



# FY 2004 SUPERFUND ANNUAL REPORT



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## Introduction

Congress created the Superfund program to address the immediate threats posed by hazardous substances, pollutants, and contaminants. To limit exposures across the country, the United States Environmental Protection Agency (EPA or the Agency) undertakes a variety of Superfund response actions. From providing alternative water supplies for communities to performing residential yard cleanups, the Superfund program continues to protect public health and safety. The Superfund program is important because it may be the best defense against direct human exposure to the contamination at these sites, assures the protection of those who work and live nearby sites, and is a principal source of information on the risks at these sites.

The purpose of this report is to communicate the progress of the Superfund program in Fiscal Year (FY) 2004 (October 1-September 30, 2004). EPA prepared this report in an ongoing effort to provide the public with information on Superfund. The Superfund program is constantly adjusting to respond to the new realities facing the program. As part of that response, EPA conducted several studies to improve the program. In the spring of 2002, EPA convened the Superfund Subcommittee under the National Advisory Council for Environmental Policy and Technology to provide a public dialogue on the future directions of the Superfund program. The Subcommittee completed its work on March 31, 2004, and transmitted the approved Subcommittee report ([“Final Report: Superfund Subcommittee of the National Advisory Council for Environmental Policy and Technology”](#)) to the Administrator on May 6, 2004. The report contained 17 consensus recommendations regarding: (1) the role of the Superfund program in addressing “megsites;” (2) program policy for listing sites on the National Priorities List (including megasites); and (3) performance measures that effectively communicate program accomplishments. In part, this report responds to recommendations in the “Final Report: Superfund Subcommittee of the National Advisory Council for Environmental Policy and Technology” and another internal study, [“Superfund: Building on the Past, Looking to the Future.”](#) EPA also established a Superfund Board of Directors to provide leadership in implementing recommendations of the 120-Day study. The Agency developed action plans available on EPA’s Superfund web site (<http://www.epa.gov/superfund/action/120day/index.htm>) and priority tasks are proceeding in FY 2005.

Today, EPA is working to increase community participation; strengthen public and private partnerships; enhance cleanup effectiveness and consistency in program implementation; streamline the enforcement process and optimize the use of fairness initiatives (e.g., orphan share, de minimis settlements); encourage beneficial reuse and revitalization of sites following cleanup; and ensure that remedies continue to protect human health. Additionally, because construction is complete at many sites, a new emphasis on long-term stewardship at these sites is required.

Working with States, Tribes, communities, local governments, and many other stakeholders, during FY 2004, the Superfund program:

- completed construction at 40 sites across the country for a total of 926 sites or 61 percent of the sites on the National Priorities List,
- conducted 678 long-term, ongoing cleanup projects at 428 sites (includes EPA funded sites, responsible party-lead sites, and Federal facility sites); and
- secured \$680 million in cleanup commitments and cost recoveries from the private parties responsible for toxic waste sites.

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<sup>1</sup> Please note that terms of art or words that may not be commonly understood to readers (such as “National Priorities List”) are defined in Appendix B, the glossary, if they appear more than once in this report. If they appear only once, such terms of art or unfamiliar words are defined where they appear.

The Superfund program spent \$507 million for construction and post-construction activities and to conduct and oversee emergency response actions. This figure includes \$367 million for construction and post-construction projects, and \$140 million for 385 removal actions to address immediate and substantial threats to communities. EPA also collaborated with its partners to address immediate and long-term dangers and to ensure that the cleanup remedies selected remain effective.

EPA and its partners continue to identify new threats to human health and the environment. In 2004, EPA listed 11 new sites on the National Priorities List, and proposed 26 sites. The Superfund program spent \$228 million to conduct and oversee: site assessments and investigations, selection and design of cleanup plans, and support for State, Tribal, community involvement and other activities. EPA selected final cleanup plans at 30 sites, bringing the cumulative total of sites with final cleanup plans to approximately 66 percent of the 1,529 National Priorities List sites.

While Superfund's accomplishments are significant, challenges remain. As the Superfund program matures, the size, complexity and cost of sites that are underway or ready to begin construction continue to grow. EPA is subdividing megasites to address the high-risk areas of those sites first and provide for more effective management of resources. In FY 2004, EPA committed more than 52 percent of the Superfund obligations for long-term, ongoing cleanup work to just nine sites. Consequently, more sites were ready for construction than funds available to start work.

Within these pages, stakeholders will find summaries and highlights of site progress, explanations of the criteria applied and reasons behind listing decisions, expenditures by fiscal year, and descriptions of trends. This report is designed to provide context for program accomplishments, summarize challenges, and outline future directions of the Superfund program.

# I. Review of the Superfund Program

## A Brief History of Superfund

In the late 1970s, a number of events made clear that serious hazardous waste problems were falling through the cracks of environmental laws: discovery of [Love Canal](#), the community in Niagara Falls, NY, which later resulted in the relocation of citizens after hazardous waste contaminated their ground water; the [Valley of the Drums](#) site, where 10,000 leaking chemical barrels resulted in the creation of one of the most notorious places in Kentucky; and the little town of [Times Beach](#), MO, became a part of the hazardous waste story, when oil contaminated with dioxin (i.e., any of a family of compounds known chemically as dibenzo-p-dioxins; concern about them arises from their potential toxicity as contaminants in commercial products) was applied to roadways, contaminating the soil and water. At the time, there was no Federal program with comprehensive authority to respond.

This time also marked the first efforts by the U.S. Department of Defense to address environmental contamination at its facilities. Later, in the 1980s, other Federal agencies, such as the U.S. Department of Energy, also began addressing environmental contamination.

In 1980, Congress passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund) to address the dangers of abandoned or uncontrolled hazardous waste sites. CERCLA provides EPA and other Federal agencies the authority to respond to a release or substantial threat of a release of a hazardous substance into the environment, or a release or substantial threat of a release of "any pollutant or contaminant which may present an immediate and substantial danger to public health or welfare."<sup>2</sup> The law established a Trust Fund known as the "Superfund," financed primarily by a tax on crude oil and certain chemicals, for EPA to use in cleaning up sites when the parties liable for the contamination could not be found or were financially unable to pay for the cleanup. The legislation also enabled the Federal government to recover the costs of its actions from the responsible parties or to compel them to clean up sites at their own expense.

### LOVE CANAL, NEW YORK



- From 1942-1953, 21,000 tons of chemical waste deposited
- More than 200 homes and a nearby school built on a covered landfill
- Increased health problems and cancer experienced among residents
- President Carter declared State of Emergency in 1978 and 1980
- September 1, 1983, EPA added Love Canal to National Priorities List
- Federal funds used to permanently relocate 900 families
- September 30, 2004, Love Canal removed from National Priorities List
- New homes now built on the site

<sup>2</sup> Petroleum and gas are not included under CERCLA as hazardous substances.

Congress passed the Superfund Amendments and Reauthorization Act (SARA) in 1986. It established improvements to the Superfund program, many of which the Agency was already implementing. The second sidebar (“Provisions of SARA”) shows some of the changes in the Superfund program as a result of SARA. CERCLA became expressly applicable to Federal facilities in 1986, when section 120 was added as a part of the SARA amendments. Before this amendment, no Federal facilities were placed on the final National Priorities List. Section 120 included deadlines for the assessment of Federal facilities and a requirement that responsible agencies enter into interagency agreements with EPA at National Priorities List sites. Since that time, EPA has placed 171 Federal facilities on the final National Priorities List. In addition, CERCLA section 104 authorizes the President (whose authority is delegated to EPA and other Federal agencies by Executive Order 12580) to conduct response actions at National Priorities List and non-National Priorities List sites. Since 1994, Congress has annually extended CERCLA authority through Congressional appropriations.

## Key Superfund Program Components

### *Assessing Sites*

The site assessment process includes three primary screening activities: Preliminary Assessment, Site Inspection, and Hazard Ranking System scoring package development. During the Preliminary Assessment, EPA collects and reviews readily available information (e.g., site history, drinking water sources, surrounding populations) about a site to determine whether a threat or potential threat exists and to decide if further investigation is needed. During a Site Inspection, EPA and other agencies further evaluate the extent to which a site presents a threat to human health or the environment through fieldwork to determine whether hazardous substances are present at the site and are migrating to the surrounding environment.

At the conclusion of each phase of the site assessment process, EPA applies the Hazard Ranking System model to derive a preliminary site score. The site score is used to determine whether further investigation is necessary or whether the site should receive a “No Further Remedial Action Planned” designation. A “No Further Remedial Action Planned” designation means that further remedial assessment under the EPA Superfund program is not planned, although a Superfund removal assessment and action may still take place. EPA may refer sites that present an immediate threat to human health and the environment to its removal program for emergency response. Sites can also be referred to the State or to other programs for further consideration (e.g., deferral to Resource Conservation and Recovery Act (RCRA) Corrective Action authorities).

## PROVISIONS OF SARA

- Increased the limits on, and the duration of, a removal action to one year and expenditures to \$2 million
- Authorized waiver of removal limits consistent with long-term remedial action or long-term cleanup
- Required cleanup actions to meet State and Federal laws, to the extent practicable
- Required EPA to consider alternatives to disposal, and to treat wastes, to the extent practicable
- Stipulated the disposal of wastes removed from sites in RCRA-compliant facilities
- Provided deadlines for negotiating and settling with responsible parties
- Authorized EPA to share the cost of cleanup with responsible parties and to settle with de minimis parties
- Increased State involvement in listing and deleting sites from the National Priorities List and negotiating and settling with responsible parties

Some recent initiatives in the site assessment program include: integrating assessments to reduce the time and cost of assessing sites, streamlining the listing process for the National Priorities List, and evaluating alternatives to placing sites on the National Priorities List.

### *Hazard Ranking System and National Priorities List*

In response to a Congressional mandate to identify the worst hazardous waste sites in the nation, EPA created the Hazard Ranking System, a numerically-based screening system, that assesses the hazards a site poses to human health and the environment. The Hazard Ranking System score is calculated by analyzing waste characteristics, their pathways of exposure (e.g., ground water, surface water, soil, and air), and potential targets (e.g., human populations or sensitive environments).

Sites with Hazard Ranking System scores at or above 28.5 are eligible to proceed through a rule-making process, including a public comment period, whereby they are first proposed and then finalized on the National Priorities List. Many factors influence the prioritization of sites for listing, such as the degree of risk to human health and to sensitive environments; need for urgent response; level of support for listing from States, Tribes, and communities; and program management considerations affecting the types and numbers of sites finally selected for proposal. EPA also seeks alternative cleanup programs before sites are listed on the National Priorities List, to ensure that all sites are addressed, whether by placement on the National Priorities List or other cleanup approaches.

