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RCRA, Superfund & EPCRA Hotline Training Module

Introduction to:

**The Superfund Response
Process**

Updated February 1998

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THE SUPERFUND RESPONSE PROCESS

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1. INTRODUCTION

Responding to growing concern over public health and environmental threats from uncontrolled releases of hazardous materials, in December 1980 Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. CERCLA established a program to:

- Identify sites where hazardous substances have been, or might be, released into the environment
- Ensure these sites are cleaned up by responsible parties or the government
- Create a claims procedure for parties who have cleaned up sites or spent money to restore natural resources.

The term "Superfund" was first coined to describe the trust fund created to finance cleanup actions, and is now often used to denote the entire program. When enacted, CERCLA established a \$1.6 billion fund with monies collected as taxes on crude oil and certain commercial chemicals. When Congress passed the Superfund Amendments and Reauthorization Act (SARA) in 1986, the fund was increased to \$8.5 billion. These monies are raised through excise taxes on petroleum feedstock chemicals, a tax on certain imported chemical derivatives, an environmental tax on corporations, appropriation from general tax revenues, and any monies recovered or collected from parties responsible for site contamination. In 1990, federal budget legislation contained a \$5.1 billion reauthorization of the Fund providing authority for the program to continue through September 30, 1994.

Superfund is not the same program today as it was when it began in 1980. Its evolution has been influenced by two major factors -- time and cost. The challenge for EPA has been to weigh these two influences while simultaneously engineering the program to satisfy the industries paying for cleaning up the sites, the communities in which the contaminated sites are located, and environmental groups keeping a watchful eye on Superfund's progress. These influences, coupled with the technical complexities of site cleanup, have compelled both Congress and EPA to improve the program.

Congress reauthorized and amended Superfund in 1986, strengthening and broadening the scope of the original statute, but the changes in the fundamental operation of the program did not stop there. In 1989, EPA conducted an evaluation of Superfund which is now known as the "90-Day Study." This study, entitled [A Management Review of the Superfund Program](#), established goals for Superfund improvement including the need to focus on enforcement first and to foster the use of innovative technologies. The 90-Day Study was the inception of a series of evaluations by EPA to examine ways Superfund can be improved. For example, in 1992, EPA devised a method to accelerate the cleanup process called the Superfund

Accelerated Cleanup Model (SACM) and also established initiatives needed to reform the program, which are known as Superfund Administrative Improvements and Reforms. These initiatives have launched new components of the program, and are elaborated on in other modules. This module introduces the basics of how Superfund operates.

When you have completed this module, you should be able to describe the CERCLA response process. Specifically, you should be able to:

- Demonstrate familiarity with the statutory and regulatory framework of the Superfund program, and quickly reference pertinent sections in the statute and the National Contingency Plan (NCP)
- Explain the basic steps of the Superfund response process, from initial site discovery until site cleanup has been completed
- Describe the function of the CERCLIS database, the archived list, and the National Priorities List (NPL)
- Locate and cite the Hazard Ranking System (HRS)
- Briefly explain the NPL, the HRS, and their relationship
- Provide information about special types of sites, such as federal facilities, mining sites, Resource Conservation and Recovery Act (RCRA) sites, pesticide sites, and radioactive sites
- Understand the factors that contribute to the selection of a remedy
- Understand the role of the states in the Superfund process.

Use this list of objectives to check your knowledge of this topic after you complete the training session.

2. REGULATORY SUMMARY

There are tens of thousands of abandoned hazardous waste sites in our nation, and accidental releases occur daily. At the core of the Superfund program is a system of identification and prioritization that allows the most dangerous sites and releases to be addressed within the confines of limited federal funding and human resources. The process is both formal and flexible. In order to focus federal attention on the worst sites first, all sites must enter the program by undergoing a nationally consistent site assessment. This allows EPA to establish a list of high-priority or worst-risk sites that will be addressed first.

In order to ensure Superfund money is spent responsibly and appropriately at priority sites, risk and exposure assessments are built into several stages of the Superfund process. Since each site is unique, these assessments allow the primary threats to human health and the environment to be identified and remedied. The careful evaluation process carries through to the selection of the preferred cleanup technology. After several alternatives are carefully weighed against each other, the Agency selects the best remedial alternative while involving the public and potentially responsible parties. This alternative should be a cleanup method which protects human health and the environment, while complying with all applicable environmental laws, and provides a long-term, cost-effective solution.

The first step in the Superfund process is to identify abandoned or uncontrolled hazardous waste sites. EPA does this through a variety of methods, including reviewing records and information provided by state and local agencies and concerned citizens. CERCLA and SARA also require facilities to report releases of certain chemicals and provide information about hazardous substances used at the facility.

Once a site is identified, EPA or a state agency performs a preliminary assessment to determine if the site poses a potential hazard and whether a federal response is necessary. If the preliminary assessment concludes that the site does not present a serious hazard to human health or the environment, no further federal action will be taken. At this point, a state or private party may initiate and conduct a cleanup independent of the federal Superfund program.

If the site does pose a potential hazard, EPA may respond in one of two ways. If the threat posed by the site appears to be an emergency situation, EPA will conduct an immediate removal action. Such removal activities may include providing alternate water supplies, installing security fencing, or moving drums of hazardous substances to a secure area. If the threat is less immediate, EPA will perform more extensive site investigations in preparation for the remedial process. Sites that are determined to be most threatening to human health and the environment are placed on the NPL through a formal rulemaking. Once on the NPL, long-term cleanup actions aimed at achieving a permanent remedy are conducted. In some

cases, EPA will commence a remedial action, such as groundwater or soil cleanup, after a removal action has been conducted to reduce immediate threats.

EPA's authority to act does not stop with the removal of barrels or the construction of treatment facilities. EPA makes every effort to find the individuals or companies responsible for the hazardous waste problem and holds them financially responsible for the cost of the cleanup effort. This search for potentially responsible parties often occurs concurrently with cleanup activities. Those parties can be compelled to pay for the cleanup as work proceeds.

2.1 DEFINITIONS

Familiarity with the following terms is key to understanding this module.

ADMINISTRATIVE RECORD

Section 113(k) of SARA provides for the establishment of an administrative record file at or near each NPL site. This file contains the information used by the lead agency to make decisions on the selection of a response action. It provides a legal basis for challenging and defending response action decisions. Depending on the type of response action required for a site (i.e., removal or remedial), the regulations specify when the administrative record must be put in place. Guidance on contents and location of the administrative record file can be found in 40 CFR §300.800.

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Applicable requirements are cleanup standards, standards of control, and other substantive requirements, criteria, or regulations promulgated under federal or state environmental or facility siting law, which specifically address a hazardous substance, action, or other circumstances of a site. Relevant and appropriate requirements are federal or state requirements, criteria, or limitations that do not specifically address the response, but address situations similar to those encountered at a site.

FACILITY

A facility is any building, structure, installation, equipment, pipe or pipeline, well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, vehicle, stock, or aircraft, or any site or area, where a hazardous substance has been deposited, stored, disposed of, or placed; but does not include any consumer product in consumer use or any vessel (CERCLA §101(9)).

FEASIBILITY STUDY

A feasibility study (FS) is a study and analysis process for developing, evaluating, and selecting remedial actions. The term also refers to the report which describes the results of the study.

HAZARDOUS SUBSTANCE

Defined in CERCLA §101(14), a hazardous substance includes any substance designated pursuant to §§307(a) or 311(b)(2)(A) of the Federal Water Pollution Control Act, §102 of CERCLA, §3001 of RCRA, §112 of the Clean Air Act, or §7 of the Toxic Substances Control Act (TSCA). The definition specifically excludes any form of petroleum unless it is mixed with a hazardous substance not inherent in the petroleum. CERCLA hazardous substances are listed in a table codified in 40 CFR §302.4.

LEAD AGENCY

The lead agency (e.g., EPA, state, or an Indian tribe) provides the on-scene coordinator and remedial project manager (OSC/RPM) to plan and implement response actions under the NCP.

NATIONAL PRIORITIES LIST

Established pursuant to CERCLA §105(a)(8), the NPL is a list of abandoned or uncontrolled hazardous substance sites that are priorities for long-term remediation.

ON-SCENE COORDINATOR

The OSC is a federal official who has been designated by EPA or the U.S. Coast Guard to coordinate and direct federal responses to oil spills or to coordinate and direct removal actions or other response actions within the Superfund process.

OPERABLE UNIT

An operable unit is a discrete part of a response action, such as groundwater cleanup or removal of contaminated soil. The cleanup of a site can be divided into a number of operable units depending on the complexity of the problems associated with the site.

PRELIMINARY ASSESSMENT

A preliminary assessment (PA) is the review of existing site information to determine if a release may require additional investigation or action. A PA may include an on-site inspection if appropriate. This is the first step of the multi-step site assessment process. The term also refers to the document which reports the results of the assessment.

RECORD OF DECISION

A Record of Decision (ROD) documents the remedy decision for a site or operable unit. The ROD certifies that the remedy selection process has followed the requirements of CERCLA and the NCP, and discusses the technical components of the remedy. The ROD also provides the public with a consolidated source of information about the site.

