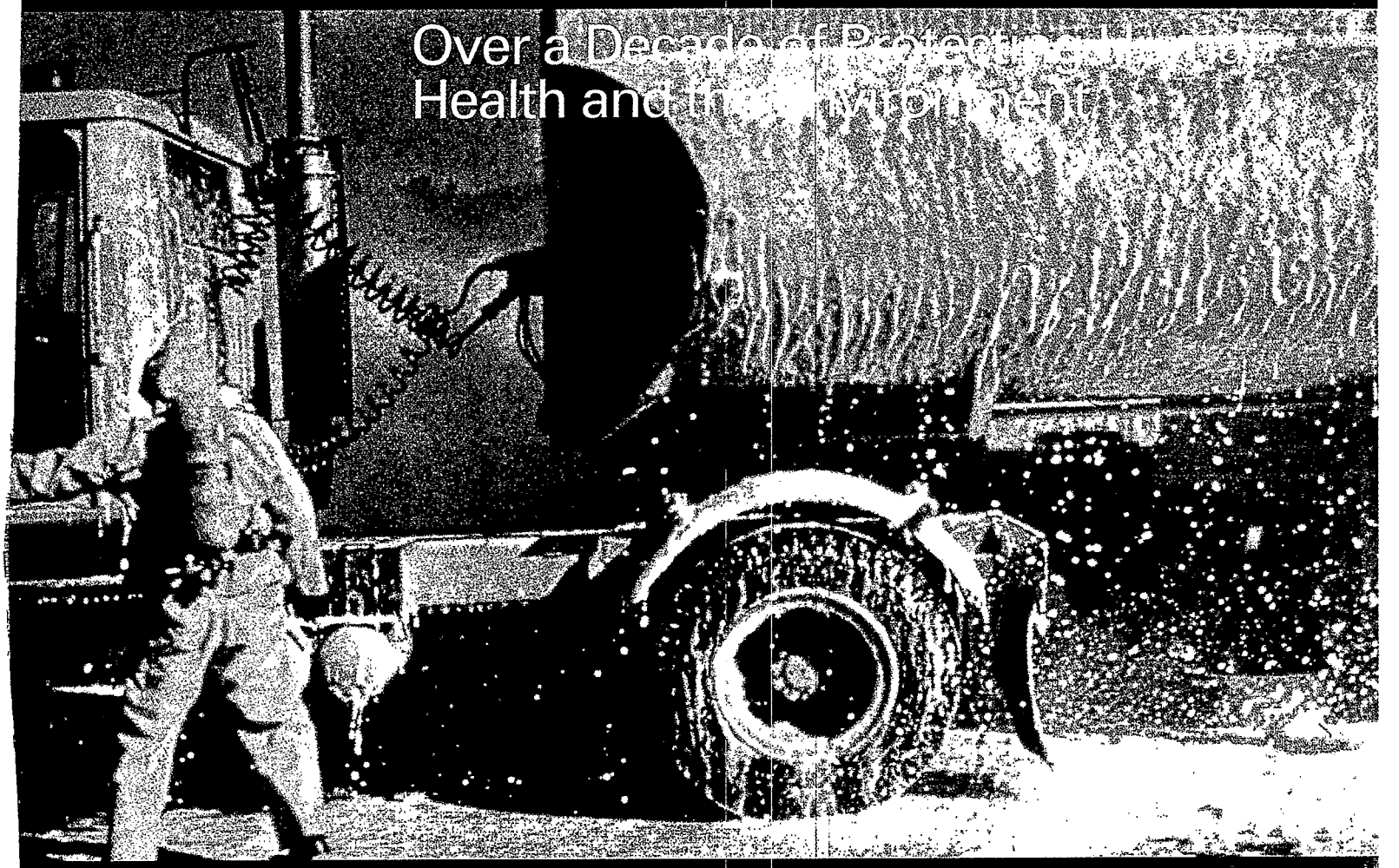
United States
Environmental Protection
Agency

