazards Analysis (Summary)

- ☐ Identification of hazards
- ☐ Analysis of vulnerability
- ☐ Analysis of risk

Comment: This analysis is a crucial aspect of the planning process. It consists of determining where hazards are likely to exist, what places would most likely be adversely affected, what hazardous materials could be involved, and what

conditions might exist during a spill or release. To prepare a hazards analysis, consult Chapter 3 of this guide, EPA's CEPP technical guidance, and DOT's *Community Teamwork and Lessons Learned*. Ask Federal offices (listed in Appendix F) for information about available computer programs to assist in a hazards analysis.

Individual data sheets and maps for each facility and transportation routes of interest could be included in this section. Similar data could be included for recurrent shipments of hazardous materials through the area. This section will also assess the probability of damage and/or injury. In communities with a great deal of hazardous materials activity, the hazards analysis will be too massive to include in the emergency plan. In that case, all significant details should be summarized here.

Planning Element H: References

Planning Element H.1: Laboratory, Consultant, and Other Technical Support Resources

- ☐ Telephone directory of technical support services
 - Laboratories (environmental and public health)
 - Private consultants
 - Colleges or universities (chemistry departments and special courses)
 - Local chemical plants

Comment: This section should identify the various groups capable of providing technical support and the specific person to be contacted. Medical and environmental laboratory resources to assess the impact of the most probable materials that could be released should be identified. Note should be made about the ability of these laboratories to provide rapid analysis. These technical experts can provide advice during a disaster and also be of great service during the development of this plan. For this reason, one of the first planning steps should be gathering information for this section.

Planning Element H.2: Technical Library

- ☐ List of references, their location, and their availability
 - General planning references
 - Specific references for hazardous materials
 - Technical references and methods for using national data bases
 - Maps

Comment: Industry sources can provide many specific publications dealing with hazardous materials. This section of the plan will list those published resources that are actually available in the community. Also list any maps (e.g., of facilities, transportation routes) that will aid in the response to an accidental spill or release.

The list of technical references in Appendix E could be helpful. Regional Federal offices can also be contacted (see Appendix F).

It is important for planners to acquire, understand, and be able to use available hazardous materials data bases, including electronic data bases available from commercial and government sources. Planning guides such as DOT's *Community Teamwork*, CMA's CAER program, EPA's CEPP technical guidance, and this guide should also be available locally.

6. Plan Appraisal and Continuing Planning

6.1 Introduction

Any emergency plan must be evaluated and kept up-to-date through the review of actual responses, simulation exercises, and regular collection of new data. Effective emergency preparedness requires periodic review and evaluation, and the necessary effort must be sustained at the community level. Plans should reflect any recent changes in: the economy, land use, permit waivers, avail-

able technology, response capabilities, hazardous materials present, Federal and State laws, local laws and ordinances, road configurations, population change, emergency telephone numbers, and facility location. This chapter describes key aspects of appraisal and provides specific guidance for maintaining an updated hazardous materials emergency plan.

6.2 Plan Review and Approval

Plan review and approval are critically important responsibilities of the planning team. This section discusses the various means by which a plan can be reviewed thoroughly and systematically.

6.2.1. Internal Review

The planning team, after drafting the plan, should conduct an internal review of the plan. It is not sufficient merely to read over the plan for clarity or to search for errors. The plan should also be assessed for adequacy and completeness. Appendix D is an adaptation of criteria developed by the National Response Team that includes questions useful in appraising emergency plans. Individual planning team members can use these questions to conduct self review of their own work and the team can assign a committee to review the total plan. In the case of a hazardous materials appendix (or appendices) to a multi-hazard EOP, the team will have to review the basic EOP as well as the functional annexes to obtain an overall

assessment of content. Once the team accomplishes this internal review the plan should be revised in preparation for external review.

6.2.2. External Review

External review legitimizes the authority and fosters community acceptance of the plan. The review process should involve elements of peer review, upper level review, and community input. The planning team must devise a process to receive, review, and respond to comments from external reviewers.

► A. Peer Review

Peer review entails finding qualified individuals who can provide objective reviews of the plan. Individuals with qualifications similar to those considered for inclusion on the planning team should be selected as peer reviewers. Examples of appropriate individuals include:

- ☐ The safety or environmental engineer in a local industry;
- ☐ Responsible authorities from other political jurisdictions (e.g., fire chief, police, environmental and/or health officers);
- ☐ A local college professor familiar with hazardous materials response operations; and
- ☐ A concerned citizen's group, such as the League of Women Voters, that provides a high level of objectivity along with the appropriate environmental awareness.

Exhibit 2 (Chapter 2, page 13) presents a comprehensive list of potential peer reviewers. Those selected as peer reviewers should use the criteria contained in Appendix D to develop their assessments of the plan.

► *B. Upper Level Review*

Upper level review involves submitting the plan to an individual or group with oversight authority or responsibility for the plan. Upper level review should take place after peer review and modification of the plan.

► *C. Community Input*

Community involvement is vital to success throughout the planning process. At the plan appraisal stage, such involvement greatly facilitates formal acceptance of the plan by the community. Approaches that can be used include:

- ☐ **Community workshops** with short presentations by planning team members followed by a question-and-answer period;
- ☐ **Publication of notice "for comment"** in local newspapers, offering interested individuals and groups an opportunity to express their views in writing;
- ☐ **Public meetings** at which citizens can submit oral and written comments;

- ☐ **Invited reviews** by key interest groups that provide an opportunity for direct participation for such groups that are not represented on the planning team; and
- ☐ **Advisory councils** composed of a relatively large number of interested parties that can independently review and comment on the planning team's efforts.

These activities do more than encourage community consensus building. Community outreach at this stage in the process also improves the soundness of the plan by increased public input and expands public understanding of the plan and thus the effectiveness of the emergency response to a hazardous materials incident.

► *D. State/Federal Review*

After local review and testing through exercises, a community may want to request review of the plan by State and/or Federal officials. Such a review will depend upon the availability of staff resources. Planning committees set up in accordance with Title III of SARA are to submit a copy of the emergency plan to the State emergency response commission for review to ensure coordination of the plan with emergency plans of other planning districts. Federal Regional Response Teams may review and comment upon an emergency plan, at the request of a local emergency planning committee. FEMA Regional offices review FEMA-funded multi-hazard EOPs using criteria in CPG 1-8A.

6.2.3. Plan Approval

The planning team should identify and comply with any local or State requirements for formal plan approval. It may be necessary for local officials to enact legislation that gives legal recognition to the emergency plan.

6.3 Keeping the Plan Up-to-Date

All emergency plans become outdated because of social, economic, and environmental changes. Keeping the plan current is a difficult task, but can be achieved by scheduling reviews regularly. As noted in Chapter 5, the plan itself should indicate who is responsible for keeping it up-to-date. Outdated information should be replaced, and the results of appraisal exercises should be incorporated into the plan. The following techniques will aid in keeping abreast of relevant changes:

- ☐ Establish a regular review period, preferably every six months, but at least annually. (Title III of SARA requires an annual review.)
- ☐ Test the plan through regularly scheduled exercises (at least annually). This testing should include debriefing after the exercises whenever gaps in preparedness and response capabilities are identified.
- ☐ Publish a notice and announce a comment period for plan review and revisions.
- ☐ Maintain a list of individuals, agencies, and organizations that will be interested in participating in the review process.
- ☐ Make one reliable organization responsible for coordination of the review and overall stewardship of the plan. Use of the planning team in this role is recommended, but may not be a viable option due to time availability constraints of team members.
- ☐ Require immediate reporting by any facility of an increase in

quantities of hazardous materials dealt with in the emergency plan, and require review and revision of plan if needed in response to such new information.

- ☐ Include a "Record of Amendments and Changes" sheet in the front section of the plan to help users of the plan stay abreast of all plan modifications.
- ☐ Include a "When and Where to Report Changes" notice in the plan and a request for holders of the plan to report any changes or suggested revisions to the responsible organization at the appropriate time.
- ☐ Make any sections of the plan that are subject to frequent changes either easily replaceable (e.g., looseleaf, separate appendix), or provide blank space (double- or triple-spaced typing) so that old material may be crossed out and new data easily written in. This applies particularly to telephone rosters and resource and equipment listings.

The organization responsible for review should do the following:

- ☐ Maintain a list of plan holders, based on the original distribution list, plus any new copies made or distributed. It is advisable to send out a periodic request to departments/branches showing who is on the distribution list and asking for any additions or corrections.
- ☐ Check all telephone numbers, persons named with particular responsibilities, and equipment

locations and availability. In addition, ask departments and agencies to review sections of the plan defining their responsibilities and actions.

- ☐ Distribute changes. Changes should be consecutively numbered for ease of tracking. Be specific, e.g., "Replace page ___ with the attached new page ___," or "Cross out ___ on page ___ and write in the following" (new phone number, name, location, etc.). Any key change (new emergency phone number, change in equipment availability, etc.) should be distributed as soon as it occurs. Do not wait for the regular review period to notify plan holders.
- ☐ If possible, the use of electronic word processing is recommended because it facilitates changing the plan. After a significant number of individual changes, the entire plan should be redistributed to ensure completeness.
- ☐ If practical, request an acknowledgement of changes from those who have received changes. The best way to do this is to include a self-addressed postcard to be returned with acknowledgement (e.g., "I have received and entered changes dated ___. Signed ___").
- ☐ Attend any plan critique meetings and issue changes as may be required.
- ☐ Integrate changes with other related plans.

6.4 Continuing Planning

In addition to the periodic updates described above, exercises, incident reviews, and training are necessary to ensure current and effective planning.

6.4.1 Exercises

The plan should also be evaluated through exercises to see if its required activities are effective in practice and if the evaluation would reveal more efficient ways of responding to a real emergency. As noted in Chapter 5, the plan itself should indicate who is responsible for conducting exercises. Simulations can be full-scale, functional, or tabletop exercises.

A full-scale exercise is a mock emergency in which the response organizations that would be involved in an actual emergency perform the actions they would take in the emergency. These simulations may focus on limited objectives (e.g., testing the capability of local hospitals to handle relocation problems). The respon-

sible environmental, public safety, and health agencies simulate, as realistically as possible, notification, hazards identification and analysis, command structure, command post staging, communications, health care, containment, evacuation of affected areas, cleanup, and documentation. Responders use the protective gear, radios, and response equipment and act as they would in a real incident. These multi-agency exercises provide a clearer understanding of the roles and resources of each responder.

A functional exercise involves testing or evaluating the capability of individual or multiple functions, or activities within a function.

A low-cost, valuable version of an exercise is the staging of a tabletop exercise. In this exercise, each agency representative describes and acts out what he or she

would do at each step of the response under the circumstances given.

Exercises are most beneficial when followed by a meeting of all participants to critique the performance of those involved and the strengths and weaknesses of the plan's operation. The use of an outside reviewer, free of local biases, is desirable. The emergency plan should be amended according to the lessons learned. Provisions should be made to follow up exercises to see that identified deficiencies are corrected.

Communities that want help in preparing and conducting exercises should consult FEMA's four-volume "Exercise Design Course," which includes sample hazardous materials exercises. CMA's *Community Emergency Response Exercise Handbook* is also helpful. CMA describes four types of exercises: tabletop, emergency operations simulation, drill, and field exercise.

6.4.2 Incident Review

When a hazardous materials incident does occur, a review or critique of the incident is a means of evaluating the plan's effectiveness. Recommendations for conducting an incident review are:

- ☐ Assign responsibility for incident review to the same organization that is responsible for plan update, for example, the planning team.
- ☐ Conduct the review only after the emergency is under control and sufficient time has passed to allow emergency respondents to be objective about the incident.
- ☐ Use questionnaires, telephone interviews, or personal interviews to obtain comments and suggestions from emergency respondents. Follow-up on non-respondents.
- ☐ Identify plan and response deficiencies: items that were over-

looked, improperly identified, or were not effective.

- ☐ Convene the planning team to review comments and make appropriate plan changes.
- ☐ Revise the plan as necessary. Communicate personal or departmental deficiencies informally to the appropriate person or department. Follow up to see that deficiencies are corrected.

6.4.3 Training

Training courses can help with continuing planning by sharpening response personnel skills, presenting up-to-date ideas/techniques, and promoting contact with other people involved in emergency response. Everyone who occupies a position that is identified in the plan must have appropriate training. This applies to persons at all levels who serve to coordinate or have responsibilities under the plan, both those directly and indirectly involved at the scene of an incident. One should not assume that a physician in the emergency room or a professional environmentalist is specifically trained to perform his/her assigned mission during an emergency.

The training could be a short briefing on specific roles and responsibilities, or a seminar on the plan or on emergency planning and response in general. However the training is conducted, it should convey a full appreciation of the importance of each role and the effect that each person has on implementing an effective emergency response.

Training is available from a variety of sources in the public and private sectors. At the Federal level, EPA, FEMA, OSHA, DOT/RSPA and the USCG offer hazardous materials training. (In some cases, there are limits on attendance in these courses.) FEMA, EPA, and other NRT agencies cooperatively offer the inter-agency "train-the-trainer" course, Haz-

ardous Materials Contingency Planning, at Emmitsburg, MD and in the field.

Title III of SARA authorizes Federal funding for training. Communities seeking training assistance should consult appropriate State agencies. States may consult with the RRT and the various Federal Regional and district offices. (See Appendix F.)

In addition to government agencies, consult universities or community colleges (especially any fire science curriculum courses), industry associations, special interest groups, and the private sector (fixed facilities, shippers, and carriers). Many training films and slide presentations can be borrowed or rented at little cost. Many chemical companies and carriers provide some level of training free.

The Chemical Manufacturers Association has a lending library of audio-visual training aids for use by personnel who respond to emergencies involving chemicals. The training aids are available on a loan basis at no charge to emergency response personnel and the public sector.