EPA continues to list sites every year because new sites serious enough to warrant Superfund attention are identified by the Agency and its partners and pose threats to human health and the environment. Final listing begins the process of investigation, study, and design that can take several years. Only after a remedy is selected for long-term cleanup are EPA sites eligible for long-term cleanup funding. In addition, EPA monitors the site for any change in status that may require additional short-term cleanup. The first National Priorities List, announced in 1983, contained 406 sites. As new sites are identified, the National Priorities List is periodically updated. At the end of FY 2004, 1,237 sites remained on the National Priorities List. Through FY 2004, EPA had listed a total 1,529 sites (including 158 Federal facilities); proposed but not yet finalized 68 sites (including seven Federal facilities); and deleted 292 sites (including 13 Federal facilities).<sup>3</sup> For a variety of reasons, sites may remain on the National Priorities List awaiting deletion (e.g., community interest, continued monitoring), well after cleanup construction has been completed. EPA has completed construction at more than 900 National Priorities List sites.

### A NUMBER OF FIRSTS UNDER SUPERFUND

- 1982—first cleanup/construction completion (pre-National Priorities List) at [Walcotte Chemical Site](#) in Greenville, MS, on December 30, 1982
- 1983—406 sites were identified and placed on the first National Priorities List
- 1986—first site deleted from the National Priorities List, [Friedman Property](#) in New Jersey
- 1987—first Federal facilities added to the National Priorities List (total of 32 Federal facilities were added)
- 1995—first major, multi-party settlement—[South Carolina Recycling and Disposal Inc.](#)
- 1998—5,000<sup>th</sup> emergency removal action
- 2004—900<sup>th</sup> construction completion

<sup>3</sup> CERCLIS data are accurate through FY 2004 and were last updated on November 13, 2004.

In early FY 2005, the Agency issued a policy to update the National Priorities List at least twice a year. A schedule for such updates will help in budgeting both staff and contractor resources. EPA's initial schedule for updating the National Priorities List will be in April and September of each year. Each update will likely comprise a proposed rule and a final rule, as needed. Throughout the year, EPA will also have the discretion to promulgate "special rules" as needed to address unique circumstances for particular sites needing immediate proposal or finalization to the National Priorities List.

### *Responding to a Release at a Site*

EPA may respond to an actual or potential release of a hazardous substance by short-term or emergency cleanups (i.e., removal actions). Three types of removal actions are: (1) emergency removals, where action is required within hours or days; (2) time-critical removals, where action may be delayed up to six months; and (3) nontime-critical removals, where action may be delayed more than six months. To date, under removal authority, EPA has provided alternative drinking water to nearly 615,000 people at National Priorities List and non-National Priorities List sites where available supplies were determined to be unsafe, and has relocated over 45,000 people when contamination posed the most severe, immediate threats to life and health, or temporarily because of a response action.

Remedial actions generally are long-term cleanup efforts to provide a permanent solution by reducing the release or threat of release of hazardous substances. Remedial actions or long-term cleanups may require years to complete.

Many of the more than 900 National Priorities List sites that achieved construction completion through FY 2004 have, or will have, remedies that only allow for restricted future uses because of remaining onsite contamination and the need to limit unacceptable exposures. Construction completion is the stage in cleanup when physical construction of all cleanup remedies is complete, all immediate threats have been addressed, and all long-term threats are under control. Though long-term cleanup actions may still be operating, a construction completion site is often ready for economic, social, or environmental reuse. Superfund Post Construction Completion activities ensure that response actions remain protective of human health and the environment. Moreover, EPA, States, responsible parties, and other Federal agencies have invested significant funding in site characterization as well as the design and implementation of response actions. Superfund Post Construction Completion activities help preserve these financial investments.

Superfund Post Construction Completion is integral to the Superfund remedial program. Post Construction Completion activities are important to maintain the integrity of Superfund response actions, provide relevant information to stakeholders, and promote the efficiency of post-construction operations. Superfund Post Construction Completion encompasses several related activities including:

- operation and maintenance, with long-term remedial actions or long-term cleanups, to monitor and confirm that remedies perform as intended;
- implementation and management of institutional controls (i.e., administrative and legal controls that help to minimize the potential for human exposure to contamination and protect the integrity of the remedy at hazardous waste cleanup sites) to limit potential exposure;
- five-year reviews to evaluate the performance of remedies, identify potential problems, and adjust operations and maintenance as necessary;

- optimization of remedies to improve performance or reduce operating costs of remediation systems without compromising protectiveness; and
- notification and solicitation of comments on EPA's decision to remove sites from the National Priorities List.

The Superfund program has assumed a leadership role in developing a voluntary national network of interactive Federal, State, Tribal, local, and industry institutional controls tracking systems to both enhance the effectiveness of institutional controls and provide information on all cleanup sites with institutional controls in a community. A key challenge to the effectiveness of institutional controls is the overlapping and often disconnected responsibilities at different levels of government for implementation, monitoring, and enforcement. The Superfund program developed a web-based, EPA institutional control tracking approach, known as the National Institutional Control Tracking Network, which is capable of receiving, storing, and exchanging various levels of institutional control information at EPA-lead sites. This system contains baseline information on nearly 900 Superfund Construction Completion sites and is undergoing rigorous quality assurance and quality control analysis. The success of this network will rely on the standardization of terms and the willingness of Federal, State, Tribal, and local agencies as well as industry representatives to use the system to collect and exchange information.

A logical extension to EPA's goal of cleaning up Superfund sites is to return properties to productive use. During the past five years, EPA has awarded funds to communities to address Superfund sites in their neighborhood; formed partnerships with property owners, local governments, and other organizations to reuse sites; and developed or revised guidance documents to incorporate consideration of the future use of the land into all aspects of the Superfund process.

Superfund's response activities are guided by the National Oil and Hazardous Substances Contingency Plan (NCP 40 CFR Part 300) which outlines the steps to follow in response to hazardous substances or oil released or likely to be released into the environment.

Information on sites addressed under the Superfund program is found in [Superfund Site Progress Profiles](#) and fact sheets released by EPA on February 17, 2005, on the Superfund Web site. Additionally, site-specific details are available on regional web sites.<sup>4</sup>

### *Enforcement*

CERCLA's strong enforcement provisions help to minimize litigation time and concentrate resources on actual cleanup.<sup>5</sup> EPA has three options in responding to a release at a non-Federal facility. EPA has the legal authority to: (1) conduct the cleanup and seek cost recovery from responsible parties, (2) enter into settlement agreements, or (3) issue a Unilateral Administrative Order to compel responsible parties to conduct a cleanup or pay for cleanup. Regardless of EPA's response decision, the liable financially viable parties must pay the cost of cleanup.

<sup>4</sup> The electronic version of this report contains a link to individual site profiles describing EPA's progress in addressing threats at the sites.

<sup>5</sup> Courts have interpreted CERCLA to impose retroactive, strict, and joint and several liability.

In 1989, EPA began promoting administrative changes to improve the program by publishing A Management Review of the Superfund Program, also known as the “90-Day Study.” This report provided a long-term strategy for the future of the program, including the “enforcement first” policy that remains in place today. Through this policy, EPA assigned the highest priority to locating responsible parties and getting them to address cleanup. Since that time, EPA has designed other initiatives to increase participation by responsible parties, including:

- early determination of responsible parties at sites;
- authorization of capable parties to conduct response actions;
- increased cost sharing by EPA;
- targeted responsible party oversight;
- consideration of future land use before and during cleanups, thereby eliminating barriers to redevelopment; and
- use of dispute resolution techniques to achieve settlement.

### *Federal Facilities Cleanup*

EPA's Federal facilities program under Superfund has two major components (programmatic and enforcement). The Office of Enforcement and Compliance Assurance's Federal Facilities Enforcement Office is responsible for ensuring that interagency and Federal facility agreements required by section 120(e) of CERCLA are in place for National Priorities List facilities. The Federal Facilities Enforcement Office also has the lead for disputes arising under interagency and Federal facility agreements. The Federal Facilities Restoration and Reuse Office has the EPA-lead for response activities, such as overseeing cleanup at National Priorities List and selected non-National Priorities List sites, addressing response policy issues related to cleanup, supporting the Department of Defense's Base Closure Programs, and promoting revitalization of Federal properties.

### *Community Involvement and Stakeholder Participation*

Stakeholder involvement is an integral part of cleanup planning and implementation that occurs early and is sustained throughout all stages of site work. Superfund engages stakeholders (e.g., communities, Tribal nations, States, and other interested organizations and groups) at each site in an appropriate and meaningful way. This policy is based on the recognition that stakeholders should have a say in the cleanup decision-making process and that robust stakeholder involvement will improve the quality and acceptability of the cleanup. At many sites, the program exceeds the mandatory basic requirements for public participation by providing more frequent information and specially developed opportunities for input. Several ways the Superfund program enables community participation include:

- awarding Technical Assistance Grants to a total of 276 communities affected by Superfund cleanup, including Federal facilities;
- providing educational and technical support for more than 200 communities through the Technical Outreach Services to Communities program; and
- organizing Community Advisory Groups in 90 communities across the nation.

Building on the recommendations from the 1992 and 1996 Reports of the Federal Facilities Environmental Restoration Dialogue Committee, Federal agencies have been leaders in promoting community involvement. Among the Federal Facilities Environmental Restoration Dialogue Committee's recommendations was the creation of restoration advisory boards to serve as focal points for citizen input to the cleanup process at Federal facilities. Federal agencies have created 132 restoration and advisory boards at National Priorities List sites and 52 at non-National Priorities List facilities. In addition, EPA awarded 44 Technical Assistance Grants at Federal facilities on the National Priorities List.

### *Redevelopment and Reuse*

EPA's Superfund Redevelopment Initiative continues to engage communities and other stakeholders on issues of site reuse and long-term stewardship. Since 1999, the Superfund Redevelopment Initiative has offered more than 90 communities assistance with reuse planning to identify reasonably anticipated future land uses for Superfund sites.

The community-based identification of reasonably anticipated future land uses informs all stages of the remedial or long-term decision-making process, strengthening EPA's relationships with communities, and creating opportunities to target planning and potentially reduce the cost of long-term cleanups. In 2004, the Superfund Redevelopment Initiative launched the Return To Use Initiative, an effort to work with local stakeholders in identifying and removing obstacles that unnecessarily prevent construction completion or National Priorities List site deletion, and permit reintegration of completed or deleted National Priorities List sites into the community and local economy.

## II. Fiscal Year 2004 Superfund Program Accomplishments<sup>6</sup>

### Financial Resources

In each of the past five years, Congress appropriated on average \$1.3 billion for the Superfund program, and private party commitments for future response work averaged an additional \$0.9 billion. Over the same five-year period, the Department of Energy spent on average \$2.5 billion for site remediation. The Department of Defense spent slightly less during the same period, with almost \$2 billion for similar work.