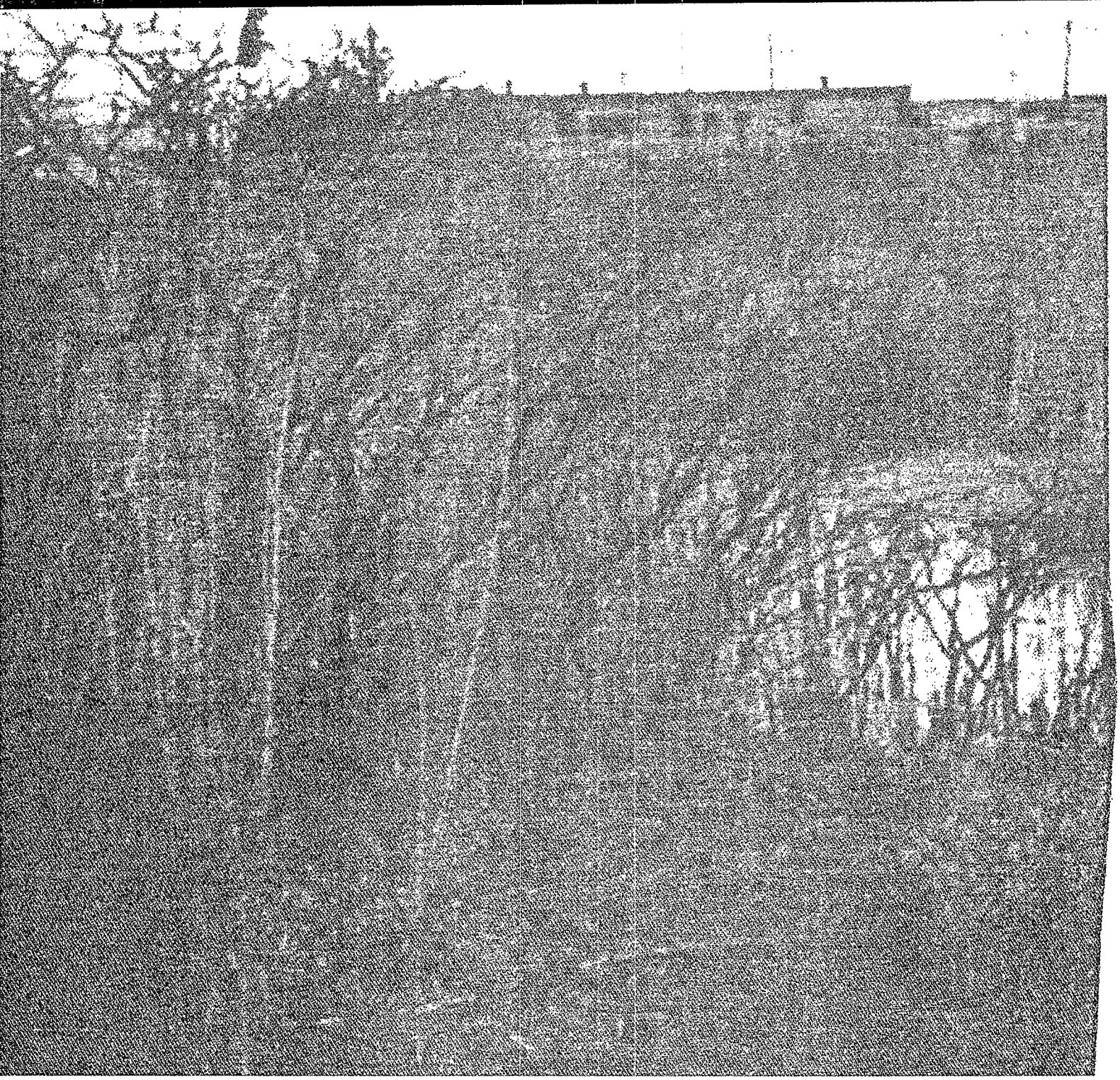
Office of Emergency
and Remedial Response
5202-G

9360.0-30
EPA 540/F-94/041
August 1994

EPA

The Superfund Emergency Response Program





THE SUPERFUND EMERGENCY RESPONSE PROGRAM

OVER A DECADE OF PROTECTING HUMAN HEALTH AND THE ENVIRONMENT

"THE CARE OF HUMAN LIFE AND HAPPINESS, AND NOT THEIR DESTRUCTION, IS THE FIRST AND ONLY LEGITIMATE OBJECT OF GOOD GOVERNMENT."

-Thomas Jefferson

"A NATION BEHAVES WELL IF IT TREATS THE NATURAL RESOURCES AS ASSETS WHICH IT MUST TURN OVER TO THE NEXT GENERATION INCREASED, AND NOT IMPAIRED, IN VALUE."

-Theodore Roosevelt

One-fifth of the U.S. population lives within 3 miles of a site where EPA has removed immediate threats to the public.

How Does the Superfund Emergency Response Program Eliminate Risk to the Public?

The Superfund emergency response program provides quick response to immediate threats from hazardous substances, wherever and whenever they occur. The program's first priority is to eliminate any danger to the public—to make sites safe for those who live or work nearby.

Since 1980, EPA has conducted over 3,000 emergency response actions at sites all across the country. Emergency response actions are quick, relatively low-cost activities that address threats from hazardous substances. The threats confronted by the emergency response program vary greatly in size, nature, and location, but there is a common element in all cases—time. Prompt action is crucial.

Typical situations requiring emergency response actions include fires or explosions, threats to people from exposure to a hazardous substance, or contamination of a drinking water supply. Regardless of the circumstances, each emergency response action quickly prevents or eliminates the threats to the public and the environment.

Emergency response personnel prepare empty drums for disposal.

COMMON CONTAMINANTS AND THEIR COMMON SOURCES

Lead: *paint pigments, glass manufacturing, smelting (iron and steel production)*

Mercury: *batteries, thermometers, paints, pesticides*

PCBs: *electrical insulation*

Chromium: *copy machines, chrome plating, stainless steel manufacturing*

Trichloroethane & Trichloroethylene: *dry-cleaning agents, degreasers*

Benzene: *chemical manufacturing*

Hazardous substances can irritate the skin or eyes, make it difficult to breathe, or even poison drinking water. Also, they can cause further harm, such as cancer, birth defects, damage to the brain or kidneys, and other medical problems. Environmental effects may include killing all life in a lake or river, or destroying all wildlife in the area.

One-fifth of all Americans, over 49 million people, live within 3 miles of a site where EPA has acted to remove immediate threats to public health. Over 850,000 people live less than 500 yards from an emergency response action site. EPA emergency response actions have eliminated risks to the health and safety of millions of people.