REMEDIAL ACTIONS

Remedial actions are actions documented in the ROD that are taken at NPL sites to eliminate or reduce the pollution to levels which prevent or minimize the release of hazardous substances so that they do not migrate or cause substantial danger to public health or welfare, or the environment. An example is to remove hazardous constituents from groundwater using pump and treat technologies.

REMEDIAL INVESTIGATION

A remedial investigation (RI) is a data collection and site characterization process at an NPL site. The RI is necessary to determine the nature and extent of contamination at the site.

REMEDIAL PROJECT MANAGER

The Remedial Project Management (RPM) is an official predesignated by EPA, the U.S. Coast Guard, or the Department of Defense to coordinate, monitor, or direct remedial activities.

REMOVAL ACTION

A removal action is a short-term federal response to prevent, minimize, or mitigate damage to the public or the environment at sites where hazardous substances have been released. Examples of removal actions are excavating contaminated soil, erecting a security fence, or stabilizing a berm, dike, or impoundment. Removal actions may also be necessary in the event of the threat of release of hazardous substances into the environment such as taking abandoned drums to a proper disposal facility. Removal actions may take place at NPL or non-NPL sites.

RESPONSE ACTION

Response action is a general term that includes both removal and remedial action, including any related enforcement actions.

SITE INSPECTION

The second stage in the Superfund site assessment process, occurring after the PA, is known as the site inspection (SI). This part of the Superfund response process involves an on-site investigation to ascertain the extent of a release or potential for release and any risks involved. The SI usually involves sample collection and may also include the installation of groundwater monitoring wells.

2.2 NATIONAL CONTINGENCY PLAN

The National Oil and Hazardous Substances Pollution Contingency Plan, commonly referred to as the NCP, is a set of regulations setting forth the procedures that EPA must follow when implementing the Superfund program. These requirements, codified in 40 CFR Part 300, outline the steps EPA takes when responding to situations in which oil is discharged into or upon the navigable waters of the United States, or hazardous substances, pollutants, or contaminants are released into the environment. The oil response regulations were developed pursuant to the Clean Water Act and are codified in Subpart D of the NCP. The hazardous substance regulations, developed pursuant to §105 of CERCLA and SARA, are codified in Subpart E. The following chart depicts the major subparts.

SECTION	NATIONAL CONTINGENCY PLAN TITLE
Subpart A	Introduction
Subpart B	Responsibility and Organization for Response
Subpart C	Planning and Preparedness
Subpart D	Operational Response Phases for Oil Removal
Subpart E	Hazardous Substance Response
Subpart F	State Involvement in Hazardous Substance Response
Subpart G	Trustees for Natural Resources
Subpart H	Participation by Other Persons
Subpart I	Administrative Record for Selection of Response Action
Subpart J	Use of Dispersants and Other Chemicals
Subpart K	Federal Facilities (Reserved -- no regulations promulgated to date)
Subpart L	Lender Liability under CERCLA (vacated by U.S. District Court)
Appendix A	Hazard Ranking System
Appendix B	National Priorities List
Appendix C	Revised Standard Dispersant Effectiveness and Toxicity Tests
Appendix D	Appropriate Actions and Methods of Remedying Releases

EPA is authorized by CERCLA §104 - Response Authorities, to respond to releases of hazardous substances, pollutants, and contaminants. The regulations in the NCP specify two types of responses: removal and remedial actions. Each type of action has its own set of regulations and procedures. At a Superfund site there may be both types of actions, possibly occurring simultaneously.

FUNDING

A response may be financed by Superfund (fund-financed), by the responsible parties, or by a third party with the intention of being reimbursed by the Superfund. For an activity to be reimbursable, the response action taken must be "consistent with the NCP" and follow other specifications outlined in 40 CFR §300.700. Fund monies used at federally-owned sites are limited to financing certain activities specified in CERCLA §§111(c) and (e)(3).

2.3 NOTIFICATION OR DISCOVERY

In order for a site to be considered eligible for Superfund response, a release must be discovered and reported to the government. Releases of hazardous substances may be discovered by various means, including:

- Mandatory CERCLA §§103(a) or (c) notification
- CERCLA §104(e) investigations
- RCRA-required release notification
- Inventory efforts or random observation by government agencies
- Formal citizen petitions pursuant to 40 CFR §300.420(b)(5)
- Review of state and federal records
- Informal community observation and notification.

Methods of site discovery, and the types of releases reported, are quite varied. Release, as defined by §101(22) of CERCLA, can mean any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment. This broad definition includes the abandonment of barrels, leaks of hazardous substances from storage tanks, and spills of hazardous substances during transportation accidents. For the purpose of implementing NCP response procedures, release also means the threat of a release.

NOTIFICATION PROCEDURES

EPA may be notified about the potential need to initiate a Superfund response action through a variety of informal or formal means. Informal notification avenues include reports from citizens, and state and local agencies. There are also several formal notification methods, some of which stem from RCRA and CERCLA statutory or regulatory requirements. A few of the more formal notification procedures are detailed below.

Reportable Quantity Regulations

Each of the hazardous substances listed in §302.4 has been assigned a reportable quantity (RQ) of either 1, 10, 100, 1,000, or 5,000 pounds. If a hazardous substance is released into the environment in a quantity greater than or equal to its RQ within a 24-hour period, then the release must be reported to the National Response Center, an emergency communication center run by the U.S. Coast Guard. (See 50 FR 13456; April 4, 1985, for a discussion of "into the environment" and other useful preamble language.) The person in charge of a vessel or facility is required by CERCLA §§103(a) and (b) to report "as soon as he has knowledge of" this release. The National Response Center (NRC) can be reached at (800) 424-8802 or (202) 426-2675.

Sections 300.125 and 300.405(b) of the NCP discuss the requirements to report releases to the NRC. After releases are reported, the NRC notifies the appropriate OSC who notifies the governor of the affected state. The OSC then determines if a preliminary assessment for a removal or a remedial action is appropriate. A more detailed discussion of the notification process and reportable quantities is presented in the module entitled CERCLA and EPCRA Release Reporting Requirements.

Notification of Past Contamination

CERCLA §103(c) stipulates that EPA be notified of the existence of hazardous waste treatment, storage, or disposal sites other than transfer facilities or those regulated by RCRA. An EPA form (8900-1) was printed in the April 15, 1981, Federal Register for owners and operators to use when providing this notification (46 FR 22144). The notification includes the location of the facility, the type and amount of hazardous waste, and any known, suspected, or likely releases.

All current and former owners or operators of non-RCRA facilities that accepted hazardous waste for treatment, storage, or disposal, and transporters who delivered waste to such facilities, were required to file a notification by June 9, 1981. Anyone who discovers hazardous waste at a site after that date must still notify EPA of the site's existence because the penalty provisions are not limited to sites identified by the statutory deadline. The continuing obligation to notify EPA of contaminated sites is known as the §103(c) "lasting provision."

CERCLIS

All sites where releases or potential releases have been reported are listed in the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS). This is a comprehensive national computer database and management system that inventories and tracks releases addressed or needing to be addressed by the Superfund program. CERCLIS contains the official inventory of CERCLA sites and supports EPA's site planning and tracking functions. As of October 21, 1997, over 10,000 sites are in the CERCLIS database. The site information maintained in CERCLIS includes location, type of facility or units on-site, type and

amount of hazardous waste, any known or suspected releases, and the response activities that have occurred, or are occurring at the site. Many of the sites in the CERCLIS database have been investigated and deferred to other authorities for possible response after EPA has determined that no further federal action is necessary. On March 29, 1995 (60 FR 16053), EPA amended the definition of CERCLIS to reflect the new procedures for maintaining the CERCLIS database. The new procedures require that sites with a No Further Response Action Planned (NFRAP) designation be removed from CERCLIS and placed in a separate archived database. As of October 21, 1997, over 30,000 sites have been moved to the Archived List. Archived sites may be sites where, following an initial investigation, no contamination was found, a cleanup action occurred at the site, or the contamination did not warrant federal Superfund action.

Some CERCLIS and Archived List data are available to the public through the Office of Emergency and Remedial Response (OERR) automated phone system at (800) 775-5037 or (202) 260-8321. Callers can request the CERCLIS and Archived List in either electronic or paper copy form. The system is designed to respond to requests for nationwide Superfund information only and cannot accommodate customized requests. Customized reports are available to the public through the Freedom of Information Act (FOIA) process. For site-, state-, or Region-specific information, FOIA requests must be sent to the EPA Regional offices. For CERCLIS information on the national level, FOIA requests are sent to EPA Headquarters. These reports are available in a variety of formats and the cost depends on the information requested. Generally, pre-decisional and enforcement data are not publicly available. A searchable version of CERCLIS is available on EPA's Superfund home page (<http://www.epa.gov/superfund>).