Training aids can also be purchased from:

National Chemical Response and
Information Center
Chemical Manufacturers Association
2501 M Street, N.W.
Washington, DC 20037

In addition to classroom training, response personnel will need hands-on experience with equipment to be used during an emergency.

Communities should provide for refresher training of response personnel. It is not sufficient to attend training only once. Training must be carried out on a continuing basis to ensure currency and capability. Some communities have found it effective to hold this refresher training in conjunction with an exercise.

The NRT, through its member agencies, is developing a strategy to address issues related to emergency preparedness and response for hazardous materials incidents. The training strategy includes: (1) improved coordination of available Federal training programs and courses; (2) sharing information about available training, and lessons learned from responses to recent hazardous materials incidents; (3) the increased use of exercises as a training method; (4) the revision of existing core courses, and the development of any needed new core courses that prepare responders to do the actual tasks expected in their own communities; and (5) decentralizing the delivery of training so that it is more easily available to responders. Further information about this training strategy can be obtained from EPA or FEMA offices in Washington, DC (see page F-1 for addresses).

APPENDIX A

**IMPLEMENTING TITLE III: EMERGENCY PLANNING AND
COMMUNITY RIGHT-TO-KNOW:
SUPERFUND AMENDMENTS AND REAUTHORIZATION
ACT OF 1986**

This appendix includes a detailed summary of Title III of SARA. The material printed in italics indicates how information generated by compliance with Title III can be of use to local emergency planning committees. Exhibit 5 is a list of key dates relative to Title III implementation. Exhibit 6 is a graphic representation of the flow of information required by Title III. Exhibit 7 summarizes ways in which Title III information can be used by local emergency planning committees. Exhibit 8 identifies various lists of chemicals mentioned in Title III and indicates the purpose(s) of each list.

On October 17, 1986, the President signed the "Superfund Amendments and Reauthorization Act of 1986" (SARA) into law. One part of the new SARA provisions is Title III: the "Emergency Planning and Community Right-to-Know Act of 1986." Title III establishes requirements for Federal, State, and local governments, and industry regarding emergency planning and community right-to-know reporting on hazardous chemicals. This legislation builds upon the Environmental Protection Agency's (EPA's) Chemical Emergency Preparedness Program (CEPP) and numerous State and local programs aimed at helping communities to meet their responsibilities in regard to potential chemical emergencies.

Title III has four major sections: emergency planning (§ 301-303), emergency notification (§ 304), community right-to-know reporting requirements (§ 311, 312), and toxic chemical release reporting -- emissions inventory (§ 313). The sec-

tions are interrelated in a way that unifies the emergency planning and community right-to-know provisions of Title III. (See Exhibit 6.)

In addition to increasing the public's knowledge and access to information on the presence of hazardous chemicals in their communities and releases of these chemicals into the environment, the community right-to-know provisions of Title III will be important in preparing emergency plans.

This appendix includes a summary of these four major sections, followed by a discussion of other Title III topics of interest to emergency planners.

Sections 301-303: Emergency Planning

The emergency planning sections are designed to develop State and local government emergency preparedness and response capabilities through better coordination and planning, especially at the local level.

Title III requires that the Governor of each State designate a State emergency response commission (SERC) by April 17, 1987. While existing State organizations can be designated as the SERC, the commission should have broad-based representation. Public agencies and departments concerned with issues relating to the environment, natural resources, emergency management, public health, occupational safety, and transportation all have important roles in Title III activities.

Various public and private sector groups and associations with interest and expertise in Title III issues can also be included on the SERC.

The SERC must designate local emergency planning districts by July 17, 1987, and appoint local emergency planning committees (LEPCs) within one month after a district is designated. The SERC is responsible for supervising and coordinating the activities of the LEPCs, for establishing procedures for receiving and processing public requests for information collected under other sections of Title III, and for reviewing local emergency plans.

The LEPC must include elected State and local officials, police, fire, civil defense, public health professionals, environmental, hospital, and transportation officials as well as representatives of facilities, community groups, and the media. Interested persons may petition the SERC to modify the membership of an LEPC.

No later than September 17, 1987, facilities subject to the emergency planning requirements must notify the LEPC of a representative who will participate in the planning process as a facility emergency coordinator.

Facility emergency coordinators will be of great service to LEPCs. For example, they can provide technical assistance, an understanding of facility response procedures, information about chemicals and their potential effects on nearby persons and the environment, and response training opportunities. CEPP experience revealed that, as a result of CMA's CAER initiative, there already exist a large number of plant managers and other facility personnel who want to cooperate with local community planners.

The LEPC must establish rules, give public notice of its activities, and establish procedures for handling public requests for information.

The LEPC's primary responsibility will be to develop an emergency response plan by October 17, 1988. In developing this plan, the local committee will evaluate available resources for preparing for and responding to a potential chemical accident. The plan must include:

- Identification of facilities and extremely hazardous substances transportation routes;
- Emergency response procedures, on site and off site;
- Designation of a community coordinator and facility coordinator(s) to implement the plan;
- Emergency notification procedures;
- Methods for determining the occurrence of a release and the probable affected area and population;
- Description of community and industry emergency equipment and facilities, and the identity of persons responsible for them;
- Evacuation plans;
- Description and schedules of a training program for emergency response to chemical emergencies; and
- Methods and schedules for exercising emergency response plans.

To assist the LEPC in preparing and reviewing plans, Congress required the National Response Team (NRT), composed of 14 Federal agencies with emergency preparedness and response responsibilities, to publish guidance on emergency planning. This Hazardous Materials Emergency Planning Guide is being published by the NRT to fulfill this requirement.

The emergency plan must be reviewed by the SERC upon completion and reviewed annually by the LEPC. The Regional Response Teams (RRTs), composed of Federal Regional officials and State representatives, may review the plans and provide assistance if the LEPC so requests.

The emergency planning activities of the LEPC and facilities should initially be focused on, but not limited to, the extremely hazardous substances published as an interim final rule in the November 17, 1986, *Federal Register*. The list included the threshold planning quantity (TPQ) for each substance. EPA can revise the list and TPQs but must take into account the toxicity, reactivity, volatility, dispersability, combustibility, or flammability of a substance. Consult EPA Regional offices for a copy of the Title III (Section 302) list of extremely hazardous substances.

Any facility that produces, uses, or stores any of the listed chemicals in a quantity greater than the TPQ must meet all emergency planning requirements. In addition, the SERC or the Governor can designate additional facilities, after public comment, to be subject to these requirements. By May 17, 1987, facilities must notify the SERC that they are subject to these requirements. If, after that time, a facility first begins to produce, use, or store an extremely hazardous substance in an amount exceeding the threshold planning quantity, it must notify the SERC and LEPC within 60 days.

Each SERC must notify EPA Regional offices of all facilities subject to Title III planning requirements.

In order to complete information on many sections of the emergency plan, the LEPC will require data from the facilities covered under the plan. Title III provides authority for the LEPC to secure from a facility information that it needs for emergency planning and re-

sponse. This is provided by Section 303 (d)(3), which states that:

"Upon request from the emergency planning committee, the owner or operator of the facility shall promptly provide information to such committee necessary for developing and implementing the emergency plan."

Within the trade secret restrictions contained in Section 322, LEPCs should be able to use this authority to secure from any facility subject to the planning provisions of the law information needed for such mandatory plan contents as: facility equipment and emergency response capabilities, facility emergency response personnel, and facility evacuation plans.

Some of the facilities subject to Section 302 planning requirements may not be subject to Sections 311-12 reporting requirements, which are currently limited to manufacturers and importers in SIC codes 20-39. LEPCs may use Section 303(d)(3) authority to gain information such as name(s), MSDSs, and quantity and location of chemicals present at facilities subject to Section 302.

Section 304: Emergency Notification

If a facility produces, uses, or stores one or more hazardous chemical, it must immediately notify the LEPC and the SERC if there is a release of a listed hazardous substance that exceeds the reportable quantity for that substance. Substances subject to this notification requirement include substances on the list of extremely hazardous substances published in the *Federal Register* on November 17, 1986, and substances subject to the emergency notification requirements of CERCLA Section 103(a).

Information included in this initial notification (as well as the additional information in the follow-up written notice described below) can be used by the LEPC to prepare and/or revise the emergency plan. This information should be especially helpful in meeting the requirement to list methods for determining if a release has occurred and identifying the area and population most likely to be affected.

The initial notification of a release can be by telephone, radio, or in person. Emergency notification requirements involving transportation incidents may be satisfied by dialing 911 or, in the absence of a 911 emergency number, calling the operator.

This emergency notification needs to include: the chemical name; an indication of whether the substance is an extremely hazardous substance; an estimate of the quantity released into the environment; the time and duration of the release; the medium into which the release occurred; any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals; proper precautions, such as evacuation; and the name and telephone number of a contact person.

Section 304 also requires a follow-up written emergency notice after the release. The follow-up notice or notices shall update information included in the initial notice and provide additional information on actual response actions taken, any known or anticipated data on chronic health risks associated with the release, and advice regarding medical attention necessary for exposed individuals.

The requirement for emergency notification comes into effect with the establishment of the SERC and LEPC. If no SERC is established by April 17, 1987, the Governor becomes the SERC and notification should be made to him/her. If no LEPC is

established by August 17, 1987, local notification must be made to the appropriate local emergency response personnel, such as the fire department.

Sections 311-312: Community Right-to-Know Reporting Requirements

As noted above, Section 303(d)(3) gives LEPCs access to information from facilities subject to Title III planning requirements. Sections 311-12 provide information about the nature, quantity, and location of chemicals at many facilities not subject to the Section 303(d)(3) requirement. For this reason, LEPCs will find Sections 311-12 information especially helpful when preparing a comprehensive plan for the entire planning district.

There are two community right-to-know reporting requirements. Section 311 requires a facility which must prepare or have available material safety data sheets (MSDSs) under the Occupational Safety and Health Administration (OSHA) hazard communications regulations to submit either copies of its MSDSs or a list of MSDS chemicals to the LEPC, the SERC, and the local fire department. Currently, only facilities in Standard Industrial Classification (SIC) Codes 20-39 (manufacturers and importers) are subject to these OSHA regulations.

The initial submission of the MSDSs or list is required no later than October 17, 1987, or 3 months after the facility is required to prepare or have available an MSDS under OSHA regulations. A revised MSDS must be provided to update an MSDS which was originally submitted if significant new information regarding a chemical is discovered.

EPA encourages LEPCs and fire departments seriously to consider contacting

facilities prior to the deadline of October 17, 1987 to request the submission of lists rather than MSDS forms. In communities with a large number of facilities, handling large numbers of chemicals, and in communities with limited capabilities to store and manage the MSDSs, the list of MSDS chemicals from the facility would be more useful than the forms themselves, and likely to be more easily produced.

LEPCs also have the option of using the chemical names provided to develop additional data on each of the chemicals, using a variety of data sources, including several on-line data bases maintained by agencies of the Federal government.

Specific MSDSs could be requested on chemicals that are of particular concern. In general every MSDS will provide the LEPC and the fire departments in each community with the following information on each of the chemicals covered:

- *The chemical name;*
- *Its basic characteristics, for example:*
 - *toxicity, corrosivity, reactivity,*
 - *known health effects, including chronic effects from exposure,*
 - *basic precautions in handling, storage, and use,*
 - *basic countermeasures to take in the event of a fire, explosion, leak, and*
 - *basic protective equipment to minimize exposure.*

In any case, these data should be useful for the planning to be accomplished by the LEPC and first responders, especially fire departments and hazmat teams. Both hazards analysis and the development of emergency countermeasures should be facilitated by the availability of MSDS information.

If the facility owner or operator chooses to submit a list of MSDS chemicals, the list must include the chemical name or common name of each substance and any hazardous component as provided on the MSDS. This list must be organized in categories of health and physical hazards as set forth in OSHA regulations or as modified by EPA.

If a list is submitted, the facility must provide the MSDS for any chemical on the list upon the request of the LEPC. Under Section 311, EPA may establish threshold quantities for hazardous chemicals below which no facility must report.

The reporting requirement of Section 312 requires facilities to submit an emergency and hazardous chemical inventory form to the LEPC, the SERC, and the local fire department. The hazardous chemicals covered by Section 312 are the same chemicals for which facilities are required to submit MSDS forms or the list for Section 311.

Under Sections 311-12, EPA may establish threshold quantities for hazardous chemicals below which no facility is subject to this requirement. See the proposed rule in the January 27, 1987 *Federal Register*. The Final Rule will be published before October 1987.

The inventory form incorporates a two-tier approach. Under Tier I, facilities must submit the following aggregate information for each applicable OSHA category of health and physical hazard:

- An estimate (in ranges) of the maximum amount of chemicals for each category present at the facility at any time during the preceding calendar year;
- An estimate (in ranges) of the average daily amount of chemicals in each category; and
- The general location of hazardous chemicals in each category.

Tier I information shall be submitted on or before March 1, 1988 and annually thereafter on March 1.

The public may also request additional information for specific facilities from the SERC and LEPC. Upon the request of the LEPC, the SERC, or the local fire department, the facility must provide the following Tier II information for each covered substance to the organization making the request:

- The chemical name or the common name as indicated on the MSDS;
- An estimate (in ranges) of the maximum amount of the chemical present at any time during the preceding calendar year;
- A brief description of the manner of storage of the chemical;
- The location of the chemical at the facility; and
- An indication of whether the owner elects to withhold information from disclosure to the public.

The information submitted by facilities under Sections 311 and 312 must generally be made available to the public by local and State governments during normal working hours.