Between 1980 and 1990, the Superfund emergency response program:

- provided almost 155,000 people, about the population of a city the size of Hartford, Connecticut, with a safe supply of drinking water, using either bottled water or a hookup to a safe local water system.
- moved over 26,000 people, more than the number of people who work in the Pentagon —the world's largest office building—from the vicinity of very dangerous sites and gave them temporary housing. Most of these people were able to return home as soon as EPA made the site safe, but when necessary, the emergency response program will permanently relocate people.
- contained or treated massive amounts of waste to make sites safe:
  - over 7 million cubic yards of contaminated soil and debris, enough to cover 4,390 acres of land a foot deep;

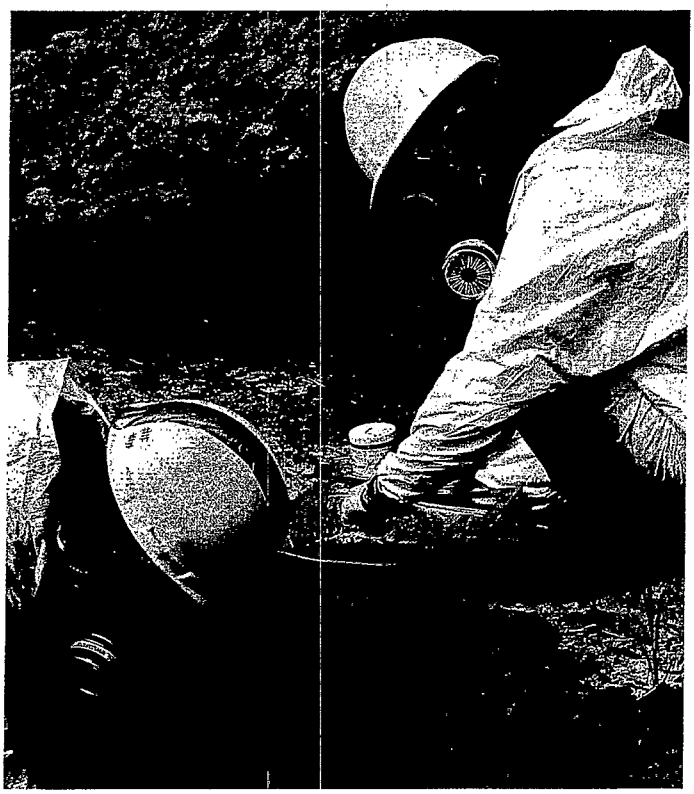
- 981 million gallons of contaminated liquids, over 70 gallons for every person in the State of Texas; and
- 288 million gallons of polluted water, more than twice the daily water use in the State of Vermont.

These accomplishments are at the heart of a program with a solid record of success in reducing and eliminating risks—providing prompt and effective emergency response actions to keep the public and the environment safe. Significant additional progress has been made in the Superfund long-term clean-up program.

A Program of Action

EPA stands ready 24 hours a day to respond quickly to protect the public and the environment whenever a hazardous substance is released.

Hazardous substances are all around us—in active and abandoned disposal sites, in trucks and trains, and in industrial production and use. Hazardous substances are found in paints, batteries, dry-cleaning agents, and hundreds of other common industrial and consumer products and processes. If any of these substances gets into the environment, it may contaminate our soils, lakes and rivers, the water we drink, and the air we breathe.

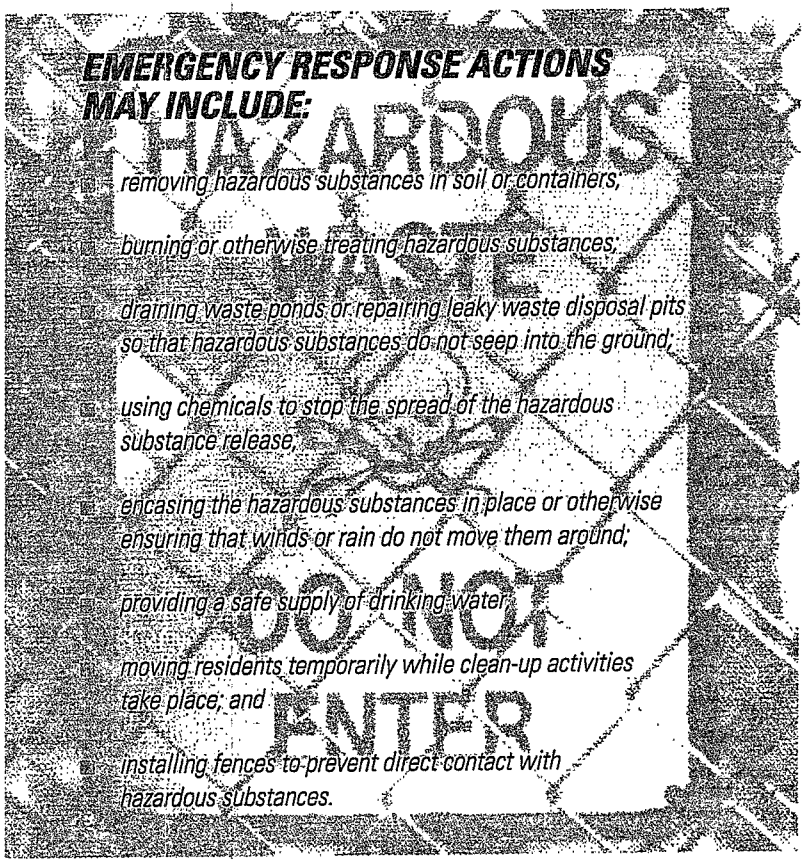


Soil samples are collected for analysis to determine the extent of contamination.

