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Environmental Protection  
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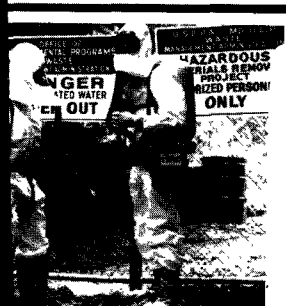
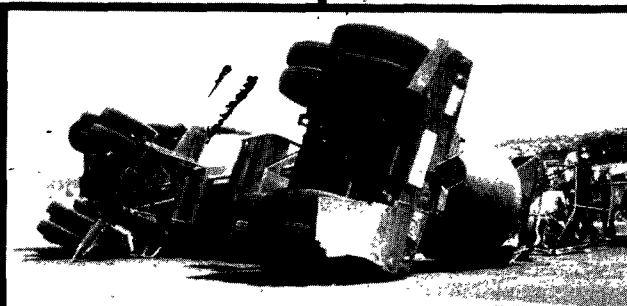
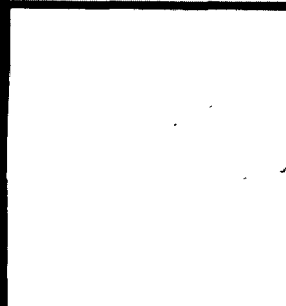
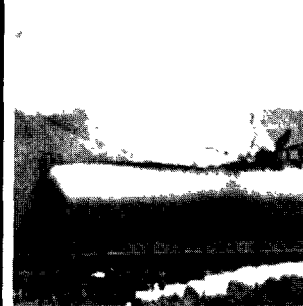
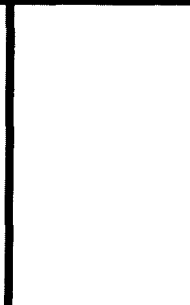
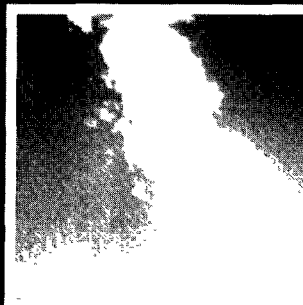
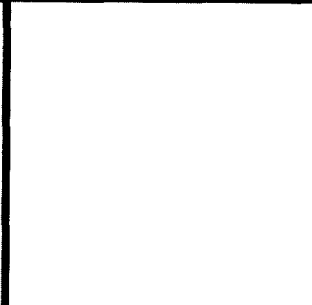
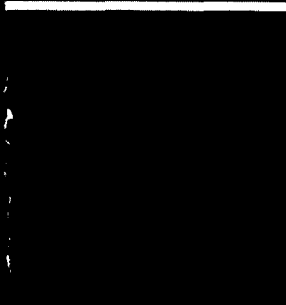
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Washington DC 20460

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# EPA's Emergency Response Program



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Chicago, Illinois 60604

**U.S. Environmental Protection Agency**

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## EPA's Emergency Response Program

In satisfying the American public's demand for sophisticated products, modern technology's response is ingenious and complex. Sometimes that technology generates toxic by-products as well—hazardous wastes.

Effective and safe handling of such wastes has improved tremendously under rapidly-advancing disposal technology. In 1976, the Resource Conservation and Recovery Act (RCRA) was enacted, for the first time establishing controls for the generation, transportation, and disposal of hazardous wastes.

Although it provided the tools to track and regulate the handling of such substances, RCRA did not deal with existing hazardous sites that had become troublesome as a result of past improper disposal practices. These sites, as well as accidents in handling or transporting hazardous substances, can present emergency situations requiring an immediate cleanup or removal.

Federal authority to respond to releases of oil and hazardous substances into the nation's navigable waters is found under Section 311 of

*Train derailments can release hazardous substances over large areas, possibly requiring evacuation of nearby residents.*



the Clean Water Act. This authority, which is assigned to the Environmental Protection Agency and the Coast Guard, has existed for over a decade. The Clean Water Act also established a fund

to finance these responses. However, it provided only limited authority and limited funds to tackle the variety of problems caused by release of hazardous substances into land, ground water, and air.

*The swollen bottom on this drum indicates a serious threat of leakage.*



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## **Superfund**

To provide a more effective and comprehensive response to the foregoing problems, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. Popularly referred to as "Superfund," CERCLA and Section 311 of the

Clean Water Act permit the Federal government to work with State and local governments to provide an immediate and comprehensive response to accidental release of hazardous substances.

