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Agency

Solid Waste And
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December 1992
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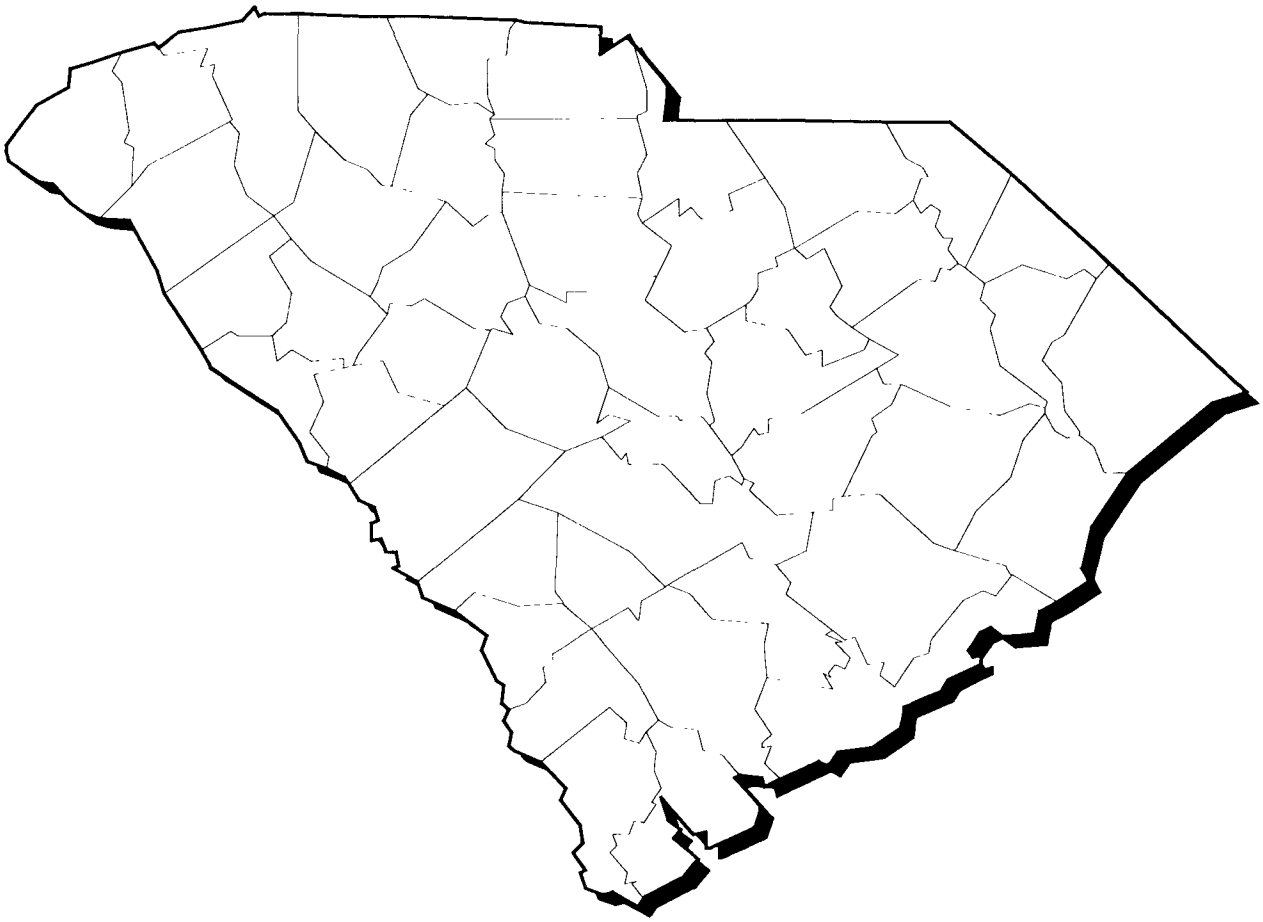
SUPERFUND: Progress at National Priority List Sites



SOUTH CAROLINA 1992 UPDATE

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INTRODUCTION

A BRIEF OVERVIEW OF SUPERFUND

During the second half of the Twentieth Century, the environmental consequences of more than 100 years of industrialization in the United States became increasingly clear. Authors such as Rachel Carson wrote passionately about the often-hidden environmental effects of our modern society's widespread use of chemicals and other hazardous materials. Their audience was small at first, but gradually their message spread. Growing concern turned to action, as people learned more about the environment and began to act on their knowledge

The 1970s saw environmental issues burst onto the national scene and take hold in the national consciousness. The first Earth Day was observed in 1970, the year that the U.S. Environmental Protection Agency (EPA) was founded. By the end of the 1970s, Love Canal in New York and the Valley of the Drums in Kentucky had entered the popular lexicon as synonyms for pollution and environmental degradation.

Superfund Is Established

The industrialization that gave Americans the world's highest standard of living also created problems that only a national program could address. By 1980, the U.S. Congress had passed numerous environmental laws, implemented by the EPA, but many serious hazardous waste problems were slipping through the cracks.

Responding to growing concern about public health and environmental threats from uncontrolled releases of hazardous materials, the U.S. Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Popularly known as Superfund, CERCLA had one seemingly simple job—to uncover and clean up hazardous materials spills and contaminated sites.

A Big Job

Few in Congress, the EPA, the environmental community, or the general public knew in 1980 just how big the nation's hazardous materials problem is. Almost everyone thought that Superfund would be a short-lived program requiring relatively few resources to clean up at most a few hundred sites. They were quite mistaken.

As the EPA set to work finding sites and gauging their potential to harm people and the environment, the number of sites grew. Each discovery seemed to lead to another, and today almost 36,000 hazardous waste sites have been investigated as potential hazardous waste sites. They are catalogued in the EPA's computerized database, CERCLIS (for the Comprehensive Environmental Re-

sponse, Compensation, and Liability Information System).

The damage to public health and the environment that each site in CERCLIS might cause is evaluated; many sites have been referred to State and local governments for cleanup. The EPA lists the nation's most serious hazardous waste sites on the National Priorities List, or NPL. (These Superfund sites are eligible for federally-funded cleanup, but whenever possible the EPA makes polluters pay for the contamination they helped create.) The NPL now numbers 1,275 sites, with 50 to 100 added each year. By the end of the century, the NPL may reach as many as 2,100 sites.

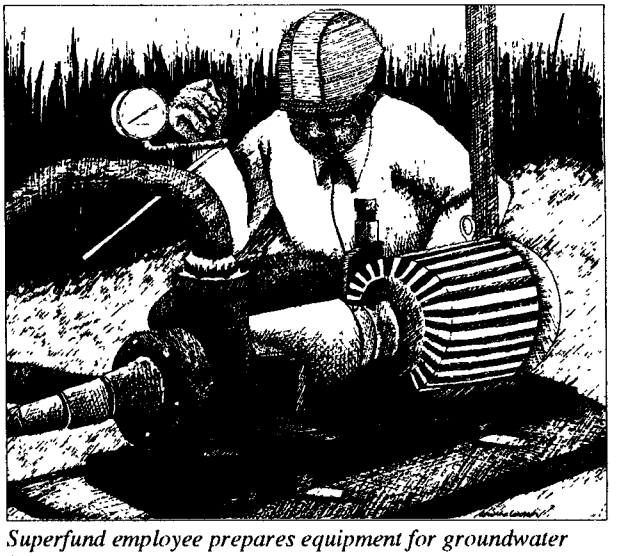
Superfund faces some of the most complex pollution problems ever encountered by an environmental program. Improperly stored or disposed chemicals and the soil they contaminate are one concern. More difficult to correct are the wetlands and bays, and the groundwater, lakes, and rivers often used for drinking water that are contaminated by chemicals spreading through the soil or mixing with storm water runoff. Toxic vapors contaminate the air at some sites, threatening the health of people living and working near by.

Superfund aims to control immediate public health and environmental threats by tackling the worst problems at the worst sites first. Wherever possible, Superfund officials use innovative treatment techniques—many developed or refined by the EPA—to correct hazardous materials problems once and for all. Many of the treatment techniques they use did not exist when the program was created.

The EPA Administrator had challenged Superfund to complete construction necessary for cleanup work at 130 NPL sites by the end of the 1992 federal fiscal year. By September 30, 1992, the end of fiscal year 1992, construction had been completed at a total of 149 NPL sites. Superfund is well on its way of meeting the Administrator's goal of completing construction at 200 NPL sites by the end of fiscal year 1993, and 650 sites by the end of fiscal year 2000.

Quick Cleanup at Non-NPL Sites

Long-standing hazardous waste sites are not Superfund's only concern. The EPA also responds to hazardous spills and other emergencies, hauling away chemicals for proper treatment or disposal. Superfund teams perform or supervise responses at rail and motor vehicle accidents, fires, and other emergencies involving hazardous substances. They also evacuate people living and working near by, if necessary, and provide clean drinking water to people whose own water is contaminated. Removal crews also post warning signs and take other precautions to keep people and animals away from hazardous substances.



Superfund employee prepares equipment for groundwater treatment.