As in the case of the MSDS data, this Section 312 information may be useful for LEPCs interested in extending the scope of their planning beyond the facilities covered by Section 302, and for reviewing and updating existing plans. Section 312 information about the quantity and location of chemicals can be of use to fire departments in the development of pre-fire plans. Section 312 data may be of limited use in the initial planning process, given the fact that initial emergency plans are to be completed by October 17, 1988,

but they will be useful for the subsequent review and update of plans. Fa-

cility owners or operators, at the request of the fire department, must allow the fire department to conduct an on-site inspection and provide specific information about the location of hazardous chemicals.

Section 313: Toxic Chemical Release Reporting

Section 313 of Title III requires EPA to establish an inventory of toxic chemical emissions from certain facilities. Facilities subject to this reporting requirement must complete a toxic chemical release form (to be prepared by EPA by June 1987) for specified chemicals. The form must be submitted to EPA and those State officials designated by the Governor on or before July 1, 1988, and annually thereafter on July 1, reflecting releases during each preceding calendar year.

The purpose of this reporting requirement is to inform government officials and the public about releases of toxic chemicals into the environment. It will also assist in research and the development of regulations, guidelines, and standards.

The reporting requirement applies to owners and operators of facilities that have 10 or more full-time employees, that are in Standard Industrial Classification (SIC) Codes 20 through 39, and that manufactured, processed, or otherwise used a listed toxic chemical in excess of specified threshold quantities. The SIC Codes mentioned cover basically all manufacturing industries.

Facilities using listed toxic chemicals in quantities over 10,000 pounds in a calendar year are required to submit toxic chemical release forms by July 1 of the following year. Facilities manufacturing or processing any of these chemicals in excess of 75,000 pounds in 1987 must report by July 1, 1988. Facilities manufacturing or processing in excess of 50,000 pounds in 1988 must report by July

1, 1989. Thereafter, facilities manufacturing or processing more than 25,000 pounds in a year are required to submit the form. EPA can revise these threshold quantities and the SIC categories involved.

The list of toxic chemicals subject to reporting consists initially of chemicals listed for similar reporting purposes by the States of New Jersey and Maryland. There are over 300 chemicals and categories on these lists. EPA can modify this combined list. In adding a chemical to the combined Maryland and New Jersey lists, EPA must consider the following factors:

- (1) Is the substance known to cause cancer or serious reproductive or neurological disorders, genetic mutations, or other chronic health effects?
- (2) Can the substance cause significant adverse acute health effects as a result of continuous or frequently recurring releases?
- (3) Can the substance cause an adverse effect on the environment because of its toxicity, persistence, or tendency to bioaccumulate?

Chemicals can be deleted if there is not sufficient evidence to establish any of these factors. State Governors or any other person may petition the EPA Administrator to add or delete a chemical from the list for any of the above reasons. EPA must either publish its reasons for denying the petition, or initiate action to implement the petition within 180 days.

Through early consultation with States or EPA Regions, petitioners can avoid duplicating previous petitions and be assisted in locating sources of data already collected on the problem of concern and data sources to support their petitions. EPA will conduct information searches on chemicals contained in a petition, focusing on the effects the

petitioners believes warrant addition or deletion.

The toxic chemical release form includes the following information for released chemicals:

- The name, location, and type of business;
- Whether the chemical is manufactured, processed, or otherwise used and the general categories of use of the chemical;
- An estimate (in ranges) of the maximum amounts of the toxic chemical present at the facility at any time during the preceding year;
- Waste treatment and disposal methods and the efficiency of methods for each wastestream;
- The quantity of the chemical entering each environmental medium annually; and
- A certification by a senior official that the report is complete and accurate.

EPA must establish and maintain a national toxic chemical inventory based on the data submitted. This information must be computer accessible on a national database.

In general these Section 313 reports appear to be of limited value in emergency planning. Over time, however they may contain information that can be used by local planners in developing a more complete understanding of the total spectrum of hazards that a given facility may pose to a community. These reports will not be available to States until July 1, 1988. These reports do not go to the LEPCs directly but they are likely to become available if the LEPCs request them from the States.

Other Title III Provisions

In addition to these four major sections of Title III, there are other provisions of interest to local communities.

Preemption

Section 321 stipulates that (with the exception of the MSDS format and content required by Section 311) Title III does not preempt any State and local laws. In effect, Title III imposes minimum planning and reporting standards where no such standards (or less stringent standards) exist, while permitting States and localities to pursue more stringent requirements as they deem appropriate.

Trade Secrets

Section 322 of Title III addresses trade secrets and applies to Section 303 emergency planning and Sections 311, 312, 313 regarding planning information, community right-to-know reporting requirements, and toxic chemical release reporting. Any person may withhold the specific chemical identity of an extremely hazardous substance or toxic chemical for specific reasons. Even if the chemical identity is withheld, the generic class or category of the chemical must be provided. Such information may be withheld if the facility submits the withheld information to EPA along with an explanation of why the information is a trade secret. The information may not be withheld as a trade secret unless the facility shows each of the following:

- The information has not been disclosed to any other person other than a member of the LEPC, a government official, an employee of such person or someone bound by a confidentiality agreement, and that

measures have been taken to protect the confidentiality;

- The information is not required to be disclosed to the public under any other Federal or State law;
- The information is likely to cause substantial harm to the competitive position of the person; and
- The chemical identity could not reasonably be discovered by anyone in the absence of disclosure.

Even if information can be legally withheld from the public, Section 323 requires it not to be withheld from health professionals who require the information for diagnostic purposes or from local health officials who require the information for assessment activities. In these cases, the person receiving the information must be willing to sign a confidentiality agreement with the facility.

Information claimed as trade secret and substantiation for that claim must be submitted to EPA. People may challenge trade secret claims by petitioning EPA, which must then review the claim and rule on its validity.

EPA will publish regulations governing trade secret claims. The regulations will cover the process for submission of claims, petitions for disclosure, and a review process for these petitions.

Enforcement

Section 325 identifies the following enforcement procedures:

- Civil penalties for facility owners or operators who fail to comply with emergency planning requirements;
- Civil, administrative, and criminal penalties for owners or operators who fail to comply with the emergency notification requirements of Section 304;

- Civil and administrative penalties for owners or operators who fail to comply with the reporting requirements in Sections 311-313;
- Civil and administrative penalties for frivolous trade secret claims; and
- Criminal penalties for the disclosure of trade secret information.

In addition to the Federal government, State and local governments and individual citizens may enforce the provisions of Title III through the citizen suit authority provided in Section 326.

Training

Section 305 mandates that Federal emergency training programs must emphasize hazardous chemicals. It also authorizes the Federal Emergency Management Agency (FEMA) to provide \$5 million for each of fiscal years 1987, 1988, 1989, and 1990 for training grants to support State and local governments. These training grants are designed to improve emergency planning, preparedness, mitigation, response, and recovery capabilities. Such programs must give special emphasis to hazardous chemical emergencies. The training grants may not exceed 80 percent of the cost of any such programs. The remaining 20 percent must come from non-Federal sources. Consult FEMA and/or EPA Regional offices for a list of training courses.

Review of Emergency Systems

Under Section 305, EPA has initiated a review of emergency systems for monitoring, detecting, and preventing releases of extremely hazardous substances at representative facilities that

produce, use, or store these substances. It also is examining public alert systems. EPA will report interim findings to the Congress no later than May 17, 1987 and issue a final report of findings and recommendations to the Congress by April 17, 1988.

The report must include EPA's findings regarding each of the following:

- Status of current technological capabilities to 1) monitor, detect, and prevent significant releases of extremely hazardous substances; 2) determine the magnitude and direction of the hazard posed by each release; 3) identify specific substances; 4) provide data on the specific chemical composition of such releases; and 5) determine relative concentrations of the constituent substances;
- Status of public emergency alert devices or systems for effective public warning of accidental releases of extremely hazardous substances into any media; and
- The technical and economic feasibility of establishing, maintaining, and operating alert systems for detecting releases.

The report must also include EPA's recommendations for the following:

- Initiatives to support development of new or improved technologies or systems that would assist the timely monitoring, detection, and prevention of releases of extremely hazardous substances; and
- Improving devices or systems for effectively alerting the public in the event of an accidental release.

EXHIBIT 5

KEY TITLE III DATES

The following is a list of some key dates relative to the implementation of the "Emergency Planning and Community Right-to-Know Act of 1986."

- | | |
|--|---|
| November 17, 1986 | • EPA publishes interim final List of Extremely Hazardous Substances and their Threshold Planning Quantities in <i>Federal Register</i> (§ 302(a)(2-3)) |
| November 17, 1986 | • EPA initiates comprehensive review of emergency systems (§ 305(b)) |
| January 27, 1987 | • EPA publishes proposed formats for emergency inventory forms and reporting requirements in <i>Federal Register</i> (§ 311-12) |
| March 17, 1987 | • National Response Team publishes guidance for preparation and implementation of emergency plans (§ 303(f)) |
| April 17, 1987 | • State Governors appoint SERCs (§ 301(a)) |
| May 17, 1987 | • Facilities subject to Section 302 planning requirements notify SERC (§ 302(c)) |
| June 1, 1987 | • EPA publishes toxic chemicals release (i.e., emissions inventory) form (§ 302(c)) |
| July 17, 1987 | • SERC designates emergency planning districts (§ 301(b)) |
| August 17, 1987
(or 30 days after designation of districts, whichever is sooner) | • SERC appoints members of LEPCs (§ 301(c)) |
| September 17, 1987
(or 30 days after local committee is formed, whichever is earlier) | • Facility notifies LEPC of selection of a facility representative to serve as facility emergency coordinator (§ 303(d)(1)) |
| October 17, 1987 | • MSDSs or list of MSDS chemicals submitted to SERC, LEPC, and local fire department (§ 311(d)) |
| March 1, 1988 | • Facilities submit their initial emergency inventory forms to SERC, LEPC, and local fire department (§ 312(a)(2)) |
| April 17, 1988 | • Final report on emergency systems study due to Congress (§ 305(b)) |
| July 1, 1988
(and annually hereafter) | • Facilities to submit initial toxic chemical release forms to EPA and designated State officials (§ 313(a)) |
| October 17, 1988 | • LEPCs complete preparation of an emergency plan (§ 303(a)) |