Superfund cleanups are financed by a \$1.6 billion

***Barges carrying large cargoes of hazardous materials may break loose and strike bridges and other structures. This barge was secured in time, preventing potentially serious damage to the waterway.***

trust fund. The fund can be used to provide both emergency and longer-term cleanup of releases of hazardous substances and inactive waste sites. It is collected through taxes paid by manufacturers, producers, and exporters and importers of oil and 42 chemical substances.

In 1968 the Federal government established the first

National Contingency Plan to respond to emergencies caused by oil spills and releases of hazardous substances in navigable waters. CERCLA required EPA to revise and republish the Plan to cover all of the actions which can now be taken under both Superfund and the Clean Water Act. The Plan details the responsibilities of 14 Federal agencies and State and local governments.



***When a hazardous substance ignites, it not only presents the immediate dangers of heat and smoke but it can spread hazardous particles and vapors over wide areas.***



for cleaning up releases of hazardous substances to all media (land, air, surface water and ground water) and discharges of oil into navigable waters of the U.S

In general the Plan

- Encourages coordination of Federal, State and local government involvement in response actions,
- Allows State and local governments to be reimbursed by the Federal government for allowable response costs; and
- Authorizes the Federal government to undertake cleanup when the responsible party or

the State cannot or will not do so

Primary responsibility for dealing with accidental releases in or near coastal waters and the Great Lakes is with the Coast Guard. The lead responsibility for other emergencies occurring inland or in inland waters belongs to EPA, as specified by an agreement between EPA and the Coast Guard. EPA responses are coordinated by its Emergency Response Division with the assistance of the Hazardous Response Support Division. Both are a part of the Office of Solid Waste and Emergency Response.

## Emergency Response Program

Two types of removal actions are carried out by EPA in its emergency response program: immediate removals and planned removals

### Immediate Removals

Immediate removals are triggered by immediate and significant emergencies involving hazardous sub-



*Chemical foams are often used to prevent evaporation of hazardous substances or to extinguish fires resulting from accidents. Response personnel wear protective clothing while handling these chemicals.*

stances. Such emergencies might include

- Fires or explosions,
- Direct human contact with a hazardous substance,
- Human, animal, or food-chain exposure to such a substance, or
- Contamination of a drinking water supply

An immediate removal is a first-aid approach to an emergency. It involves cleaning up the hazardous site as necessary to protect

life and human health, stopping the hazardous release, and minimizing damage or threat of damage to the environment. If there has been a spill (from a truck, derailed train or barge, for example) the response will continue until the spill is cleaned up. Inactive hazardous waste sites will be stabilized but the cleanup may continue beyond stabilization if this course appears less expensive than stopping and returning later for final cleanup or remedial action.

Specifically, immediate removal responses may include

- Collecting and analyzing samples,
- Controlling the release,
- Removing hazardous substances from the site and storing, treating, or disposing of them,
- Providing alternate water supplies,
- Installing security fencing,
- Deterring the spread of the pollutants, and
- Evacuating threatened individuals

### Planned Removals

A planned removal occurs when the hazard is sub-



***Above: Workers with protective suits and self-contained breathing units extract samples from drums. Samples are sent to a chemical laboratory for analysis.***

stantial and imminent but constitutes something less than an immediate emergency. Such a removal assumes that, while the situation is deteriorating, time is available to plan an appropriate response before reaching the site. Under Superfund, a planned removal may be initiated if:

- The action will minimize damages or risks and preclude future emergency response actions,

- Removal is consistent with the most effective long-term solution to the problem,
- The responsible party is unknown, cannot be found, or cannot or will not take timely and appropriate action,
- The State agrees to pay at least 10 percent of the costs of the removal action, and
- The State agrees to nominate the site to the National Priority List for remedial action, if further action at the site is considered appropriate once the removal is completed.

The planned removal response will be chosen only after analysis of removal alternatives to determine the quickest and least costly approach. The selected course of action also must be reliable and effective, and consistent with the probable long-term solution.

The planned removal ends when the situation is stabilized and the imminent danger has been abated. The operation may continue, however, if the cleanup can be completed within a short time and at a low cost.