Quick Cleanups, or Removals, are not limited to emergencies. When cleanup crews at contaminated sites find hazardous substances that immediately threaten people or the environment, they act right away to reduce the threat or to remove the chemicals outright. As the EPA implements the Superfund Accelerated Cleanup Model (SACM), more and more sites will undergo quick cleanups, and many of these will be cleaned up completely without ever being included on the NPL. (See "Streamlining Superfund: The Superfund Accelerated Cleanup Model.")

Some of Superfund's most significant gains in public health and environmental protection have been won by the removal program. As of March 31, 1992, the Emergency Response Program had logged more than 2,300 removal completions since Superfund was established.

Superfund employee removing drums from a Superfund site.

The Public's Role

Superfund is unique among federal programs in its commitment to citizen participation. Although the EPA is responsible for determining how dangerous a site is and how best to clean it up, the Agency relies on citizen input as it makes these decisions.

Community residents are often invaluable sources of information about a hazardous waste site, its current and previous owners, and the activities that took place there. Such information can be crucial to experts evaluating a site and its potential dangers.

Residents also comment on EPA cleanup plans by stating their concerns and preferences at public meetings and other forums and in formal, written comments to Agency proposals. The EPA takes these comments and concerns seriously, and has modified many proposals in response to local concerns. For, ultimately, it is the community and its citizens that will live with the results of the EPA's decisions and actions; it is only fair that citizens participate in the process.

A Commitment to Communication

The Superfund program is very serious about public outreach and communication. Community relations coordinators are assigned to each NPL site to help the public understand the potential hazards present, as well as the cleanup alternatives. Local information repositories, such as libraries or other public buildings, have been established near each NPL site to ensure that the public has an opportunity to review all relevant information and the proposed cleanup plans.

The individual State volumes contain summary fact sheets on NPL sites in each State and territory. Together, the fact sheets provide a concise report on site conditions and the progress made toward site cleanups as of March 1992. The EPA revises these volumes periodically to provide an up-to-date record of program activities. A glossary of key terms relating to hazardous waste management and Superfund site cleanup is provided at the back of this book.

INTRODUCTION

Superfund is, of course, a public program, and as such it belongs to everyone of us. This volume, along with other State volumes, comprises the EPA's report on Superfund progress to the program's owners for the year 1992.

STREAMLINING SUPERFUND: THE SUPERFUND ACCELERATED CLEANUP MODEL

Historically, critics and supporters alike have measured Superfund's progress by the number of hazardous waste sites deleted from the NPL. Although easy enough to tally, this approach is too narrow. It misses the major gains Superfund makes by reducing major risks at the nation's worst hazardous sites long before all clean-up work is done and the site deleted. It also ignores the Removal Program's contributions to meeting Superfund's twin mandates of maximizing public health and environmental protection.

Renewing Superfund's commitment to rapid protection from hazardous materials, the EPA is streamlining the program. The Superfund Accelerated Cleanup Model, or SACM, will take Early Actions, such as removing hazardous wastes or contaminated materials, while experts study the site. SACM also will combine similar site studies to reduce the time required to evaluate a site and its threats to people and the environment. This way, immediate public health and environmental threats will be addressed while long-term cleanups are being planned.

Emergencies such as train derailments and motor vehicle accidents will continue to be handled expeditiously. Teams of highly trained technicians will swing into action right away, coordinating the cleanup and removal of hazardous substances to ensure public safety as quickly as possible.

Breaking With Tradition

The traditional Superfund process begins with a lengthy phase of study and site assessment, but SACM will save time by combining separate, yet similar, activities. Each EPA Region will form a Decision Team of site managers, risk assessors, community relations coordinators, lawyers, and other experts to monitor the studies and quickly determine whether a site requires Early Action (taking less than five years), Long-term Action, or both.

While the site studies continue, the Decision Team will begin the short-term work required to correct immediate public health or environmental threats from the site. Besides removing hazardous materials, Early Actions include taking precautions to keep contaminants from moving off the site and restricting access to the site. Early Actions could eliminate most human risk from these sites, and Superfund will further focus its public participation and public information activities on site assessment and Early Action.

Long-Term Solutions

While Early Actions can correct many hazardous waste problems—and provide the bulk of public health and environmental protection—some contamination will take longer to correct. Cleanups of mining sites, wetlands, estuaries, and projects involving incineration of contaminants or restoration of groundwater can take far longer than the three to five years envisioned for Early Actions. Under SACM, these sites will be handled much as they are now.

Also under SACM, the EPA will continue its pursuit of potentially responsible parties who may have caused or contributed to site contamination. Expedited enforcement and procedures for negotiating potentially responsible party settlements will secure their participation. Superfund personnel will continue to oversee clean-up work performed by potentially responsible parties.

HOW SUPERFUND WORKS

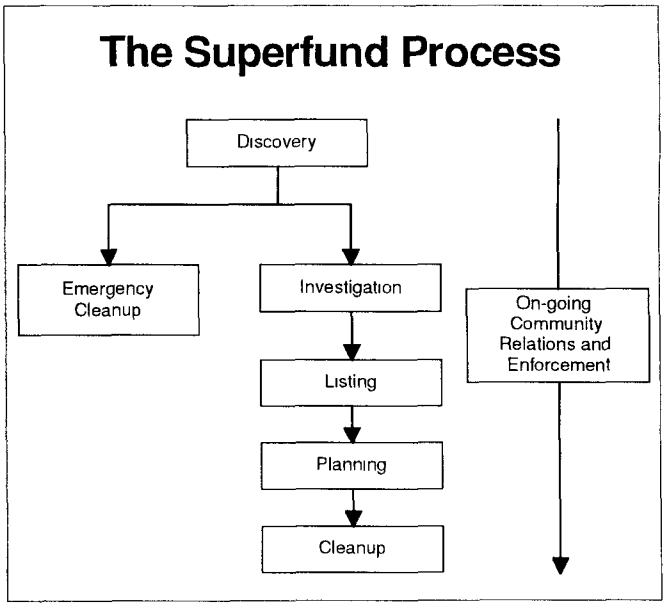
Each Superfund site presents a different set of complex problems. The same hazardous materials and chemicals often contaminate many sites, but the details of each site are different. Almost always, soil is contaminated with one or more chemicals. Their vapors may taint the air over and around the site. Contaminants may travel through the soil and reach underground aquifers which may be used for drinking water, or they may spread over the site to contaminate streams, ponds, and wetlands. The contaminating chemicals may interact with each other, presenting even more complicated cleanup problems.

Superfund's cleanup process is arduous and exacting. It requires the best efforts of hundreds of experts in science and engineering, public health, administration and management, law, and many other fields.

The average NPL site takes from seven to ten years to work its way through the system, from discovery to the start of long-term cleanup. Actual cleanup work can take years, decades if contaminated groundwater must be treated. Of course, imminent threats to public health or the environment are corrected right away.

The diagram to the right presents a simplified view of the cleanup process. The major steps in the Superfund process are:

- Site discovery and investigation to identify contaminants and determine whether emergency action is required;
- Emergency site work such as removing contaminants for proper treatment or disposal, and securing the site to keep people and animals away, if warranted by conditions at the site;
- Site evaluation to determine how people living and working nearby, and the environment, may be exposed to site contaminants;
- Detailed studies to determine whether conditions are serious enough to add the site to the National Priorities List of sites eligible for federally funded cleanup under Superfund;
- Selection, design, and implementation of a cleanup plan, after a thorough review of the most effective cleanup options, given site conditions, contaminants present, and their potential threat to public health or the environment.
- Follow-up to ensure that the cleanup work done at the site continues to be effective over the long term.



From the earliest stages, EPA investigators work hard to identify those responsible for the contamination. As their responsibility is established, the EPA negotiates with these "responsible parties" to pay for cleaning up the problem they helped create. This "enforcement first" policy saves Superfund Trust Fund monies for use in cleanups where the responsible parties cannot be identified, or where they are unable to fund cleanup work.

THE VOLUME

How to Use the State Book

The site fact sheets presented in this book are comprehensive summaries that cover a broad range of information. The fact sheets describe hazardous waste sites on the NPL and their locations, as well as the conditions leading to their listing ("Site Description"). The summaries list the types of contaminants that have been discovered and related threats to public and ecological health ("Threats and Contaminants"). "Cleanup Approach" presents an overview of the cleanup activities completed, underway, or planned. The fact sheets conclude with a brief synopsis of how much progress has been made in protecting public health and the environment. The summaries also pinpoint other actions, such as legal efforts to involve polluters responsible for site contamination and community concerns.

The fact sheets are arranged in alphabetical order by site name. Because site cleanup is a dynamic and gradual process, all site information is accurate as of the date shown on the bottom of each page. Progress always is being made at NPL sites, and the EPA periodically will update the site fact sheets to reflect recent actions and will publish updated State volumes. The following two pages show a generic fact sheet and briefly describe the information under each section.

How Can You Use This State Book?

You can use this book to keep informed about the sites that concern you, particularly ones close to home. The EPA is committed to involving the public in the decision making process associated with hazardous waste cleanup. The Agency solicits input from area residents in communities affected by Superfund sites. Citizens are likely to be affected not only by hazardous site conditions, but also by the remedies that combat them. Site cleanups take many forms and can affect communities in different ways. Local traffic may be rerouted, residents may be relocated, temporary water supplies may be necessary.