Eliminating Immediate Threats from Hazardous Substances

The need for an emergency response action may arise anywhere, at any time. For example:

- workers may find leaking drums at an abandoned industrial site;
- neighbors of a landfill may notice a foul taste or odor in their drinking water;
- a transportation accident may result in chemicals spilling;
- chemicals stored in a warehouse may explode;
- stored tires may ignite, creating hazardous smoke and liquid run-off; or
- passers-by may discover illegally dumped chemicals in an abandoned lot.



EPA has the experience and ability to respond quickly to any of these situations, anywhere in the United States. EPA has even conducted emergency response actions for problems caused by natural disasters such as hurricanes, earthquakes, and floods.

Of the more than 3,000 actions taken since the emergency response program began in 1980, EPA has conducted about 75 percent of these

actions, and directed and monitored those responsible for the pollution as they conducted the remaining 25 percent. Emergency response actions undertaken and financed by those responsible are extremely important because they represent actions where EPA will not have to respond itself. Each time the persons responsible for the spill pay for an emergency response action, Superfund money is saved. This money can be used to perform other emergency response actions. In addition, EPA lends technical support for emergency response actions performed by state and local responders and for responsible parties who clean up voluntarily.

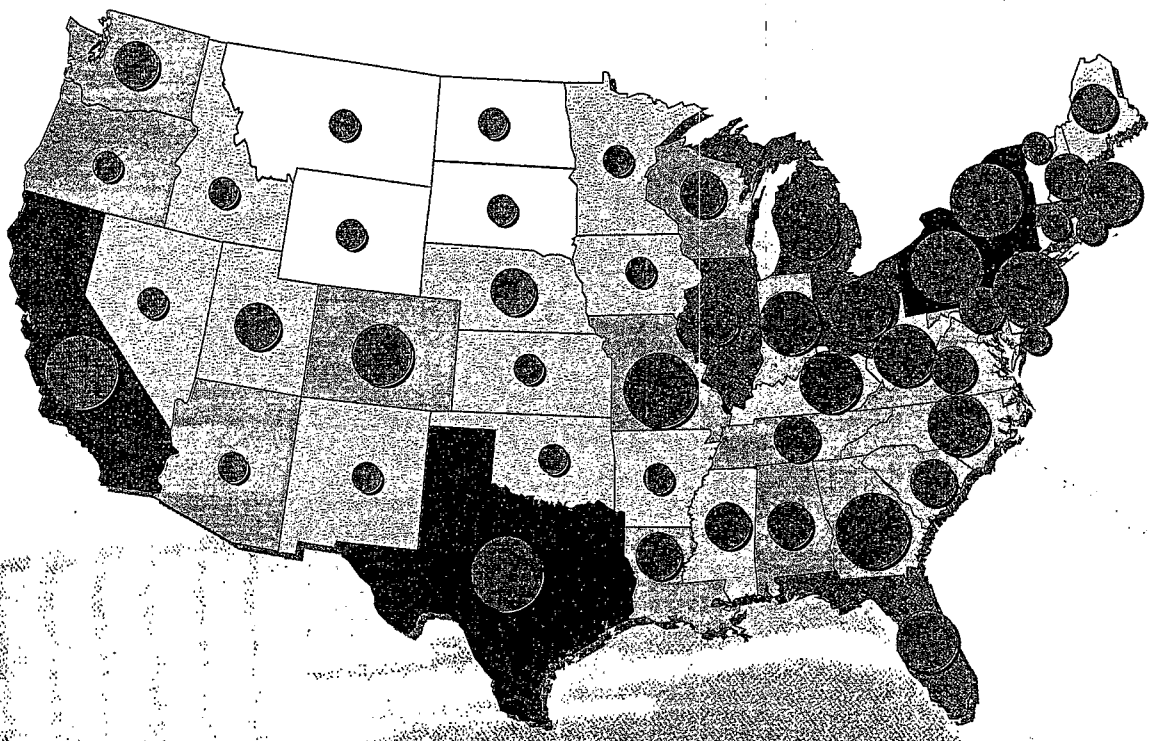
ON-SCENE COORDINATORS

The key player during an EPA emergency response action is the On-Scene Coordinator (OSC). OSCs are highly skilled men and women who conduct, direct, and coordinate emergency response actions—to take whatever actions are necessary, consistent with federal law, to remove the threat.

In every area of the country, OSCs are on-call and ready to respond to a hazardous substance release 24 hours a day. When a release is discovered or reported, the OSC evaluates the situation and, if the OSC decides a federal emergency response action is necessary, he or she works with state and local emergency response teams, local police and firefighters, or other federal agencies to eliminate the danger. The OSC also will ensure that the public and business community are kept informed and that their concerns are considered throughout the emergency response action.