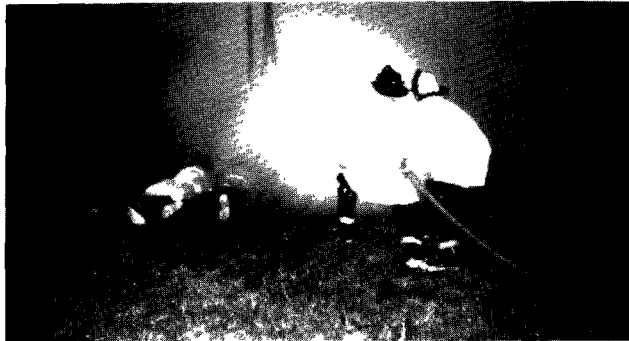


### **Hazardous Substance Cleanup: An Industry- Government Partnership**

In practice, many emergency cleanups and removals are handled by the responsible party—usually the generator, transporter, or disposer of the waste. The remainder are cleaned up by an industry-government partnership. If government resources are called upon, a variety of local, State, and

Additional Federal agencies that may be involved are the Departments of Agriculture, Commerce, Defense, Energy, Justice, Labor, State, and Housing and Urban Development; and the Small Business Administration. In the event Federal services are called upon:

- The Coast Guard or EPA assumes primary responsibility to respond, depending upon the location of the emergency;
- The Federal Emergency Management Agency is responsible for evacuations;
- The Fish and Wildlife Service in the Department of the Interior and the National Marine Fisheries Service in the Department of Commerce conduct research into the effects of the disaster on marine, aquatic and terrestrial life;
- The Public Health Service in the Department of Health and Human Services investigates incidents of hazardous substance exposure to humans and threats to the public welfare; and
- Other agencies play roles related to their re-



***Emergency situations involving hazardous substances require specific techniques, equipment and personal safety protection. Above: Firefighters respond to a night emergency.***

Federal agencies may be called into action.

Superfund and Section 311 of the Clean Water Act require that EPA, the Coast Guard, the Federal Emergency Management Agency, the Department of Health and Human Services, the Department of the Interior, and nine other Federal agencies cooperate as members of the National and Regional Response Teams to coordinate activities in cases of emergency.

spective authorities if the emergency requires it

#### **When To Notify the Government**

When release of a hazardous substance creates an emergency situation, local police and fire departments probably will be the first agencies involved. While they are taking initial protective actions, however, local officials may be calling upon State and Federal agencies for assistance.

The responsible party—such as a generator, transporter or disposer of hazardous waste—must also notify the National Response Center (NRC) as soon as (s)he has knowledge that a hazardous substance was released in a Reportable Quantity (RQ) into the environment. Section 102 of CERCLA designates almost 700 substances as hazardous and assigns RQs that trigger notification requirements.

To request Federal assistance under Superfund, a State or local government should contact its nearest EPA Regional Office.

When the National Response Center is notified, the duty officer immediately

relays the release information to an EPA or Coast Guard On-Scene Coordinator (OSC), depending upon the location and nature of the emergency. The OSC coordinates and monitors all protective and precautionary activities to ensure that everything possible is done to protect public health, welfare, and the environment.

#### **The Federal Role**

The response process begins with the OSC's decision to initiate response measures. This decision is based on a preliminary assessment of notification information and on follow-up data gathered from the responsible party or officials at the release site. The OSC must decide whether the Federal government is the appropriate response agency. Alternatively, State agencies may take the lead in cleaning up a release site, or the party responsible for the release may have the capability to provide mitigation actions. In both cases, however, the Federal OSC will retain the authority for oversight or monitoring of the cleanup operations to ensure that the threat is mitigated. At times, the expertise of other Federal



***The grapppler's specially-designed pickup arm helps remove hazardous waste drums from an active disposal site.***

agencies and other States can be brought to a response action through the Regional Response Team (RRT) established by the National Contingency Plan. The Federal OSC, either in consultation with other agencies or on the spot, must decide what type of response to make, whether the release should be contained to prevent migration, whether the release should be treated in situ, or whether a federally-funded removal to a treatment, storage or disposal (TSD) facility should be undertaken.

The OSC seeks assistance from the EPA Regional Emergency Response Offices and the special Environmental Response Teams based in Cincinnati, Ohio, and Edison, New Jersey.

As part of EPA's policy of keeping the public accurately informed, the OSC

may also seek assistance from the Agency in coordinating information for the media and providing liaison with citizens organizations as necessary.