EPA continued to prioritize sites to receive cleanup funding. EPA also encouraged innovative public and private financing. The Superfund program spent \$507 million for construction and post-construction activities and for cleanup and oversight of 385 emergency response and removal actions to address threats to the community.

In FY 2004, Superfund accomplishments included:

- EPA securing \$680 million in cleanup commitments and cost recoveries from the parties responsible for toxic waste sites;
- EPA achieving 66 settlements with funds designated for special accounts, 15 de minimis settlements, and seven orphan share settlements; and
- agreements with responsible parties to initiate more than two-thirds of remedial actions or long-term cleanup started during FY 2004.

### FOX RIVER SITE REGION 5, WISCONSIN

Responsible parties agreed under an Administrative Order on Consent to perform remedial design and remedial action or long-term cleanup. The work, estimated to cost approximately \$60 million, is the first major step toward cleanup of the approximately 65,000 pounds of PCBs located in the sediment of the [Fox River](#). The dredging work under this consent decree began in September 2004.

### EL MONTE AND SAN GABRIEL VALLEY SITES REGION 9, CALIFORNIA

EPA reached a settlement with 27 companies for a \$40 million cleanup of a 10-square-mile ground water plume in the [San Gabriel Valley](#) of Los Angeles County. The San Gabriel Basin ground water aquifer (an underground geological formation, or group of formations, containing water and capable of supplying water to springs or wells) and springs underlie most of the San Gabriel Valley and is the primary source of water for most of the Basin's one million residents. Contamination in the San Gabriel Valley has severely and adversely impacted numerous public water supply wells, forcing water purveyors to shut down wells or construct new treatment systems.

Under the consent decree, the settling parties will construct and operate treatment systems to address various contaminants, including volatile organic compounds and, if needed, perchlorate. In addition, the companies will reimburse EPA for approximately \$2 million in response costs.

<sup>6</sup> Please see Appendix A for the "Superfund National Accomplishments Summary" for a full list of accomplishments for FY 2004.

## Protecting Human Health and the Environment

The Superfund program met or exceeded the Agency's FY 2004 annual and multiyear Strategic Plan/Government Performance and Results Act goals for human health and ground water protection. Assuming current land and ground water uses, 83 percent of Superfund sites listed before FY 2003 (1,242 of 1,493 sites with human health exposures) met human health indicators, meaning that current actual and potential human exposures are under control. EPA is conducting further study or cleanup work at the remaining sites. Additionally, 67 percent of Superfund sites (875 of 1,306 ground water affected sites) met ground water protection indicators, having addressed the migration of contaminated ground water through engineered remedies or natural processes. EPA is either conducting further study or cleanup work at the remaining 33 percent of sites.

Superfund continues to list sites on the National Priorities List. During FY 2004, EPA added 11 new sites and proposed 26 others to the National Priorities List. All appropriate responses were implemented and no further cleanup was required at 19 sites, allowing EPA to delete 16 sites (including four Federal facilities) from the National Priorities List and partially delete three other sites.

At the end of FY 2004:

- 67 percent of the sites listed on the National Priorities List (1,024 of 1,529 sites) had final cleanup plans selected,
- 61 percent of the sites on the National Priorities List (926 of 1,529 sites) had construction of the remedy complete,
- with the available resources, EPA began 27 new construction projects and continued 458 construction projects at 345 non-Federal facility National Priorities List sites, and
- 450 ongoing studies and 278 ongoing construction projects were underway at Federal facilities on the National Priorities List.

### FORMER LANDFILL REUSED AS A SPORTS COMPLEX

[Neville Island's](#) newly built Sports Complex includes two indoor ice rinks, a golf training facility and miniature golf course. The sports complex increases employment opportunities, enhances the community, and protects drinking water sources.

Neville Island:

- was a 32-acre Ohio River Park site in Neville Island, PA, used as an industrial landfill from the 1930s through 1960s;
- caused widespread contamination of surface water, ground water, and soil; and
- was completed in 1998.

### 900<sup>TH</sup> CONSTRUCTION COMPLETION

[Solitron Microwave](#), a 20-acre site in Port Salerno, FL, was used for plating and manufacturing processes:

- contained 12 private wells with contaminant levels above drinking water standards;
- added to the National Priorities List in 1998;
- completed construction in 2004; and
- redeveloped into an industrial park.

### 385 REMOVAL ACTION STARTS IN FY 2004

- 182 removal action starts undertaken by the Fund;
- 175 removal action starts undertaken by responsible parties;
  - 62 starts by responsible parties pursuant to a Federal enforcement action;
  - 113 starts by responsible parties with no enforcement instruments; and
- 28 removal action starts at Federal facilities.

Through investigation and cleanup, the Superfund program identified nearly 420 Superfund sites with land available for reuse. These sites (the majority of which are National Priorities List sites) comprise more than 244,000 acres, of which 52,000 (21 percent) are available for residential uses and 192,000 (79 percent) are available for nonresidential uses.

### *Responding and Preparing for Emergencies*

EPA continued to strengthen its emergency preparedness and response capability, particularly for homeland security. During FY 2004, EPA collaborated with Federal partners to improve the incident command system across public and private sectors; provided Federal assistance to States (at the discretion of the Federal Emergency Management Agency); and, as a member of the Catastrophic Disaster Response Group, developed national policy and guidance on response coordination and emergency support issues.

### Federal Facilities

The Government made progress in protecting human health and the environment at many Federal facility sites. In FY 2004, the Federal government (for the sites on the National Priorities List:

- issued 90 cleanup decision documents for Federal facilities,
- selected final remedies at 9 sites,
- entered into four interagency and Federal facility agreements at Federal facilities,
- completed 28 Five-Year Reviews, and
- designated 9,000 acres of land on non-base closure Federal facilities and an additional 80,000 acres of land on Base Realignment and Closure properties, with a cumulative total of over 400,000 acres rated available for reuse.

## SAFE TRANSPORT OF WASTE TO DISPOSAL FACILITIES

- Through the end of FY 2004, over five million tons of waste were safely transported and disposed of at the Environmental Remediation Disposal Facility.
- The [Waste Isolation Pilot Plant](#) safely received and disposed of 18,300 cubic meters of transuranic (artificially made, radioactive element, such as neptunium, plutonium, americium, and others, that has an atomic number higher than uranium in the periodic table of elements) and weapons-grade nuclear waste.
- More than 2,300 shipments of waste destined for the Waste Isolation Pilot Plant traveled more than 2.4 million highway miles with no significant incident.

## 5,000-ACRES TRANSFERRED TO U.S. FISH & WILDLIFE SERVICE

- The [Rocky Mountain Arsenal](#) (RMA) is a former weapons production facility near Denver, CO.
- The transferred land established the Rocky Mountain Arsenal National Wildlife Refuge.
- To facilitate the land transfer, EPA deleted over 5,000 acres of the RMA from the National Priorities List.
- Once cleanup is complete, the Department of the Interior will designate the 27,000-acre site an urban wildlife refuge.

## REMEDATION PLANS FOR FEDERAL FACILITIES REMAIN ON SCHEDULE

- In [Oak Ridge](#), TN, more than 98,000 cubic meters of waste were disposed of and land was transferred to the city by the Department of Energy.
- The [F-Canyon Facility](#) at the Savannah River Site began decontamination and decommissioning work.
- At the Fernald and Mound Plant sites in Ohio and the Rocky Flats Environmental Technology site in Colorado, the removal of waste is near completion and remains on track for completion in 2006.

EPA oversees environmental cleanups resulting from past improper hazardous materials/waste handling and disposal operations primarily at Department of Defense installations.

In FY 2004, the number of decision documents (Record of Decision, Record of Decision Amendment, and Explanation of Significant Differences) signed at Federal facilities increased by 40 percent over FY 2003 accomplishments (78 vs. 56). In addition, Federal facilities completed all remedy construction at three other National Priorities List facilities, bringing their total to 43. For all remedial actions or long-term cleanups, program-to-date accomplishments total 603 remedial actions completed at National Priorities List facilities. Approximately 720 remedial projects are still in the pipeline at 135 National Priorities List sites. One facility, the [Atlantic Fleet Weapons Training Area](#) in Puerto Rico, was proposed for listing in FY 2004. Approximately 136 interagency and Federal facility agreements are signed for Federal facilities. EPA expects that all Army and Navy bases without an interagency or Federal facility agreement in place at the end of FY 2004 will have one signed by the end of FY 2005.

### *Streamlining Cleanup Process*

In FY 2004, EPA and the Department of Defense initiated a project focusing on streamlining the cleanup processes, paying particular attention to the post-remedies process. EPA is also leading an effort under its One Cleanup Program to reach out and address barriers to cleanup involving other Federal agencies. In early FY 2005, EPA will complete work to improve RCRA/CERCLA integration at Federal facilities, improve interagency coordination at former Department of Defense sites, and between EPA and Federal land managers during the pre-Remedial Investigation and Feasibility Study stage, and develop a policy creating joint mining waste repositories.

## FIVE-YEAR REVIEW COMPLETED AT A FEDERAL FACILITY

- In September 2004, the Air Force completed second Five-Year Review at the 4,255-acre [Pease Air Force Base](#) in Portsmouth, NH.
- Until 1991, Pease AFB served as a Strategic Air Command bomber and tanker base.
- Contaminants found onsite include trichloroethylene, volatile organic compounds, pesticides, paint, and waste oils.

## SINCE THE INCEPTION OF SUPERFUND IN 1980:

- placed 45,826 sites in the data system
- removed 33,695 sites
- retained 12,131 active sites
- listed 1,535 sites on the National Priorities List
- deleted 292 sites from the National Priorities List
- completed 210 sites which are undergoing long-term monitoring

Of 592 sites remaining on the National Priorities List (not yet construction complete), 97.2 percent (576 sites) have activities underway:

- 23.8 percent are in the study phase (141 sites)
- 5.4 percent have a remedy selected (32 sites)
- 10.1 percent have a design underway (60 sites)

## III. Trends and Technology Innovation

### Trends

On September 30, 2004, the Superfund program completed its 24<sup>th</sup> year. EPA has increased its focus on allocating and leveraging funding for site-specific activities. The Superfund program streamlined its processes; ensured that the worst sites are addressed first, with the ranking and prioritizing of sites; and sought other financial avenues for cleanup through enforcement actions that support the “enforcement first” principle. Throughout all Superfund programmatic activities, EPA and the Regions work closely with the local community to build early and meaningful involvement.

Four different trends in financial management, streamlined decision-making, enforcement, and programmatic accomplishments are discussed below.