Emergency response actions do much more than just remove hazardous substances from the site and take them elsewhere for disposal. In a growing number of situations, EPA treats contaminated water or soil rather than move it to someone else's "backyard." Treatment processes used include traditional treatment methods such as burning, but they also include new technologies that may be more effective. EPA's use of new technologies is part of its continuing effort to eliminate threats created by hazardous substances. For example, one technology—bioremediation—involves using bacteria to "eat," or neutralize, the hazardous substances.

SUPERFUND EMERGENCY RESPONSE ACTIONS 1980 - 1992



Number of Sites

0-19 20-49 50-99 100+

Population Affected

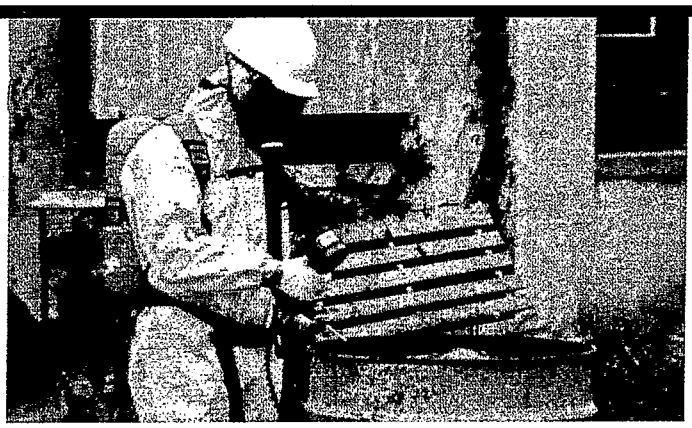
- 0 < 500,000
- 500,000 < 2,000,000
- 2,000,000 < 5,000,000
- 5,000,000 < 10,000,000
- 10,000,000+

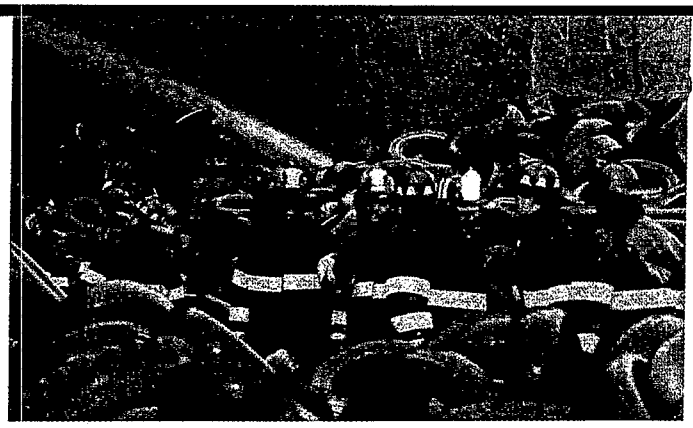
Population affected is defined as the total population of all counties where emergency response actions have been taken.

Emergency response workers sample contents of an abandoned drum.

Emergency Response Actions at Long-Term Clean-Up Sites

In addition to performing emergency response actions at various types of sites, EPA conducts long-term actions at hundreds of seriously contaminated hazardous waste sites. In these cases it will take several years to fully study the problem, develop the right remedy, and clean up the hazardous waste. These are the sites most people think of when they talk about the





Case Study: Radioactive Wastes

The Radium Chemical Company was located in a densely populated urban area in Queens, New York, directly adjacent to the Brooklyn-Queens Expressway. The facility had operated since the 1930s and had leased and sold radium products that were used in cancer therapy. Radium and its derivatives are radioactive and extremely dangerous if handled improperly and allowed to come into contact with unprotected persons. In the early 1980s, New York State officials discovered that the plant's radiation level, both inside and for several feet outside, was dangerously high. To further complicate the situation, the building had already been struck by traffic twice and had been a target of vandals and a bomb threat.

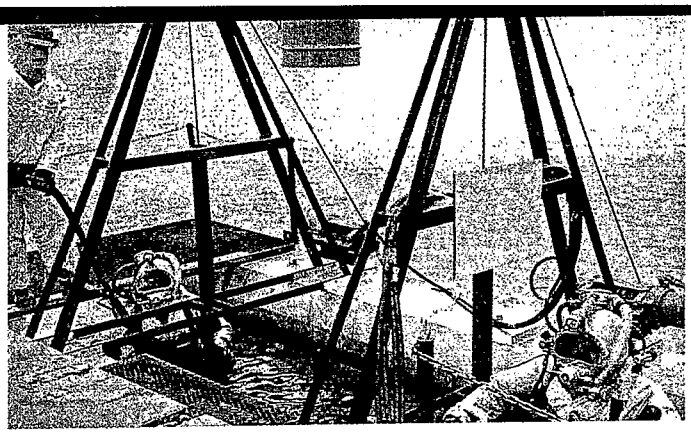
In July 1988, EPA took over the management of site security, keeping all unauthorized people away from the radioactive plant. The Agency then installed monitoring equipment and implemented an extensive community relations program. EPA officials examined the site and found thousands of potentially radioactive metal tubes and cylinders containing radium stored in the plant. During the emergency response, EPA decontaminated parts of the plant as preparation for the long-term cleanup, which included dismantling the plant piece by piece and disposing of all plant materials in approved disposal facilities.