Definitive information on a site can help citizens sift through alternatives and make decisions. To make good choices, you must know what the threats are and how the EPA intends to clean up the site. You must understand the cleanup alternatives being proposed for site cleanup and how residents may be affected by each one. You also need to have some idea of how your community intends to use the site in the future, and you need to know what the community can realistically expect once the cleanup is complete.

The EPA wants to develop cleanup methods that meet community needs, but the Agency only can take local concerns into account if it understands what they are. Information must travel both ways in order for cleanups to be effective and satisfactory. Please take this opportunity to learn more, become involved, and assure that hazardous waste cleanup at "your" site considers your community's concerns.

THE VOLUME

NPL LISTING HISTORY

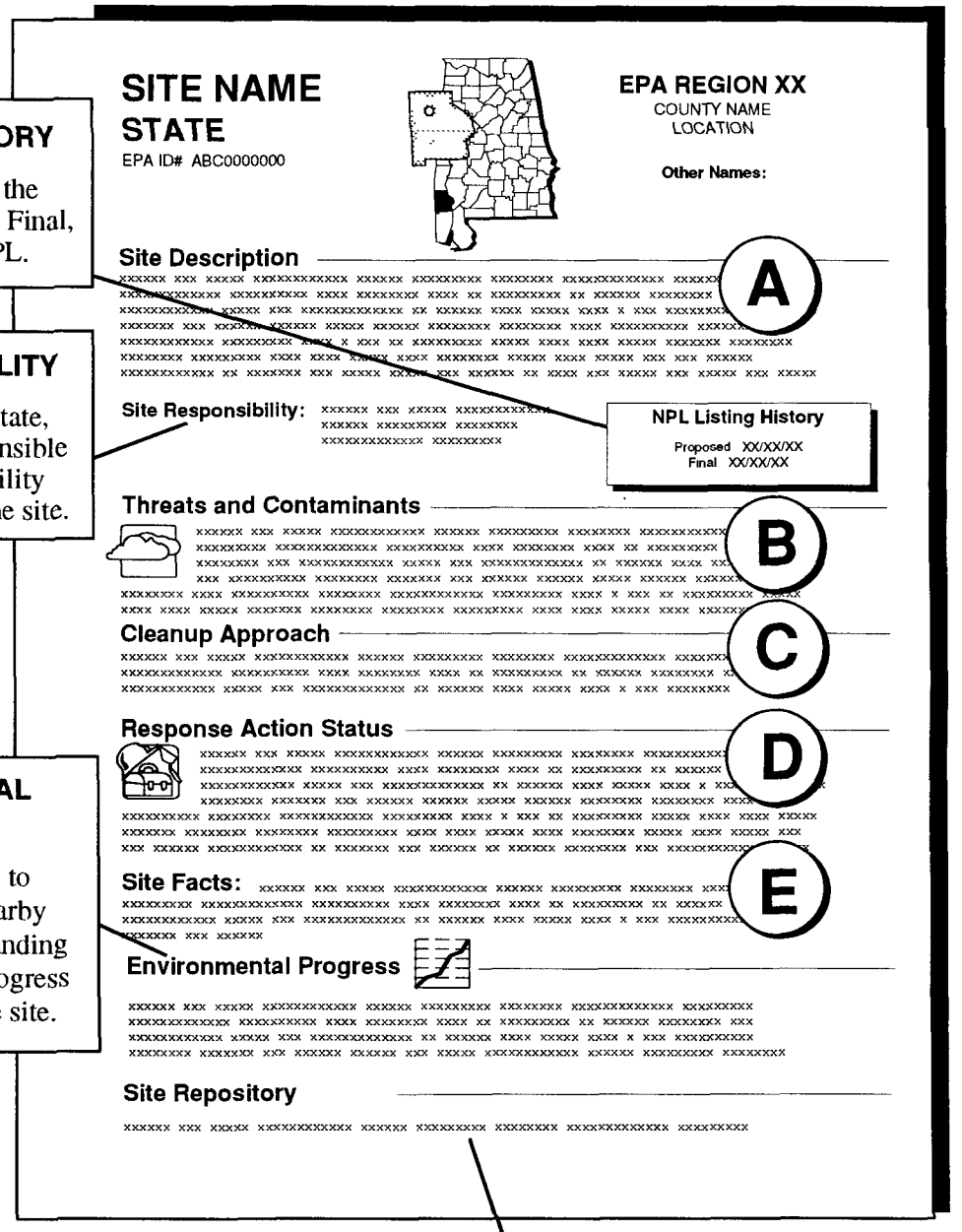
Provides the dates when the site was Proposed, made Final, and Deleted from the NPL.

SITE RESPONSIBILITY

Identifies the Federal, State, and/or potentially responsible parties taking responsibility for cleanup actions at the site.

ENVIRONMENTAL PROGRESS

Summarizes the actions to reduce the threats to nearby residents and the surrounding environment and the progress towards cleaning up the site.



SITE REPOSITORY

Lists the location of the primary site repository. The site repository may include community relations plans, public meeting announcements and minutes, fact sheets, press releases, and other site-related documents.

A

SITE DESCRIPTION

This section describes the location and history of the site. It includes descriptions of the most recent activities and past actions at the site that have contributed to the contamination. Population estimates, land usages, and nearby resources give readers background on the local setting surrounding the site.

B

THREATS AND CONTAMINANTS

The major chemical categories of site contamination are noted, as well as which environmental resources are affected. Icons representing each of the affected resources (may include air, groundwater, surface water, soil, and contamination to environmentally sensitive areas) are included in the margins of this section. Potential threats to residents and the surrounding environments arising from the site contamination also are described.

C

CLEANUP APPROACH

This section contains a brief overview of how the site is being cleaned up.

D

RESPONSE ACTION STATUS

Specific actions that have been accomplished or will be undertaken to clean up the site are described here. Cleanup activities at NPL sites are divided into separate phases, depending on the complexity and required actions at the site. Two major types of cleanup activities often are described: initial, immediate, or emergency actions to quickly remove or reduce imminent threats to the community and surrounding areas; and long-term remedial phases directed at final cleanup at the site. Each stage of the cleanup strategy is presented in this section of the summary. Icons representing the stage of the cleanup process (initial actions, site investigations, EPA selection of the cleanup remedy, engineering design phase, cleanup activities underway, and completed cleanup) are located in the margin next to each activity description.

E

SITE FACTS

Additional information on activities and events at the site are included in this section. Often details on legal or administrative actions taken by the EPA to achieve site cleanup or other facts pertaining to community involvement with the site cleanup process are reported here.

THE VOLUME

The "icons," or symbols, accompanying the text allow the reader to see at a glance which environmental resources are affected and the status of cleanup activities at the site.

Icons in the Threats and Contaminants Section

Contaminated *Groundwater* resources in the vicinity or underlying the site. (Groundwater is often used as a drinking water source.)

Contaminated *Surface Water and Sediments* on or near the site. (These include lakes, ponds, streams, and rivers.)

Contaminated *Air* in the vicinity of the site. (Air pollution usually is periodic and involves contaminated dust particles or hazardous gas emissions.)

Contaminated *Soil and Sludges* on or near the site. (This contamination category may include bulk or other surface hazardous wastes found on the site.)

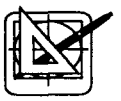
Threatened or contaminated *Environmentally Sensitive Areas* in the vicinity of the site. (Examples include wetlands and coastal areas or critical habitats.)

Icons in the Response Action Status Section

Initial, Immediate, or Emergency Actions have been taken or are underway to eliminate immediate threats at the site.

Site Studies at the site to determine the nature and extent of contamination are planned or underway.

Remedy Selected indicates that site investigations have been concluded, and the EPA has selected a final cleanup remedy for the site or part of the site.

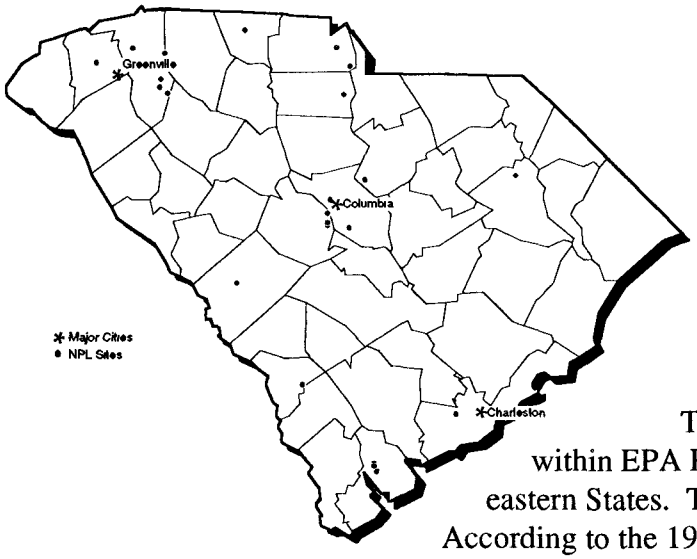


Remedy Design means that engineers are preparing specifications and drawings for the selected cleanup technologies.