2.4 RESPONSE PROCESS

As mentioned previously, there are different regulations for removal and remedial activities. It can be confusing as to how each set of regulations applies in the grand scheme of the Superfund response process. All sites that are entered into CERCLIS are carefully evaluated to determine whether the contamination poses a great enough threat to warrant inclusion on the NPL. Generally, remedial actions are long-term cleanup actions intended to permanently remedy the problems at the NPL sites. Removal actions may take place at NPL or non-NPL sites and at any time during the remedial process, if site conditions pose an imminent and substantial threat to human health or the environment.

SITE ASSESSMENT

Once a site is identified, EPA or the state conducts a preliminary assessment (PA). Often, EPA or the state hires a contractor to conduct the PA. If further information is needed to determine if the site merits federal action, an SI is performed. A Hazard Ranking System (HRS) score may be calculated to determine whether the site

should be included on the NPL. These steps of the process combined are referred to as the site assessment.

The percentage of CERCLIS-listed sites eventually added to the NPL is between two and seven percent of those assessed. About half of CERCLIS sites are eliminated from further consideration at the PA step of the process (55 FR 8693; March 8, 1990). The sites that need further attention but do not warrant placement on the NPL are addressed by the state or by the removal program, or by another EPA program (e.g., RCRA corrective action).

Preliminary Assessment

All releases listed in the CERCLIS database must undergo a PA (§300.420(b)). The goal of the PA is to assess the threat to human health and the environment, determine if a removal action is necessary, and establish site inspection priorities. The initial assessment does not typically involve on-site activities, but is more likely to involve activities such as:

- Review of federal, state, and local government permit and judicial files
- Interviews with federal, state, and government personnel
- Examination of land use records from local planning commissions
- Analysis of geological, topographical, and hydrological data
- A visual inspection from the site's perimeter.

There is no sampling at this early point in the process because the intent is to obtain quick, low-cost information about the site and its surroundings to determine the need for further investigation.

After researching this information, the Agency may determine that the release does not pose a threat to human health and the environment sufficient to cause the site to be listed on the NPL. If EPA makes a NFRAP determination, the Regional office will indicate in CERCLIS that EPA has completed its assessment at a site, and has determined that no further steps on the federal level will be taken unless new information indicates future listing may be appropriate. NFRAP sites are removed from CERCLIS and archived as historical records. If EPA intends to continue the response process, the indication of this decision will not be shown on CERCLIS until the next step has begun.

Site Inspection

If the PA indicates that further investigation may be necessary, an SI is performed (§300.420(c)). An SI is a hands-on inspection which includes sample collection, and is carried out to:

- Eliminate from consideration releases that pose no threat to human health or the environment

- Identify any immediate threat to public health or the environment
- Collect data for NPL eligibility determinations
- Collect data to better characterize the release for more effective response.

During the SI, EPA, its contractors, state personnel, or state contractors examine soil and sediment, ground and surface water, air quality, drums and lagoons, site layout, geology, hydrogeology, meteorology, and topography. Potentially responsible parties are also identified.

The site inspection is often performed in two stages. The initial site investigation is known as the focused site inspection. A follow-up inspection, known as the expanded site inspection, may be conducted if additional data are needed to score the site using the HRS. During the focused site inspection samples will be collected and analyzed to determine more precisely which contaminants are present at the site; migration potential; and threats to drinking water, soils, and air. These results help the OSC to determine if the site should undergo removal action or should be subject to more sampling to be considered for the NPL.

In the event further sampling must be done, the site moves into the second stage of the site inspection process. In the expanded SI, hypotheses developed during the focused SI are tested, background levels are established, and preparation for the HRS begins. Specific activities can include:

- Monitoring well installation
- Air sampling
- Geophysical studies
- Drum or tank sampling
- Borehole installation
- Complex background sampling studies.

Most likely before the expanded SI is complete, initial calculation of the HRS score will begin. The following section will cover the details of the HRS scoring process.

Hazard Ranking System

Data gathered during the PA and the SI are used to develop an HRS score. The HRS is a scoring methodology for evaluating relative risks to human health and the environment posed by uncontrolled hazardous waste sites, and is the mechanism by which EPA has listed over 95 percent of the sites currently on the NPL. The HRS procedures are found in Appendix A of 40 CFR Part 300.

The HRS assesses four pathways of potential human exposure to contamination (i.e., groundwater, surface water, soil, and air) and calculates a score based on the results of each pathway evaluation. The groundwater pathway evaluates the likelihood that hazardous substances at a site will migrate through the ground to contaminate aquifers and any drinking water wells drawing from those aquifers.

The surface water pathway evaluates the likelihood that runoff containing hazardous substances from a site can move through surface water and affect people or the environment. The soil exposure pathway evaluates the potential threats posed by direct, physical contact with hazardous wastes or contaminated soil. The air migration pathway evaluates both observed and potential releases of hazardous substances to the air. For each pathway, the HRS assigns numerical values to factors that relate to or indicate risk based on conditions at the site. The factors are grouped into three categories:

- The likelihood that a site has released or has the potential to release contaminants into the environment
- The characteristics of the waste (toxicity and waste quantity)
- The people or sensitive environments affected by the release.

The score generated from each pathway evaluation is applied to a complex formula called a root-mean-square. The root-mean-square equation is used so that higher-scoring pathways will have more weight when being compared to low-score or zero-score pathways. This ensures that a site with extensive groundwater contamination worthy of federal action, but no contamination in the other three pathways, will still score high enough to be considered for inclusion on the NPL. The final score generated from the root-mean-square calculation will range from 0 to 100. Sites that have a score of 28.50 and above are eligible for the NPL. If the HRS score equals or exceeds 28.50, EPA will propose the site for inclusion on the NPL and, after appropriate public comment, will make a final decision on listing the site. All final NPL decisions are published in the Federal Register. For more information on the revised HRS and the four pathways, see the December 14, 1990, Federal Register (55 FR 51532), EPA's guidance entitled Hazard Ranking System Guidance Manual (OSWER Directive 9345.1-07), Revision to OSWER NPL Policy "The Revised Hazard Ranking System: Evaluating Sites After Waste Removals", Publication No. 9345.1-03FS, October 1991 (OSWER Directive 9345.1-25), and EPA's fact sheet entitled The Revised Hazard Ranking System: Background Information (OSWER Directive 9320.7-03FS). There are two additional mechanisms available for determining eligibility for inclusion on the NPL. These mechanisms, state top priority designation and the Agency for Toxic Substances and Disease Registry (ATSDR) involvement, are described below.

State Top Priority

Pursuant to CERCLA §105(a)(8)(B), each state may add a single site to the NPL by designating a site as its top priority, regardless of the HRS score. This mechanism is set out in the NCP at §300.425(c)(2), and may be used only once. Of the 57 states and territories, 40 have designated top priority sites.

Agency for Toxic Substances and Disease Registry

As mentioned in the module entitled Statutory Overview of CERCLA, CERCLA §104(i) established ATSDR, which is part of the Department of Health and Human Services. ATSDR administers a third mechanism for listing certain sites on the NPL. According to §300.425(c)(3), to be eligible for the NPL under this mechanism, all three of the following conditions must be met:

- ATSDR has issued a health advisory that recommends that humans avoid contact with a release
- EPA determines that the release poses a significant threat to public health
- EPA determines that it will be more cost effective to use its remedial authority than its removal authority to respond to the release.

Thirteen sites are currently on the NPL based on the issuance of an ATSDR health advisory.

In addition to its role in the site listing process, ATSDR plays an important role in conducting and reviewing toxicological studies and health assessments at Superfund sites. Section 104(i) requires that EPA and ATSDR prepare a prioritized list of hazardous substances commonly found at NPL sites and toxicological profiles of those substances (52 FR 12866; April 17, 1987). This list is periodically updated, and is available from ATSDR at (404) 639-6000.

ATSDR must conduct a health assessment for each site on, and proposed for inclusion on, the NPL (§104(i)(6)(a)). CERCLA directs ATSDR to complete health assessments "promptly" and to the "maximum extent practicable" before completion of the remedial investigation/feasibility study (RI/FS). The ATSDR health assessment consists of reviewing environmental sampling data and other site-related information written by EPA (e.g., remedial investigation reports, risk assessments). These data are evaluated to:

- Assess whether there is any current or potential health threat
- Develop health advisories as necessary
- Identify studies needed to evaluate human health effects.

If possible, health assessments are to be completed by ATSDR prior to the release of the RI/FS for public comment. When this is not possible, EPA and ATSDR should discuss preliminary findings of the health assessment prior to ROD signature.

LISTING POLICIES

CERCLA restricts EPA's authority to respond to certain sites under this statute by expressly excluding some substances -- petroleum, for example -- from the definition

of hazardous substances. In addition, EPA may as a matter of policy choose not to use CERCLA authority to act on a site because the federal government can undertake or enforce cleanup under other laws, thus preserving CERCLA funds for sites not covered by other laws. EPA has chosen not to use CERCLA for hazardous waste sites regulated by RCRA corrective action. If EPA later determines that the sites are not being properly addressed by other authorities, it may consider placing them on the NPL.

The table below describes the categories of sites having special concerns or procedures under CERCLA.