According to CERCLA, an official Federal removal action may be considered in cases where:

- The discharger is unknown,
- The discharge is caused by an act of God or war; or
- The responsible party cannot or will not respond adequately.

Under Superfund, governmental emergency response is able to achieve the highest degree of inter-agency and inter-governmental teamwork. If Federal authorization is provided, State and local governments may conduct the cleanups and reimbursement will be made by Superfund. The Federal government itself may conduct the removal if the State or local government requests assistance.

In either case, the Federal government retains its important advisory and coordination role. EPA's scientific resources and its specialized

monitoring, sampling and safety equipment will support State and local efforts. Superfund will be the key source of cleanup money.

To help keep the fund solvent, Superfund also pro-

vides that the responsible party may be liable for punitive damages of up to three times the cost of the Federal removal for failure to respond properly to the emergency.

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## Prevention

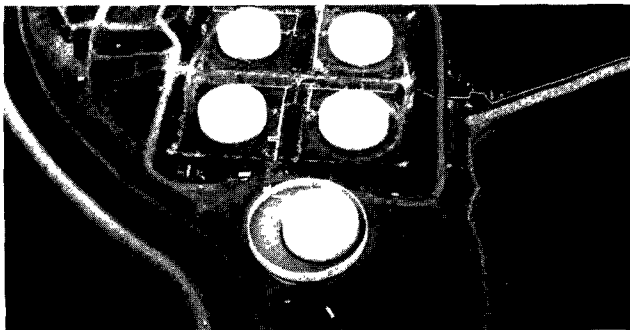
### Oil Pollution Prevention

For more than a decade, EPA has been concerned about the discharge of oil into the navigable waters of the United States. To prevent such oil discharges by non-transportation-related (NTR) onshore and offshore facilities, EPA promulgated the oil pollution prevention regulation in December 1973. The regulation establishes requirements for the development and implementation of Spill Control and Countermeasure Plans (SPCC Plans). This regulation is applicable to all owner/operators of NTR onshore and

offshore facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, or consuming oil and oil products and who, because of their location, could reasonably be expected to discharge oil into or upon the navigable waters of the United States. The EPA Regional Offices implement this regulation by routinely visiting facilities and reviewing their SPCC Plan.

All transportation-related facilities are regulated by the Department of Transportation in accordance with an agreement with EPA.

*The containments around the storage tanks are designed to prevent any leakage of oil products into adjacent waters.*



### Hazardous Substance Prevention

EPA's Hazardous Substance Prevention Program establishes guidelines for industry to prevent hazardous substance releases into the environment. The guidelines focus on protection of public health, welfare, and the environment.

## **Superfund in Action**

### **The Emergency Response at Cecil County, Maryland**

*Site workers wearing protective suits placed leaking drums into over-packs. In all, more than 1,300 drums and 5 million pounds of contaminated soil were removed and disposed of at authorized facilities.*

In the late 1960s, approximately 1,300 drums of hazardous wastes were stacked in a clay quarry and covered over in the small Cecil County, Maryland, community of North East. When the new owners of the land began an expansion of a mobile home community into the former quarry area, they

discovered chemical odors and several surfacing drums.

After receiving complaints in April 1981, the county and the Maryland Office of Environmental Programs tested drinking water wells and surface water in the area. The property owner also conducted geological studies



The analyses showed safe drinking water, but the surface water and soil samples contained organic solvents, including several known and suspected carcinogens. The State then requested assistance from Superfund.

From February to April 1982, EPA conducted a site investigation, including additional sampling. The on-scene investigators discovered drums of hazardous organic wastes located a few hundred feet from a 300-unit trailer park. These wastes were contaminating soil, two small ponds, and a creek running through

the trailer park. A joint State and EPA emergency response team evaluated the site in May. EPA approved a removal action under Superfund in June 1982.

EPA began an immediate removal action costing \$110,000 on Wednesday, June 16, 1982. This included erecting a fence around the site to secure the area, installing filter fences on the stream, removing four drums of ignitable materials found on the surface, overpacking eight leaking drums, conducting magnetometer and ground-penetrating radar surveys to determine where additional drums were buried, and continuing air, water, and soil sampling.

Based on these studies, EPA estimated that there were approximately 125 drums at the site. Because of the potential danger these posed to the neighboring community, EPA decided to undertake a planned removal action. Instead of the expected 125 drums, however, in November, 1982, on-scene personnel discovered that there were 1,300 drums stacked up to 15 layers deep.