EXHIBIT 6
TITLE III - MAJOR INFORMATION FLOW/REQUIREMENTS

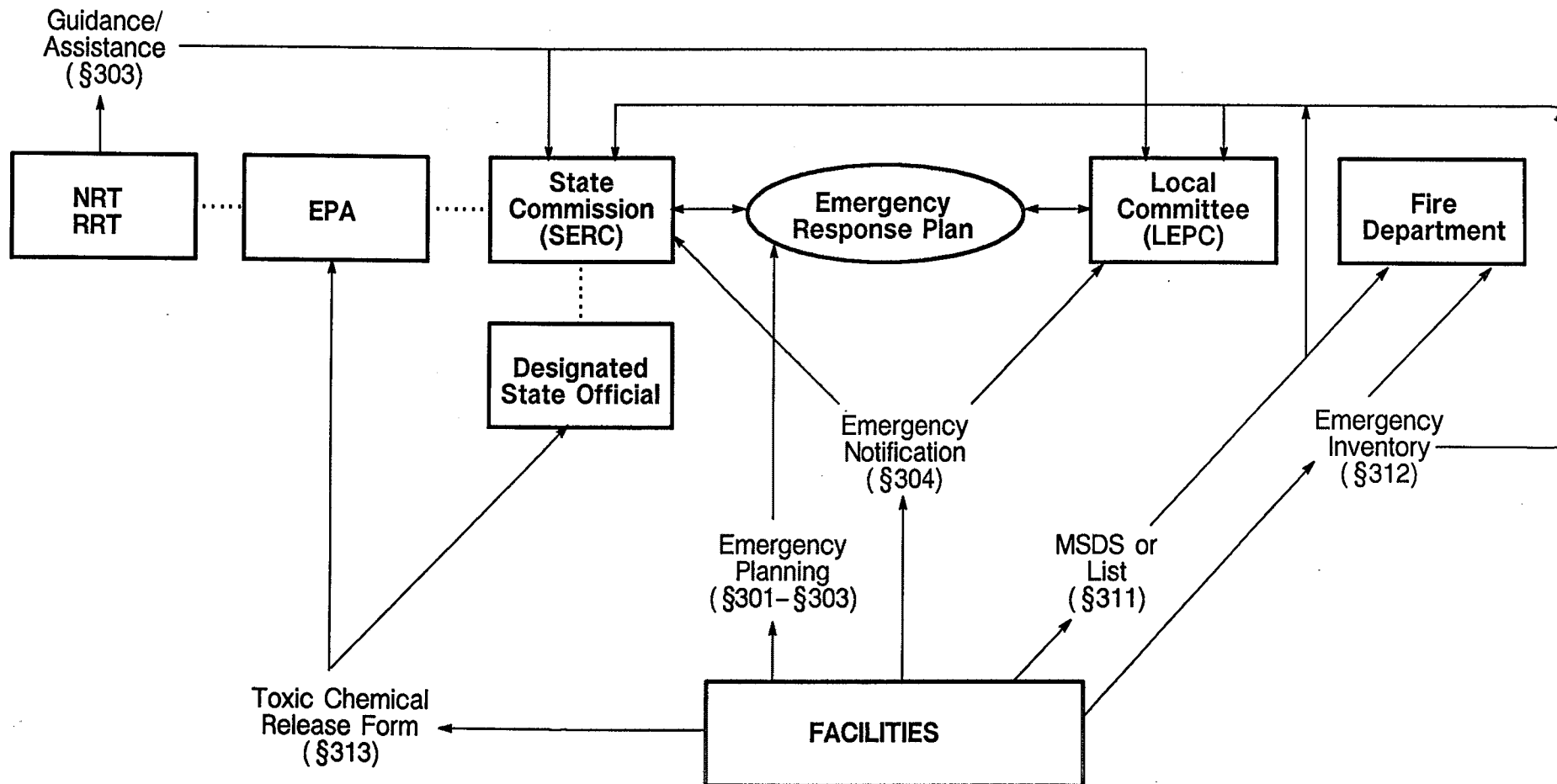


EXHIBIT 7
INFORMATION FROM FACILITIES PROVIDED BY TITLE III
IN SUPPORT OF LEPC PLAN DEVELOPMENT

Information Generated by Title III Compliance	Authority	How LEPC Can Use the Information
Facilities subject to Title III planning requirements (including those designated by the Governor or SERC)	Section 302; Notice from Governor/SERC	Hazards analysis -- Hazards identification (see p. 64)
Additional facilities near subject facilities (such as hospitals, natural gas facilities, etc.)	Sections 302(b) (2); 303 (c) (1)	Hazards analysis -- Vulnerability analysis (see p. 64)
Transportation routes	Sections 303 (c) (1); 303(d) (3)	Hazards analysis -- Hazards identification (see p. 64)
Major chemical hazards (chemical name, properties, location, and quantity)	Section 303(d) (3) for extremely hazardous substances used, produced, stored Section 311 MSDSs for chemicals manufactured or imported Section 312 inventories for chemicals manufactured or imported	Hazards analysis -- Hazards identification (see p. 64)
Facility and community response methods, procedures, and personnel	Sections 303(c) (2); 303(d) (3)	Response functions (see pp. 49ff)
Facility and community emergency coordinators	Sections 303(c) (3); 303(d) (1)	Assistance in preparing and implementing the plan (see p. 11)
Release detection and notification procedures	Sections 303(c) (4); 303(d) (3)	Initial notification (see p. 50) Warning systems (see p. 53)
Methods for determining release occurrence and population affected	Sections 303(c) (5); 303(d) (3)	Hazards analysis -- Vulnerability analysis and risk analysis (see p. 64)
Facility equipment and emergency facilities; persons responsible for such equipment and facilities	Sections 303(c) (6); 303(d) (3)	Resource management (see p. 54)
Evacuation plans	Sections 303(c) (7); 303(d) (3)	Evacuation planning (see p. 57)
Training programs	Sections 303(c) (8); 303(d) (3)	Resource management (see p. 54)
Exercise methods and schedules	Sections 303(c) (9); 303(d) (3)	Testing and updating (see p. 63)

EXHIBIT 8
TITLE III CHEMICAL LISTS AND THEIR PURPOSES

List	Required in Section	Purpose
<u>Extremely Hazardous Substances</u> <i>(Federal Register 11/17/86 -- initially 402 chemicals listed in CEPP Interim Guidance)</i>	Section 302: Emergency Planning	<ul style="list-style-type: none"> Facilities with more than established planning quantities of these substances must notify the SERC. Initial focus for preparation of emergency plans by LEPCs
	Section 304: Emergency Notification	<ul style="list-style-type: none"> Certain releases of these chemicals trigger Section 304 notification to SERC and LEPC.
Substance requiring notification under Section 103(a) of CERCLA (717 chemicals)	Section 304: Emergency Notification	<ul style="list-style-type: none"> Certain releases of these chemicals trigger Section 304 notification to SERC and LEPC as well as CERCLA Section 103(a) requirement to notify National Response Center.
<u>Hazardous Chemicals</u> considered physical or health hazards under OSHA's Hazard Communication Standard (This is a performance standard, there is no specific list of chemicals.)	Section 304: Emergency Notification	<ul style="list-style-type: none"> Identifies facilities subject to emergency notification requirements
	Section 311: Material Safety Data Sheets	<ul style="list-style-type: none"> MSDS or list of MSDS chemicals provided by facilities to SERC, LEPC, and local fire department
	Section 312: Emergency and Hazardous Chemical Inventory	<ul style="list-style-type: none"> Covered facilities provide site-specific information on the quantity and location of chemicals to SERC, LEPC, and local fire departments to inform the community and assist in plan preparation.
<u>Toxic Chemicals</u> identified as chemicals of concern by States of New Jersey and Maryland (329 chemicals/chemical categories)	Section 313: Toxic Chemical Release Reporting	<ul style="list-style-type: none"> These chemicals are reported on an emissions inventory to inform government officials and the public about releases of toxic chemicals in the environment.



APPENDIX B

LIST OF ACRONYMS AND RECOGNIZED ABBREVIATIONS

AAR/BOE	Association of American Railroads/Bureau of Explosives
AIChE	American Institute of Chemical Engineers
ASCS	Agricultural Stabilization and Conservation Service
ASME	American Society of Mechanical Engineers
ASSE	American Society of Safety Engineers
ATSDR	Agency for Toxic Substances and Disease Registry (HHS)
CAER	Community Awareness and Emergency Response (CMA)
CDC	Centers for Disease Control (HHS)
CEPP	Chemical Emergency Preparedness Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (PL 96-510)
CFR	Code of Federal Regulations
CHEMNET	A mutual aid network of chemical shippers and contractors.
CHEMTREC	Chemical Transportation Emergency Center
CHLOREP	A mutual aid group comprised of shippers and carriers of chlorine.
CHRIS/HACS	Chemical Hazards Response Information System/Hazard Assessment Computer System
CMA	Chemical Manufacturers Association
CPG 1-3	Federal Assistance Handbook: Emergency Management, Direction and Control Programs
CPG 1-8	Guide for Development of State and Local Emergency Operations Plans
CPG 1-8A	Guide for the Review of State and Local Emergency Operations Plans
CWA	Clean Water Act
DOC	U.S. Department of Commerce
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOJ	U.S. Department of Justice
DOL	U.S. Department of Labor
DOS	U.S. Department of State
DOT	U.S. Department of Transportation

APPENDIX B (Continued)

LIST OF ACRONYMS AND RECOGNIZED ABBREVIATIONS

EENET	Emergency Education Network (FEMA)
EMA	Emergency Management Agency
EMI	Emergency Management Institute
EOC	Emergency Operating Center
EOP	Emergency Operations Plan
EPA	U.S. Environmental Protection Agency
ERD	Emergency Response Division (EPA)
FEMA	Federal Emergency Management Agency
FEMA-REP-5	Guidance for Developing State and Local Radiological Emergency Response Plans and Preparedness for Transportation Accidents
FWPCA	Federal Water Pollution Control Act
HAZMAT	Hazardous Materials
HAZOP	Hazard and Operability Study
HHS	U.S. Department of Health and Human Services
ICS	Incident Command System
IEMS	Integrated Emergency Management System
LEPC	Local Emergency Planning Committee
MSDS	Material Safety Data Sheet
NACA	National Agricultural Chemicals Association
NCP	National Contingency Plan
NCRIC	National Chemical Response and Information Center (CMA)
NETC	National Emergency Training Center
NFA	National Fire Academy
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NOAA	National Oceanic and Atmospheric Administration
NRC	U.S. Nuclear Regulatory Commission; National Response Center
NRT	National Response Team
NUREG 0654/ FEMA-REP-1	Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants
OHMTADS	Oil and Hazardous Materials Technical Assistance Data System

APPENDIX B (Continued)

LIST OF ACRONYMS AND RECOGNIZED ABBREVIATIONS

OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration (DOL)
PSTN	Pesticide Safety Team Network
RCRA	Resource Conservation and Recovery Act
RQs	Reportable Quantities
RRT	Regional Response Team
RSPA	Research and Special Programs Administration (DOT)
SARA	Superfund Amendments and Reauthorization Act of 1986 (PL 99-499)
SCBA	Self-Contained Breathing Apparatus
SERC	State Emergency Response Commission
SPCC	Spill Prevention Control and Countermeasures
TSD	Treatment, Storage, and Disposal Facilities
USCG	U.S. Coast Guard (DOT)
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USNRC	U.S. Nuclear Regulatory Commission



APPENDIX C

GLOSSARY

- CAER** --- Community Awareness and Emergency Response program developed by the Chemical Manufacturers Association. Guidance for chemical plant managers to assist them in taking the initiative in cooperating with local communities to develop integrated (community/industry) hazardous materials response plans.
- CEPP** --- Chemical Emergency Preparedness Program developed by EPA to address accidental releases of acutely toxic chemicals.
- CERCLA** --- Comprehensive Environmental Response, Compensation, and Liability Act regarding hazardous substance releases into the environment and the cleanup of inactive hazardous waste disposal sites.
- CHEMNET** --- A mutual aid network of chemical shippers and contractors. CHEMNET has more than fifty participating companies with emergency teams, twenty-three subscribers (who receive services in an incident from a participant and then reimburse response and cleanup costs), and several emergency response contractors. CHEMNET is activated when a member shipper cannot respond promptly to an incident involving that company's product(s) and requiring the presence of a chemical expert. If a member company cannot go the scene of the incident, the shipper will authorize a CHEMNET-contracted emergency response company to go. Communications for the network are provided by CHEMTREC, with the shipper receiving notification and details about the incident from the CHEMTREC communicator.
- CHEMTREC** --- Chemical Transportation Emergency Center operated by the Chemical Manufacturers Association. Provides information and/or assistance to emergency responders. CHEMTREC contacts the shipper or producer of the material for more detailed information, including on-scene assistance when feasible. Can be reached 24 hours a day by calling 800-424-9300. (Also see "HIT.")
- CHLOREP** --- Chlorine Emergency Plan operated by the Chlorine Institute. A 24-hour mutual aid program. Response is activated by a CHEMTREC call to the designated CHLOREP contact, who notifies the appropriate team leader, based upon CHLOREP's geographical sector assignments for teams. The team leader in turn calls the emergency caller at the incident scene and determines what advice and assistance are needed. The team leader then decides whether or not to dispatch his team to the scene.

APPENDIX C (Continued)

GLOSSARY

- CHRIS/HACS** -- Chemical Hazards Response Information System/Hazard Assessment Computer System developed by the U.S. Coast Guard. HACS is a computerized model of the four CHRIS manuals that contain chemical-specific data. Federal OSCs use HACS to find answers to specific questions during a chemical spill/response. State and local officials and industry representatives may ask an OSC to request a HACS run for contingency planning purposes.
- CPG 1-3** -- Federal Assistance Handbook: Emergency Management, Direction and Control Programs, prepared by FEMA. Provides States with guidance on administrative and programmatic requirements associated with FEMA funds.
- CPG 1-5** -- Objectives for Local Emergency Management, prepared by FEMA. Describes and explains functional objectives that represent a comprehensive and integrated emergency management program. Includes recommended activities for each objective.
- CPG 1-8** -- Guide for Development of State and Local Emergency Operations Plans, prepared by FEMA (see EOP below).
- CPG 1-8A** -- Guide for the Review of State and Local Emergency Operations Plans, prepared by FEMA. Provides FEMA staff with a standard instrument for assessing EOPs that are developed to satisfy the eligibility requirement to receive Emergency Management Assistance funding.
- CPG 1-35** -- Hazard Identification, Capability Assessment, and Multi-Year Development Plan for Local Governments, prepared by FEMA. As a planning tool, it can guide local jurisdictions through a logical sequence for identifying hazards, assessing capabilities, setting priorities, and scheduling activities to improve capability over time.
- EBS** -- Emergency Broadcasting System to be used to inform the public about the nature of a hazardous materials incident and what safety steps they should take.
- EMI** -- The Emergency Management Institute is a component of FEMA's National Emergency Training Center located in Emmitsburg, Maryland. It conducts resident and nonresident training activities for Federal, State, and local government officials, managers in the private economic sector, and members of professional and volunteer organizations on subjects that range from civil nuclear preparedness systems to domestic emergencies caused by natural and technological hazards. Nonresident training activities are also conducted by State Emergency Management Training Offices under cooperative agreements that offer financial and technical assistance to establish annual training programs that fulfill emergency management training requirements in communities throughout the nation.

APPENDIX C (Continued)

GLOSSARY

- ERT** -- Environmental Response Team, a group of highly specialized experts available through EPA 24 hours a day.
- EOP** -- Emergency Operations Plan developed in accord with the guidance in CPG 1-8. EOPs are multi-hazard, functional plans that treat emergency management activities generically. EOPs provide for as much generally applicable capability as possible without reference to any particular hazard; then they address the unique aspects of individual disasters in hazard-specific appendices.
- FAULT-TREE ANALYSIS** -- A means of analyzing hazards. Hazardous events are first identified by other techniques such as HAZOP. Then all combinations of individual failures that can lead to that hazardous event are shown in the logical format of the fault tree. By estimating the individual failure probabilities, and then using the appropriate arithmetical expressions, the top-event frequency can be calculated.
- FEMA-REP-5** -- Guidance for Developing State and Local Radiological Emergency Response Plans and Preparedness for Transportation Accidents, prepared by FEMA. Provides a basis for State and local governments to develop emergency plans and improve emergency preparedness for transportation accidents involving radioactive materials.
- HAZARDOUS MATERIALS** -- Refers generally to hazardous substances, petroleum, natural gas, synthetic gas, acutely toxic chemicals, and other toxic chemicals.
- HAZOP** -- Hazard and operability study, a systematic technique for identifying hazards or operability problems throughout an entire facility. One examines each segment of a process and lists all possible deviations for normal operating conditions and how they might occur. The consequences on the process are assessed, and the means available to detect and correct the deviations are examined.
- HIT** -- Hazard Information Transmission program provides a digital transmission of the CHEMTREC emergency chemical report to first responders at the scene of a hazardous materials incident. The report advises the responder on the hazards of the materials, the level of protective clothing required, mitigating action to take in the event of a spill, leak or fire, and first aid for victims. HIT is a free public service provided by the Chemical Manufacturers Association. Reports are sent in emergency situations only to organizations that have pre-registered with HIT. Brochures and registration forms may be obtained by writing: Manager, CHEMTREC/CHEMNET, 2501 M Street, N.W., Washington, DC, 20037.