Type of Site	Description
RCRA Sites	<p>The NPL generally does not include active facilities which are operating under RCRA Subtitle C corrective action authorities. EPA believes any problems at these facilities can be addressed through RCRA enforcement tools. Nevertheless, EPA has made provisions to list certain categories of RCRA facilities on the NPL when they can not be addressed under RCRA. See the October 4, 1989, <u>Federal Register</u> for further information (54 <u>FR</u> 41000).</p> <p>The October notice also discusses facilities are either unwilling or unable to pay for cleanup and costs under RCRA corrective action, and are eligible for NPL listing.</p>
Federal Facilities	<p>SARA §120(a) requires federal facilities (such as DOD bases or DOE sites) to comply with CERCLA, but §111(e)(3) generally prohibits using fund monies to clean them up, so federal agencies must use their own funds.</p> <p>The NCP published in the July 20, 1982, <u>Federal Register</u> prohibited placing sites that are owned by the federal government on the NPL. This prohibition was removed on November 20, 1982, and as result, the first federal facility sites were listed in a separate section of the NPL in the June 10, 1986, <u>Federal Register</u> (51 <u>FR</u> 21054). Until recently, federal facility sites may be placed on the NPL even if they are subject to RCRA corrective action authorities. See the March 13, 1989, <u>Federal Register</u> for this policy (54 <u>FR</u> 10512). However, that policy was recently changed: federal facilities can be deferred to RCRA if they meet certain conditions, such as the ability of RCRA to address all contamination (62 <u>FR</u> 62523; November 24, 1997).</p>

Type of Site	Description
Mining Wastes	Between December 1982 and June 1986, the mining industry contended that CERCLA did not apply to mining waste releases. The industry claimed that the HRS scoring of mining waste was inappropriate because of the large volume and low toxicity of the waste streams. Citing a court decision, EPA supported its position that mining sites <u>are</u> eligible for the NPL in the September 18, 1985, <u>Federal Register</u> (50 FR 37950), and reaffirmed it in the June 10, 1986, <u>Federal Register</u> (51 FR 21054).
Pesticide Sites	Certain sites where pesticides have been released present several regulatory issues under CERCLA. CERCLA §107 states that someone who applied pesticides to the land in compliance with FIFRA cannot be held liable for cleanup of a site. Currently, EPA policy is to list on the NPL only pesticide sites where the contamination resulted from spills, leaks, or improper disposal of pesticides. If warranted, EPA may develop a general strategy for addressing contamination from agricultural chemicals in groundwater under FIFRA (56 FR 5598; February 11, 1991).
Radioactive Materials	CERCLA §101(22) excludes several types of radioactive releases, making these releases ineligible for CERCLA response actions or the NPL. EPA will not list releases of source, by-product, or special nuclear materials from any facility with a current Nuclear Regulatory Commission license because the Commission has its own cleanup authority, provided the cleanup is comparable to that required under CERCLA. The Agency will, however, consider listing facilities which are no longer licensed by the Commission. Radionuclides, on the other hand, are subject to CERCLA authorities as hazardous substances because they are designated hazardous air pollutants under §112 of the Clean Air Act (CERCLA §101(14)(E)).

NPL RULEMAKING PROCESS

Developing the NPL requires close cooperation among EPA Headquarters, the Regions, and the state agencies involved. Since the NPL is promulgated as an appendix to the NCP, it must undergo the regulatory rulemaking process. The process begins when the Regions submit HRS packages for a Headquarters quality assurance review. Those sites that still have an HRS score of 28.50 or above after a thorough review are slated for NPL listing. This initial list is subject to internal review and approval by the Office of Management and Budget (OMB). After OMB approval, EPA publishes the list of sites in the Federal Register. The published proposed rule is generally subject to a 60-day public comment period. EPA establishes a docket including the HRS packages and site summary at EPA Headquarters and the respective Regional office. State and ATSDR health advisory

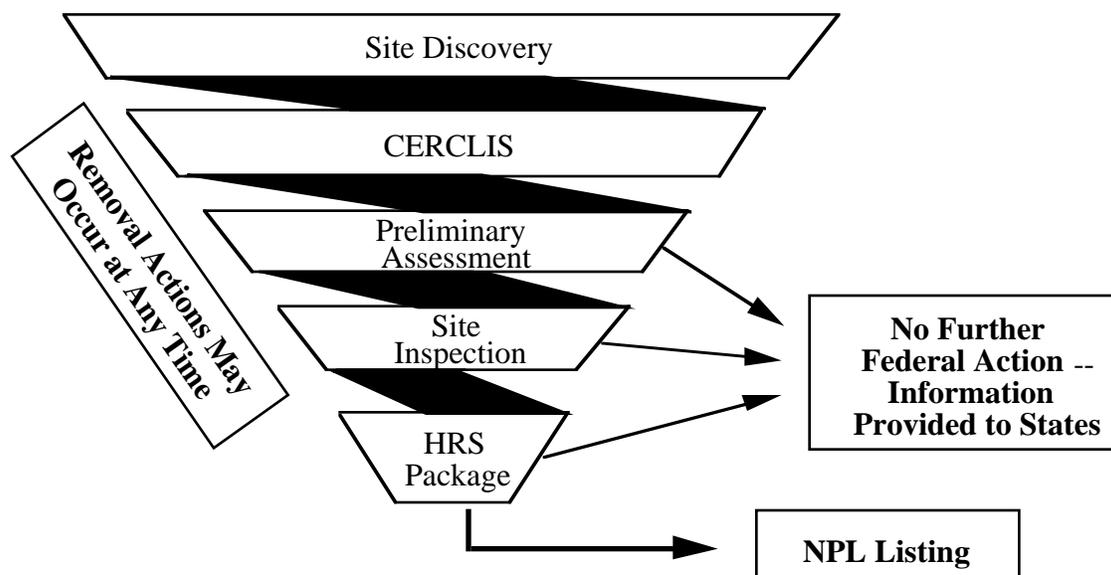
sites are also subject to the public comment period.

Once public comments on the proposed sites have been considered, EPA compiles a final rule along with a support document that includes the comments received and EPA's responses. The final rule is then reviewed by OMB, signed by the Assistant Administrator of OSWER, and published in the Federal Register. The new sites are now officially part of the NPL.

In Fiscal years 1995 and 1996, Congress prohibited EPA funding for listing or proposed listing unless the governor provided written concurrence for the site to be added to the NPL (Public Laws 104-19 and 104-134). This requirement, referred to as "Governor's Concurrence," ended on September 30, 1996. The appropriations bill for fiscal year 1997 contains no such provision. EPA, nevertheless, intends to continue to coordinate with the states in the NPL listing decision process and has issued a memorandum outlining those intentions (Laws to Regional Administrators; November 14, 1996, and Fields to Regions; July 25, 1997).

The site assessment information addressed so far has been extensive, but there is still much more to cover. Figure 2 provides a schematic overview of the Superfund site assessment process. During any stage of the response process, a removal action may be necessary. Therefore, before going into detail about the remedial process for sites which qualify for the NPL, it is necessary to provide a detailed description of removal actions and activities.

**Figure 2
SITE ASSESSMENT**



2.5 REMOVAL PROCESS

Removal actions, authorized by CERCLA §§104(a)(2) and 104(c)(1), are short-term federal responses to prevent, minimize, or mitigate damage to the public or the environment at sites where hazardous substances, pollutants, or contaminants have been released or where there is a substantial threat of a release. Removal actions may include, but are not limited to: repairs to a dike or impoundment wall, erecting a security fence, or transporting leaking drums to a RCRA treatment, storage, and disposal facility.

A removal may be conducted during any step of the response process at an NPL site, and may even constitute complete cleanup of a site. In addition, removal actions are often used to respond to emergencies and accidental releases during transport, or at operating facilities, as well as uncontrolled releases at non-NPL sites. Removals are also conducted under §311 of the Clean Water Act when oil spills occur in or near navigable waters (40 CFR Part 300, Subpart D).

In most cases, an OSC designated by the lead agency directs removal actions, and the work is done by emergency response contractors. When a removal takes place at an NPL site, it may be directed by an RPM and performed by remedial contractors.

LIMITS

To make a clear distinction between short-term removal actions and long-term remedial actions, Congress placed limits on the time and money available to conduct a removal response in CERCLA §104(c)(1). In 1986, SARA raised the spending limit from \$1 million to \$2 million per removal, and the time allotted per removal from 6 to 12 months. The spending and time limits may be extended (§300.415(b)(5)) when:

- Continuation is required to prevent, limit, or mitigate an emergency which is an immediate risk to public health or the environment and it will not be acted upon by another party
- or**
- Continuing the removal is consistent with a remedial action that will be taken at the site (applicable only to proposed and final NPL sites).

DECISION TO CONDUCT A REMOVAL

Provided there is a substantial threat at a particular site and a removal action is necessary, the preliminary assessment and the site investigation may be combined into a procedure referred to as the removal site evaluation. The regulations governing removal site evaluations are found at 40 CFR §300.410.