***The drums were stacked up to 15 layers deep. To speed up the removal action, EPA combined compatible chemicals so they could be either treated at the site or bulk shipped to a disposal facility.***





***At the completion of the removal action, the site was filled, capped with clay, covered with top soil, and seeded.***

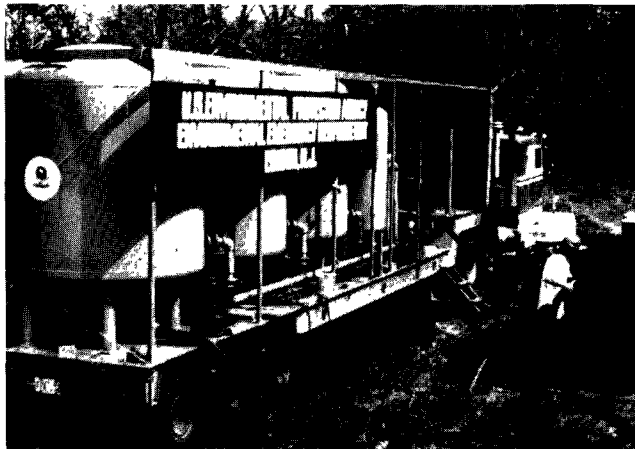
The discovery changed the scope of the planned removal action. EPA, State and local agencies, and contractors increased personnel to complete the action within the statutory limit of six months—a deadline of December 16, 1982. EPA changed the removal strategy to combine compatible chemicals together and dispose of them as bulked liquids rather than in drums. This and other innovative strategies lowered the per drum cost of cleanup, so that the planned removal action cost \$960,000, only about \$300,000 more than anticipated when the number of drums was thought to be a tenth of how many were found.

In all, EPA removed 50,000 gallons of contaminated liquids, 5 million pounds of contaminated soil, and treated 100,000 gallons of contaminated water. Site workers refilled the hole with clean fill material, installed a clay cap to prevent water seepage into the former drum area and the leaching out of any contaminants possibly left in the deeper ground, and covered the surface with topsoil seeded with grass to prevent erosion. The State pledged to maintain the air and water monitoring stations. To date, all environmental samples have been free of the contamination that prompted this Superfund removal action.

## Research and Development

Controlling and cleaning up hazardous substances is a relatively new field. New equipment and new techniques are required to respond quickly and effectively to emergencies, and to dispose of the materials in a way that is environmentally safe. Both industry and EPA are working diligently to learn more about controlling such substances and to develop new

is a cooperative effort among emergency response research personnel at Edison, the Environmental Response Team, other EPA operational personnel, and contractors from private industry. As new equipment is developed and tested satisfactorily, it is utilized by EERU in actual emergencies, it is also used in training courses and in development of emergency response assistance manuals. Additional R&D support is provided at other EPA research installations.



***EPA's "Blue Magoo" can be moved quickly to hazardous waste sites to remove hazardous substances from contaminated water.***

cleanup techniques and equipment.

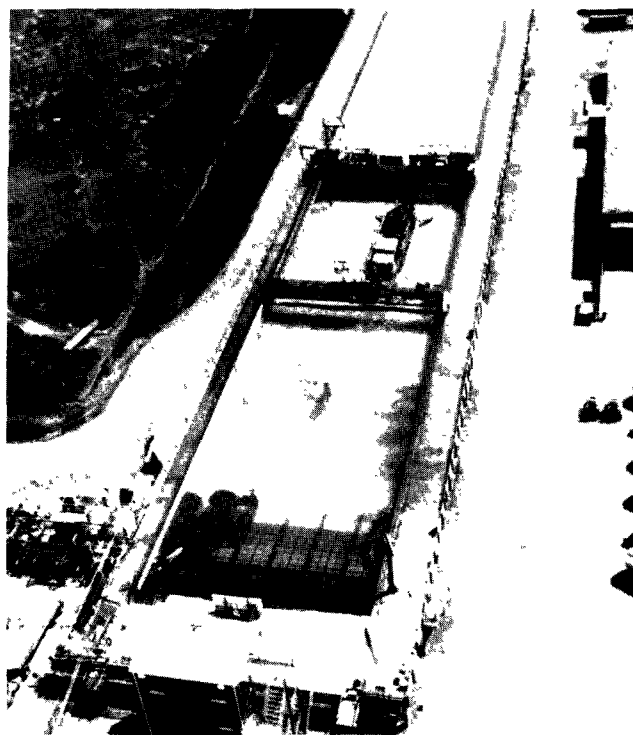
Much of the development and testing related to the Emergency Response Program occurs at EPA's Environmental Emergency Response Unit (EERU) in Edison, New Jersey. EERU

### Chemical Cleanups

A number of special cleanup equipment designs are under development at Edison. One, designed for cleanup of chemical substances, is a fully-operational Physical-Chemical Treatment Trailer nicknamed the "Blue Magoo." A combination of treatment units mounted on a flatbed trailer truck, the Blue Magoo is capable of being transported to an emergency site.