APPENDIX C (Continued)

GLOSSARY

- ICS** --- Incident Command System, the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure with responsibility for management of assigned resources to effectively accomplish stated objectives at the scene of an incident.
- IEMS** --- Integrated Emergency Management System, developed by FEMA in recognition of the economies realized in planning for all hazards on a generic functional basis as opposed to developing independent structures and resources to deal with each type of hazard.
- NCP** --- National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), prepared by EPA to put into effect the response powers and responsibilities created by CERCLA and the authorities established by Section 311 of the Clean Water Act.
- NFA** --- The National Fire Academy is a component of FEMA's National Emergency Training Center located in Emmitsburg, Maryland. It provides fire prevention and control training for the fire service and allied services. Courses on campus are offered in technical, management, and prevention subject areas. A growing off-campus course delivery system is operated in conjunction with State fire training program offices.
- NHMIE** --- National Hazardous Materials Information Exchange, provides information on hazmat training courses, planning techniques, events and conferences, and emergency response experiences and lessons learned. Call toll-free 1-800-752-6367 (in Illinois, 1-800-367-9592). Planners with personal computer capabilities can access NHMIE by dialing FTS 972-3275 or (312) 972-3275.
- NRC** --- National Response Center, a communications center for activities related to response actions, is located at Coast Guard headquarters in Washington, DC. The NRC receives and relays notices of discharges or releases to the appropriate OSC, disseminates OSC and RRT reports to the NRT when appropriate, and provides facilities for the NRT to use in coordinating a national response action when required. The toll-free number (800-424-8802, or 202-426-2675 or 202-267-2675 in the Washington, DC area) can be reached 24 hours a day for reporting actual or potential pollution incidents.
- NRT** --- National Response Team, consisting of representatives of 14 government agencies (DOD, DOI, DOT/RSPA, DOT/USCG, EPA, DOC, FEMA, DOS, USDA, DOJ, HHS, DOL, Nuclear Regulatory Commission, and DOE), is the principal organization for implementing the NCP. When the NRT is not activated for a response action, it serves as a standing committee to develop and maintain preparedness, to evaluate methods of responding to discharges or releases, to recommend needed changes in the re-

APPENDIX C (Continued)

GLOSSARY

sponse organization, and to recommend revisions to the NCP. The NRT may consider and make recommendations to appropriate agencies on the training, equipping, and protection of response teams; and necessary research, development, demonstration, and evaluation to improve response capabilities.

NSF

- National Strike Force, made up of three Strike Teams. The USCG counterpart to the EPA ERTs.

NUREG 0654/ FEMA-REP-1

- Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, prepared by NRC and FEMA. Provides a basis for State and local government and nuclear facility operators to develop radiological emergency plans and improve emergency preparedness. The criteria also will be used by Federal agency reviewers in determining the adequacy of State, local, and nuclear facility emergency plans and preparedness.

OHMTADS

- Oil and Hazardous Materials Technical Assistance Data System, a computerized data base containing chemical, biological, and toxicological information about hazardous substances. OSCs use OHMTADS to identify unknown chemicals and to learn how to best handle known chemicals.

OSC

- On-Scene Coordinator, the Federal official predesignated by EPA or USCG to coordinate and direct Federal responses and removals under the NCP; or the DOD official designated to coordinate and direct the removal actions from releases of hazardous substances, pollutants, or contaminants from DOD vessels and facilities. When the NRC receives notification of a pollution incident, the NRC Duty Officer notifies the appropriate OSC, depending on the location of an incident. Based on this initial report and any other information that can be obtained, the OSC makes a preliminary assessment of the need for a Federal response. If an on-scene response is required, the OSC will go to the scene and monitor the response of the responsible party or State or local government. If the responsible party is unknown or not taking appropriate action, and the response is beyond the capability of State and local governments, the OSC may initiate Federal actions, using funding from the FWPCA Pollution Fund for oil discharges and the CERCLA Trust Fund (Superfund) for hazardous substance releases.

PSTN

- Pesticide Safety Team Network operated by the National Agricultural Chemicals Association to minimize environmental damage and injury arising from accidental pesticide spills or leaks. PSTN area coordinators in ten regions nationwide are available 24 hours a day to receive pesticide incident notifications from CHEMTREC.

APPENDIX C (Continued)

GLOSSARY

- RCRA** -- Resource Conservation and Recovery Act (of 1976) established a framework for the proper management and disposal of all wastes. RCRA directed EPA to identify hazardous wastes, both generically and by listing specific wastes and industrial process waste streams. Generators and transporters are required to use good management practices and to track the movement of wastes with a manifest system. Owners and operators of treatment, storage, and disposal facilities also must comply with standards, which are generally implemented through permits issued by EPA or authorized States.
- RRT** -- Regional Response Teams composed of representatives of Federal agencies and a representative from each State in the Federal region. During a response to a major hazardous materials incident involving transportation or a fixed facility, the OSC may request that the RRT be convened to provide advice or recommendations in specific issues requiring resolution. Under the NCP, RRTs may be convened by the chairman when a hazardous materials discharge or release exceeds the response capability available to the OSC in the place where it occurs; crosses regional boundaries; or may pose a substantial threat to the public health, welfare, or environment, or to regionally significant amounts of property. Regional contingency plans specify detailed criteria for activation of RRTs. RRTs may review plans developed in compliance with Title III, if the local emergency planning committee so requests.
- SARA** -- The "Superfund Amendments and Reauthorization Act of 1986." Title III of SARA includes detailed provisions for community planning.
- Superfund** -- The trust fund established under CERCLA to provide money the OSC can use during a cleanup.
- Title III** -- The "Emergency Planning and Community Right-to-Know Act of 1986." Specifies requirements for organizing the planning process at the State and local levels for specified extremely hazardous substances; minimum plan content; requirements for fixed facility owners and operators to inform officials about extremely hazardous substances present at the facilities; and mechanisms for making information about extremely hazardous substances available to citizens. (See Appendix A.)

APPENDIX D

CRITERIA FOR ASSESSING STATE AND LOCAL PREPAREDNESS

C.1 INTRODUCTION

The criteria in this appendix, an adaptation of criteria developed by the Preparedness Committee of the NRT in August 1985, represent a basis for assessing a State or local hazardous materials emergency response preparedness program. These criteria reflect the basic elements judged to be important for a successful emergency preparedness program.

The criteria are separated into six categories, all of which are closely interrelated. These categories are hazards analysis, authority, organizational structure, communications, resources, and emergency planning.

These criteria may be used for assessing the emergency plan as well as the emergency preparedness program in general. **It must be recognized, however, that few State or local governments will have the need and/or capability to address all these issues and meet all these criteria to the fullest extent.** Resource limitations and the results of the hazards analysis will strongly influence the necessary degree of planning and preparedness. Those governmental units that do not have adequate resources are encouraged to seek assistance and take advantage of all resources that are available.

Other criteria exist that could be used for assessing a community's preparedness and emergency planning. These include FEMA's CPG 1-35 (Hazard Identification, Capability Assessment and Multi-Year Development Plan for Local Governments) and CPG 1-8A. Additionally, States may have issued criteria for assessing capability.

C.2 THE CRITERIA

C.2.1 Hazards Analysis

"Hazards Analysis" includes the procedures for determining the susceptibility or vulnerability of a geographical area to a hazardous materials release, for identifying potential sources of a hazardous materials release from fixed facilities that manufacture, process, or otherwise use, store, or dispose of materials that are generally considered hazardous in an unprotected environment. This also includes an analysis of the potential or probable hazard of transporting hazardous materials through a particular area.

A hazards analysis is generally considered to consist of identification of potential hazards, determination of the vulnerability of an area as a result of the existing hazards, and an assessment of the risk of a hazardous materials release or spill.

The following criteria may assist in assessing a hazards analysis:

- ☐ Has a hazards analysis been completed for the area? If one exists, when was it last updated?
- ☐ Does the hazards analysis include the location, quantity, and types of hazardous materials that are manufactured, processed, used, disposed, or stored within the appropriate area?

- ☐ Was it done in accordance with community right-to-know laws and prefire plans?
- ☐ Does it include the routes by which the hazardous materials are transported?
- ☐ Have areas of public health concern been identified?
- ☐ Have sensitive environmental areas been identified?
- ☐ Have historical data on spill incidents been collected and evaluated?
- ☐ Have the levels of vulnerability and probable locations of hazardous materials incidents been identified?
- ☐ Are environmentally sensitive areas and population centers considered in analyzing the hazards of the transportation routes and fixed facilities?

C.2.2 Authority

"Authority" refers to those statutory authorities or other legal authorities vested in any personnel, organizations, agencies, or other entities in responding to or being prepared for responding to hazardous materials emergencies resulting from releases or spills.

The following criteria may be used to assess the existing legal authorities for response actions:

- ☐ Do clear legal authorities exist to establish a comprehensive hazardous materials response mechanism (Federal, State, county, and local laws, ordinances, and policies)?
- ☐ Do these authorities delegate command and control responsibilities between the different organizations within the same level of government (horizontal), and/or provide coordination procedures to be followed?
- ☐ Do they specify what agency(ies) has (have) overall responsibility for directing or coordinating a hazardous materials response?
- ☐ Do they specify what agency(ies) has (have) responsibility for providing assistance or support for hazardous materials response and what comprises that assistance or support?
- ☐ Have the agency(ies) with authority to order evacuation of the community been identified?
- ☐ Have any limitations in the legal authorities been identified?

C.2.3 Organizational Structure

"Organization" refers to the organizational structure in place for responding to emergencies. This structure will, of course, vary considerably from State to State and from locality to locality.

There are two basic types of organizations involved in emergency response operations. The first is involved in the planning and policy decision process similar to the NRT and RRT. The second is the operational response group that functions within the precepts set forth in the State or local plan. Realizing that situations vary from State to State and

locality to locality and that emergency planning for the State and local level may involve the preparation of multiple situation plans or development of a single comprehensive plan, the criteria should be broadly based and designed to detect a potential flaw that would then precipitate a more detailed review.

- ☐ Are the following organizations included in the overall hazardous materials emergency preparedness activities?
 - Health organizations (including mental health organizations)
 - Public safety
 - fire
 - police
 - health and safety (including occupational safety and health)
 - other responders
 - Transportation
 - Emergency management/response planning
 - Environmental organizations
 - Natural resources agencies (including trustee agencies)
 - Environmental agencies with responsibilities for:
 - fire
 - health
 - water quality
 - air quality
 - consumer safety
 - Education system (in general)
 - public education
 - public information
 - Private sector interface
 - trade organizations
 - industry officials
 - Labor organizations
- ☐ Have each organization's authorities, responsibilities, and capabilities been determined for pre-response (planning and prevention), response (implementing the plan during an incident), and post-response (cleanup and restoration) activities?

- ☐ Has one organization been given the command and control responsibility for these three phases of emergency response?
- ☐ Has a "chain of command" been established for response control through all levels of operation?
- ☐ Are the roles, relationships, and coordination procedures between government and non-government (private entities) delineated? Are they understood by all affected parties? How are they instituted (written, verbal)?
- ☐ Are clear interrelationships, and coordination procedures between government and non-government (private entities) delineated? Are they understood by all affected parties? How are they instituted (written, verbal)?
- ☐ Are the agencies or departments that provide technical guidance during a response the same agencies or departments that provide technical guidance in non-emergency situations? In other words, does the organizational structure vary with the type of situation to be addressed?
- ☐ Does the organizational structure provide a mechanism to meet regularly for planning and coordination?
- ☐ Does the organizational structure provide a mechanism to regularly exercise the response organization?
- ☐ Has a simulation exercise been conducted within the last year to test the organizational structure?
- ☐ Does the organizational structure provide a mechanism to review the activities conducted during a response or exercise to correct shortfalls?
- ☐ Have any limitations within the organizational structure been identified?
- ☐ Is the organizational structure compatible with the Federal response organization in the NCP?
- ☐ Have trained and equipped incident commanders been identified?
- ☐ Has the authority for site decisions been vested in the incident commanders?
- ☐ Have the funding sources for a response been identified?
- ☐ How quickly can the response system be activated?

C.2.4 Communication

"Communication" means any form or forms of exchanging information or ideas for emergency response with other entities, either internal or external to the existing organizational structure.

Coordination:

- ☐ Have procedures been established for coordination of information during a response?
- ☐ Has one organization been designated to coordinate communications activities?

- ☐ Have radio frequencies been established to facilitate coordination between different organizations?

Information Exchange:

- ☐ Does a formal system exist for information sharing among agencies, organizations, and the private sector?
- ☐ Has a system been established to ensure that "lessons learned" are passed to the applicable organizations?

Information Dissemination:

- ☐ Has a system been identified to carry out public information/community relations activities?
- ☐ Has one organization or individual been designated to coordinate with or speak to the media concerning the release?
- ☐ Is there a communication link with an Emergency Broadcast System (EBS) point of entry (CPCS-1) station?
- ☐ Does a communications system/method exist to disseminate information to responders, affected public, etc.?
- ☐ Is this system available 24-hours per day?
- ☐ Have alternate systems/methods of communications been identified for use if the primary method fails?
- ☐ Does a mechanism exist to keep telephone rosters up-to-date?
- ☐ Are communications networks tested on a regular basis?

Information Sources and Database Sharing:

- ☐ Is a system available to provide responders with rapid information on the hazards of chemicals involved in an incident?
- ☐ Is this information available on a 24-hour basis? Is it available in computer software?
- ☐ Is a system in place to update the available information sources?