Cleanup Ongoing indicates that the selected cleanup remedies for the contaminated site, or part of the site, currently are underway.

Cleanup Complete shows that all cleanup goals have been achieved for the contaminated site or part of the site.

A SUMMARY OF THE STATE PROGRAM



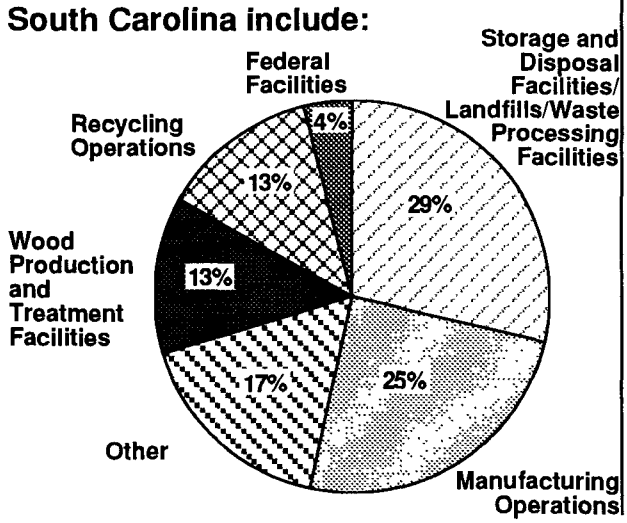
Superfund Activities in South Carolina

The State of South Carolina is located within EPA Region 4, which includes the eight southeastern States. The State covers 31,113 square miles. According to the 1990 Census, South Carolina experienced a 12 percent increase in population between 1980 and 1990, and is ranked twenty-fifth in U.S. population with approximately 3,487,000 residents.

The Hazardous Waste Management Act of 1980 provides for a site priority list, enforcement authority, and State funding from the Hazardous Waste Contingency Fund. In practice, the State issues a notice to the polluter with deadlines for voluntary action and informs the EPA simultaneously. The statute requires the State to exhaust polluter and Federal funds before using its Hazardous Waste Contingency Fund. In addition to the 10 percent contribution from the State required by the Federal Superfund program, State funding is used for emergency response and removals, studies and design, long-term cleanup actions, and operation and maintenance activities. Currently, 23 sites in the State of South Carolina have been listed as final on the NPL. One new site was proposed for listing in 1992.

The Department of Health and Environmental Control
implements the Superfund Program in the State of South Carolina

Activities responsible for hazardous waste contamination in the State of South Carolina include:



Facts about the 24 NPL sites in South Carolina:

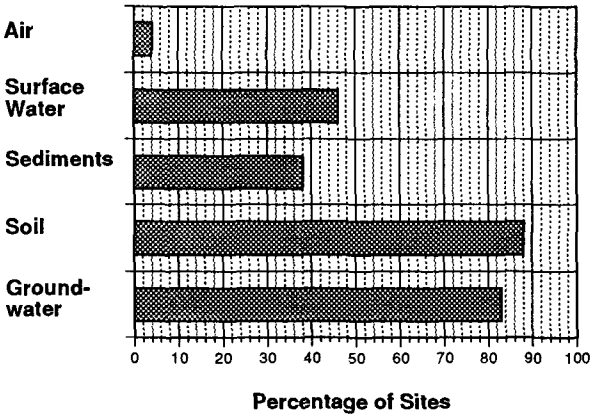
Immediate Actions (such as removing hazardous substances or restricting site access) were performed at 16 sites.

Six sites endanger sensitive environments.

Nineteen sites are located near residential areas.

Most Sites Have Multiple Contaminants and Contaminated Media:

Media Contaminated at Sites



Contaminants Found at Sites

	Percentage of Sites
Heavy Metals	83%
VOCs	67%
PCBs	21%
Pesticides/Herbicides	21%
Creosotes	17%
Other*	8%
Radiation	4%

*Other contaminants include chloroform and cyanide.

The Potentially Responsible Party Pays...

In the State of South Carolina, potentially responsible parties are paying for or conducting cleanup activities at 18 sites.

For Further Information on NPL Sites and Hazardous Waste Programs in the State of South Carolina Please Contact:

EPA Region 4 Public Affairs Office	For information concerning community involvement	(404) 347-3004
National Response Center	To report a hazardous waste emergency	(800) 424-8802
Department of Health and Environmental Control: Environmental Quality Control, Bureau of Solid and Hazardous Waste Management	For information about the State's responsibility in the Superfund Program	(803) 734-5200
EPA Region 4 Waste Management Division	For information about the Regional Superfund Program	(404) 347-5065
EPA Superfund Hotline	For information about the Federal Superfund program	(800) 424-9068

THE NPL REPORT

PROGRESS TO DATE

The following Progress Report lists all sites currently on, or deleted from, the NPL and briefly summarizes the status of activities for each site at the time this report was prepared. The steps in the Superfund cleanup process are arrayed across the top of the chart, and each site's progress through these steps is represented by an arrow (⇨) indicating the current stage of cleanup.

Large and complex sites often are organized into several cleanup stages. For example, separate cleanup efforts may be required to address the source of the contamination, hazardous substances in the groundwater, and surface water pollution, or to clean up different areas of a large site. In such cases, the chart portrays cleanup progress at the site's *most advanced* stage, reflecting the status of site activities rather than administrative accomplishments.

- ⇨ An arrow in the "Initial Response" category indicates that an emergency cleanup, immediate action, or initial action has been completed or currently is underway. Emergency or initial actions are taken as an interim measure to provide immediate relief from exposure to hazardous site conditions or to stabilize a site to prevent further contamination.

- ⇨ A final arrow in the "Site Studies" category indicates that an investigation to determine the nature and extent of the contamination at the site currently is ongoing or planned.

- ⇨ A final arrow in the "Remedy Selection" category means that the EPA has selected the final cleanup strategy for the site. At the few sites where the EPA has determined that initial response actions have eliminated site contamination, or that any remaining contamination will be naturally dispersed without further cleanup activities, a "No Action" remedy has been selected. In these cases, the arrows are discontinued at the "Remedy Selection" step and resume in the "Construction Complete" category.

- ⇨ A final arrow at the "Remedial Design" stage indicates that engineers currently are designing the technical specifications for the selected cleanup remedies and technologies.

- ⇨ A final arrow in the "Cleanup Ongoing" column means that final cleanup actions have been started at the site and currently are underway.

- ⇨ A final arrow in the "Construction Complete" category is used only when all phases of the site cleanup plan have been performed, and the EPA has determined that no additional construction actions are required at the site. Some sites in this category currently may be undergoing long-term operation and maintenance or monitoring to ensure that the cleanup actions continue to protect human health and the environment.

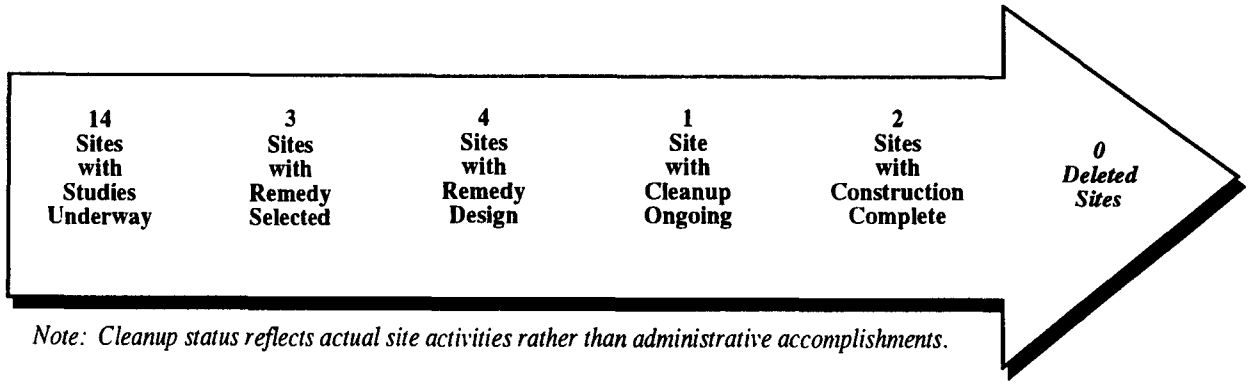
- ✓ A check in the "Deleted" category indicates that the site cleanup has met all human health and environmental goals and that the EPA has deleted the site from the NPL.

Further information on the activities and progress at each site is given in the site "Fact Sheets" published in this volume.