Information gathered from the removal site evaluation may trigger greater concern for problems at a site that need to be addressed quickly. The following are examples of information presented at the conclusion of a removal site evaluation:

- Identification of the nature and source of the release
- Evaluation of the threat to public health
- Evaluation of the magnitude of the threat
- Evaluation of factors necessary to make a determination of whether a removal is necessary
- Determination of whether a nonfederal party is undertaking a proper response.

These and other factors listed in 40 CFR §300.415(b)(2) will be carefully weighed to determine the appropriateness of a removal action.

REMOVAL ACTION

If the lead agency determines that a removal action is appropriate, action begins as soon as possible. Not all actions considered to be removal actions will be equally urgent. For example, situations involving risk of fire or explosion, or contamination of a drinking water reservoir, may require more prompt and expeditious attention than certain drum removals or cleanups of surface impoundments. The three categories of removals are:

- **Classic Emergencies:** Those actions where the release requires on-site activities be initiated within hours of the lead agency's determination that a removal action is appropriate
- **Time-Critical:** Those removals where, based on the site evaluation, the lead agency determines that a removal action is appropriate and that there is less than six months available before on-site activities must be initiated. Specific community relations requirements for time-critical actions are set out at §300.415(m)(2) and specific administrative record requirements are given at §300.820(b)
- **Non-Time-Critical:** Those removals where, based on the site evaluation, the lead agency determines that a removal action is appropriate and that there is a planning period of more than six months available before on-site activities must begin.

In accordance with §300.415(b)(4), the lead agency must conduct an engineering evaluation/cost analysis (EE/CA) for a non-time-critical removal action. The EE/CA is an analysis of removal alternatives for a site. Specific administrative record requirements for non-time-critical actions are specified in §300.820(a). For more information on the procedures and activities involved in conducting an

EE/CA, see EPA's document entitled Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA (OSWER Directive 9360.0-32).

Section 300.415(d) of the NCP provides examples of some appropriate removal actions, such as:

- Drainage controls where needed to reduce migration of hazardous substances, pollutants, or contaminants off site
- Fences, warning signs, or other security or site control precautions where humans or animals have access to the release
- Capping of contaminated soils or sludges where needed to reduce migration of hazardous substances, pollutants, or contaminants.

A flowchart of the removal process is shown in Figure 3.

Action Memorandum

An Action Memorandum is the primary decision document for a removal action (the equivalent of a remedial Record of Decision which is discussed later in this module). The purpose of the Action Memorandum is to document the need for a removal response, identify the proposed action, and explain the rationale for the removal. On-scene coordinators must prepare Action Memoranda for all fund-financed actions conducted under removal authority in accordance with OSWER Directive 9360.3-01, which provides Action Memorandum guidance. The Action Memorandum is also a critical component of the administrative record required by CERCLA §113(k) for the selection of any response action.

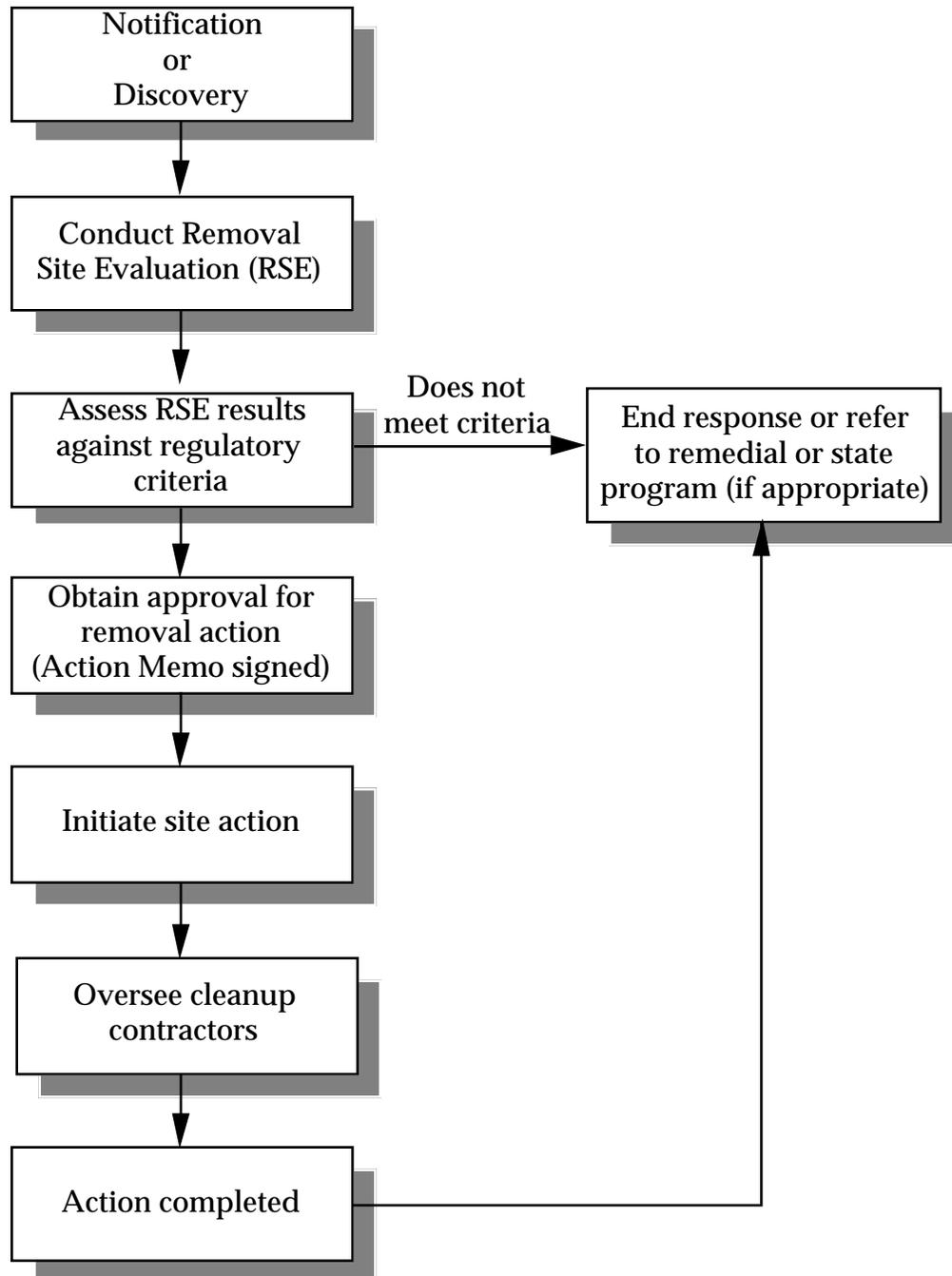
Applicable or Relevant and Appropriate Requirements

When a removal action takes place, there is a need to consider other federal and state laws that may apply to the site beyond Superfund regulations. These standards and requirements must be met to the extent practicable, considering the urgency of the removal action. The complexity of applying these requirements warrants future discussion and is expanded on in the remedial process section, and is also discussed in greater detail in the module entitled Applicable or Relevant and Appropriate Requirements.

Next Steps

After the removal action is complete one of two events can occur. The site may be cleaned to the extent that no further response on the federal level is needed. In this case, the decision would be documented and indicated in CERCLIS. In contrast, the Agency may still need to continue with a long-term remedial action.

Figure 3
THE SUPERFUND REMOVAL PROCESS



2.6 REMEDIAL PROCESS

Remedial actions differ from removal actions in several ways. There are no set time or monetary limits placed on a remedial action as these activities are targeted for long-term, permanent response. Remedial actions involve more detailed planning and decision-making processes than removal actions and may only be conducted at sites on the NPL. A RPM, designated by the lead agency, directs remedial actions, with cleanup activities usually performed by remedial contractors. This section addresses the remedial process that commences after a site is placed on the NPL.

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

After a site is added to the NPL, the task of selecting the best, most appropriate cleanup method begins. The RI/FS is a process of site and remedy evaluation, which facilitates the selection of remedies that will most effectively eliminate, reduce, or control risks to human health and the environment. The RI and FS are conducted concurrently. Conducting the RI/FS generally involves project scoping, data collection, risk assessment, treatability studies, analysis of alternatives, and identification of ARARs.

Project Scoping

During project scoping, the lead and support agencies are required to identify the optimal set and sequence of actions necessary to address site problems. The lead agency is required to:

- Evaluate existing site data, and identify likely response scenarios, possible technologies, and operable units
- Undertake limited data collection efforts, and identify the type, quality, and quantity of the data that will be collected during the RI/FS
- Prepare site health and safety plans
- Coordinate necessary assessments, evaluations, investigations, and planning with natural resource trustees, if natural resources are or may be injured by the release
- Develop sampling and analysis plans
- Initiate the identification of potential federal and state ARARs.

Remedial Investigation

The purpose of the RI is to collect data necessary to adequately assess the risks to human health and the environment and to support the development, evaluation, and selection of appropriate response alternatives (§300.430(d)). The RI may be performed in several stages in order to refine sampling efforts. It involves field investigations, treatability studies, a baseline risk assessment, and identification of ARARs.