Case Study: Tire Fire

In late October 1983, vandals started a fire on a huge pile of tires being stored for reprocessing. The tire pile, located in Winchester, Virginia, covered about 5 acres of a ravine and contained between 5 and 7 million tires piled up to 80 feet high. Feeding on the massive number of tires, the volcano-like fire sent up a hazardous smoke plume several thousand feet that extended 50 miles into four states. The smoke plume was not the only concern at the site—the intense heat of the fire caused oil and liquid tar to run from the pile of burning tires off the site into a stream at a rate of 30 to 50 gallons per minute, rapidly contaminating surrounding soil and threatening a nearby creek.

The fire, tar, and oil posed several serious threats to the public and the environment. Tar and oil in the creek could kill fish and other aquatic life, as well as ruin the drinking water supply for livestock in the area. Ash in the smoke plume threatened over 4,000 residents within 5 miles of the site. The smoke itself was a serious health concern for neighbors with respiratory diseases. Finally, a nearby forest could ignite if the fire remained unattended. Responders had to act to control the furious blaze and stop the flow of oil and tar.

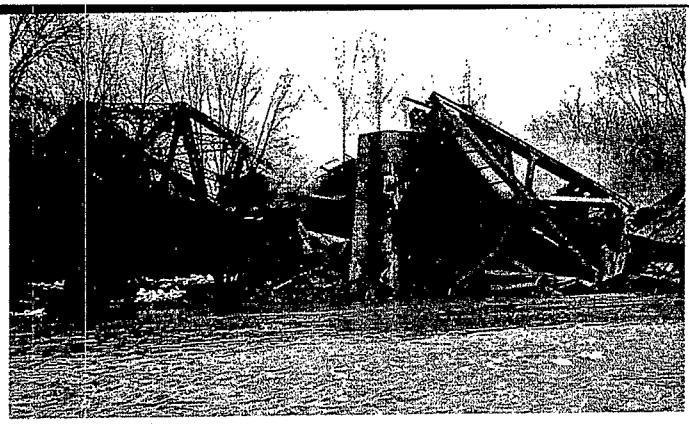
EPA, the State of Virginia, and county agencies responded to the blaze. The EPA Environmental Response Team provided technical advice on air quality, cleanup of the site, and treatment of polluted water. EPA directed the flow of oil and tar away from the creek by building walls and channels. The EPA On-Scene Coordinator directed the collection and subsequent sale of this oil by EPA. The money was used to defray the costs of the cleanup.



Case Study: Underwater Emergency

In 1990, the Continental Steel Quarry Site in Kokomo, Indiana, presented the Superfund emergency response program with a new challenge: conducting a large-scale underwater emergency response action as the first initiative in the long-term cleanup of the site. The EPA Environmental Response Team visually surveyed the quarry pond with an underwater remotely operated vehicle (ROV). The ROV is equipped with a tracking and detection system that assists in locating underwater objects in areas of limited visibility. The survey team found hundreds of hazardous substance containers. Samples of the pond water revealed that it contained many hazardous substances which had altered the pH level. No life remained in the pond because of the extremely toxic levels of chemicals. The quarry area was bordered on three sides by residential property. Wildlife had been seen traveling across the site and contamination was seeping through the pond bottom to underground water supplies.

The EPA On-Scene Coordinator had three objectives: removing the containers without releasing more of the substances into the water, removing the hazardous substances already in the pond, and dealing with the difficulties and safety concerns in conducting this emergency response action underwater. To minimize the amount of hazardous substance further released into the pond, responders worked underwater, placing the containers in overpacks (larger containers). Equipment modifications were made and specific safety procedures were followed to ensure diver safety. To clean up the pond, responders drained all the water, treated it, and returned it to the pond.



Case Study: Train Derailment

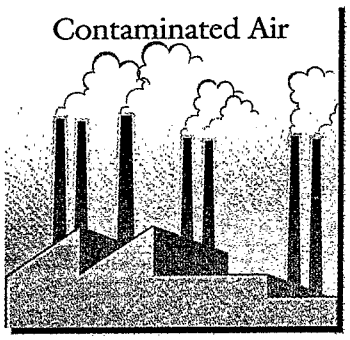
Shortly after midnight on November 19, 1991, a freight train derailed on a bridge over the Salt River near the small town of Shepherdsville, Kentucky. Two of the 28 derailed cars contained hazardous substances, including MDI (a chemical used in manufacturing plastic) and POX (an insect killer). A third car was loaded with U.S. Army cluster bombs. When the EPA On-Scene Coordinator arrived, she was faced with:

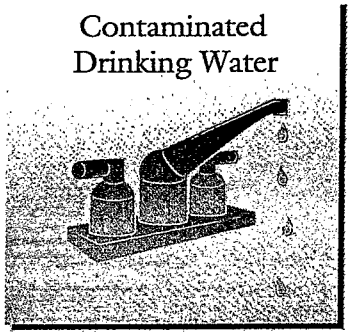
- a car full of POX—an extremely flammable material;
- a fire in one of the derailed cars next to the POX car;
- a car full of cluster bombs; and
- a car full of MDI dangling from the bridge trestle and leaking into the river.

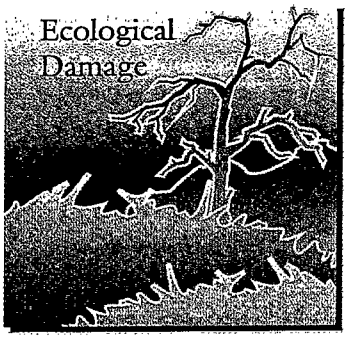
The situation was critical—the POX could explode, and the vapors from the leaking MDI could cause skin and eye irritation and, at high temperatures, release an extremely poisonous gas. The MDI leaking into the river could potentially poison the water and kill fish.