Progress Toward Cleanup at NPL Sites in the State of South Carolina

Site Name	County	NPL	Date	Initial Response	Site Studies	Remedy Selected	Remedy Design	Cleanup Ongoing	Construction Complete	Deleted
BEAUNIT CORPORATION (CIRCULAR KNIT AND DYING PLANT)	GREENVILLE	Final	02/16/90		⇨					
CAROLAWN, INC.	CHESTER	Final	09/01/83	⇨	⇨	⇨	⇨			
ELMORE WASTE DISPOSAL	SPARTENBURG	Final	03/31/89	⇨	⇨					
GEIGER SITE (C & M OIL)	CHARLESTON	Final	09/01/84		⇨	⇨	⇨			
GOLDEN STRIP SEPTIC TANK SERVICE	GREENVILLE	Final	07/07/87		⇨	⇨				
HELENA CHEMICAL COMPANY LANDFILL	ALLENDALE	Final	02/16/90	⇨	⇨					
INDEPENDENT NAIL COMPANY	BEAUFORT	Final	09/01/84	⇨	⇨	⇨	⇨	⇨	⇨	
KALAMA SPECIALTY CHEMICALS	BEAUFORT	Final	09/01/84		⇨					
KOPPERS COMPANY, INC. (CHARLESTON PLANT)	CHARLESTON	Proposed	02/07/92		⇨					
KOPPERS COMPANY, INC. (FLORENCE PLANT)	FLORENCE	Final	09/01/84	⇨	⇨					
LEONARD CHEMICAL CO., INC.	YORK	Final	09/01/84	⇨	⇨					
LEXINGTON COUNTY LANDFILL AREA	LEXINGTON	Final	10/04/89		⇨					
MEDLEY FARM DRUM DUMP	CHEROKEE	Final	03/31/89	⇨	⇨	⇨	⇨			
PALMETTO RECYCLING, INC.	RICHLAND	Final	07/07/87	⇨	⇨					
PALMETTO WOOD PRESERVING	LEXINGTON	Final	09/01/84	⇨	⇨	⇨	⇨	⇨		
PARA-CHEM SOUTHERN, INC.	GREENVIVILLE	Final	08/30/90	⇨	⇨					
ROCHESTER PROPERTY	GREENVILLE	Final	10/04/89	⇨	⇨					
ROCK HILL CHEMICAL COMPANY	YORK	Final	02/16/90	⇨	⇨					
SANGAMO/TWELVE-MILE/HARTWELL	PICKENS	Final	02/16/90	⇨	⇨	⇨				
SAVANNAH RIVER SITE (USDOE)	AIKEN	Final	11/21/89	⇨	⇨					
SCRDI BLUFF ROAD	RICHLAND	Final	09/01/83	⇨	⇨	⇨				
SCRDI DIXIANA	LEXINGTON	Final	09/01/83		⇨	⇨	⇨	⇨	⇨	
TOWNSEND SAW CHAIN CO.	RICHLAND	Final	02/16/90	⇨	⇨					
WAMCHEM, INC.	BEAUFORT	Final	09/01/84		⇨	⇨	⇨			

Progress Toward Cleanup at NPL Sites in the State of South Carolina (Continued)



Note: Cleanup status reflects actual site activities rather than administrative accomplishments.

BEAUNIT CORP. (CIRCULAR KNIT AND DYEING PLANT)

SOUTH CAROLINA

EPA ID# SCD000447268

EPA REGION 4
Greenville County
Fountain Inn

Site Description

The Beaunit Corporation (Circular Knit and Dyeing Plant) site is a 70-foot abandoned unlined lagoon located in a commercial district of Fountain Inn. From 1952 to 1977, the site was used to treat dye waste generated from the Circular Knit and Dyeing Plant. The old textile facility currently is used for the manufacture of tennis balls. There is no present discharge of wastewater to the lagoon, however, 6 feet of sludge discharged from the previous facility are located on the bottom of the lagoon. Because a barrier was not placed along the site's perimeter, the lagoon discharged into an unnamed stream that flows northwest to join Howard Branch. Testing in 1985 by the South Carolina Department of Health and Environmental Control found a variety of contaminants in the lagoon, the nearby stream, soil, and sediment at the site. Approximately 1,000 people live within 3 miles of the site.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 02/16/90

Threats and Contaminants

Polychlorinated biphenyls (PCBs) and heavy metals including chromium and lead have been found in on-site sediments and soil. Volatile organic compounds (VOCs) are contaminating the lagoon and the unnamed stream that flows northwest to join Howard Branch. Because the soils in the area are permeable and groundwater is shallow, contaminants could easily migrate into the groundwater.

Cleanup Approach

This site is being addressed in a single long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Entire Site: An intensive investigation into the nature and extent of contamination at the site is scheduled to begin in early 1992. This investigation is expected to be completed in 1994, at which time the EPA will select an appropriate remedy for cleanup of the site.

Site Facts: The EPA issued General and Special Notice Letters to the parties potentially responsible for site contamination, requesting their participation in site cleanup activities. An Administrative Order on Consent was signed by five potentially responsible parties on March 12, 1992 to perform a site study.

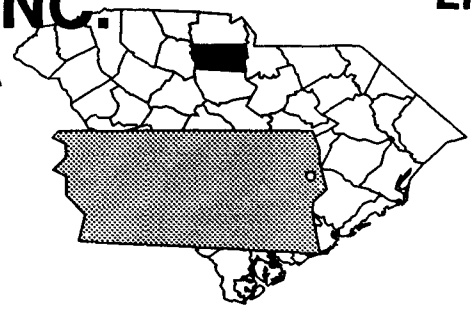
Environmental Progress

After adding this site to the NPL, the EPA performed preliminary investigations and determined that no immediate actions were needed at the Beaunit Corp. (Circular Knit and Dyeing Plant) site while further studies and cleanup activities are taking place.

Site Repository

Not established.

CAROLAWN, INC.
SOUTH CAROLINA
EPA ID# SCD980558316



EPA REGION 4
Chester County
Fort Lawn

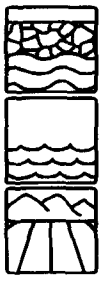
Site Description

The Carolawn, Inc. site is an abandoned 3-acre waste storage and disposal facility that was owned by various companies until the Carolawn Company bought the site in 1977. Several hundred drums of chemical wastes, including acids, bases, organic solvents, and contaminated soil, were stored both outside and inside the fenced site. Some drums were damaged in a fire, and others were corroded and leaking. Four 2,000-gallon tanks of solvents were located on site. A lagoon was used for disposal of waste sludges. Carolawn constructed two incinerators; however, they never were used to dispose of wastes. State inspections in 1979 revealed improper storage of wastes and a lack of progress toward disposal of waste materials. The company was not able to obtain a permit for incineration and went bankrupt in 1980. During the same year, the South Carolina Department of Health and Environmental Control (SCDHEC) sampled three private wells and found them to be contaminated. Approximately 100 people live within a 1-mile radius of the site; 2,000 people live within 4 miles. Significant amounts of contaminated runoff from the site have migrated into a tributary of the Catawba River, which supplies drinking water to the town of Lugaff.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 12/01/82
Final Date: 09/01/83

Threats and Contaminants



The groundwater is contaminated with lead, chloroform, and various volatile organic compounds (VOCs). Stream sediments are contaminated with arsenic, lead, and methylene chloride. The soil contains lead, and the surface water is contaminated with chloroform. People who accidentally come into direct contact with or ingest contaminated groundwater, surface water, soil, or sediments may be at risk.

Cleanup Approach

This site is being addressed in three stages: immediate actions and two long-term remedial phases focusing on cleanup of the entire site and the former drum storage areas.

Response Action Status

Immediate Actions: In 1981 and 1982, the EPA removed contaminated sludge and solid waste from the lagoon. The liquid wastes were recycled, and the solid wastes were disposed of in a federally approved facility. In 1985, alternate drinking water was provided by Carolawn to nearby homes. In 1986, the EPA extended the municipal water lines to the affected residences, and the EPA removed approximately 1,000 drums, 220,000 gallons of liquid wastes, 5,000 gallons of contaminated water, and the tanks stored outside the fence to a federally approved facility.

Entire Site: In 1989, the EPA chose a remedy to clean up the site which included: (1) installing a groundwater extraction system; (2) removing pollutants by various techniques including filtering the groundwater through an activated carbon filter, contact with air to evaporate contaminants, or biological treating; (3) monitoring the groundwater; and (4) further sampling of soil north of the fenced area. The EPA is sampling the soil and is conducting studies on the type and extent of its contamination. The potentially responsible parties have begun preparing the technical specifications and design for cleaning up the groundwater. The cleanup will begin once the design phase is completed in 1993.

Former Drum Storage Areas: The EPA conducted preliminary studies of the former drum storage areas located to the west and north of the Carolawn site in 1990. These studies indicated the presence of organic chemicals and heavy metals. An intensive investigation into the nature and extent of contamination at this area will begin in 1992.

Site Facts: The parties potentially responsible for the site contamination have signed an Administrative Order, which specifies how design and construction activities will be completed. In December 1991, a Consent Decree was entered by the court triggering the Carolawn Steering Committee contractors to begin the cleanup designs and activities.

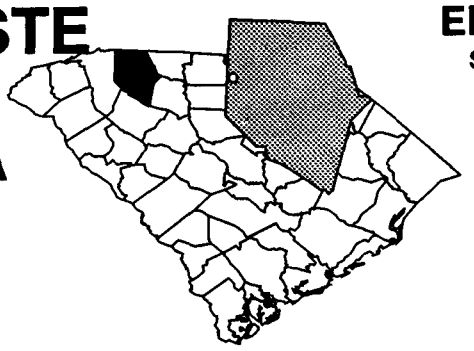
Environmental Progress

The removal of sludge and solid and liquid wastes has reduced the potential for exposure to contaminated materials at the Carolawn, Inc. site. These actions and the extension of municipal water lines have reduced risks to the public health and the environment, while investigations, remedy designs, and further cleanup activities take place.