The field investigation enables the lead agency to characterize the nature of a threat posed by the hazardous substances and support the analysis and design of potential response actions. The following factors are assessed:

- Physical characteristics of the site such as surface features, soils, geology, hydrogeology, meteorology, and ecology
- Characteristics of air, surface water, and groundwater
- Quantities, physical state, concentration, toxicity, propensity to bioaccumulate, persistence, and mobility of the waste
- Source(s) of the release
- Actual or potential exposure pathways through environmental media
- Actual and potential exposure routes, such as inhalation and ingestion
- Any additional pertinent factors, such as sensitive populations.

When necessary, bench-scale and pilot-scale studies are conducted to obtain enough data to select and implement a remedial action alternative. Bench-scale studies conducted during the remedial investigation phase are usually limited to treatability and materials testing activities to help identify, screen, and evaluate alternatives. Pilot-scale studies, which are larger, more expensive, and more time-consuming than bench-scale studies, are used to fine tune the selected treatment process and are usually conducted during the remedial design stage.

The site-specific baseline risk assessment is needed to determine whether the contaminants of concern would pose a current or potential threat to human health and the environment if a remedial action were not undertaken. During the risk assessment, chemical-specific toxicity information, combined with quantitative and qualitative information relating to exposure, are compared to site conditions. These comparisons determine whether concentrations of contaminants at or near the site affect or may affect human health and the environment. The results of this baseline risk assessment will help establish acceptable exposure levels for use in developing remedial alternatives in the FS.

Similar to removal actions, ARARs must be identified in the remedial process as well. A major component of the RI/FS is the identification of ARARs. CERCLA §121(d) specifies that on-site Superfund remedial actions shall attain other federal standards, requirements, criteria, limitations, or more stringent state requirements that are determined to be legally applicable, or relevant and appropriate to the specified circumstances at the site. In choosing the type and extent of cleanup at a site, EPA must consider the other regulations that may apply to that type of contamination or activity. EPA has published several guidance documents to assist in the identification of ARARs (see Compendium of CERCLA ARARs). The appropriate state is responsible for identifying all potential state ARARs at the time of the RI/FS. Examples of ARARs include:

- Ambient or chemical-specific requirements from the Clean Water Act or Clean Air Act
- Performance, design, and other action-specific requirements such as RCRA closure regulations
- RCRA land disposal restrictions
- Location requirements such as federal and state siting laws for hazardous waste facilities and the National Register of Historic Places.

Applicable requirements are federal and state environmental requirements, criteria, or limitations that address wastes, pollutants, contaminants, remedial actions, location, or other circumstances at a CERCLA site. These requirements must be stringently applied. There is a bit more leeway allowed in determining the scope of relevant and appropriate requirements. Provisions and standards included in advisory and guidance documents issued by federal or state governments, but not formally promulgated as laws or regulations, are known as requirements to be considered (TBC). They are not ARARs, but they may be considered in determining the necessary level of cleanup.

On-site remedial activities must comply with substantive, but not administrative requirements. Because permitting is considered to be an administrative requirement (55 FR 8756; March 8, 1990), federal, state, and local permits are not required for on-site activities at fund-financed and CERCLA §106 remedial actions (40 CFR §300.400(e) and CERCLA §121(e)). For example, compliance with RCRA design and operating standards would be necessary for a Superfund action involving the management of hazardous waste, but a RCRA treatment, storage, and disposal permit would not be required. For a more detailed discussion of ARAR identification and descriptions of other laws which may be ARARs at Superfund sites, refer to the module entitled Applicable or Relevant and Appropriate Requirements.

Feasibility Study

The FS is conducted to develop and evaluate remedial alternatives. FS activities should be fully integrated with the RI. FSs can include an alternatives screening step to select a reasonable number of alternatives for detailed analysis. In developing and screening alternatives, the lead agency must establish remedial action objectives specifying contaminants of concern, potential exposure pathways, and remediation goals.

Remediation Goals

Remediation goals establish the extent to which the site should be cleaned up in order to protect human health and the environment (§300.430(e)(2)(i)). The factors to be considered include the following:

- For known or suspected carcinogens, the remediation should achieve an upper-bound lifetime cancer risk level of between 10^{-4} and 10^{-6} for high-end receptors. (This risk level indicates that between 1 in 10,000 to 1 in 1,000,000 people exposed to the site over a lifetime or a portion of a lifetime will be likely to contract cancer.)
- For other types of toxicants, a safe exposure level should be established. This level should represent a dose below which no adverse health effects have been observed in laboratory studies.
- Clean Water Act and Safe Drinking Water Act standards should be attained where relevant and appropriate.
- Ecological threats should be addressed, particularly sensitive habitats and critical habitats of species protected under the Endangered Species Act.

Potential Remedial Technologies

The lead agency identifies and evaluates potential suitable technologies, including innovative technologies. SARA requires EPA to consider alternatives that reduce toxicity, mobility, or volume of contaminated material through treatment, including alternative treatment technologies or resource recovery technologies. The lead agency then assembles a set of alternative remedial actions. The NCP (§§300.430(e)(3)-(5)) suggests remedial alternatives that should be assembled in various situations. One of the alternatives developed should always be a no-action or no further action alternative, to provide a baseline for comparison.

If appropriate, there should be an initial screening of the remedial alternatives in accordance with the following criteria:

- Effectiveness: the degree to which an alternative reduces toxicity, mobility, or volume through treatment; minimizes risks and provides long-term

protection; complies with ARARs; minimizes short-term impacts; and achieves protection quickly

- **Implementability:** the technical feasibility and availability of the technologies each alternative would employ
- **Cost:** alternatives providing effectiveness and implementability similar to that of another alternative, but at a greater cost, may be eliminated.

Detailed Analysis of Alternatives

The purpose of the detailed analysis is to objectively assess the alternatives with respect to nine criteria listed in §300.430(e)(9)(iii), and to evaluate the relative advantages and disadvantages of each alternative relative to the criteria. Alternatives must be analyzed for long-term effectiveness using the factors listed in CERCLA §121(b)(1). CERCLA also states that off-site transport and disposal or containment without treatment are the least favored alternatives.

SELECTION OF REMEDY

The selection of the remedial action is a two-step process, requiring the development of a proposed plan and a ROD. The state agency and the community are given the opportunity to participate in the remedy selection activities. The remedy selection process may be initiated at one operable unit at a site, while other operable units are still undergoing investigation.

Proposed Plan

The lead agency, in conjunction with the support agency, prepares a plan that briefly describes the remedial alternatives that were analyzed, proposes a preferred remedial alternative, and summarizes the information used to make this decision (§300.430(f)(2)). The proposed plan is presented to the public, and revised in accordance with state and public comment if necessary.

Record of Decision

After evaluating all comments received on the proposed plan, the lead agency makes the final remedy selection decision. The lead agency documents the final decision in the ROD, which must be signed by the Regional Administrator. The ROD contains significant facts, analysis of facts, and site-specific policy determinations considered in the remedy selection process, and explains how the nine evaluation criteria were used to select the remedy. The specific information required to be included in the ROD is listed in §300.430(f)(5).

The ROD is a major element of the administrative record and must be made available for public inspection. RODs for fund-financed actions should include

formal written concurrence from the state. All legal challenges, appeals, and defenses rely on the ROD and the administrative record. RODs are publicly available from the National Technical Information Service (NTIS). ROD abstracts, searchable by state and city, are provided on EPA's Superfund home page (<http://www.epa.gov/superfund>). A searchable RODs database containing the full text of each ROD is available through the Right-to-Know Computer Network or RTK-NET ([http:// rtk.net](http://rtk.net)).

REMEDIAL DESIGN/REMEDIAL ACTION

The remedial design (RD) is the engineering plan used to guide implementation of the selected remedy. Remedial action (RA) is the physical implementation of the ROD and remedial design. All RD/RA activities must conform to the remedy set forth in the ROD and other decision documents. If the remedial action or settlement entered into differs significantly from the ROD, an explanation of significant differences (ESD) must be published, or the ROD must be amended (§300.435(c)(2)).

Off-Site Rule

The off-site rule promulgated in the Federal Register on September 22, 1993 (58 FR 49200), amended the NCP by adding 40 CFR §300.440. This rule applies to the off-site transfer of any CERCLA waste from a response action. The basic premise of the rule is to ensure waste leaving a Superfund site is properly handled to avoid causing another Superfund site in the future. For example, a RCRA hazardous waste generated at a Superfund site destined for disposal off-site must be properly treated (if required) and sent to a facility that has a RCRA permit and no significant regulatory violations. The facility receiving the waste must meet the acceptability criteria set forth in 40 CFR §300.440(b). The Regional office in which the facility is located will determine if the facility meets the following criteria:

- The facility has no significant violations
- The facility has no releases of hazardous substances
- If the facility has had a significant release of a hazardous substance, the release must be controlled by an enforceable agreement for corrective action under an applicable state or federal authority.