The treatment technology was adapted from equipment currently used for conventional water pollution control treatment. The physical-chemical treatment





***Oil is released into the EPA OHMSETT tank at Edison, New Jersey, to test spill cleanup methods and equipment.***

concept for hazardous substances has now been adopted by at least two commercial cleanup equipment manufacturers.

Still in the testing stage is a mobile hazardous waste incineration system. This unit will be capable of on-site thermal detoxification of many hazardous materials such as PCBs, kepone, malathion, and TCDD. The

system is mounted on three over-the-road semi-trailers to facilitate transportation to operating sites. Trial burnings of liquid hazardous and toxic substances have been completed successfully. This is to be followed by trial burnings on contaminated solids.

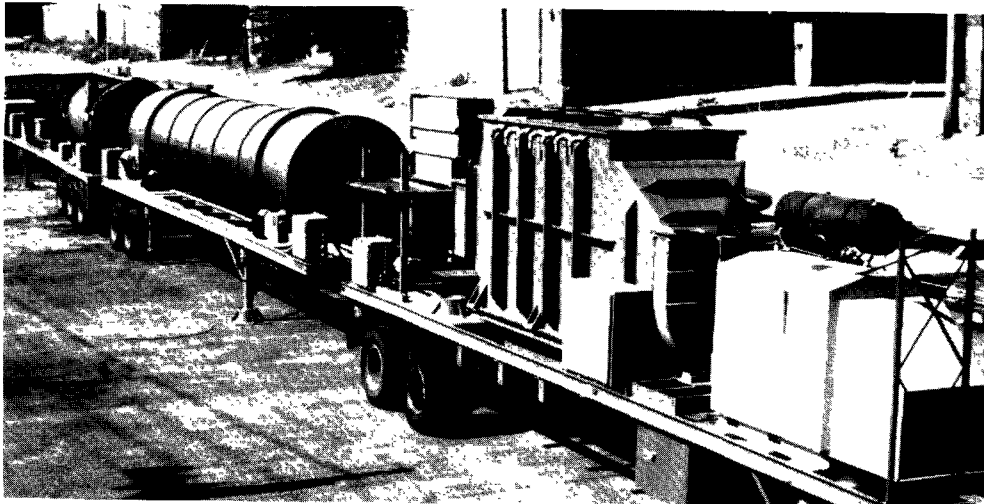
### **Oil Cleanups**

EPA also conducts a wide-ranging oil spills research program under Section 311 of the Clean Water Act. Major research and development efforts for oil spills include

- Construction and operation of a Spill Cleanup Testing Facility at Leonardo, New Jersey. The testing facility, called the Oil and Hazardous Materials Simulated Environmental Test Tank (OHMSETT), is a large concrete tank with a mobile bridge. It permits environmentally-safe testing of spill cleanup methods and equipment. Oil spill containment booms, skimmers and dispersing agents can be tested repeatedly to insure reliability and efficiency.
- Evaluation of chemical dispersants developed

- by industry, and techniques for applying them from ships and aircraft in rough seas
- Techniques for cleaning up and protecting shorelines and beaches The Edison facility, for example, is

emergencies involving contamination of ground water, surface water and drinking water by spills of hazardous substances and oils The unit also has provided emergency responses to uncontrolled waste sites EERU activities during these



***EPA's mobile hazardous waste incineration system is mounted on three semi-trailers to facilitate transportation to hazardous substance sites.***

investigating use of chemical agents which could be applied before an oil slick arrives These agents form a thin film that prevents the oil from adhering to the beach

#### **Emergency Assistance**

During the past several years, the EERU has responded to a variety of

emergencies included.