Site Repository

Lancaster County Public Library, 313 South White Street, Lancaster, SC 29720

ELMORE WASTE DISPOSAL
SOUTH CAROLINA
EPA ID# SCD980839542



EPA REGION 4
Spartanburg County
Greer

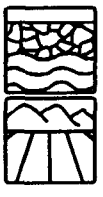
Site Description

The Elmore Waste Disposal site is a grassy field covering approximately 1/2 acre in a primarily residential area. Drums containing unknown liquid wastes were deposited there between 1975 and 1977. In response to citizens' complaints of odors coming from the site, the South Carolina Department of Health and Environmental Control (SCDHEC) inspected the site and found numerous 55-gallon drums, some of which were leaking, and a 6,000-gallon buried tank. In 1977, the owner of the Elmore site signed a Consent Order with the State of South Carolina and conducted a partial cleanup of the site. After this action, 25 drums and the bulk tank remained. In 1980, the owner was instructed to stop cleanup actions until sampling was performed to verify the adequacy of earlier efforts. Investigations of site conditions by SCDHEC in 1986 and 1987 confirmed that the soil, sediments, and surface waters remain contaminated with volatile organic compounds (VOCs) and chromium. Wards Creek, a small tributary to the South Tyger River, flows about 700 feet to the north of the site.

Site Responsibility: This site is being addressed through a combination of Federal and State actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 03/31/89

Threats and Contaminants



On-site monitoring wells have detected contamination from heavy metals including cadmium, lead, zinc, and barium and from various VOCs from former drum storage activities. The soil also is contaminated with heavy metals. Monitoring wells at the site have shown groundwater contamination since 1987. There is no evidence to date that groundwater contamination has migrated into private wells.

Cleanup Approach

This site is being addressed in two stages: initial actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Initial Actions: The owner of the Elmore site attempted a partial cleanup in 1977 by surrounding some of the leaking drums with wood shavings, removing some of the deteriorated drums, and excavating and drumming some of the contaminated surface soil. The State completed this phase of the cleanup in 1986 by removing approximately 5,500 tons of contaminated soil and debris and 16,800 pounds of contaminated liquids to a hazardous waste facility. This action removed the source of contamination and eliminated immediate threats to neighboring residents.

Entire Site: In early 1991, the EPA began field work to investigate the nature and extent of contamination and to develop and select alternative cleanup strategies for the remaining site contamination. Upon completion of the study, scheduled for late 1992, the EPA will select a final remedy for site cleanup. After a 1991 groundwater investigation within a 1-mile radius of the Elmore site, it was concluded that private wells were not contaminated

Site Facts: In 1977, the owner of Elmore Waste Disposal entered into a Consent Order with the State to clean up and properly dispose of the waste. No viable responsible party has been identified as yet.

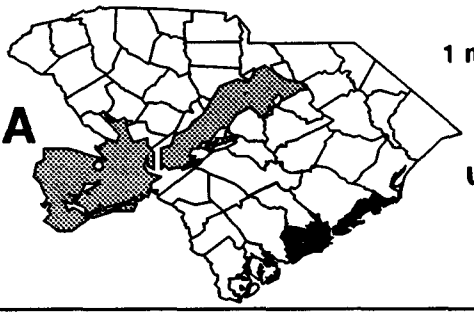
Environmental Progress

The removal of soil and drums has greatly reduced the potential for people to be exposed to hazardous substances at the Elmore Waste Disposal site while studies and cleanup activities are taking place.

Site Repository

Greer Branch Library, 113 School Street, Greer, SC 29651

GEIGER (C & M OIL)
SOUTH CAROLINA
EPA ID# SCD980711279



EPA REGION 4
Charleston County
1 mile northeast of Rantowles

Other Names:
Wm L Sires/C & M Oil
United Pollution Control

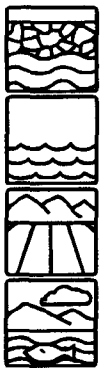
Site Description

The Geiger (C & M Oil) site occupies about 5 acres. In 1969, Adams Run Services, Inc. was permitted to incinerate waste oil at the site. In 1971, eight unlined lagoons were constructed to hold the waste oil. In response to complaints from area residents, the South Carolina Pollution Control Authority ordered all incineration and waste disposal activities at the site stopped; also, the owner was required to take action to prevent spillage, leakage, or seepage of oil from the site. In 1974, the Charleston County Health Department ordered the site closed, citing evidence of recent oil dumping and overflowing. In 1982, the site was purchased by the present owner who, in 1983, filled the lagoons with local soils, since his requests to excavate and dispose of contaminated soil were denied. The site since has been used for the storage of equipment by his company, Pile Drivers, Inc. Crops, pasture lands, and sand borrow pits are scattered within 1 mile of the site. Approximately 40 people live within 1/4 mile of the site. The closest population center is the town of Rantowles, located a mile northeast; the town of Hollywood is 4 miles west.

Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 09/01/83
Final Date: 09/01/84

Threats and Contaminants



The groundwater is contaminated with heavy metals and various volatile organic compounds (VOCs) from former activities at the site. The sediments are contaminated with polychlorinated biphenyls (PCBs). The soil and surface water are contaminated with all contaminants listed above. Workers or residents may be exposed to health hazards if direct contact is made with contaminated sediments, soils, surface water, or groundwater from the shallow aquifer wells. Runoff from the site flows through hardwood swamps and marshes.

Cleanup Approach

This site is being addressed in two long-term remedial phases focusing on cleanup of groundwater and soil.

Response Action Status

Groundwater: A groundwater investigation was conducted at the site after initial cleanup decisions were made. The work involved the inspection of existing monitoring wells, installation of additional monitoring wells, and the installation of off-site residential drinking water wells. The cleanup technology selected involves removing and treating the contaminated groundwater, which then will flow to an off-site stream. Design of technologies to be used for the cleanup is underway.

Soil: The cleanup process that the EPA will perform includes solidifying the soil to ensure that the contaminants cannot leave the soil, followed by grading and covering. Soil cleanup criteria for lead, chromium and various organics have been established. The engineering design of the technologies to be used for the cleanup was completed in November 1991.

Environmental Progress

After adding this site to the NPL, the EPA performed preliminary investigations and determined that no immediate actions were required at the Geiger (C&M Oil) site while further design activities and cleanup actions are continuing.

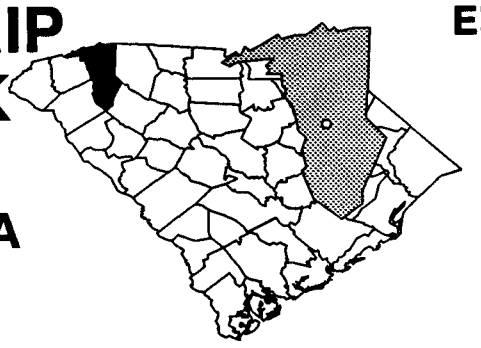
Site Repository

Hollywood Town Hall, 6316 Highway 162, Hollywood, SC 29449

GOLDEN STRIP SEPTIC TANK SERVICE

SOUTH CAROLINA

EPA ID# SCD980799456



EPA REGION 4

Greenville County
Greenville

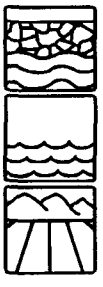
Site Description

The Golden Strip Septic Tank Service site consists of five abandoned lagoons covering 3 acres on a farm. From 1960 to 1975, the company deposited septic tank discharge, plating wastes, and other liquids from nearby industries into the lagoons. The lagoons were unlined and had no structures to prevent rainfall runoff from leaving them. In 1978, three lagoons that had dried up were filled with dirt, but two still contain liquids. Tests conducted by the South Carolina Department of Health and Environmental Control and the EPA indicated contamination of groundwater and sediments near Rice Spring, which is about 500 feet from the lagoons, as well as heavy metals contamination in the lagoons. Approximately 1,600 people live within 3 miles of the site and use private wells for drinking water. Cows graze on the site. The site is in the drainage basin of Gilder Creek, which is not used for recreational activities.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 01/22/87
Final Date: 07/07/87

Threats and Contaminants



Groundwater contains heavy metals including chromium, cadmium, lead, and zinc, which have leached from the lagoons. The sediments, soil, and surface water also are contaminated with heavy metals. People who use contaminated spring or well water for drinking water supplies may be at risk. Contaminated fish from Gilder Creek may pose a health risk to those who eat them. Children who trespass on the fenced site and accidentally come into direct contact with or ingest contaminated soil or groundwater may suffer health threats.

Cleanup Approach

This site is being addressed in a single long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Entire Site: The parties potentially responsible for site contamination completed a study of the type and extent of groundwater and other contamination at the site in 1991. Subsequently, the EPA chose a remedy to clean up the site which included the following: 1) excavation and treatment of approximately 28,000 cubic yards of contaminated soil and lagoon sludge by solidification/fixation, with backfill of treated material into on-site excavations; 2) discharge of approximately 1 1/2 million gallons of surface water impounded in on-site lagoons into local public water treatment systems; 3) long-term monitoring of site groundwater; and 4) implementation of institutional controls and an easement to prohibit future development of property. The design of the selected remedy is scheduled to begin in mid-1992 and the actual cleanup is scheduled to begin in early 1993.