#### Trend 1 – EPA increased cost management in response to increased demand for cleanup.

The Superfund program, like all Federal programs, must operate within the funding levels provided by annual Congressional appropriations. The Superfund program often completes short-term actions to mitigate health threats at sites pending completion of investigations and the start of long-term cleanup construction. However, many Superfund sites pose serious continuing and documented public health risks requiring long-term measures as well. For example, the Agency is cleaning areas where residents were found with high body burdens of lead (a heavy metal that is hazardous to health if breathed or swallowed; its use in gasoline, paints, and plumbing compounds was sharply restricted or eliminated by Federal laws and regulations), arsenic (a naturally occurring element found throughout the environment), and other contaminants. This exposure impairs children’s physical and cognitive development and can have a variety of impacts on adults. In addition, since its inception, the Superfund program has provided alternative sources of drinking water to nearly 615,000 people near both National Priorities List and non-National Priorities List sites where existing water supplies were unsafe because of contamination. Under these conditions, EPA carefully allocates the Superfund budget across all program activities.

Changes in the program (e.g., more complicated sites, larger sites, longer schedules) lead to budgetary pressures. The trend toward more projects ready for construction than those for which funding is available requires the Agency to seek additional cost efficiencies in the program, while maintaining protection of human health and the environment. To accomplish this, the Agency initiated action in four areas of cost management. First, the Agency continued its **efforts to ensure that the people responsible for the contamination pay** for or conduct the cleanup work. In FY 2004, the Agency augmented its appropriated cleanup funding with \$109 million from responsible party settlements and used the funds for construction and post-construction activities.

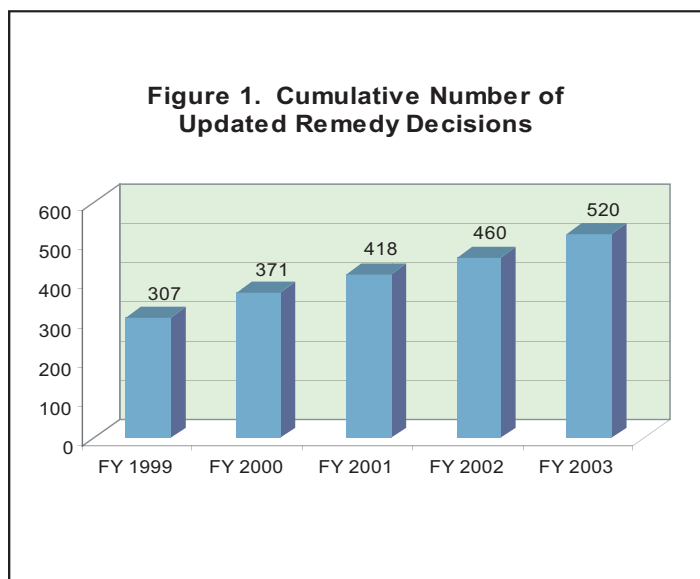
EPA is **getting the most out of Superfund money** by ensuring that program resources are used effectively and efficiently. Superfund appropriations since the inception of the program exceed \$27 billion. Historically, some funds remain in cleanup agreements with States and contracts with private companies for work no longer required. Through an aggressive effort to deobligate prior year’s funds from contracts, grants, cooperative agreements (assistance agreements whereby EPA transfers money, property, services, or anything of value to a State, university, non-profit, or not-for-profit organization for the accomplishment of authorized activities or tasks), and interagency agreements, EPA recaptured \$79 million. In FY 2004 Superfund used these funds for long-term construction, site investigations, remedy selection, emergency response, and other activities.

Third, EPA is working to **increase the efficiency and effectiveness of remedies** by reviewing and improving high cost remedies and paying careful attention to design and operation.

- EPA established the Contaminated Sediments Technical Advisory Group, comprised of Agency experts, to monitor the progress of and provide advice to Regions regarding a select group of large, complex, or controversial contaminated sediment Superfund sites, prior to the selection of remedies at sites with potentially high costs.
- Superfund's ongoing efforts to update remedies continued to play a significant role in saving money for the program and for private parties during remedy design, construction, and operation and maintenance. In FY 2003, because of changes in science, technology or new information, EPA updated 60 remedies, generating cost savings estimated to exceed \$85 million. Since the inception of these reviews in FY 1996, EPA has updated over 500 remedies, reducing estimated cleanup costs by more than \$1.8 billion. See Figure 1 for the cumulative number of updated remedy decisions from FY 1999 through FY 2003.
- Superfund also developed new cost estimating tools to use during design and is reviewing and modifying contaminated ground water treatment systems in an effort to save about \$4.8 million a year.

Fourth, EPA is **utilizing new technology for site management**. EPA continues to encourage the development of new, more effective technologies (particularly using computer capabilities) and the sharing of information on these technologies within the industry. For example, EPA is exploring the Triad Approach (using: (1) systematic project planning, (2) dynamic work plan strategy, and (3) real-time measurement technologies) for site investigation. This approach uses more real time sample analysis and decision-making, and holds great potential for cost savings, time savings and less uncertainty in site evaluations, including the remedial investigation.

These activities are accomplished within the framework of the Agency's priorities for providing remedial action or long-term cleanup funding. Superfund's most important long-term cleanup priority is to continue work on projects underway, with construction equipment and staff onsite. The amount of funding for new projects is based on the health threat posed and the need to finish work at an entire site. This goal drives the cost management initiatives Superfund is undertaking.



EPA put in place all of these activities to find and use every dollar and resource available to clean up contaminated sites and protect human health. However, the size, complexity and cost of sites under construction or ready to begin construction continue to grow. In fact, in FY 2004, EPA committed more than 52 percent of the Superfund obligations for long-term, ongoing cleanup work at just nine sites. The Agency expects a similar situation in FY 2005.

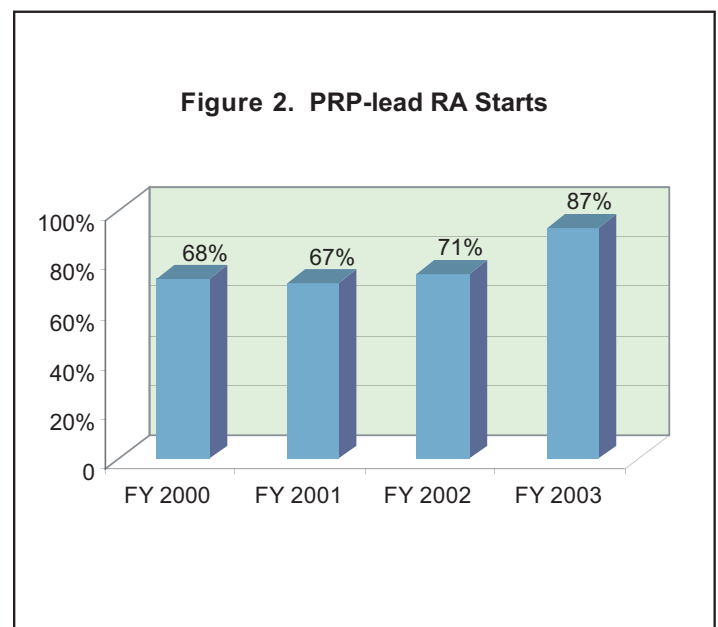
Nonetheless, the Agency responds to sites that pose an immediate threat to human health and the environment. EPA continues to monitor sites for any changes in site conditions and will act to address such threats. As stated above, Superfund's removal and emergency response program started 385 removal cleanup actions in FY 2004 and has completed more than 8,286 removals at hazardous waste sites to immediately reduce their threat to human health and the environment.

Program resources must be managed carefully given the added responsibilities of Superfund's emergency response under the National Response Plan. On September 11, 2001, EPA emergency personnel were on their way to New York City before the second plane hit the World Trade Center. Later, EPA was put in charge of cleaning up the anthrax (an acute infectious disease caused by the spore-forming bacterium *Bacillus anthracis*) contamination in the Hart Senate Office Building in Washington, D.C. When the space shuttle Columbia disintegrated over Texas, EPA's emergency responders were called to the scene. EPA is often predeployed at national events in case of a terrorist attack. These new responsibilities are placing new pressures on staff as they train and prepare to address a long list of possible emergencies – chemical, radiological, and biological.

## Trend 2 – EPA leveraged potentially responsible party performance and financing for response actions.

As part of EPA's efforts to leverage funds for Superfund activities, settlements with responsible parties are increasingly important. Under its "enforcement first" principle, EPA actively seeks responsible parties and remains committed to continuing this effort. Through response settlements, the use of interest-bearing special accounts, and cost-recovery settlements, EPA is able to initiate additional site activities. Cashout settlements (cash payments in resolution of liability for both past and future costs) that designate funds to a special account, de minimis settlements, and orphan share compensation are tools that assist EPA in working with responsible parties to reach a funding agreement for cleanup.

Figure 2 depicts the increase in the percentage of remedial action starts undertaken by responsible parties from FY 2000 through FY 2003. In FY 2004, EPA created a new measure and began reporting the percentage of remedial actions or long-term cleanups at non-Federal Superfund sites with known, viable, liable parties where settlements were reached or enforcement actions were taken in time to start the remedial action or long-term cleanup during the fiscal year. For the first year under this new measure, settlement was reached at 98 percent of the applicable sites.

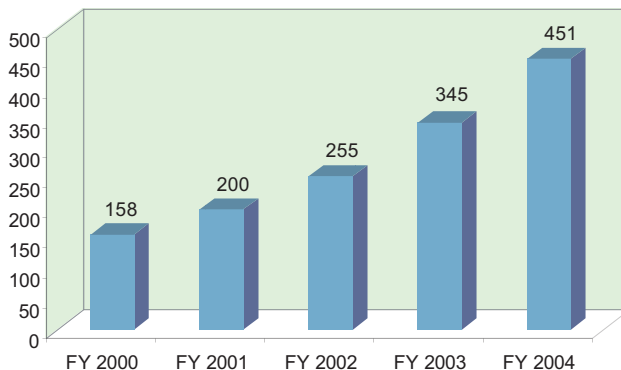


The number of settlements with funds collected for site-specific special accounts and the total amount of those funds in special accounts both steadily increased in recent years. By FY 2004, EPA collected approximately \$1.3 billion, established 451 special accounts, and accrued over \$185 million in interest. Roughly one-half of the increase in the amounts deposited in special accounts was between FY 2000 - FY 2004. In FY 2004 alone, EPA established more than 20 percent of the special accounts. Figure 3 shows the increase in the number of special accounts from FY 2000 through FY 2004.