Notification Procedures:

- ☐ Have specific procedures for notification of a hazardous materials incident been developed?
- ☐ Are multiple notifications required by overlapping requirements (e.g., State, county, local each have specific notification requirements)?
- ☐ Does the initial notification system have a standardized list of information that is collected for each incident?
- ☐ Does a network exist for notifying and activating necessary response personnel?

- ☐ Does a network exist for notifying or warning the public of potential hazards resulting from a release? Does this network have provisions for informing the public what hazards to expect, what precautions to take, whether evacuation is required, etc.?
- ☐ Has a central location or phone number been established for initial notification of an incident?
- ☐ Is the central location or phone number accessible on a 24-hour basis?
- ☐ Does the central location phone system have the ability to expand to a multiple line system during an emergency?

Clearinghouse Functions:

- ☐ Has a central clearinghouse for hazardous materials information been established with access by the public and private sector?

C.2.5 Resources

"Resource" means the personnel, training, equipment, facilities, and other sources available for use in responding to hazardous materials emergencies. To the extent that the hazards analysis has identified the appropriate level of preparedness for the area, these criteria may be used in evaluating available resources of the jurisdiction undergoing review.

Personnel:

- ☐ Have the numbers of trained personnel available for hazardous materials been determined?
- ☐ Has the location of trained personnel available for hazardous materials been determined? Are these personnel located in areas identified in the hazards analysis as:
 - heavily populated;
 - high hazard areas – i.e., numbers of chemical (or other hazardous materials) production facilities in well-defined areas;
 - hazardous materials storage, disposal, and/or treatment facilities; and
 - transit routes?
- ☐ Are sufficient personnel available to maintain a given level of response capability identified as being required for the area?
- ☐ Has the availability of special technical expertise (chemists, industrial hygienists, toxicologists, occupational health physicians, etc.) necessary for response been identified?
- ☐ Have limitations on the use of above personnel resources been identified?
- ☐ Do mutual aid agreements exist to facilitate interagency support between organizations?

Training:

- ☐ Have the training needs for the State/local area been identified?
- ☐ Are centralized response training facilities available?
- ☐ Are specialized courses available covering topics such as:
 - organizational structures for response actions (i.e., authorities and coordination);
 - response actions;
 - equipment selection, use, and maintenance; and
 - safety and first aid?
- ☐ Does the organizational structure provide training and cross training for or between organizations in the response mechanism?
- ☐ Does an organized training program for all involved response personnel exist? Has one agency been designated to coordinate this training?
- ☐ Have training standards or criteria been established for a given level of response capability? Is any certification provided upon completion of the training?
- ☐ Has the level of training available been matched to the responsibilities or capabilities of the personnel being trained?
- ☐ Does a system exist for evaluating the effectiveness of training?
- ☐ Does the training program provide for "refresher courses" or some other method to ensure that personnel remain up-to-date in their level of expertise?
- ☐ Have resources and organizations available to provide training been identified?
- ☐ Have standardized curricula been established to facilitate consistent Statewide training?

Equipment:

- ☐ Have response equipment requirements been identified for a given level of response capability?
- ☐ Are the following types of equipment available?
 - personal protective equipment
 - first aid and other medical emergency equipment
 - emergency vehicles available for hazardous materials response
 - sampling equipment (air, water, soil, etc.) and other monitoring devices (e.g., explosivity meters, oxygen meters)
 - analytical equipment or facilities available for sample analyses

- fire-fighting equipment/other equipment and material (bulldozers, boats, helicopters, vacuum trucks, tank trucks, chemical retardants, foam)
- ☐ Are sufficient quantities of each type of equipment available on a sustained basis?
- ☐ Is all available equipment capable of operating in the local environmental conditions?
- ☐ Are up-to-date equipment lists maintained? Are they computerized?
- ☐ Are equipment lists available to all responders?
- ☐ Are these lists broken down into the various types of equipment (e.g., protective clothing, monitoring instruments, medical supplies, transportation equipment)?
- ☐ Is there a mechanism to ensure that the lists are kept up-to-date?
- ☐ Have procedures necessary to obtain equipment on a 24-hour basis been identified?
- ☐ Does a program exist to carry out required maintenance of equipment?
- ☐ Are there maintenance and repair records for each piece of equipment?
- ☐ Have mutual aid agreements been established for the use of specialized response equipment?
- ☐ Is sufficient communications equipment available for notifying personnel or to transmit information? Is the equipment of various participating agencies compatible?
- ☐ Is transportation equipment available for moving equipment rapidly to the scene of an incident, and its state of readiness assured?

Facilities:

- ☐ Have facilities capable of performing rapid chemical analyses been identified?
- ☐ Do adequate facilities exist for storage and cleaning/reconditioning of response equipment?
- ☐ Have locations or facilities been identified for the storage, treatment, recycling, and disposal of wastes resulting from a release?
- ☐ Do adequate facilities exist for carrying out training programs?
- ☐ Do facilities exist that are capable of providing medical treatment to persons injured by chemical exposure?
- ☐ Have facilities and procedures been identified for housing persons requiring evacuation or temporary relocation as a result of an incident?
- ☐ Have facilities been identified that are suitable for command centers?

C.2.6 Emergency Plan

The emergency plan, while it relates to many of the above criteria, also stands alone as a means to assess preparedness at the State and local level of government, and in the private sector. The following questions are directed more toward evaluating the plan rather than determining the preparedness level of the entity that has developed the plan. It is not sufficient to ask if there is a plan, but rather to determine if the plan that does exist adequately addresses the needs of the community or entity for which the plan was developed.

- ☐ Have the levels of vulnerability and probable locations of hazardous materials incidents been identified in the plan?
- ☐ Have areas of public health concern been identified in the plan?
- ☐ Have sensitive environmental areas been identified in the plan?
- ☐ For the hazardous materials identified in the area, does the plan include information on the chemical and physical properties of the materials, safety and emergency response information, and hazard mitigation techniques? (NOTE: It is not necessary that all this information be included in the emergency plan; the plan should, however, at least explain where such information is available.)
- ☐ Have all appropriate agencies, departments, or organizations been involved in the process of developing or reviewing the plan?
- ☐ Have all the appropriate agencies, departments, or organizations approved the plan?
- ☐ Has the organizational structure and notification list defined in the plan been reviewed in the last six months?
- ☐ Is the organizational structure identified in the plan compatible with the Federal response organization in the NCP?
- ☐ Has one organization been identified in the plan as having command and control responsibility for the pre-response, response, and post response phases?
- ☐ Does the plan define the organizational responsibilities and relationships among city, county, district, State, and Federal response agencies?
- ☐ Are all organizations that have a role in hazardous materials response identified in the plan (public safety and health, occupational safety and health, transportation, natural resources, environmental, enforcement, educational, planning, and private sector)?
- ☐ Are the procedures and contacts necessary to activate or deactivate the organization clearly given in the plan for the pre-response, response, and post-response phases?
- ☐ Does the organizational structure outlined in the plan provide a mechanism to review the activities conducted during a response or exercise to correct short-falls?
- ☐ Does the plan include a communications system/method to disseminate information to responders, affected public, etc.?

- ☐ Has a system been identified in the plan to carry out public information/community relations activities?
- ☐ Has a central location or phone number been included in the plan for initial notification of an incident?
- ☐ Have trained and equipped incident commanders been identified in the plan?
- ☐ Does the plan include the authority for vesting site decisions in the incident commander?
- ☐ Have government agency personnel that may be involved in response activities been involved in the planning process?
- ☐ Have local private response organizations (e.g., chemical manufacturers, commercial cleanup contractors) that are available to assist during a response been identified in the plan?
- ☐ Does the plan provide for frequent training exercises to train personnel or to test the local contingency plans?
- ☐ Are lists/systems that identify emergency equipment available to response personnel included in the plan?
- ☐ Have locations of materials most likely to be used in mitigating the effects of a release (e.g., foam, sand, lime) been identified in the plan?
- ☐ Does the plan address the potential needs for evacuation, what agency is authorized to order or recommend an evacuation, how it will be carried out, and where people will be moved?
- ☐ Has an emergency operating center, command center, or other central location with the necessary communications capabilities been identified in the plan for coordination of emergency response activities?
- ☐ Are there follow-up response activities scheduled in the plan?
- ☐ Are there procedures for updating the plan?
- ☐ Are there addenda provided with the plan, such as: laws and ordinances, statutory responsibilities, evacuation plans, community relations plan, health plan, and resource inventories (personnel, equipment, maps [not restricted to road maps], and mutual aid agreements)?
- ☐ Does the plan address the probable simultaneous occurrence of different types of emergencies (e.g., power outage and hazardous materials releases) and the presence of multiple hazards (e.g., flammable and corrosive) during hazardous materials emergencies?

APPENDIX E

BIBLIOGRAPHY

General Emergency Planning for Hazardous Materials

American Institute of Chemical Engineers, Center for Chemical Plant Safety. *Guidelines for Hazard Evaluation Procedures*. Washington, DC: A.I.Ch.E., 1985.

American Society of Testing & Materials. *Toxic and Hazardous Industrial Chemicals Safety Manual*. 1983.

Association of Bay Area Governments. *San Francisco Bay Area: Hazardous Spill Prevention and Response Plan*. Volumes I & II. Berkeley, CA: 1983.

Avoiding and Managing Environmental Damage from Major Industrial Accidents. Proc. of Conference of the Air Pollution Control Association. 1985.

Bretherick, L. *Handbook of Reactive Chemical Hazards*. 2nd ed. Butterworth, 1979.

Brinsko, George A. et al. *Hazardous Material Spills and Responses for Municipalities*. (EPA-600/2-80-108, NTIS PB80-214141). 1980.

Cashman, John R. *Hazardous Materials Emergencies: Response and Control*. 1983.

Chemical Manufacturers Association. *Community Awareness and Emergency Response Program Handbook*. Washington, DC: CMA, 1985.

Chemical Manufacturers Association. *Community Emergency Response Exercise Program*. Washington, DC: CMA, 1986.

Chemical Manufacturers Association. *Risk Analysis in the Chemical Industry - Proceedings of a Symposium*. Rockville, MD: Government Institutes, Inc., 1985.

Chemical Manufacturers Association. *Site Emergency Response Planning*. Washington, DC: CMA, 1986.

Copies of the CMA guides can be obtained by writing to:

Publications Fulfillment
Chemical Manufacturers Association
2501 M Street, N.W.
Washington, D.C. 20037

Emergency Management and Civil Defense Division, Consolidated City of Indianapolis. *Final Report: Demonstration Project to Develop a Hazardous Materials Accident Prevention and Emergency Response Program, Phases I, II, III, IV*. Indianapolis: 1983.

Energy Resources Co., Inc.; Cambridge Systematics, Inc.; Massachusetts Department of Environmental Quality Engineering. *Demonstration Project to Develop a Hazardous Materials Accident Prevention and Emergency Response Program for the Commonwealth of Massachusetts*. Volumes I & II. Cambridge and Boston, MA: 1983.

Environmental and Safety Design, Inc. *Development of a Hazardous Materials Accident Prevention and an Emergency Response Program*. Memphis, TN: 1983.

Federal Emergency Management Agency. *Disaster Operations: A Handbook for Local Governments*. Washington, DC: 1981.

Federal Emergency Management Agency. *Hazard Identification, Capability Assessment, and Multi-Year Development Plan for Local Governments*. CPG 1-35, Washington, DC: 1985.

Federal Emergency Management Agency. *Objectives for Local Emergency Management*. CPG 1-5, Washington, DC: 1984.

Federal Emergency Management Agency. *Professional Development Series: Emergency Planning -- Student Manual*. Washington, DC.

Federal Emergency Management Agency. *Professional Development Series: Introduction to Emergency Management -- Student Manual*. Washington, DC.

Gabor, T. and T.K. Griffith. *The Assessment of Community Vulnerability to Acute Hazardous Materials Incidents*. Newark, DE: University of Delaware, 1985.

Government Institutes, Inc. Md. R.C.R.A. *Hazardous Waste Handbook*. Volumes 1 & 2. 1981.

Green, Don W., ed. *Perry's Chemical Engineers' Handbook*. 6th ed. McGraw-Hill, 1984.

Hawley, Gessner G., ed. *Condensed Chemical Dictionary*. 10th ed. New York: Van Nostrand Reinhold, 1981.

Hildebrand, Michael S. *Disaster Planning Guidelines for Fire Chiefs*. Washington, DC: International Association of Fire Chiefs, 1980.

Multnomah County Office of Emergency Management. *Hazardous Materials Management System: A Guide for Local Emergency Managers*. Portland, OR: 1983.

National Fire Protection Association. *Fire Protection Guide on Hazardous Materials*. Boston: NFPA, 1986.

National Institute of Occupational Safety and Health. *Pocket Guide to Chemical Hazards*. Washington, DC: DHEW (NIOSH) 78-210, 1985. (GPO Stock No. 017-033-00342-4)

New Orleans, City of. *Demonstration Project to Develop a Hazardous Materials Accident Prevention and Emergency Response Program for the City of New Orleans, Phases I, II, III, IV*. New Orleans: 1983.

Portland Office of Emergency Management. *Hazardous Materials Hazard Analysis*. Portland, OR: 1981.

Puget Sound Council of Governments. *Hazardous Materials Demonstration Project Report: Puget Sound Region*. Seattle, WA: 1981.

Sax, N. Irving. *Dangerous Properties of Industrial Materials*. 6th ed. New York: Van Nostrand Reinhold, 1984.

Sittig, Marshall. *Handbook of Toxic and Hazardous Chemicals and Carcinogens*. Noyes, 1985.

Smith, Al J. *Managing Hazardous Substances Accidents*. 1981.

U.S. Department of Transportation. *CHRIS: Manual I, A Condensed Guide to Chemical Hazards*. U.S. Coast Guard, 1984.