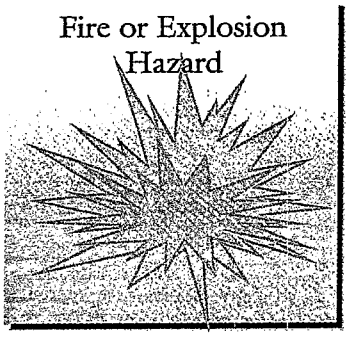
All permanent residents, workers, and students within a 1-mile radius—half the town—were evacuated. The OSC and local responders decided quickly that the major concerns were putting out the fire and preventing an explosion. After the fire was extinguished, further disaster was prevented by moving the POX car. Responders also pulled the leaking MDI car away from the river and the U.S. Army moved the cluster bombs to a safe distance. At the same time, the yellow MDI was seen moving slowly down river, where the U.S. Coast Guard monitored for dead fish or other serious environmental damage. The MDI, which eventually became a solid from exposure to the water, was captured as it floated down the river, and no environmental harm was discovered in the area.

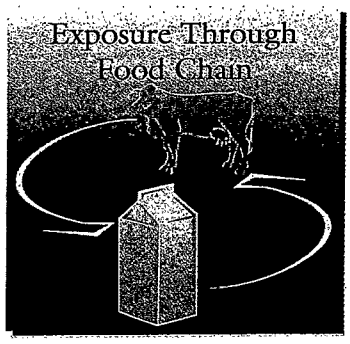
SOURCES OF EXPOSURE TO HAZARDOUS SUBSTANCES

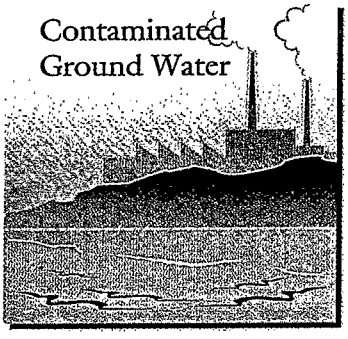


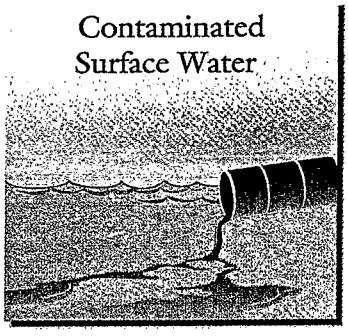












Superfund program. EPA does not ignore the possibility, however, that serious immediate threats to the environment or to the people who live or work around the site may need to be dealt with before the long-term action is complete, or even under way.

Within 3 months of identifying one of these long-term clean-up sites, EPA evaluates whether there are any immediate threats. If so, an emergency response action is taken. EPA then re-evaluates each of these long-term clean-up sites at least once every other year until cleanup is complete to make sure no new immediate threats arise. In this review, EPA pays particular attention to sites that may be susceptible to damage from events occurring at the site, such as harsh weather conditions, facility deterioration, or vandalism. If new immediate threats arise, an emergency response action is taken.

A long-term clean-up site may ultimately have several emergency response actions, or it may have none. In some cases, emergency response actions may eliminate the need for a long-term cleanup at certain portions of the site. As a result, emergency response actions may speed the cleanup of portions of the site and may lead to early elimination of the site from EPA's long-term clean-up program.

WHO PAYS?

EPA's goal is to make the responsible parties clean up their own hazardous substances. However, in an emergency situation, when those responsible cannot be found, or when they will not cooperate, EPA responds without delay. EPA gets the money to respond to hazardous substance releases from the Superfund, which is financed through taxes on petroleum and the production of a number of commercial chemicals.

Environmental Response Team

A vital force in EPA's battle to eliminate hazardous substance threats is the Environmental Response Team (ERT). The ERT is a group of EPA technical experts who provide around-the-clock assistance at the scene of hazardous substance releases. Sometimes, when an EPA On-Scene Coordinator or any other emergency responder comes to the scene of a hazardous substance release, he or she knows immediately that extra technical help will be needed. The ERT can provide

this expertise. For example, the ERT can provide support in unusual or complex emergency response actions, such as the cleanup of waste containers underwater described in detail in the centerfold of this brochure. In such an action, the ERT can bring in special equipment and experienced responders. The ERT even has provided technical assistance for responses to hazardous substance releases in other countries, including Kuwait, Uzbekistan, Thailand, Latvia, and Mozambique.

A health and safety instructor demonstrates personal protection equipment.

Trainees respond to a simulated transportation accident.

Environmental Response Team Training

Another key function of the ERT is emergency responder training. Each year close to 6,000 students from federal agencies, state and local emergency response teams, and private industry enroll in EPA's Hazardous Materials Incident Response Training program. The courses offered cover safety in handling hazardous substances, as well as the technical operations used to identify, evaluate, and control hazardous substances that have been or could be released. They emphasize the practical application of lecture material through problem-solving, case studies, and field exercises. These courses are offered at different locations around the country.

A local response team takes emergency measures to control a spill.