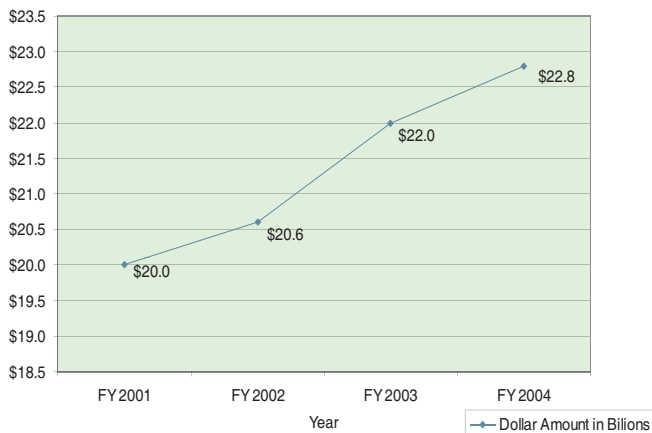
The Agency strives to ensure that it reviews the cost-recovery potential of every case with significant EPA funded project expenditures before the Government's potential claim is extinguished by the statute of limitations. For each case where EPA's total past costs exceed \$200,000, the Agency attempts to either settle with the responsible parties, file a claim against them, or formally document its reasons for waiving cost recovery before the potential expiration of the statutes of limitations. For each of the last five years, the Agency has addressed between 98 and 100 percent of such cases before their potential statutes of limitations expiration date and has had great success in recovering costs in these cases.

Private party commitments played an integral role in funding cleanups. Since its inception, EPA has achieved more than \$8 in private party cleanup commitments and cost recovery, for every \$1 spent on Superfund civil enforcement (see Figure 4). In FY 2004 EPA negotiated \$523 million in private party commitments for future response work, including cashouts and \$157 million in private party commitments for EPA's past costs.

**Figure 3. Number of Special Accounts Established (FY2000 - FY2004)**



**Figure 4: Increase in Private Party Commitments Since Inception of Program (cumulative)**

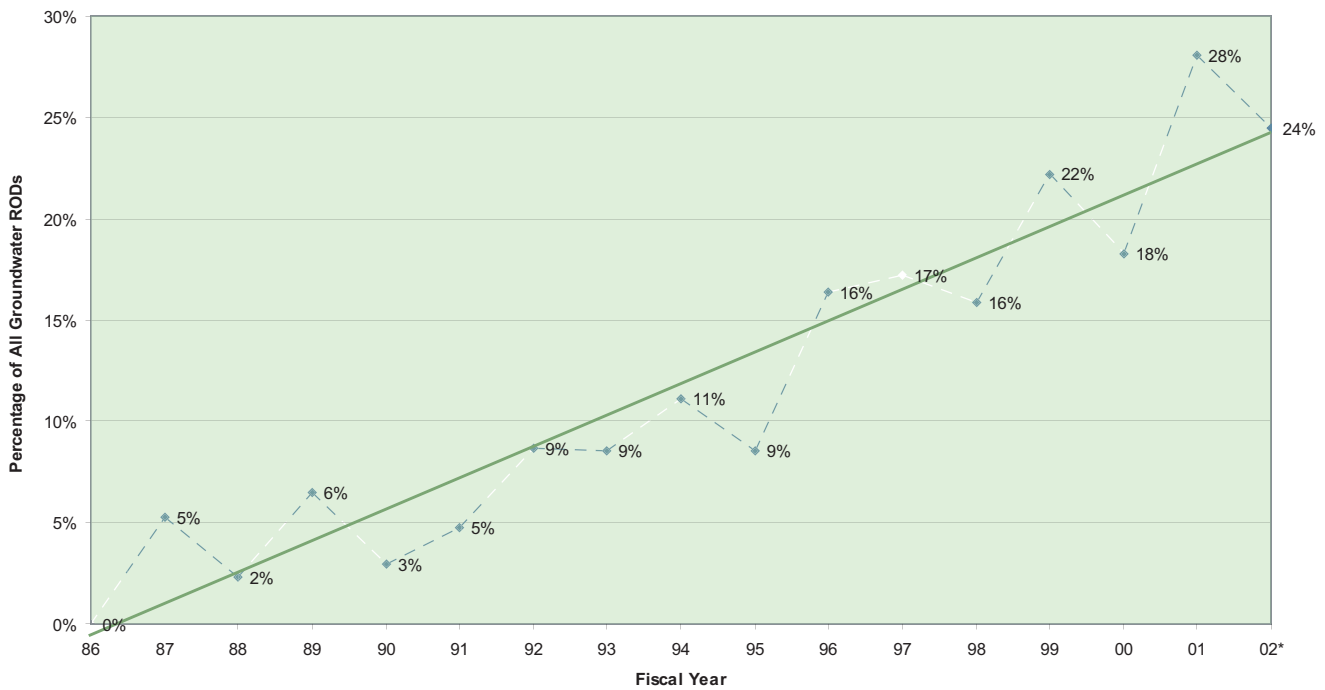


### Trend 3 – The number of projects for which EPA selected in situ remediation technologies increased.

At sites, where previously the only remedial option was removal and off-site disposal, EPA now has additional alternatives such as in situ or onsite treatment of contaminants. EPA documented ways in situ remediation options often efficiently target the actual sources of contamination and reduce the time required for cleanup. Having a larger tool box of remediation options allowed EPA to develop unique cleanup plans that are more likely to restore sites to a specific use.

Figure 5 depicts the steady increase in the percentage of ground water remedies with in situ treatment selected. This upward trend is due to several factors, including more widespread acceptance of these treatment technologies and the reduced operations and maintenance costs. EPA also found that in situ treatment effectively addressed contaminants that historically were difficult to remediate, such as dense nonaqueous phase liquids and chlorinated solvents.

**Figure 5. Superfund Remedial Actions: Trends in the Selection of In Situ Treatment for Ground Water (FY 1986-2002)\***



ROD = Record of Decision

\* Includes information from an estimated 70% of FY 2002 RODs.

RODs Selecting In Situ Treatment

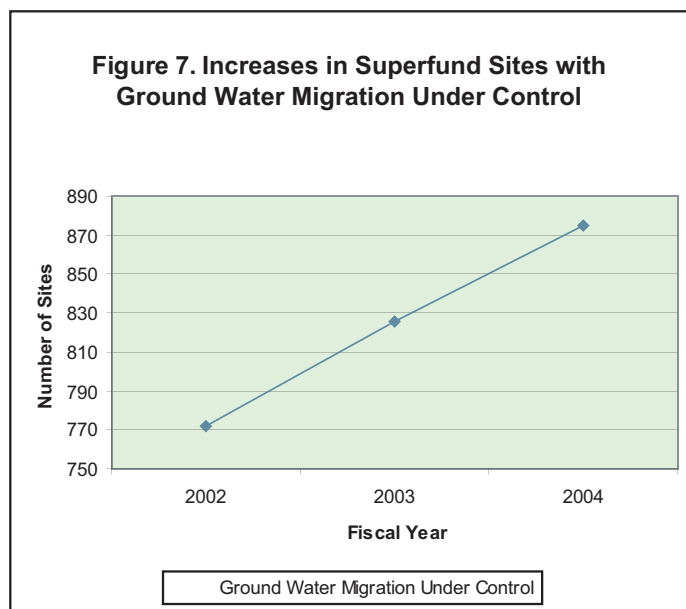
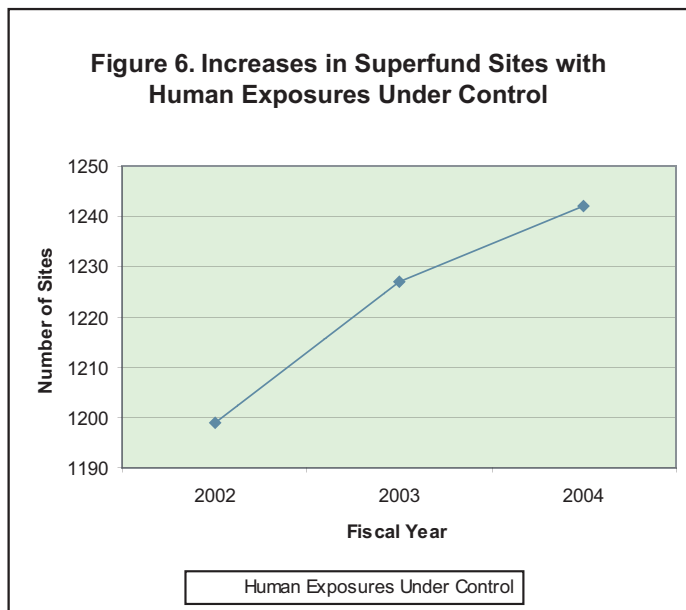
Linear (RODs Selecting In Situ Treatment)

## Trend 4 – EPA reduced threats to human health.

The Superfund program fulfills the important environmental mission of reducing risks to human health and the environment posed by dangerous chemicals, pollutants, and contaminants in the air, soil, and water. When ground water drinking supplies or residential soil is contaminated with hazardous wastes, the public is faced with an immediate and direct threat to health. Superfund's performance measures for environmental indicators (i.e., Human Exposures Under Control and Ground Water Migration Under Control) demonstrate the cumulative impact the program has already had on the universe of sites to be addressed. These measures are an additional way to see the program's incremental progress protecting human health and the environment each year.

In FY 2004, the Superfund program protected public health through response activities that reduced current, direct human exposures to hazardous pollutants. At the close of FY 2004, human exposures were under control at 83 percent (1,242 of 1,493 sites with human health exposures) of affected National Priorities List sites, meaning that protective controls were in place to prevent any unacceptable human exposures under current land and ground water use. EPA is conducting further study or cleanup work at the remaining sites. At the [Ace Services Site](#) in Colby, KS, a former chrome-plating facility, chromium (a heavy metal) contamination threatened the local drinking water supply. EPA and the State of Kansas are now providing water connections to replace contaminated private wells with city water to protect the health of residents and the environment. In addition, the migration of contaminated ground water was under control at 67 percent (875 of 1,306 sites with ground water contamination) of National Priorities List sites by the close of FY 2004.

In the period from FY 2002, when data were first collected on human exposures under control and ground water migration under control, to the present, EPA has made substantial progress. Since FY 2002, an additional 43 sites have human exposures controlled and an additional 103 sites have ground water migration controlled. These accomplishments translate into tangible environmental results for the protection of human health (see Figures 6 and 7).



Tangible environmental benefits are also demonstrated by the return of formerly contaminated land to productive reuse. On November 5, 2004, EPA issued guidance to its regional offices (Guidance for Documenting and Reporting the Superfund Revitalization Performance Measures, Office of Solid Waste and Emergency Response 9202.1-26) instructing them in the use of two new performance measures to document and report EPA's Superfund Land Revitalization accomplishments. The two measures are: the number of acres of land at Superfund sites ready for reuse and the number of Superfund sites with land ready for reuse.