A facility deemed unacceptable to receive an off-site transfer of CERCLA wastes must be notified by the applicable EPA Region. Within ten days of the issuance of this notice, the owner/operator of the facility may submit a written request to have an informal conference with the EPA Regional office. In this meeting, the owner/operator and Regional officials may discuss the reasons why the facility does not meet the acceptability criteria. A determination will be made on the acceptability of the facility after the owner/operator has had the opportunity to

provide the Region with more information at the informal conference. If the facility does not submit a letter requesting an informal conference, then the facility will be considered unacceptable until the EPA Regional office notifies the owner/operator of any change in its determination.

Prior to the promulgation of the off-site rule, EPA had published several policy determinations on the transfer of any CERCLA waste from a response action. The September 22, 1993, rule however, supersedes any previous guidance on the off-site policy.

OPERATION AND MAINTENANCE

At any site where the remedial action does not result in fully unrestricted use of the site, operation and maintenance (O&M) measures will continue at the site to ensure effective implementation of the remedial action. O&M measures are initiated after the remedy is constructed and is determined to be operational and functional (40 CFR §300.435(f)(2)). For Fund-lead sites the state is responsible for funding O&M activities and must enter into an agreement with EPA to that effect before remedial action begins. EPA will share operation and maintenance costs for the first year. Federal funding of actions involving measures to restore groundwater may continue for up to 10 years after the remedy becomes operational and functional (40 CFR §300.430(f)(3)).

DELETION OF SITES

When no further response action is appropriate, sites can be deleted from the NPL in accordance with the procedures outlined in §300.425(e). Prior to the deletion, the state must be consulted, a notice of intent to delete must be published in the Federal Register, and public comments must be considered.

Historically, EPA had very stringent criteria that had to be met before deleting a site from the NPL. Consequently, many sites that had been essentially cleaned up and posed no threat to human health or the environment had to remain on the NPL because they had not met all necessary administrative requirements. The small number of sites officially deleted led to a perception that EPA was not cleaning up sites. To more accurately reflect the work done at sites, EPA has changed the deletion procedures in two ways: by developing a construction completion category on the NPL, and by removing five-year reviews from the NPL deletion criteria.

Beginning with the February 11, 1991, NPL final rule, EPA activated a category on the NPL identifying sites where remedial construction activities have been completed, but formal deletion is not yet appropriate (56 FR 5598). These sites are designated as part of the "construction completion" category. This category is now included on final NPL lists as well as in the public information materials published at the time of the rulemakings. As of September 27, 1997, EPA had categorized 447 sites on the Construction Completion List (CCL) (62 FR 50442).

For several years, EPA's policy was to retain sites on the NPL until it completed a review five years after initiation of the remedial action. The review, required by CERCLA §121(c), was intended to confirm that the remediation is protective of human health and the environment. EPA subsequently determined that the Superfund program would operate more efficiently if the NPL deletion process and the five-year process were separated. This change allows sites to be deleted from the NPL as soon as the requirements specified in the ROD have been met.

Since the Superfund remedial process is extremely detailed, it usually takes several years to complete. A review of the previously discussed process is provided in Figure 4. The intention of the linear depiction in Figure 4 is to promote a basic understanding of the process, but in reality, the process is not this rigid. Refer to the module entitled Superfund Accelerated Cleanup Model, for more information on the current implementation of the remedial process.

2.7 COMMUNITY INVOLVEMENT

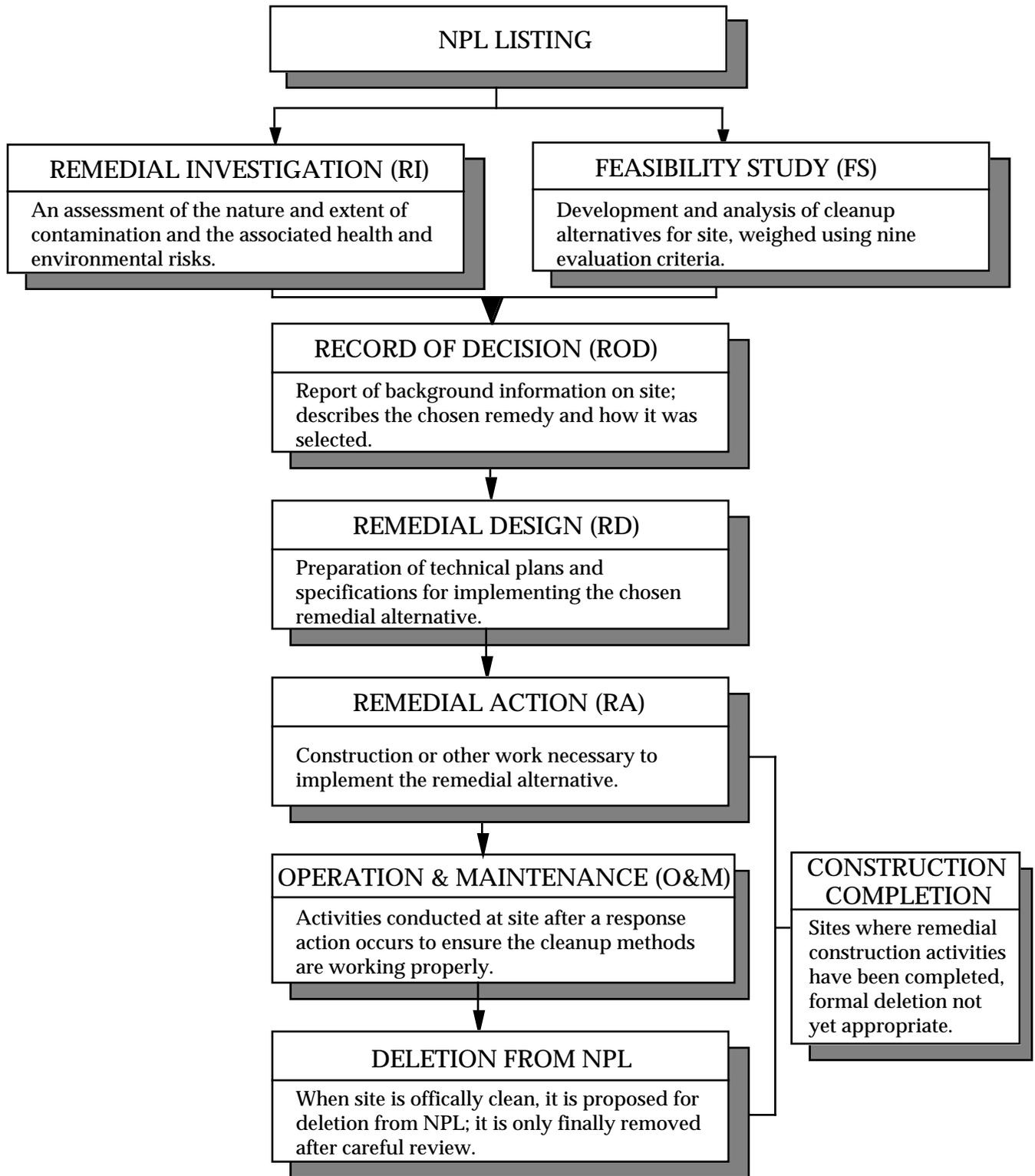
Because the Superfund process is so site-specific and requires decision making at many junctures, it is important that citizens who may be affected by releases of hazardous substances are informed of site activities and able to participate in the decision-making process. Community involvement activities are built into and occur throughout the Superfund process. The module entitled Superfund Community Involvement covers this topic in depth.

SARA §117 expanded the CERCLA community involvement provisions and authorized grants for technical assistance to community groups that may be affected by an NPL site. The grants are intended to allow local groups to obtain technical assistance in interpreting the nature of the hazards posed by the site, as well as each step of the response process including the RI/FS, ROD, remedial design, remedial action, operation and maintenance, and removal actions.

2.8 STATE ROLE

SARA §121(f) mandated that EPA provide for substantial and meaningful involvement by the states (and Indian tribes meeting the requirements of 40 CFR §300.515(b)) in the initiation, development, and selection of remedial actions. If EPA is the lead agency at a site, the state agency should participate in the decision-making process, and has responsibility for fulfilling certain financial and legal obligations. In addition, the state can serve as the lead agency at a site after entering into a

Figure 4
SUPERFUND REMEDIAL PROCESS



Superfund Cooperative Agreement with EPA. Specific requirements regarding state involvement in hazardous substance response are found in Subpart F of the NCP, and 40 CFR Part 35 (55 FR 22994; June 5, 1990).

SUPERFUND MEMORANDUM OF AGREEMENT

To increase state involvement in the Superfund program, EPA encourages states to enter into Superfund Memoranda of Agreement (SMOA). A SMOA is a nonbinding agreement intended to enhance the EPA Regional/state relationship during a Superfund response by:

- Encouraging cooperation between the states and the Regions
- Establishing ongoing mechanisms for communication
- Clarifying roles and responsibilities
- Providing a checklist of regulatory and statutory requirements.