Site Facts: The potentially responsible parties have signed an Administrative Order with the EPA to conduct a study of the type and extent of contamination.

Environmental Progress

After adding this site to the NPL, the EPA performed preliminary investigations and determined that no immediate actions were needed at the Golden Strip Septic Tank Service site while studies leading to final cleanup actions are taking place.

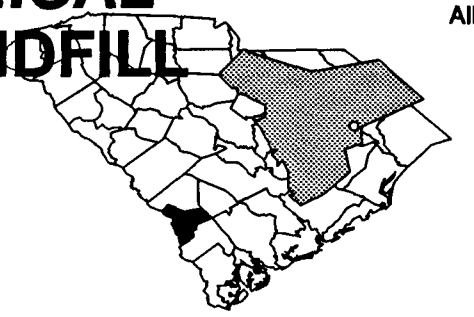
Site Repository

Greenville Public Library, South Carolina Room, 300 College Street, Greenville, SC 29601

HELENA CHEMICAL COMPANY LANDFILL

SOUTH CAROLINA

EPA ID# SCD058753971



EPA REGION 4

Allendale County
Fairfax

Site Description

From 1971 to 1978, the Helena Chemical Company formulated pesticides in Fairfax; previous operations date from the early 1960s. The company disposed of pesticides and empty pesticide containers in an unlined landfill. In 1985, the South Carolina Department of Health and Environmental Control detected contaminants in the on-site shallow monitoring wells. Sediments also were found to be contaminated. The shallow aquifer is connected to the lower aquifer, potentially permitting contaminated water to move into it. The lower aquifer provides water to Fairfax municipal wells within 3 miles of the site. These wells serve approximately 2,200 people. The nearest municipal well is about 500 feet away from the site.

Site Responsibility: This site is being addressed through Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 02/16/90

Threats and Contaminants

Groundwater, soil, and sediments are contaminated with various pesticides from the former disposal of pesticide wastes. People who come in direct contact with or accidentally ingest contaminated groundwater or sediments may be at risk.

Cleanup Approach

This site is being addressed in two stages: initial actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Initial Actions: In 1984, under State supervision, the company removed some of the waste, transported it to an approved hazardous waste facility, and covered the site with clay.

Entire Site: Helena Chemical is studying the type and extent of contamination from pesticide disposal activities on the site. Once the study is finished in 1992, the EPA will select the most appropriate remedies and will begin cleanup activities soon thereafter.

Site Facts: In 1981, the State and Helena Chemical signed a Consent Order, requiring the company to study the contamination and then clean up the site. In 1984, another agreement was signed to cover the landfill and monitor the groundwater for 30 years.

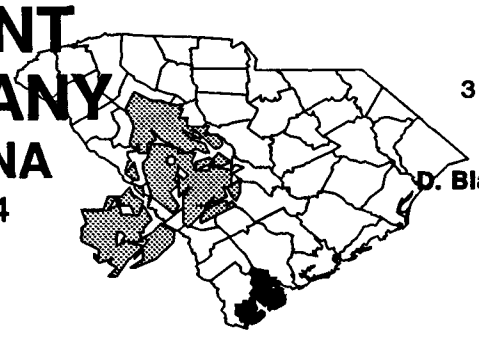
Environmental Progress

The initial actions to remove wastes and to cover the area have reduced risks to the public health at the Helena Chemical Company Landfill site while further studies and cleanup activities are taking place.

Site Repository

City Hall, Town of Fairfax, Highway 278 & Laurens Avenue, Fairfax, SC 29827

INDEPENDENT NAIL COMPANY
SOUTH CAROLINA
EPA ID# SCD004773644



EPA REGION 4
Beaufort County
3 miles northwest of Beaufort

Other Names:
D. Blake & Johnson Company, Inc.

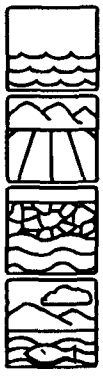
Site Description

The Independent Nail Company currently operates a paneling nail coating process on this site. The previous owners of the site, the D. Blake and Johnson Co., manufactured metallic screws and fasteners. As a part of the manufacturing process, the company discharged approximately 33,000 to 75,000 gallons per day of plating wastewater containing heavy metals into an unlined infiltration lagoon. The lagoon was in use from 1969 to 1980, when Blake and Johnson ceased operations. That same year, the Independent Nail Company purchased the plant. As part of the process of selling the property, Blake and Johnson installed monitoring wells that showed some effect from the lagoon on the groundwater. Further studies by the State also noted movement of contaminants to groundwater. The surrounding area is a combination of fields, woodlands, and wetlands. Approximately 25 people live within 1/4 mile of the site.

Site Responsibility: This site is being addressed through Federal and State actions.

NPL LISTING HISTORY
Proposed Date: 09/01/83
Final Date: 09/01/84

Threats and Contaminants



The sediments and soil were contaminated with cyanide and heavy metals including chromium, zinc, arsenic, cadmium, lead, and mercury from the former disposal activities. The groundwater contains these same compounds. Coming into direct contact with the contaminated sediments or soil was the primary means of potential human exposure, however, site access was resticted by a fence in 1988.

Cleanup Approach

This site was addressed in three stages: immediate actions and two long-term remedial phases focusing on groundwater assessment and cleanup of the entire site.

Response Action Status

Immediate Actions: The EPA fenced the area around the lagoon in 1988 to restrict access to the wastes on site.

Groundwater: After a thorough field investigation conducted by the EPA, it was concluded that there was no risk to human health or the environment from the low level of contaminants in the groundwater. Thus, no action was required to clean up the groundwater.

Entire Site: The EPA chose the following methods to clean up the site: excavation of contaminated soils and lagoon sediments; solidification and stabilization of excavated soils and sediments; placement of treated soils and sediments back into the lagoon with 6 inches of topsoil, followed by covering and seeding. The EPA completed these cleanup actions in 1988 and is working with the State to ensure proper operation and maintenance at the site. With the completion of these actions, the EPA is planning to delete the site from the NPL.

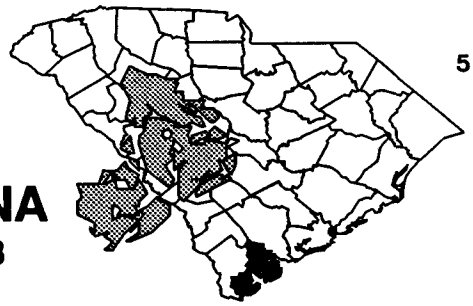
Environmental Progress

All activities have been completed at the Independent Nail Company site, and all surface contamination has been cleaned up. Additionally, the EPA has determined that groundwater resources do not pose a threat to the public and that no cleanup actions are required to address low levels of contamination. Extensive evaluations of the completed remedies and site sampling have determined that the Independent Nail Company site now is safe to nearby residents and the environment, and the EPA has begun the process to delete the site from the NPL.

Site Repository

Information is no longer available.

KALAMA SPECIALTY CHEMICALS
SOUTH CAROLINA
EPA ID# SCD094995503



EPA REGION 4
Beaufort County
5 miles northwest of Beaufort

Site Description

Two specialty chemical companies operated at the Kalama Specialty Chemicals site, which covers 66 acres. From 1973 to 1977, the first firm, Vega Chemical, produced a wide range of chemicals in small, special-order batches for manufacturers and larger chemical producers. Kalama bought the property in 1977 to manufacture fosamine ammonium, an herbicide and plant-growth regulator. The facility closed in 1979, after one of the reactors exploded. This event caused large-scale spillage of various organic chemicals. Afterwards, the company bought 50 acres which are part of the site, including a trailer park located just above its northern boundary. The trailers were removed, but several abandoned, dilapidated houses remain. In 1988, the EPA reported that a construction company operated on Kalama property at the eastern edge of the site, but it made plans to relocate that same year. The site once contained a wastewater lagoon that at one time overflowed into a tile drainage field and a separate holding lagoon. This, as well as the explosion, are suspected of contaminating shallow groundwater. Both impoundments have been decommissioned. The site is in the recharge zone of an important source of groundwater. The site is adjacent to a Marine Corps Air Station, a vacant trailer park, and a cement plant. The closest home is less than 100 yards away, and a day care center lies less than 1/4 mile south of the site. Approximately 16,000 people live within a 4-mile radius of the property; 2,500 reside within a mile. Independent Nail Company and Wamchem, Inc. are two other NPL sites located within 4 miles of this site.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 09/01/83
Final Date: 09/01/84

Threats and Contaminants

On-site groundwater, surface water, and soil contain lead and volatile organic compounds (VOCs) including benzene and toluene. Trespassers on the site may be exposed to harmful materials by coming in direct contact with contaminated soil, surface water, or groundwater or accidentally ingesting any of the contaminated materials. The property is fenced, but fencing has been torn as the result of periodic vandalism. Signs of trespassing have been evident at the site. This site lies in a coastal area, threatening wildlife and aquatic life.