In October 2004, using these performance measures, EPA partially quantified its success in making land ready for reuse over the life of the Superfund program. It identified 244,000 acres of land in use or made ready for reuse at non-Federal facility Superfund sites. Other Federal agencies identified over 400,000 acres as available for reuse. Twenty-one percent of this land is ready for residential use, and 79 percent is ready for nonresidential use. EPA also identified 420 sites with land ready for reuse, of which 226 sites are already in use.

In FY 2005, EPA will continue to gather current and historical data on land and sites ready for reuse as a result of Superfund cleanups, to establish a baseline against which it can track the effectiveness of its current activities in making land ready for reuse. EPA will also continue to increase its emphasis on incorporating future land use into the cleanup process at Superfund sites, to accommodate long-term use of sites without compromising the protection of human health and the environment.

## New Techniques and Technologies

### *Superfund Innovations in Sediment Cleanup*

Superfund is a vehicle for innovation in evaluating and cleaning up contaminated sediments. Through the work of Superfund personnel and through partnerships with other Federal agencies, States, and industry, Superfund improved characterization techniques, piloted unconventional designs, tested new construction techniques, and developed new ways to incorporate community reuse opportunities into cleanup designs. Examples of innovations include:

- EPA worked with the U.S. Army Corps of Engineers, the U.S. Navy, and the Department of Energy to undertake innovative investigations using [EPA's Triad Approach](#). Using the time and cost efficiencies inherent in the Triad Approach, project teams delineated the contribution and extent of various sources of contaminants to water bodies at a number of sites. At the [Lower Duwamish River](#) in Seattle, WA, EPA also used the Triad Approach to test the reliability of collaborative analytical methods.
- In partnership with States and local health agencies, EPA has developed novel outreach and health education programs to protect fish and shellfish consumers at many sites. At the [New Bedford Site](#) in Massachusetts, EPA also partners with the local healthcare and social service providers, schools, and marina and bait businesses to raise people's awareness of the health risks from eating PCB-contaminated seafood, specifically targeting women of childbearing years and children, as well as the general fishing community.
- At the [Fox River](#) site in Wisconsin, EPA and responsible party contractors are testing the largest deployment yet undertaken of a geotube (large bags made from a high tensile strength woven polypropylene geotextile) method for dewatering contaminated sediment. If it continues to be as successful as early data indicate, this method may significantly reduce the cost of dewatering sediment at large dredging projects.

- The Superfund program was instrumental in promoting new solutions which meet both remediation and restoration goals. In coordination with trustee agencies and communities, EPA identified creative ways, at a number of sites, to incorporate habitat restoration into Superfund cleanup.
- In partnership with the Office of Research and Development's [Hazardous Substance Research Center–South-Southwest](#), EPA supported research into new capping designs which incorporate features to actively treat or sequester contaminants in the [Anacostia River](#) in Washington, DC. This research can lead to increased circumstances in which capping is a protective method to manage contaminated sediments in place.
- At a number of sites, EPA has developed new ways to excavate contaminated sediments in dry conditions, improving the accuracy of excavation. For example, at the [GE Housatonic River Site](#) shallow bedrock (a general term for any consolidated rock) prevented the installation of sheetpile cofferdams (a watertight enclosure from which water is pumped to expose the bottom of a body of water and permit construction made of sheetpile). EPA and its contractor designed and constructed a temporary dam with a pipe bypass system. The dam backed up the river and funneled the water through gravity-flow pipes placed in the riverbed itself. By moving the pipes to one side of the river and then the other, both sides could be excavated without major reconstruction of the bypass system.
- Through partnership with industry in the Remedial Technologies Development Forum, EPA supported development of a framework for assessment of monitored natural recovery of contaminated sediments, which is described in EPA's draft [Contaminated Sediment Remediation Guidance for Hazardous Waste Sites](#), peer reviewed in the spring of 2005.
- At the New Bedford Superfund Site, EPA and its contractors developed a pioneering method to improve the accuracy of assessing public health risks from dredging operations through a system of monitoring and tracking airborne PCB exposure, then comparing it to a health-based long-term exposure budget. The method is working well to ensure protection of the local community during a large dredging operation.
- In partnership with local communities at a number of sites, EPA incorporated innovative future land uses into the design of facilities to be constructed for the cleanup including port and transportation infrastructure and piers. At the New Bedford Site, EPA also instituted innovative programs to share construction costs where combined sewer overflows (sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe) or power cable movement was necessary and the local government desired other changes to these systems.
- A number of Superfund sediment sites have Records of Decision which specify pioneering sediment cleanup levels that are more scientifically sound than simple numerical limits. For example, at the Fox River site, EPA and the Wisconsin Department of Natural Resources developed concentration-based sediment levels to be evaluated with surface-weighted average (concentration weighting for soft sediment deposits and hard sediment areas) limits. These took into account the feeding patterns of fish, with alternatives built into the decision tree, giving the project team flexibility to cost effectively meet cleanup levels.
- In cooperation with industry partners of the [Remediation Technologies Development Forum](#), EPA organized a workshop evaluating the application and status of inventive in situ treatment technologies at contaminated sediment sites. More than 100 participants gathered to discuss opportunities for further development of these technologies.

## IV. Responding to New Realities

### Superfund Program Office Perspective

The Superfund program is responding to its challenges using innovation and collaboration with others. In December 2004, the Superfund program issued the "Principles for Superfund Cleanup in the 21<sup>st</sup> Century," Office of Solid Waste and Emergency Response Directive 9200.5-18, December 8, 2004, which describes how all program processes coordinate to promote effective cleanups.

The Superfund program faces a backlog of new cleanup projects ready to begin construction. At the same time, Superfund is experiencing a growing challenge to fully fund several large and complex ongoing construction projects. Projected FY 2005 needs for existing construction and long-term remedial actions or long-term cleanups will exceed appropriated funding levels. Therefore, EPA must continue to rely on deobligations and carryover to fund new projects.

To date, a small number of sites may require additional work to address portions of the remedy that have failed or hazardous substances, pollutants or contaminants for which the cleanup levels have changed, thereby raising concerns about the protectiveness of the remedy. Effective institutional controls that help minimize the potential for human exposure to contamination are EPA's greatest asset in avoiding remedy failure and maintaining their integrity. A key challenge to the effective use of institutional controls is the overlapping and often disconnected responsibilities at different levels of government for implementation, monitoring, and enforcement. EPA's Superfund program is taking a leadership role in the development of a voluntary national network of interactive Federal, State, Tribal, local, and industry institutional controls tracking systems to both enhance their effectiveness and provide information on all cleanup sites in a community.

Maintaining a positive ratio of responsible party-lead to EPA funded projects is important to the outyear forecast for Superfund. Preserving a two-thirds responsible party-lead to one-third EPA funded projects ratio maximizes the leveraging of appropriated funds in a given year, minimizes the States' near-term cost share contributions, and reduces States' long-term liability for operation and maintenance of sites. Increasing the reuse of Superfund sites can diminish the costs to States and responsible parties for tracking and monitoring sites in the future. Shifting these costs may further reduce the long-term societal cost of these projects.

In the future, EPA will continue to address immediate threats to public health through the removal program and will continue to place on the National Priorities List sites that pose long-term threats and cannot be addressed with other State or Federal remedial programs. Superfund will continue to monitor and evaluate sites that do not receive funding, and research alternative approaches to address unfunded sites. In the 21<sup>st</sup> century, the Superfund program is supporting a vigorous post-construction completion program to ensure that remedial actions provide for the long-term protection of human health and the environment as well as to return sites to beneficial uses.

## Superfund Enforcement Office Perspective

Maximizing responsible party-lead activities at every stage of the cleanup process is now more important than ever. Superfund enforcement is increasing its efforts to get responsible private parties to conduct site activities earlier in the cleanup process (e.g., at the Remedial Investigation and Feasibility Study stage). EPA will continue to emphasize the importance of its “enforcement first” policy. This strategy will allow EPA to focus limited resources on sites where viable, potentially responsible parties do not exist or lack the funds or capabilities needed to conduct the cleanup.

In addition, the Agency is moving toward strengthening “financial assurance” for operating hazardous waste sites (and for responsible parties doing work at Superfund sites) to ensure that the money is available in the future for site closure and cleanup. Financial assurance could reduce the need for EPA and the U.S. taxpayer to pay for a potentially costly cleanup.

EPA will increase its efforts to ensure that institutional controls are effectively implemented at Superfund sites. In September 2004, EPA issued a strategy that sets forth a five-year plan to ensure that effective institutional controls are in place and functioning properly at approximately 900 sites that have achieved construction completion.

## Removal Program Office Perspective

There are more than 30,000 accidental releases of hazardous materials reported to the Federal government each year. Emergencies range from small scale spills to large events requiring prompt action and evacuation of nearby populations. For example, on June 28, 2004, two trains collided near Macdona, TX. The collision resulted in derailment of four locomotives and 35 railcars, and a small fire started by the release of 60 tons of chlorine. Through EPA's response to the incident, the chlorine was collected into large mobile tanks (frac tanks), and air monitoring was conducted in the surrounding area.

EPA will continue to ensure that nontime-critical and time-critical removal actions are conducted when necessary to protect human health and the environment by funding response actions directly or overseeing and enforcing actions conducted by potentially responsible parties. In carrying out these responsibilities, consistent with the National Oil and Hazardous Substances Contingency Plan and the National Response Plan, EPA will closely coordinate all removal actions with other EPA programs (including the Superfund remedial program), other Federal agencies, States, Tribes, and local governments.

EPA's core emergency response program will respond quickly and effectively to chemical, oil, biological, and radiological releases and will continuously improve coordination mechanisms to enable timely and effective responses to simultaneous, large-scale national emergencies, including homeland security incidents. Response systems and processes (e.g., Incident Command System, National Incident Coordination Teams, Regional Incident Coordination Teams) will be overseen by relevant Agency members at all levels of management.

Using the process established under the Agency's National Approach to Response, EPA will: (1) maximize EPA assets; and (2) promote consistency and coordination across the Regions, the Agency's specialized response teams, laboratories, and Headquarters. The National Approach to Response work groups will update and improve policies, guidelines, procedures, and plans. All of EPA's preparedness and response programs (including those in the Regions) will consistently implement the National Approach to Response policies, guidance, and other communication materials.

EPA will continuously provide state-of-the-art equipment, training, and exercises for its emergency response staff. Training and exercises will incorporate the latest scientific methods, approaches, and procedures for detection, analysis, response, decontamination, and health and safety needs for chemical, biological, and radiological agents.