If a state has not entered into a SMOA, then the EPA/state relationship is governed by the requirements of 40 CFR §300.515(h). This section includes provisions for:

- Annual consultations to enable EPA and the state to establish priorities, identify roles and responsibilities, and discuss future response plans
- Identification of ARARs and other pertinent advisories, criteria, or guidance to be considered (TBCs)
- Support agency review of lead agency documents.

STATE ASSURANCES

Prior to the initiation of any fund-financed remedial action, the state must provide EPA with assurance that it will assume certain responsibilities required by CERCLA §104(c)(9). These responsibilities include cost sharing, operation and maintenance activities, capacity for proper disposal of hazardous waste, and provisions for acquisition of property. EPA and the state must document these assurances in a two-party Superfund State Contract.

Pursuant to §300.510(b) of the NCP, states are not required to share in the cost of a state- or EPA-lead, fund-financed **removal** action. For fund-financed **remedial** actions, the state generally shares 10 percent of the cost actions. If the facility was publicly operated at the time of disposal of hazardous substances, however, states are required to share at least 50 percent of the cost of fund-financed removal or remedial actions.

SARA greatly expanded the role of states in remedial actions. CERCLA §104(c)(9) dictates that as of October 1989, EPA may not conduct fund-financed remedial actions in a state unless the state assures EPA of the availability of adequate and acceptable hazardous waste treatment and disposal facilities. Each state must submit

a Capacity Assurance Plan (CAP) which ensures that the state has facilities that:

- Have adequate treatment and disposal capacity until 2009
- Are in the state or are subject to an interstate or Regional agreement
- Are acceptable to EPA
- Are in compliance with RCRA.

For further information on CAPs refer to EPA's documents entitled Guidance for Capacity Assurance Planning, (OSWER Directive 9010.02) and National Capacity Assessment Report: Capacity Planning Pursuant to CERCLA §104(c)(9), EPA530-R-95-016.

COOPERATIVE AGREEMENTS

CERCLA authorizes EPA to enter into Superfund cooperative agreements with capable states, political subdivisions, or federally recognized Indian tribes to implement CERCLA activities (§104(d)(1)). EPA uses cooperative agreements to transfer funds to those entities to undertake fund-financed response actions. EPA may also provide Core Program Cooperative Agreements to states and Indian tribes to be used for non-site-specific Superfund activities. Specific regulations regarding cooperative agreements may be found in §300.515 and §300.525 of the NCP, as well as 40 CFR Part 35.

2.9 NATURAL RESOURCE DAMAGE ASSESSMENTS

Pursuant to CERCLA §107, natural resource trustees can be compensated for damages or injury to natural resources resulting from the discharge of oil or a release of a hazardous substance. CERCLA §101(16) defines natural resources as land, fish, wildlife, biota, water, groundwater, drinking water supplies, and other such resources. Trustees are most often the state, but may include government organizations such as the Department of the Interior, the Department of Agriculture, and Indian tribes (40 CFR §300.600(b)).

Unlike with other elements of the Superfund program, the Department of the Interior (DOI), not EPA, has the responsibility for implementing Natural Resource Damage Assessments (NRDA). NRDA generally take place during the RI/FS stage of the Superfund process. The NRDA rule, developed pursuant to CERCLA §301(c) and codified in 43 CFR Part 11, provides procedures for assessing injury to, destruction of, or loss of natural resources. DOI promulgated two types of assessment rules: standard procedures for simplified assessments requiring minimal field observation (type A assessments), and site-specific procedures for detailed assessments in individual cases (type B assessments). In response to a court ruling, DOI has finalized revisions to this rule (58 FR 14262; March 25, 1994).

2.10 FEDERAL FACILITY RESPONSE

At this time, Subpart K of the NCP is reserved for federal facility regulations. Once they are proposed and finalized, this subpart will consolidate those regulations federal facilities must follow when conducting CERCLA response actions. Subpart K also will codify certain other provisions of §120 of CERCLA relating to federal facilities.

According to §120(a)(1), a federal department or agency is subject to CERCLA just like any other PRP; however, §111(e)(3) generally prohibits using fund monies to remediate government sites, so federal agencies must use their own funds. Under Executive Order 12580, federal departments or agencies have some additional authority. Specifically, the Department of Defense and Department of Energy have §106 enforcement authority for releases at or originating from their facilities. Section 120 delegates the authority to all agencies to conduct response actions at their non-NPL facilities and to perform RI/FS activities at federal NPL sites. Section 120(a)(2) prohibits a federal facility from adopting guidelines, rules, regulations, or criteria which are inconsistent with those established under Superfund.

Cleanup activities beyond the RI/FS must be concluded under an Interagency Agreement with EPA. More information on the implementation of CERCLA at federal facilities may be found in the document entitled Federal Facilities Hazardous Waste Compliance Manual (OSWER Directive 9992.4).

CERCLA §120(c), as well as certain provisions of RCRA, require EPA to establish a Federal Facilities Hazardous Waste Compliance Docket that contains information regarding federal facilities that manage hazardous waste or from which hazardous substances may be or have been released. CERCLA requires that this docket be updated every six months, as new facilities are reported to EPA by federal agencies. These updates are periodically published in the Federal Register. The most recent update was published on June 27, 1997 (62 FR 34780).

2.11 CONTRACTOR SUPPORT

Most fund-financed Superfund response activities are performed by private contractors that are supervised by EPA or state officials. In some cases, the U.S. Army Corps of Engineers enters into engineering design and construction contracts with EPA for remedial responses. The actual work is performed by private contractors under the Corps' supervision.

The NCP also includes procedures for determining whether contractors have conflicts of interest that could significantly impact the performance of the contract or the liability of potential prime contractors and subcontractors (§300.435(d)).

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS

Contractor personnel at CERCLA sites are required to follow the OSHA health and safety regulations at 29 CFR §1910.120 (40 CFR §300.150). The requirements include 40 hours of initial training and 8 hours of refresher training annually, as well as medical surveillance.

INDEMNIFICATION

CERCLA §119 exempts response action contractors (RACs) with respect to releases or threatened releases of hazardous substances, pollutants or contaminants from liability except for those releases arising due to the contractor's negligence. EPA finalized guidelines to set standards for the indemnification of contractors on January 25, 1993 (58 FR 5972).

SUPERFUND CONTRACTING STRATEGY

In response to recommendations made in the document entitled A Management Review of the Superfund Program, EPA has developed a long-term contracting strategy for the Superfund program. After analyzing the long-term contracting needs of the program, EPA developed a contractor structure. Following are the major components of that structure:

Site Evaluation Activities: Field Investigative Team/Technical Assistance Team

The Field Investigative Teams (FITs) were historically dedicated to remedial site evaluation activities, while the Technical Assistance Teams (TATs) provided emergency response support for the removal program. These teams are now combined to form one integrated team in each Region, responsible for removal and remedial site evaluation technical assistance.

Remedial Activities: Response Action Contracts (RACs)

Response Action Contractors, managed on a Regional basis, provide support for all remedial activities as well as enforcement oversight activities and long-term removal actions.

Response Actions: Emergency Response Cleanup Services (ERCS)

These contractors perform rapid removal actions and will begin to perform emergency remedial actions as well. ERCS contractors provide cleanup personnel, equipment, and materials to the OSC. Their duties include containing, recovering, and disposing of hazardous substances; analyzing samples; and site restoration. (Presently the Army Corps of Engineers generally handles rapid remedial actions.)

Analytical Support: Contract Laboratory Program (CLP)

The CLP consists of a network of private laboratories that provide routine and special analytical services to support Superfund sampling activities. Contract Laboratory Analytical Services Support (CLASS), located in Alexandria, Virginia, provides management, operations, and administrative support to the CLP. Additional analytical assistance and overview is often provided by Regional environmental services assistance teams (ESAT) contractors.

3. MODULE SUMMARY

This module outlines the framework of the Superfund response process. A site may be addressed using remedial or removal authorities, or both. The first phase of the response process, the site assessment, is composed of the following steps: PA/SI, HRS scoring, and NPL consideration. If at the completion of the site assessment a site is placed on the NPL, a remedial response is conducted. The remedial process involves detailed planning and decision-making steps including conducting an RI/FS, developing a proposed plan and a ROD, and performing the actual remedial action. At any time in the response process a removal action may be warranted, depending on site conditions. The removal process focuses on short-term emergency responses and is divided into three categories of response based on urgency: classic emergencies, time-critical actions, and non-time-critical actions. Removal actions do not involve as much detailed planning as remedial actions, can be conducted at NPL and non-NPL sites, and are limited in scope to one year and \$2 million. The procedures for implementing the Superfund response process are laid out in the NCP.

The Superfund Accelerated Cleanup Model (SACM), and the Superfund Administrative Improvements and Reforms initiatives, which were established by EPA to accelerate and improve the cleanup process, have had a significant effect on the basic Superfund Response Process. SACM reorganizes the basic response process in an effort to expedite it. Superfund Administrative Improvements and Reforms include promoting the use of innovative technologies, and improving the enforcement and settlement process. These initiatives are addressed in more detail in the modules entitled Superfund Administrative Improvements/Reforms and Superfund Accelerated Cleanup Model.