- Evaluation of the severity and extent of contamination,
- On-site analytical support,
- Recommendation of safe, effective treatment and disposal options; and
- Supervision of spill cleanup operations

### **Training**

In order to disseminate the latest knowledge on new emergency techniques and equipment, EERU has designed a comprehensive one-week training course for emergency response personnel from Federal, State and local organizations and private industry.

The course, entitled "Hazardous Materials Incident Response Operations," is offered at EERU's Edison facility. Its goal is to train response officials in the latest emergency procedures, team organization and functioning, and safety. The course consists of lectures followed by problem-solving sessions in the classroom or outdoor exercises.

Subjects include those concepts and principles associated with all response activities.

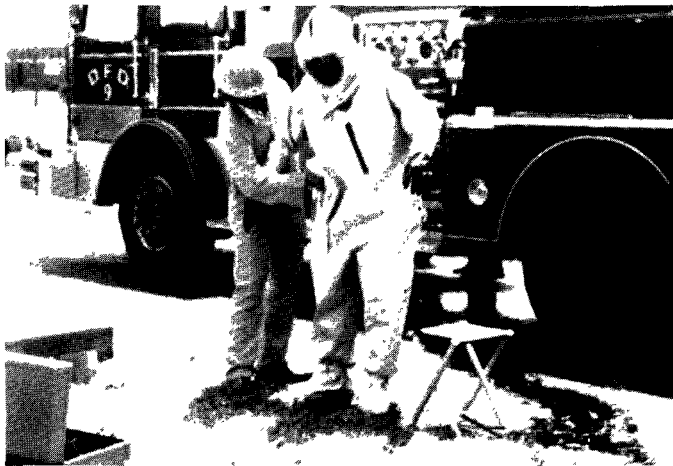
- Recognizing the hazards associated with specific materials,
- Determining the risks to the public and the environment,
- Developing methods to reduce or prevent the effects of an incident, and
- Insuring protection and safety of response personnel

The course is limited to 18 participants per session. During the first part of the instruction, students are divided into small work groups which study and practice problem-solving and decision-making involved in the foregoing concepts. Participants are next instructed in the use of protective clothing and breathing equipment, after which they actually use the equipment in a smoke-filled environment, on obstacle courses and while operating field instruments.

Final exercises are designed to test students' ability to utilize the information presented to them in a full-scale environmental episode. They are confronted with two simulated exercises, both based upon actual emergencies, which require practical application of the techniques learned earlier.

The course has proven to be one of EERU's most effective means of involving emergency response personnel in the complexities of such a response and ensuring informed, well-coordinated teamwork to resolve the problem.

*EPA sponsors nationwide training for representatives of industry, fire departments, and State and local governments. Right and below: Trainees learn how to don and use the self-contained breathing apparatus often required for respiratory protection.*



Several hundred emergency response personnel have completed the course since it was inaugurated in 1981. Graduates include all members of EPA's Emergency

Response Division, other Federal officials with emergency responsibilities, and response personnel from State, local and private organizations.

The course currently is being offered once each month. Further information is available from:  
Thomas Sell  
Training Coordinator, ERT  
US Environmental  
Protection Agency  
26 West St. Clair Street  
Cincinnati, Ohio 45268  
513-684-7537  
FTS-684-7537



*Inside this EPA mobile laboratory, scientists and technicians test soil and water samples for hazardous substances.*

### **Manuals**

In connection with its developmental testing and training functions, EPA publishes an extensive series of manuals to assist emergency response personnel in planning and conducting cleanup operations. In an effort to

achieve a uniform and cohesive national response program, the Agency develops manuals in emergency response methodology, adaptation of latest cleanup techniques, uniform communications terminology and administrative procedures, guidance on decision-making, and instructional and reference manuals for students in the ERT training courses.

Recently published manuals deal with pesticide disposal, contingency planning (in cooperation with the Federal Emergency Management Agency), and control of hazardous materials spills. Currently available manuals on emergency response to spills include:

- *Manual of Practice for Protection and Cleanup of Shorelines*
- *Manual for Control of Hazardous Material Spills*
- *Hazardous Materials Incident Response Operations*

All emergency response manuals are published and made available through the National Technical Information Service, Springfield, Virginia 22161. Further information may be obtained

from NTIS, from EPA's Emergency Response Team or any EPA Regional Office

#### **Identification**

Each hazardous substance has special properties that dictate its handling and disposition. A substantial portion of EPA's hazardous substance research is designed to develop methods of identifying these properties. These programs are conducted at EPA's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada. Major research efforts there include

- Evaluation of proposed sampling, analysis and classification procedures;
- Improvement of monitoring procedures at disposal and cleanup sites, and
- Development of a quality assurance program to guarantee the reliability of data

EPA files document many cases of damage to life and the environment from im-

proper disposal of hazardous substances or accidental spills. Dangers also develop from release of such substances into rivers, lakes and other surface waters, from air pollution, fire, explosions and soil contamination.