To improve coordination mechanisms and the speed and effectiveness with which EPA responds to national emergencies, EPA participated in several homeland security exercises during FY 2004. Two major exercises held in the summer of 2004 include: the EPA Radiation Emergency Exercise (Ruby Slippers); and the Federal Homeland Security Exercise (Determined Promise 2004). Operation Ruby Slippers held in Leavenworth, Kansas was conducted by EPA's Office of Radiation and Indoor Air. More than 130 EPA emergency responders and experts from across the country participated in this exercise that enabled key staff to walk through the emergency response plan, identifying and resolving any problems. The Department of Defense Northern Command sponsored Operation Determined Promise 2004, involving five simulated events in southern Virginia. EPA participated in the exercise in an advisory role to the Incident Commander, and provided sampling and decontamination support.

Agency emergency response staff consistently uses crisis and information management systems. Large quantities of information will be effectively managed and disseminated during response incidents. The data will be used to manage response and to assist EPA in providing unified and consistent public messages. The latest information technology developments will be incorporated into system development (e.g., web portals).

## Federal Facilities Office Perspective

The challenges facing the Federal government include conditions unique to the Federal sector, such as cleaning up a nuclear weapons complex containing radiological and mixed wastes. These present unique technical and practical challenges. The Department of Defense's unique challenge is addressing active and former facilities with military munitions and residual contamination. There are also facilities where Federal operations (e.g., Department of Defense and National Aeronautics and Space Administration) generated environmental problems similar to those in the private sector (e.g., releases of hazardous substances to ground water, contaminant spills). Likewise, some Superfund sites are on lands owned or administered by the Federal government (typically the Departments of the Interior and Agriculture), where either the Federal government or private parties or both disposed of or generated waste through operations such as mining.

In the future, EPA will propose a limited number of Federal facility sites to the National Priorities List. Most of the Department of Defense and Department of Energy facilities were previously evaluated for listing, and eligible sites are already on the National Priorities List. Other Federal agencies are addressing sites that scored below the Hazard Ranking System cutoff level of 28.5 using other authorities, or these sites are awaiting final decisions. Sites formerly owned by the Federal government continue to challenge the agencies, especially where military munitions are present.

Spending authority for Federal facility environmental cleanups remained relatively constant during the past decade, with a slight overall increase for the Department of Energy and a slight decrease for the Department of Defense. The Department of Energy anticipates its future annual funding needs will begin to decline in FY 2007 because of completion of construction at three of its large sites. The Department of Defense projects remedies in place for all of its "high-risk" sites by 2008. These accomplishments will allow the Services to focus their efforts on sites they deem as "medium-risk" or "low-risk."

Because of continued progress in finalizing remedies, the Agency anticipates a slight increase in the number of remedies selected at National Priorities List sites in FY 2005. The Agency also expects to see a slight increase in the annual number of Federal facilities achieving construction completion, assuming funding remains relatively stable for the Department of Defense and Department of Energy.

With more projects reaching construction completion, efforts will shift toward post-construction completion activities, including Five-Year Reviews, monitoring remedies (including the effectiveness of institutional controls), and transferring properties for reuse. With few exceptions, most Federal facilities on the National Priorities List will require institutional controls.

## APPENDIX A: Superfund National Accomplishments Summary

### Fiscal Year 2004

The Superfund program spent \$507 million to perform construction and post-construction activities and to conduct and oversee emergency response actions.<sup>1</sup>

- \$367 million for construction and post-construction projects.
- \$140 million to conduct 385 emergency response and removal actions to address immediate and substantial threats to communities.

EPA funded new construction:

- EPA obligated \$104 million of appropriated funds, State cost share, and responsible party settlement resources for 27 new construction projects.

Superfund accomplishments include:

- EPA secured \$680 million in cleanup commitments and cost recoveries from the parties responsible for toxic waste sites.
- Conducted 678 long-term ongoing cleanup projects at 428 sites (includes EPA-lead sites, responsible party-lead sites, and Federal facility sites).
- Completed work at 40 sites across the country for a total of 926 or 61 percent of the National Priorities List.

The Superfund program prepared for future cleanup efforts:

- Listed 11 new sites on the National Priorities List, and proposed 26 sites for listing.
- The Superfund program spent \$228 million to conduct and oversee:
  - ◆ Site assessments and investigations
  - ◆ Selection and design of cleanup plans
  - ◆ Support for State, Tribal, community involvement activities, and other activities.
- Selected final cleanup plans at 30 sites. This brings the cumulative total of sites with final cleanup plans to approximately 66 percent of the 1,529 National Priorities List sites.

Constraints on the Superfund Program:

- As the Superfund program matures, the size, complexity and cost of sites that are under or ready to begin construction continue to grow. In Fiscal Year 2004, over 52 percent of the Superfund obligations for long-term, ongoing cleanup work were committed to just nine sites.

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<sup>1</sup>All financial data are from CERCLIS, as of November 5, 2004.

## APPENDIX A: Superfund National Accomplishments Summary Fiscal Year 2004 (continued)

In Fiscal Year 2004, the Superfund program used its resources to address cleanup priorities that protect human health and the environment.<sup>2</sup> The program leveraged additional resources to assist with its funding needs.

- Through management of Superfund contract spending, \$79 million was deobligated and used for long-term construction, site investigations, remedy selection, emergency removals and other activities.<sup>3</sup>
- \$130 million from responsible party settlements (\$109 million) and State cost share (\$21 million) were used for construction and post-construction work.

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<sup>2</sup> Activities were conducted through both the Superfund remedial and removal programs, with resources taken from Congressional appropriations, deobligations, private party settlements, and State cost shares.

<sup>3</sup> This figure reflects updated data from the Integrated Financial Management System, as of November 15, 2004.

## APPENDIX B: Glossary

### -A-

**Administrative Order on Consent** - a legal agreement signed by EPA and an individual, business, or other entity through which the violator agrees to pay for correction of violations, take the required corrective or cleanup actions, or refrain from an activity. It describes the actions to be taken, may be subject to a comment period, applies to civil actions, and can be enforced in court. Unlike a consent decree, an administrative order on consent does not have to be approved by a judge.

### -B-

**biological contaminants** - living organisms or derivatives (e.g. viruses, bacteria, fungi, and mammal and bird antigens) that can cause harmful health effects when inhaled, swallowed, or otherwise taken into the body.

**brownfields** - abandoned, idled, or underused industrial and commercial facilities/sites, the expansion or redevelopment of which is complicated by real or perceived environmental contamination. They can be in urban, suburban, or rural areas. EPA's Brownfields program helps communities mitigate potential health risks and restore the economic viability of such areas or properties.

### -C-

**cleanup** - actions taken to deal with a release or threat of release of a hazardous substance that could affect humans or the environment. The term "cleanup" is sometimes used interchangeably with the terms "remedial action," "removal action," "response action," or "corrective action."

**CERCLA (Comprehensive Environmental Response, Compensation and Liability Act)** - commonly known as Superfund, this law, enacted by Congress on December 11, 1980, created the Superfund program. Specifically, CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified.

**CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System)** - an automated inventory of site information for all potential or confirmed Superfund sites.

**Community Advisory Group** - a committee, task force, or board comprised of citizens affected by a hazardous waste site. These groups provide a public forum for community members to present and discuss their needs and concerns about the decision-making process at sites affecting them.

**consent decree** - a legal document, approved by a judge, that formalizes an agreement reached between EPA and potentially responsible parties (PRPs) through which PRPs will conduct all or part of a cleanup action at a Superfund site; cease or correct actions or processes that are polluting the environment; or otherwise comply with EPA initiated regulatory enforcement actions to resolve the contamination at the Superfund site involved. The consent decree describes the actions PRPs will take and may be subject to a public comment period.

## APPENDIX B: Glossary (continued)

**construction completion** - the stage in cleanup when physical construction of all cleanup remedies is complete, all immediate threats have been addressed, and all long-term threats are under control. Though long-term cleanup actions may still be operating, the site is often ready for economic, social, or environmental reuse.

**contaminant** - any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.

**contamination** - introduction into water, air, and soil of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the medium unfit for its next intended use; also applies to surfaces of objects, buildings, and various household and agricultural use products.

**cost recovery** - legal process by which potentially responsible parties who contributed to contamination at a Superfund site can be required to reimburse the Trust Fund for money spent during any cleanup actions by the federal government.

### -D-

**de micromis party** - party whose contribution is equal to or less than (1) 0.002% of total volume or 110 gallons (such as two 55-gallon drums) or 200 pounds of materials containing hazardous substances, whichever is greater, or (2) 0.2% of total volume, if the party sent only municipal solid waste. EPA will not pursue a de micromis party for recovery costs, and if a private party threatens a small party with litigation, EPA will settle with that de micromis party for \$0.

**de minimis party** - party whose contribution of hazardous substances to a facility is minimal, in both volume and toxicity (or other hazardous effects) relative to the other hazardous substances at the site. EPA will often offer small settlements to de minimis parties.

**dewatering** - removing or separating a portion of the water in a sludge or slurry to dry the sludge so it can be handled and disposed of, and removing or draining the water from a tank or trench.

**dredging** - removal of mud from the bottom of water bodies. This can disturb the ecosystem and causes siltation that kills aquatic life. Dredging of contaminated muds can expose biota to heavy metals and other toxics. Dredging activities may be subject to regulation under Section 404 of the Clean Water Act.

### -E-

**emergency removal action** - steps taken to remove contaminated materials that pose imminent threats to local residents (e.g., removal of leaking drums or the excavation of explosive waste); and the state record of such removals.

## APPENDIX B: Glossary (continued)

**enforcement** - EPA, state, or local legal actions to obtain compliance with environmental laws, rules, regulations, or agreements or obtain penalties or criminal sanctions for violations. Enforcement procedures may vary, depending on the requirements of different environmental laws and related implementing regulations. Under CERCLA, for example, EPA will seek to require potentially responsible parties to clean up a Superfund site or pay for the cleanup. In other situations, if investigations by EPA and state agencies uncover willful violations, criminal trials and penalties are sought.

**“Enforcement First” principle** - policy by which EPA seeks to compel those who are responsible for hazardous waste sites to take the lead in cleanup, thus conserving the resources of the Trust Fund.

### -F-

**Five-Year Reviews** - generally required by CERCLA or program policy when hazardous substances remain on site above levels which permit unrestricted use and unlimited exposure. Reviews are performed five years following the initiation of a CERCLA response action, and are repeated every succeeding five years so long as future uses remain restricted. Five-year reviews can be performed by EPA or the lead agency for a site, but EPA retains responsibility for determining the protectiveness of the remedy.

### -G-

**ground water** - the supply of fresh water found beneath the Earth's surface, usually in aquifers, which supply wells and springs. Because ground water is a major source of drinking water, concern is growing over contamination from leaching agricultural or industrial pollutants or leaking underground storage tanks.