U.S. Department of Transportation. *CHRIS: Manual II, Hazardous Chemical Data*. U.S. Coast Guard, 1984.

U.S. Department of Transportation. *Emergency Response Guidebook*. Washington, DC: 1984.

U.S. Environmental Protection Agency. *Community Relations in Superfund: A Handbook*. Washington, DC.

U.S. Environmental Protection Agency. *The National Oil and Hazardous Substances Pollution Contingency Plan*. 40 CFR 300.

Verschuaren, Karel. *Handbook of Environmental Data on Organic Chemicals*. 2nd ed. New York: Van Nostrand Reinhold, 1983.

Waste Resource Associates, Inc. *Hazmat - Phases I, II, III, IV: Demonstration Project to Develop a Hazardous Materials Accident Prevention and Emergency Response Program*. Niagara Falls, NY: 1983.

Zajic, J.E. and W.A. Himmelman. *Highly Hazardous Material Spills and Emergency Planning*. Dekker, 1978.

Transportation Emergency Planning

American Trucking Associations. *Handling Hazardous Materials*. Washington, DC: 1980.

Association of American Railroads. *Emergency Action Guides*. Washington, DC: 1984.

Association of American Railroads. *Emergency Handling of Hazardous Materials In Surface Transportation*. Washington, DC: 1981.

Battelle Pacific Northwest Laboratories. *Hazardous Material Transportation Risks in the Puget Sound Region*. Seattle, WA: 1981.

Portland Office of Emergency Management. *Establishing Routes for Trucks Hauling Hazardous Materials: The Experience in Portland, Oregon*. Portland, Oregon; 1984.

Portland Office of Emergency Management. *Hazardous Materials Highway Routing Study: Final Report*. Portland, OR: 1984.

Russell, E.R., J.J. Smaltz, et al. *A Community Model for Handling Hazardous Materials Transportation Emergencies: Executive Summaries*. Washington, DC: U.S. Department of Transportation, January 1986.

Russell, E.R., J.J. Smaltz, et al. *Risk Assessment/Vulnerability Users Manual for Small Communities and Rural Areas*. Washington, DC: U.S. Department of Transportation, March 1986.

Russell, E.R., W. Brumgardt, et al. *Risk Assessment/Vulnerability Validation Study Volume 2: 11 Individual Studies*. Washington, DC: U.S. Department of Transportation, June 1983.

Urban Consortium Transportation Task Force. *Transportation of Hazardous Materials*. Washington, DC: U.S. Department of Transportation, September 1980.

Urban Systems Associates, Inc., St. Bernard Parish Planning Commission. *St. Bernard Parish: Hazardous Materials Transportation and Storage Study*. New Orleans, LA: 1981.

Urganek, G. and E. Barber. *Development of Criteria to Designate Routes for Transporting Hazardous Materials*. Springfield, VA: National Technical Information Service, 1980.

U.S. Department of Transportation. *Community Teamwork: Working Together to Promote Hazardous Materials Transportation Safety*. Washington, DC: 1983.

U.S. Department of Transportation. *A Guide for Emergency Highway Traffic Regulation*. Washington, DC: 1985.

U.S. Department of Transportation. *A Guide to the Federal Hazardous Transportation Regulatory Program*. Washington, DC: 1983.

U.S. Department of Transportation. *Guidelines for Selecting Preferred Highway Routes for Highway Route Controlled Quantity Shipments of Radioactive Materials*. Washington, DC: 1984.

U.S. Department of Transportation and U.S. Environmental Protection Agency. *Lessons Learned from State and Local Experiences in Accident Prevention and Response Planning for Hazardous Materials Transportation*. Washington, DC, December 1985.

U.S. Department of Transportation. Three-Phase/Four-Volume report: Volume I, *A Community Model for Handling Hazardous Materials Transportation Emergencies*; Volume II, *Risk Assessment Users Manual for Small Communities and Rural Areas*; Volume III, *Risk Assessment/Vulnerability Model Validation*; and, Volume IV, *Manual for Small Towns and Rural Areas to Develop A Hazardous Materials Emergency Plan*. 7/81 - 12/85. Document is available to the U.S. Public through the National Technical Information Service, Springfield, VA. 22161.

Transportation Research Board. *Transportation of Hazardous Materials: Toward a National Strategy*. Volumes 1 & 2. Washington, DC: 1983.

Spill Containment and Cleanup

Guswa, J.H. *Groundwater Contamination and Emergency Response Guide*. Noyes, 1984.

U.S. Environmental Protection Agency. *State Participation in the Superfund Remedial Program*. Washington, DC: 1984.

Personal Protection

International Association of Fire Chiefs. *Fire Service Emergency Management Handbook*. Washington, DC: 1985.

National Institute of Occupational Safety and Health. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*. Washington, DC: DHHS Publication No. 85-115, 1985.

U.S. Environmental Protection Agency. *Standard Operating Safety Guides*. Washington, DC: 1984.

VIDEOTAPES

The following videotapes are available from the Chemical Manufacturers Association:

- ☐ CAER: "Reaching Out"
- ☐ CAER: "How a Coordinating Group Works"
- ☐ CAER: "Working with the Media"
- ☐ CAER: "Planning and Conducting Emergency Exercises"
- ☐ NCRIC: "First on the Scene"

The following videotapes are available from FEMA's National Emergency Training Center/Learning Resource Center/Emergency Management Information Center:

- ☐ "Livingston, LA, Hazardous Materials Spills" (September 28, 1982)
- ☐ "Waverly, TN, Hazardous Materials Blast" (February 22, 1978)

Also available for purchase from FEMA's National Emergency Training Center (see p. F-1 for address and telephone number) are videotapes of teleconferences produced by FEMA's Emergency Education Network (EENET). One available teleconference is:

- ☐ "Emergency Exercises -- Getting Involved in Community Preparedness," originally seen on December 11, 1986, and co-sponsored by FEMA, EPA, DOT/RSPA, USOCG, and CMA.

The following documentary videotape (produced by the League of Women Voters of California and available from Bullfrog Films, Oley PA, 19547) provides public education on the nature and need for local emergency planning and hazardous materials data bases from a citizen's perspective.

- ☐ "Toxic Chemicals: Information Is The Best Defense"



APPENDIX F
FEDERAL AGENCY ADDRESSES

1. NATIONAL OFFICES

Federal Emergency Management Agency
Technological Hazards Division
Federal Center Plaza
500 C Street, S.W.
Washington, DC 20472
(202) 646-2861

Department of Labor
Occupational Safety & Health Admin.
Directorate of Field Operations
200 Constitution Avenue, N.W.
Washington, DC 20210
(202) 523-7741

FEMA National Emergency Training Center
Emmitsburg, MD 21727
(301) 447-6771

U.S. Coast Guard (G-MER)
Marine Environmental Response Division
2100 2nd Street, S.W.
Washington, DC 20593
(202) 267-2010 (info.)

U.S. Environmental Protection Agency
OSWER Preparedness Staff
401 M Street, S.W.
Washington, DC 20460
(202) 475-8600
CEPP Hotline: 1-800-535-0202
(479-2449 in Washington, DC area)

NATIONAL RESPONSE CENTER:
1-800-424-8802
(202-426-2675 or 202-267-2675 in
Washington, DC area)

U.S. Environmental Protection Agency
OERR Emergency Response Division
401 M Street, S.W.
Washington, DC 20460
(202) 475-8720

U.S. Dept. of Transportation
Research and Special Programs Admin.
Office of Hazardous Materials
Transportation (Attention: DHM-50)
400 7th Street, S.W.
Washington, DC 20590
(202) 366-4000

Agency for Toxic Substances
and Disease Registry
Department of Health & Human Services
Chamblee Building 30S
Atlanta, GA 30333
(404) 452-4100

Department of Justice
Environmental Enforcement Section
Room 7313
10th and Constitution, N.W.
Washington, DC 20530
(202) 633-3646

U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585
(202) 252-5000

Department of the Interior
18th and C St., N.W.
Washington, DC 20240
(202) 343-3891

Department of Agriculture
Forest Service
P.O. Box 96090
Washington, DC 20013-6090
(703) 235-8019

Department of Commerce
NOAA -- Superfund Program Coordinator
11400 Rockville Pike
Rockville, MD 20852
(301) 443-8465

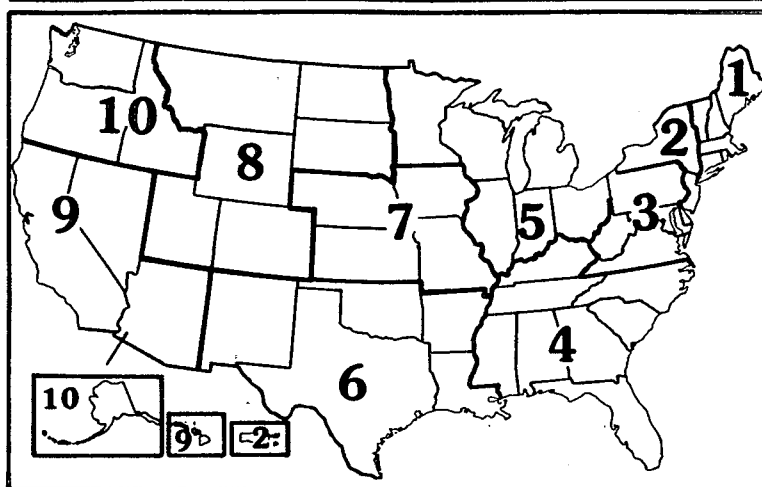
Department of Defense
OASD (A+L)E
Room 3D 833
The Pentagon
Washington, DC 20301-8000
(202) 695-7820

Department of State
Office of Oceans and Polar Affairs
Room 5801
2201 C St., N.W.
Washington, DC 20520
(202) 647-3263

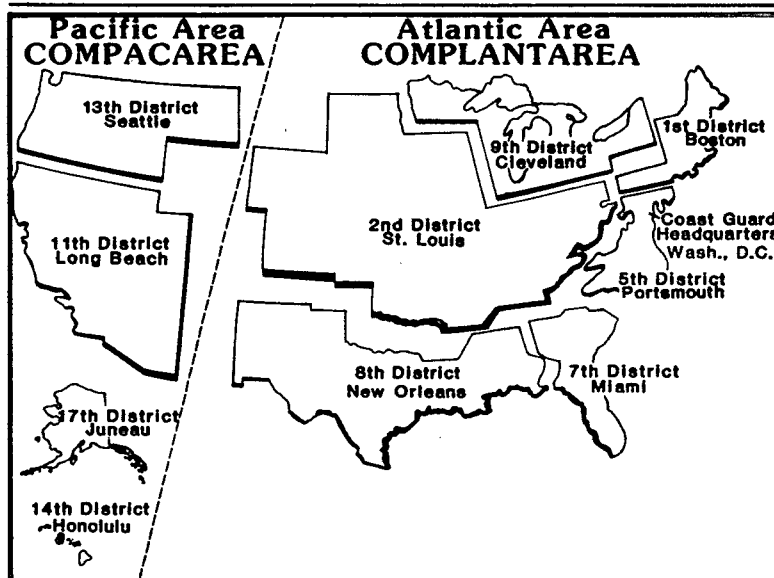
Nuclear Regulatory Commission
Washington, DC 20555
(301) 492-7000

2. REGIONAL OFFICES

EPA, FEMA, HHS, ATSDR, OSHA Regional Offices



U.S. COAST GUARD DISTRICTS



1



4



2. REGIONAL OFFICES

A. EPA Regional Offices

(Note: Direct all requests to the "EPA Regional Preparedness Coordinator" (RPC) of the appropriate EPA Regional office.)

Region I

(Connecticut, Maine, Massachusetts,
New Hampshire, Rhode Island, Vermont)

John F. Kennedy Building, Rm. 2203
Boston, MA 02203
(617) 565-3715
RPC: (617) 861-6700

Region II

(New Jersey, New York, Puerto Rico,
Virgin Islands)

26 Federal Plaza, Room 900
New York, NY 10278
(212) 264-2525
RPC: (201) 321-6657

Region III

(Delaware, Washington DC, Maryland,
Pennsylvania, Virginia, West Virginia)

841 Chestnut Street
Philadelphia, PA 19107
(215) 597-9800
RPC: (215) 597-8907

Region IV

(Alabama, Florida, Georgia, Kentucky,
Mississippi, North Carolina,
South Carolina, Tennessee)

345 Courtland, Street, N.E.
Atlanta, GA 30365
(404) 347-4727
RPC: (404) 347-3931

Region V

(Illinois, Indiana, Michigan,
Minnesota, Ohio, Wisconsin)

230 S. Dearborn Street
Chicago, IL 60604
(312) 353-2000
RPC: (312) 886-1964

Region VI

(Arkansas, Louisiana, New Mexico,
Oklahoma, Texas)

1445 Ross Avenue, 12th Floor
Dallas, TX 75202-2733
(214) 655-6444
RPC: (214) 655-2270

Region VII

(Iowa, Kansas, Missouri, Nebraska)

726 Minnesota Avenue
Kansas City, KS 66101
(913) 236-2800
RPC: (913) 236-2806

Region VIII

(Colorado, Montana, North Dakota,
South Dakota, Utah, Wyoming)

One Denver Place
999 18th Street, Suite 1300
Denver, CO 80202-2413
(303) 293-1603
RPC: (303) 293-1723

Region IX

(Arizona, California, Hawaii, Nevada,
American Samoa, Guam)

215 Fremont Street
San Francisco, CA 94105
(415) 974-8071
RPC: (415) 974-7460

Region X

(Alaska, Idaho, Oregon, Washington)

1200 6th Avenue
Seattle, WA 98101
(206) 442-5810
RPC: (206) 442-1263

B. FEMA Regional Offices

(Note: Direct all requests to the "Hazmat Program Staff" of the appropriate FEMA Regional office.)