Although the responsible party may satisfactorily clean up the release of a hazardous substance, Superfund and Section 311 of the Clean Water Act now permit the highest degree of inter-governmental coordination and effectiveness whenever private industry requests emergency assistance.

This inter-governmental coordination, together with constantly improving technology and a growing environmental awareness by industries which generate, transport and dispose of hazardous waste, is being translated daily into increased environmental protection and safety for the American public.

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## EPA Regional Emergency Response Offices

### Region I

Chief, Oil and Hazardous Materials  
Section  
Surveillance and Analysis Division  
60 Westview Street  
Lexington, MA 02173  
(617) 861-6700

### Region II

Chief, Emergency Response Branch  
Office of Emergency and Remedial  
Response  
Edison, NJ 08837  
(201) 321-6657

### Region III

Chief, Superfund Branch  
Curtis Building 3HW-20  
6th and Walnut Streets  
Philadelphia, PA 19106  
(215) 597-9492

### Region IV

Chief, Emergency Remedial and  
Response Branch  
345 Courtland Street, N E  
Atlanta, GA 30365  
(404) 881-3931

### Region V

Chief, Spill Response Section  
Environmental Services Division  
5-SEES  
536 South Clark Street  
Chicago, IL 60605  
(312) 353-2102

### Region VI

Chief, Emergency Response Branch  
6ES-E  
1201 Elm Street  
Interfirst-Two Building  
Dallas, TX  
(214) 767-2720

### Region VII

Chief, Emergency Planning and  
Response Branch  
Environmental Services Division  
25 Funston Road  
Kansas City, KS 66115  
(913) 236-3888

### Region VIII

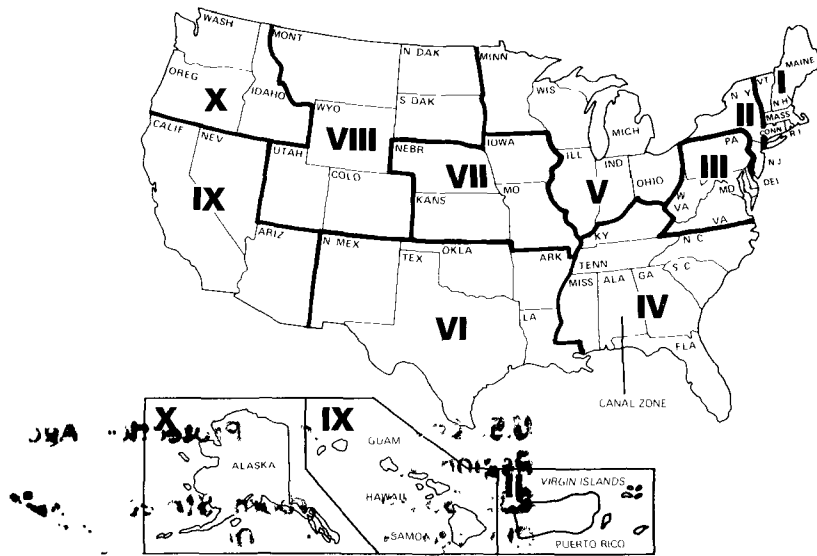
Chief, Emergency Response Branch  
Environmental Services Division  
1860 Lincoln Street  
Denver, CO 80295  
(303) 234-6069

### Region IX

Chief, Emergency Response Section  
T 3-3  
Field Operations Branch  
Toxic and Waste Management  
Division  
215 Fremont Street  
San Francisco, CA 94105  
(415) 974-7511

### Region X

Chief, Environmental Emergency  
Response Team  
Environmental Services Division  
1200 6th Avenue  
Seattle, WA 98101  
(206) 442-1263



**Superfund/RCRA Hotline** . . . . . (800) 424-9346  
for information on programs or  
(202) 382-3000 . . . . .

**National Response Center** . . . . . (800) 424-8802  
to report oil and hazardous substance releases