### -H-

**Hazard Ranking System** - the principal screening tool used by EPA to evaluate risks to public health and the environment associated with abandoned or uncontrolled hazardous waste sites. A score is calculated based on the potential of hazardous substances spreading from the site through the air, surface water, or ground water, and on other factors such as density and proximity of human population. This score is the primary factor in deciding if the site should be on the National Priorities List and, if so, what ranking it should have compared to other sites on the list.

**hazardous substance** - any material that poses a threat to human health or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive; any substance designated by EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or is otherwise released into the environment.

**hazardous waste** - by-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

### -I-

**in situ** - in its original place; unmoved unexcavated; remaining at the site or in the subsurface.

## APPENDIX B: Glossary (continued)

**institutional controls** - actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use.

### -M-

**megasites** - large, complex, and costly sites for which total cleanup costs are expected to equal or exceed \$50 million.

**monitoring** - periodic or continuous surveillance or testing to determine the level of compliance with statutory requirements or pollutant levels in various media or in humans, plants, and animals.

### -N-

**National Priorities List** - EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under Superfund. The list is based primarily on the score a site receives from the Hazard Ranking System. EPA is required to update the list at least once a year. A site must be on the list to receive money from the Trust Fund for remedial action.

**NCP 40 CFR Part 300 (National Oil and Hazardous Substances Contingency Plan)** - the Federal regulation that guides determination of the sites to be corrected under both the Superfund program and the program to prevent or control spills into surface waters or elsewhere.

**NFRAP (No Further Remedial Action Planned)** - decisions are made from a site assessment perspective only; they simply denote that further Superfund National Priorities List assessment work is not required based on currently available information. In contrast, the archival of WasteLAN sites is made only when no further Superfund interest exists at a site. This means that sites are not archived if there are planned or ongoing removal or enforcement activities or if other Superfund interest still exists, even if a NFRAP decision was made during site assessment activities.

**nonaqueous phase liquids** - contaminants that remain undiluted as the original bulk liquid in the subsurface, e.g., spilled oil.

**nontime-critical removals** - removals where based on 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. The lead agency for nontime-critical removals will undertake an engineering evaluation/cost analysis or its equivalent.

### -O-

**orphan share** - the financial responsibility assigned to a potentially responsible party who is insolvent or defunct and unaffiliated with other liable responsible parties. Orphan share compensation provides a major incentive for responsible parties to perform cleanups and settle claims quickly without litigation, and reduces transaction costs by wholly or partly resolving the question of who should bear the burden of orphan shares.

## APPENDIX B: Glossary (continued)

### -P-

**PCBs (Polychlorinated Biphenyls)** - mixtures of synthetic organic chemicals with the same basic chemical structure and similar physical properties ranging from oily liquids to waxy solids. PCBs have been demonstrated to cause a variety of adverse health effects.

**pesticides** - substances or mixture intended for preventing, destroying, repelling, or mitigating any pest. Also, any substance or mixture intended for use as a plant regulator, defoliant, or desiccant.

**plume** - visible or measurable discharge of a contaminant from a given point of origin. Can be visible or thermal in water, or visible in the air as, for example, a plume of smoke; the area of radiation leaking from a damaged reactor; area downwind within which a release could be dangerous for those exposed to leaking fumes.

**pollutant** - generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.

**potentially responsible party** - any individual or company—including owners, operators, transporters or generators—potentially responsible for, or contributing to a spill or other contamination at a Superfund site. Whenever possible, through administrative and legal actions, EPA requires PRPs to clean up hazardous sites they have contaminated.

**Preliminary Assessment** - the process of collecting and reviewing available information about a known or suspected waste site or release.

### -Q-

**quality assurance/quality control** - a system of procedures, checks, audits, and corrective actions to ensure that all EPA research design and performance, environmental monitoring and sampling, and other technical and reporting activities are of the highest achievable quality.

### -R-

**radioactivity (radiological)** - the property of some atoms to spontaneously give off energy as particles or rays. The atoms that make up the radioactive materials are the source of radiation.

**Record of Decision** - a public document that explains which cleanup alternative EPA used to address a site under the authority of CERCLA.

**release** - any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance, pollutant, or contaminant).

**remedial action/long-term response** - the actual construction or implementation phase of a Superfund site cleanup that follows remedial design.

## APPENDIX B: Glossary (continued)

**remedial design** - a phase of remedial action that follows the remedial investigation/feasibility study and includes development of engineering drawings and specifications for a site cleanup.

**remedial investigation and feasibility study** - a phase of remedial action that follows the remedial investigation/feasibility study and includes development of engineering drawings and specifications for a site cleanup. The feasibility study usually recommends selection of a cost-effective alternative. It usually starts as soon as the remedial investigation is underway; together, they are commonly referred to as the "RI/FS". They are also known as a small-scale investigation of a problem to ascertain whether a proposed research approach is likely to provide useful data.

**remediation** - cleanup or other methods used to remove or contain a toxic spill or hazardous materials from a Superfund site; for the Asbestos Hazard Emergency Response program, abatement methods including evaluation, repair, enclosure, encapsulation, or removal of greater than 3 linear feet or square feet of asbestos-containing materials from a building.

**removal/removal action** - short-term immediate actions taken to address releases of hazardous substances that require expedited response.

**response action** - a generic term for actions taken in response to actual or potential health-threatening environmental events such as spills, sudden releases, and asbestos abatement/management problems; a CERCLA-authorized action involving either a short-term removal action or a long-term removal response. This may include but is not limited to: removing hazardous materials from a site to an EPA-approved hazardous waste facility for treatment, containing or treating the waste on-site, identifying and removing the sources of ground-water contamination and halting further migration of contaminants; any of the following actions taken in school buildings in response to AHERA to reduce the risk of exposure to asbestos: removal, encapsulation, enclosure, repair, and operations and maintenance.

**RCRA (Resource Conservation and Recovery Act)** - enacted by Congress in 1976, RCRA's primary goals are to protect human health and the environment from the potential hazards of waste disposal; to conserve energy and natural resource; to reduce the amount of waste generated; and to ensure that wastes are managed in an environmentally sound manner. In 1984, Congress enacted the Hazardous and Solid Waste Amendments which significantly expanded the scope and requirements of RCRA.

**Return To Use Initiative** - a policy that focuses on National Priorities List sites that were cleaned up prior to EPA's current emphasis on considering reuse during response activities. Many of these sites have remained vacant. With appropriate oversight, communities can reclaim these vacant sites. Returning these sites to beneficial use will provide local communities with valuable green space, recreational amenities, or commercial property. Removing the stigma associated with fenced and vacant Superfund sites may also increase local property values and the tax base.

**risk** - a measure of the probability that damage to life, health, property, or the environment will occur as a result of a given hazard.

## APPENDIX B: Glossary (continued)

### -S-

**sediment** - soil, sand, and minerals washed from land into water, usually after rain. They pile up in reservoirs, rivers and harbors, destroying fish and wildlife habitat, and clouding the water so that sunlight cannot reach aquatic plants. Careless farming, mining, and building activities will expose sediment materials, allowing them to wash off the land after rainfall.

**site assessment** - An initial phase of the Superfund process through which hazardous waste sites are evaluated, using preliminary assessments and site inspections, to develop a Hazard Ranking System score.

**Site Inspection** - the collection of information from a Superfund site to determine the extent and severity of hazards posed by the site. This phase follows and is more extensive than a preliminary assessment. The purpose is to gather information necessary to score the site using the Hazard Ranking System, and to determine if the site presents an immediate threat requiring prompt removal.

**special accounts** - cost recovery payments are deposited into "special accounts" that are sub-accounts within Superfund's Trust Fund. Special accounts are most commonly used when certain potentially responsible parties "cash out" their liability at a site rather than perform the cleanup work.

**stakeholder** - any organization, governmental entity, or individual that has a stake in or may be impacted by the Superfund program.

**State of Emergency** - a governmental declaration that may suspend certain normal functions of government, may work to alert citizens to alter their normal behaviors, or may order government agencies to implement emergency preparedness plans.

**statutes of limitations** - deadlines for filing lawsuits within a certain time after events that are the source of a claim.

**Strategic Plan/Government Performance and Results Act** - both of these hold Federal agencies accountable for using resources wisely and achieving program results. The Act requires agencies to develop plans for what they intend to accomplish, measure how well they are doing, make appropriate decisions based on the information they have gathered, and communicate information about their performance to Congress and to the public.

**strict, joint and several liability** - the liability scheme imposed by CERCLA.

**Superfund** - see CERCLA.

**SARA (Superfund Amendments and Reauthorization Act)** - legislation that amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) on October 17, 1986. SARA reflected EPA's experience in administering the complex Superfund program during its first six years and made several important changes and additions to the program. SARA stressed the importance of permanent remedies and innovative treatment technolo-

## APPENDIX B: Glossary (continued)

gies; required Superfund actions to consider the standards and requirements found in other State and Federal environmental laws and regulations; provided new enforcement authorities and settlement tools; increased State involvement; increased the focus on human health problems; encouraged greater citizen participation; and increased the size of the Trust Fund to \$8.5 billion.

**surface water** - all water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.).

### -T-

**Technical Assistance Grants** - grants provided to citizens' groups to obtain assistance in interpreting information related to cleanups at Superfund sites or those proposed for the National Priorities List. Grants are used by such groups to hire technical advisors to help them understand the site-related technical information for the duration of response activities.

**time-critical removals** - removals where based on the site evaluation, the lead agency determines that a removal action is appropriate and that there is a period of less than six months available before response activities begin on-site.

**toxic waste** - a waste that can produce injury if inhaled, swallowed, or absorbed through the skin.

**Triad Approach** - a three-pronged approach using: systematic project planning; dynamic work plan strategy; and real-time measurement technologies for site investigation.

**TCE (trichloroethylene)** - a stable, low boiling-point colorless liquid, toxic if inhaled: used as a solvent or metal degreasing agent, and in other industrial applications.

**Trust Fund** - a fund set up under CERCLA authority to help pay for cleanup of hazardous waste sites with revenues subject to congressional appropriation.

### -U-

**Unilateral Administrative Order (UAO)** - a legal document issued by EPA directing a potentially responsible party to perform site cleanup. A UAO sets forth the liability of the party for the cleanup, describes actions to be taken, and subjects the recipient to penalties and damages for noncompliance. Unilateral orders may be enforced in court. A UAO is EPA's most potent enforcement tool and a powerful settlement incentive. EPA usually only issues them to parties that are the largest contributors of waste to a site, are financially viable, and against whom there is strong evidence of liability.

### -V-

**VOCs (volatile organic compounds)** - any organic compound that participates in atmospheric photochemical reactions except those designated by EPA as having negligible photochemical reactivity.