Region I

(Connecticut, Maine, Massachusetts,
New Hampshire, Rhode Island, Vermont)

442 J.W. McCormack POCH
Boston, MA 02109
(617) 223-9540

Region II

(New Jersey, New York, Puerto Rico,
Virgin Islands)

Room 1337
26 Federal Plaza
New York, NY 10278
(212) 264-8980

Region III

(Delaware, Washington DC, Maryland,
Pennsylvania, Virginia, West Virginia)

Liberty Square Building
105 S. 7th Street
Philadelphia, PA 19106
(215) 597-9416

Region IV

(Alabama, Florida, Georgia, Kentucky,
Mississippi, North Carolina,
South Carolina, Tennessee)

Suite 700
1371 Peachtree Street, N.E.
Atlanta, GA 30309
(404) 347-2400

Region V

(Illinois, Indiana, Michigan,
Minnesota, Ohio, Wisconsin)

24th Floor
300 S. Wacker Drive
Chicago, IL 60606
(312) 353-8661

Region VI

(Arkansas, Louisiana, New Mexico,
Oklahoma, Texas)

Federal Regional Center, Room 206
800 N. Loop 288
Denton, TX 76201-3698
(817) 387-5811

Region VII

(Iowa, Kansas, Missouri, Nebraska)

911 Walnut Street, Room 300
Kansas City, MO 64106
(816) 374-5912

Region VIII

(Colorado, Montana, North Dakota,
South Dakota, Utah, Wyoming)

Denver Federal Center, Building 710
Box 25267
Denver, CO 80225-0267
(303) 235-4811

Region IX

(Arizona, California, Hawaii, Nevada,
American Samoa, Guam)

Building 105
Presidio of San Francisco, CA 94129
(415) 923-7000

Region X

(Alaska, Idaho, Oregon, Washington)

Federal Regional Center
130 228th St., S.W.
Bothell, WA 98021-9796
(206) 481-8800

C. HHS REGIONAL OFFICES

(Note: Consult the map on Page F-3 to determine which States are assigned to each Region.)

Region I

Division of Preventive Health Services
John Fitzgerald Kennedy Building
Boston, Massachusetts 02203
(617) 223-4045

Region II

Division of Preventive Health Services
Federal Building
26 Federal Plaza, Room 3337
New York, New York 10278
(212) 264-2485

Region III

Division of Preventive Health Services
Gateway Building #1
Post Office Box 13716
Philadelphia, Pennsylvania 19101
(215) 596-6650

Region IV

Division of Preventive Health Services
101 Marietta Tower
Atlanta, Georgia 30323
(404) 331-2313

Region V

Division of Preventive Health Services
300 South Wacker Drive
Chicago, Illinois 60606
(312) 353-3652

Region VI

Division of Preventive Health Services
1200 Main Tower Building, Room 1835
Dallas, Texas 75202
(214) 767-3916

Region VII

Division of Preventive Health Services
601 East 12th Street
Kansas City, Missouri 64106
(816) 374-3491

Region VIII

Division of Preventive Health Services
1185 Federal Building
1961 Stout Street
Denver, Colorado 80294
(303) 844-6166, ext. 28

Region IX

Division of Preventive Health Services
50 United Nations Plaza
San Francisco, California 94102
(415) 556-2219

Region X

Division of Preventive Health Services
2901 Third Avenue, M.S. 402
Seattle, Washington 98121
(206) 442-0502

**D. ATSDR PUBLIC HEALTH ADVISORS ASSIGNED TO
EPA REGIONAL OFFICES**

(Note: Consult the map on Page F-3 to determine which States are assigned to each Region.)

Region I

ATSDR Public Health Advisor
EPA Superfund Office
Room 1903
John F. Kennedy Building
Boston, MA 02203
(617) 861-6700

Region II

ATSDR Public Health Advisor
Emergency & Remedial Response
Room 737
26 Federal Plaza
New York, New York 10007
(212) 264-8676

Region III

ATSDR Public Health Advisor
EPA Superfund Office
841 Chestnut Street, 6th Floor
Philadelphia, PA 19106
(215) 597-7291

Region IV

ATSDR Public Health Advisor
Air & Waste Management Division
345 Courtland Street, N.E.
Atlanta, GA 30365
(404) 347-3931/2

Region V

ATSDR Public Health Advisor
Emergency & Remedial Branch (5HR)
230 S. Dearborn
Chicago, IL 60604
(312) 886-9293

Region VI

ATSDR Public Health Advisor
EPA Superfund Office
1201 Elm Street
Dallas, TX 75270
(214) 767-9872

Region VII

ATSDR Public Health Advisor
Waste Management Branch
726 Minnesota Avenue
Kansas City, KS 66101
(913) 236-2856

Region VIII

ATSDR Public Health Advisor
Waste Management Division
1860 Lincoln Street
Denver, CO 80295
(303) 293-1526

Region IX

ATSDR Public Health Advisor
Toxics & Waste Management Division
215 Freemont Street
San Francisco, CA 94105
(415) 974-7742
Mailing address: P.O. Box 2453
Daly City, CA 94017

Region X

ATSDR Public Health Advisor
Hazardous Waste (M/S 525)
1200 6th Avenue
Seattle, WA 98101
(206) 442-2711

E. OSHA REGIONAL OFFICES

(Note: Consult the map on Page F-3 to determine which States are assigned to each Region.)

Region I

16-18 North Street - 4th Floor
1 Dock Square Building
Boston, Massachusetts 02109
(617) 223-6710

Region II

1515 Broadway (1 Astor Plaza)
Room 3445
New York, New York 10036
(212) 944-3432

Region III

Gateway Building - Suite 2100
3535 Market Street
Philadelphia, Pennsylvania 19104
(215) 596-1201

Region IV

1375 Peachtree Street, N.E.
Suite 587
Atlanta, Georgia 30367
(404) 347-3573

Region V

32nd Floor - Room 3244
230 Dearborn Street
Chicago, Illinois 60604
(312) 353-2220

Region VI

525 Griffin Street
Room 602
Dallas, Texas 75202
(214) 767-4731

Region VII

911 Walnut Street
Room 406
Kansas City, Missouri 64106
(816) 374-5861

Region VIII

Federal Building - Room 1576
1961 Stout Street
Denver, Colorado 80294
(303) 844-3061

Region IX

11349 Federal Building
450 Golden Gate Avenue
P.O. Box 36017
San Francisco, California 94102
(415) 556-7260

Region X

Federal Office Building
Room 6003
909 First Avenue
Seattle, Washington 98174
(206) 442-5930

F. U.S. Coast Guard District Offices

1st District

(Maine, Massachusetts, New York,
New Hampshire, Connecticut,
Rhode Island, Vermont, Northern
Pennsylvania, Northern New Jersey)

Commander (mep)
408 Atlantic Avenue
Boston, MA 02110-2209
(617) 223-8444

2nd District

(Alabama, Arkansas, Colorado, Illinois,
Indiana, Iowa, Kansas, Kentucky,
Minnesota, Mississippi, Missouri,
Nebraska, North Dakota, Ohio,
Western Pennsylvania,
South Dakota, Tennessee
West Virginia, Wyoming)

Commander (meps)
1430 Olive Street
St. Louis, MO 63103
(314) 425-4655

5th District

(Maryland, Delaware, North Carolina,
Southern Pennsylvania,
Southern New Jersey, Virginia)

Commander (mep)
Federal Building
431 Crawford Street
Portsmouth, VA 23705
(804) 398-6638

7th District

(Georgia, Florida, South Carolina,
Puerto Rico, Virgin Islands)

Commander (mep)
Federal Building
51 S.W. 1st Avenue
Miami, FL 33130
(305) 350-5276

8th District

(Alabama, Florida, Georgia, Louisiana,
Mississippi, New Mexico, Texas)

Commander (mpes)
Hale Boggs Federal Building
500 Camp Street,
New Orleans, LA 70130
(504) 589-6296

9th District

(Indiana, Illinois, Michigan, Minnesota,
Ohio, Pennsylvania, New York,
Wisconsin)

Commander (mep)
1240 East 9th Street
Cleveland, OH 44199
(216) 522-3918

11th District

(Arizona, California, Nevada, Utah)

Commander (mep)
Union Bank Building
400 Oceangate
Long Beach, CA 90822
(213) 590-2301

F. U.S. Coast Guard District Offices (Continued)

13th District

(Idaho, Montana, Oregon, Washington)

Commander (mep)
Federal Building
915 Second Avenue
Seattle, WA 98174
(206) 442-5850

14th District

(Hawaii, Guam, American Samoa,
Trust Territory of the Pacific Island, Com
monwealth of Northern Mariana Islands)

Commander (mep)
Prince Kalaniana'ole Federal Building
300 Ala Moana Boulevard, 9th Floor
Honolulu, HI 96850
(808) 541-2114

17th District

(Alaska)

Commander (mep)
P.O. Box 3-5000
Juneau, AK 99802
(907) 586-7195

*G. Department of Energy (DOE) Regional Coordinating Offices For
Radiological Emergency Assistance Only*

Region 1

(Connecticut, Delaware, District of
Columbia, Maine, Maryland,
Massachusetts, New Hampshire, New
Jersey, New York, Pennsylvania,
Rhode Island, Vermont)

Brookhaven Area Office:

Upton, NY 11973
(516) 282-2200
FTS - 666-2200
(312) 972-5731 (off hours)
(Use same 7-digit number for FTS)

Region 2

(Arkansas, Kentucky, Louisiana,
Mississippi, Missouri, Puerto Rico,
Tennessee, Virgin Islands, Virginia,
West Virginia)

Oak Ridge Operations Office:

P.O. Box E
Oak Ridge, TN 37830
(615) 576-1005
FTS 626-1005

Region 3

(Alabama, Canal Zone, Florida,
Georgia, North Carolina,
South Carolina)

Savannah River Operations Office:

P.O. Box A
Aiken, SC 29801
(803) 725-3333
FTS - 239-3333

Region 4

(Arizona, Kansas, New Mexico,
Oklahoma, Texas)

Albuquerque Operations Office:

P.O. Box 5400
Albuquerque, NM 87115
(505) 844-4667
(Use same 7-digit number for FTS)

Region 5

(Illinois, Indiana, Iowa, Michigan,
Minnesota, Nebraska, North Dakota,
Ohio, South Dakota, Wisconsin)

Chicago Operations Office:

9800 South Cass Avenue
Argonne, IL 60439
(312) 972-4800 (duty hours)
(Use same 7-digit number for FTS)
(312) 972-5731 (off hours)

Region 6

(Colorado, Idaho, Montana, Utah,
Wyoming)

Idaho Operations Office:

550 Second Street
Idaho Falls, ID 83401
(208) 526-1515
FTS 582-1515

Region 7

(California, Hawaii, Nevada)

San Francisco Operations Office:

1333 Broadway
Oakland, CA 94612
(415) 273-4237
FTS 537-4237

Region 8

(Alaska, Oregon, Washington)

Richland Operations Office:

P.O. Box 550
Richland, WA 99352
(509) 373-3800
FTS - 440-3800

H. Department Of Transportation, Regional Pipeline Offices

Office of Pipeline Safety
Eastern Region, DPS-4, Room 8321
400 7th Street, S.W.
Washington, DC 20590
(202) 366-4585

(Connecticut, Delaware, District of
Columbia, Maine, Maryland, Vermont,
Massachusetts, New Hampshire, New
Jersey, New York, Pennsylvania,
Rhode Island, Virginia, West Virginia,
Puerto Rico)

Office of Pipeline Safety
Southern Region, DPS-5, Ste. 504N.
1720 Peachtree Road, N.W.
Atlanta, Georgia 30309
(404) 347-2632

(Alabama, Florida, Georgia, Kentucky,
North Carolina, South Carolina, Tennessee)

Office Of Pipeline Safety
Central Region, DPS-6
911 Walnut Street, Room 1811
Kansas City, Missouri 64106
(816) 374-2653

(Iowa, Illinois, Indiana, Kansas, Michigan,
Minnesota, Ohio, Missouri, Nebraska,
Wisconsin)

Office of Pipeline Safety
Southeast Region, DPS-7
2320 La Branch, Room 2116
Houston, Texas 77704
(713) 750-1746

(Arkansas, Louisiana, New Mexico,
Oklahoma, Texas)

Office of Pipeline Safety
Western Region, DPS-8
555 Zang Street, 2nd Floor
Lakewood, Colorado 80228
(303) 235-3424

(Arizona, California, Colorado, Idaho,
Montana, Nevada, North Dakota, Oregon,
South Dakota, Utah, Washington,
Wyoming, Alaska, Hawaii)

I. U.S. Nuclear Regulatory Commission Regional Offices

Region 1

(Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont)

USNRC

631 Park Avenue
King of Prussia, PA 19406
(215) 337-5000

Region 2

(Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, Virginia, Virgin Islands, West Virginia)

USNRC

Suite 2900
101 Marietta Street, NW
Atlanta, GA 30323
(404) 331-4503

Region 3

(Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin)

USNRC

799 Roosevelt Road
Glen Ellyn, IL 60137
(312) 790-5500

Region 4

(Arkansas, Colorado, Idaho, Kansas, Louisiana, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, Wyoming)

USNRC

Suite 1000
611 Ryan Plaza Drive
Arlington, TX 76011
(817) 860-8100

Region 5

(Alaska, Arizona, California, Hawaii, Nevada, Oregon, Pacific Trust Territories, Washington)

USNRC

Suite 210
1450 Maria Lane
Walnut Creek, CA 94596
(415) 943-3700

*U.S. GOVERNMENT PRINTING OFFICE: 1989 617-003/04873