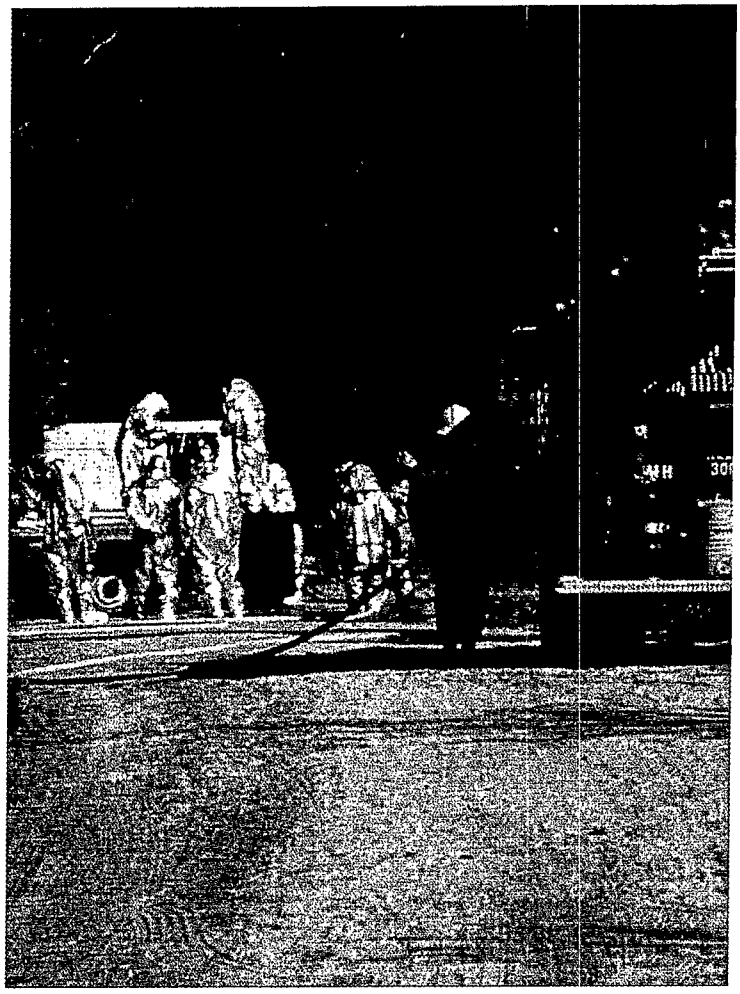
State and Local Community Involvement in Emergency Response Actions

The first responders at the scene of an emergency response action are usually firemen or state or local police. They are the first to assess the situation and take emergency measures such as fighting a fire, securing the area, or re-routing traffic. Their assessment and initial activities help the EPA On-Scene Coordinator determine what EPA actions are necessary.

EPA supports direct state and local government involvement in response efforts through financial and technical support, as well as numerous training opportunities. Hundreds of local responders attend ERT training courses each year. This assistance enhances the abilities of local governments to successfully undertake short-term actions to reduce or eliminate risks to public health and to protect the environment.

Local Government Reimbursement

EPA helps local governments pay for emergency actions they take in response to hazardous substance spills. Usually, these actions are beyond what the community normally provides in terms of emergency response. To date, approximately



Local responders arrive on the scene of an emergency response action.

$500,000 has been given to local governments through this program. Any city, county, municipal government, or Indian tribe may apply for money from this program. Reimbursable activities may range from fire or explosion control to putting up a security fence around a site to keep people away. The local government must initially attempt to recover the cost of the activity from the party responsible for the hazardous substance spill. If this fails, the local government may collect from EPA up to $25,000 for each action. With the money it has available, EPA tries to reimburse first those local governments that can least afford the expense of the emergency actions taken.

Community Involvement

EPA recognizes that involvement of the public in all types of Superfund projects is an important ingredient for success. Good communication and community involvement may help to avoid misunderstandings and confusion between government officials and local citizens during an emergency response action. An offi-

cial EPA spokesperson is appointed for each emergency response action to keep the public informed and to respond to any questions. EPA also establishes a written record that contains information about the emergency response action and makes this record available to the public.

COMMUNITY INVOLVEMENT IN PRACTICE

The Superfund emergency response program goes to great lengths to assure effective community relations. In the emergency response action at the White Chemical Company site in Newark, New Jersey, a unique communication system was installed in the community to reduce the risk of exposure in the event of another emergency at the site during cleanup. Federal, state, and local emergency response personnel developed a telephone notification system (the Community Alert Network), which contained the phone numbers of all area businesses, residents, schools, day care centers, hospitals, and emergency response personnel. The system was designed specifically for residents, businesses, and other facilities near the site. Although it never became necessary to activate the system, if a hazardous substance had been released, the system would have automatically sent information and messages, in both English and Spanish, to the entire community.

EPA meets with local officials to discuss the emergency response action at the White Chemical Company site in Newark, NJ.

EPA's Superfund emergency response program has for over a decade acted quickly and decisively to protect the public and the environment from immediate threats. The broad range of emergencies to which EPA must respond will never be completely eliminated. Thus, the Agency stands ready to use its emergency response authorities to their fullest extent, today and in the future, to continue to eliminate risks to human health and the environment.

For more information and additional copies:
Superfund Hotline
(800) 424-9346

For reporting of oil and hazardous material spills:
The National Response Center
(800) 424-8802