Cleanup Approach

This site is being addressed in a single long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Entire Site: In 1988, the parties potentially responsible for site contamination began an intensive study of its pollution problems. This investigation, conducted under EPA monitoring, will measure the type and extent of soil and water pollution around the property. The study is scheduled for completion in mid-1992, at which time the EPA will select the most appropriate remedies for cleanup of this site.

Site Facts: A Consent Order was signed in 1988 for the parties potentially responsible to conduct site studies. These parties and the EPA currently are conducting discussions on specific issues related to the site studies.

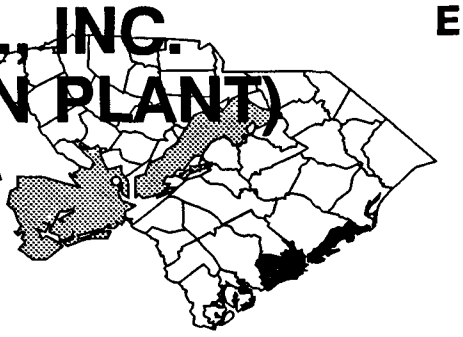
Environmental Progress

After adding this site to the NPL, the EPA performed preliminary investigations and determined that no immediate actions were required at the Kalama Specialty Chemicals site while further studies leading to final cleanup activities are taking place.

Site Repository

Beaufort County Library, 710 Craven Street, Beaufort, SC 29902

KOPPERS CO., INC. (CHARLESTON PLANT)
SOUTH CAROLINA
EPA ID# SCD980310239



EPA REGION 4
Charleston County
Charleston

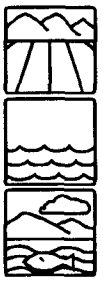
Site Description

This 127-acre site is located in an industrial and residential area and is bordered on the west by the Ashley River and on the north and south by industrial facilities. Koppers Co., Inc. operated a milling, wood-preserving, and pole storage facility in the Charleston Heights District of Charleston, South Carolina from 1925 to 1978. After wood-preserving operations stopped in 1978, Southern Dredging Co. leased part of the site from Koppers. In 1984, Southern Dredging dredged a canal from the Ashley River through a waste disposal area. Dredged materials were placed in a bermed area near the canal. In 1988, the EPA detected numerous creosote constituents in the soil from three sources: a pit where timbers were soaked in wood preservative; the drip pad area where timbers were stored; and the bermed area that received contaminated sediment from the canal dredging. Runoff from all three sources enters the Ashley River. Approximately 94,000 people live within 4 miles of the site. Wetlands adjacent to the site are a State wildlife sanctuary. The Ashley River and Charleston Harbor support recreational and commercial fishing and serve as an important breeding and nursery habitat for a variety of marine finfish and shellfish.

Site Responsibility: This site is being addressed through Federal actions.

NPL Listing History
Proposed Date: 02/07/92

Threats and Contaminants



Soil at the site is contaminated with numerous polynuclear aromatic hydrocarbons (PAHs), a constituent of creosote. The sediments of the canal and the Ashley River are contaminated with PAHs, and heavy metals such as chromium, copper, and zinc.

Cleanup Approach

This site is being addressed in one long-term remedial phase focused on cleanup of the entire site.

Response Action Status

Entire Site: the potentially responsible party, under EPA supervision, will initiate an investigations into the nature and extent of contamination at the site. This study, planned for late 1992, will help determine cleanup options for the site.

Environmental Progress

Initial investigation indicate the Koppers Co., Inc. (Charleston Plant) site does not pose an immediate threat to the health and safety of the nearby population while further studies are being conducted.

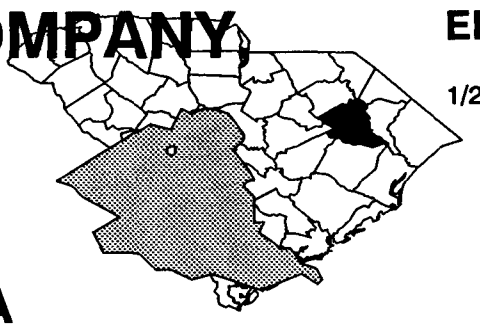
Site Repository

Not established.

KOPPERS COMPANY, INC. (FLORENCE PLANT)

SOUTH CAROLINA

EPA ID# SCD003353026



EPA REGION 4
Florence County
1/2 mile east of Florence

Site Description

The 145-acre Koppers Company, Inc. site is an active wood-treating and preserving plant that still generates hazardous wood preserving chemicals. The company currently uses three preservatives in its operations: creosote, pentachlorophenol (PCP), and chromated copper arsenate (CCA). State and Federal permits for wastewater discharges required the owner to upgrade operating practices on several occasions, starting in 1971. The State required the plant's liquid wastes to be sprayed over a field and allowed to evaporate. In addition, the company pumped "penta-oil" wastes into four unlined lagoons, where it was released through evaporation and seepage. In 1974, the operation violated the limits of its Federal discharge permit, and the EPA ordered the owner to study and control runoff. The study recommended closing the penta-oil lagoons, the creosote lagoon, and the spray field and replacing them with three concrete-lined solar oxidation ponds. Liquid from the final pond would be sprayed over land. The State approved the new system in 1977, and the EPA focused its concerns on stormwater discharge only. In 1979, the plant's drinking water supply became contaminated with naphthalene, and by the next year, nearby residents reported a creosote odor and foul taste in their wells. The State ordered the company to study the groundwater problem. In response, the company supplied public water to homes that were affected, and installed recovery wells to retrieve and slow the movement of contaminants in the groundwater. The recovered groundwater and process wastewater now are sent to the pre-treatment facility on site and then discharged to the water treatment facility. The site is located adjacent to a growing area of Florence. Homes and apartments, hospitals, schools, and a day care center are all located with a 1-mile radius, as are mobile homes, agricultural lands, an airport, businesses, and light industries. Access to the site is unrestricted. The residential areas are 1/4 mile away from the site and contain gardens, livestock, and private wells. At least 1,200 people use the shallow aquifer for drinking water.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 09/01/83
Final Date: 09/01/84

Threats and Contaminants

On-site groundwater, surface water, and soil are contaminated with polycyclic aromatic hydrocarbons (PAHs), PCP, heavy metals including arsenic and mercury, and oil and grease from wood-treatment activities. PAHs and other organic chemicals were detected in off-site private wells in 1985. People may experience adverse health effects through coming into direct contact with, inhaling, or accidentally ingesting contaminated groundwater and soil. Contamination was detected in some private wells downslope from the plant in 1985. The plant also is located in an area where water may recharge directly to the Black Creek/Middendorf Aquifer. This aquifer is the only source of potable water for the city of Florence.

Cleanup Approach

This site is being addressed in two stages: immediate actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Immediate Actions: The parties potentially responsible for site contamination studied the groundwater problem, furnished an alternate water supply to affected residents, and installed recovery wells and a treatment system around the boundary of the site.

Entire Site: Under EPA monitoring, the owner of the site began a study of the site's pollution problems in 1988. This study will define the nature and extent of contamination. The study is scheduled for completion in 1992. Once the study is completed, alternatives for site cleanup will be evaluated, and EPA will select the most appropriate remedies for cleanup of this site. The site currently is being addressed under the Resource Conservation and Recovery Act (RCRA).

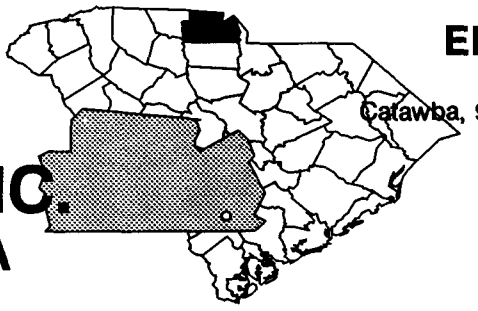
Environmental Progress

The alternate water supply has eliminated the potential for exposure to hazardous materials from the Koppers Company, Inc. (Florence Plant) site through the groundwater. Further studies and cleanup activities are being completed to address contaminated waters and soils.

Site Repository

Not established.

LEONARD CHEMICAL COMPANY, INC.
SOUTH CAROLINA
EPA ID# SCD991279324



EPA REGION 4
York County
Catawba, 9 miles southeast of Rock Hill

Other Names:
Leonard Chemical

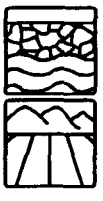
Site Description

The 7-acre Leonard Chemical Company site began operating in the late 1960s as a hazardous waste treatment facility. Its primary treatment method was distillation. Recovery residues were placed in various locations on the site. Plant operations ceased in 1982, under orders of the South Carolina Department of Health and Environmental Control. Approximately 3,400 drums and 11,500 gallons of various chemicals were left on the site. Materials included solvents, volatile organic compounds (VOCs), printing inks, polyester solids, stillbottoms, and filters for paint, water, and fiberglass. Numerous spills and leaks occurred, threatening groundwater, and the State ordered the owner to install three monitoring wells. By 1988, the site was overgrown with scrub and covered with abandoned equipment and machines. Numerous sludges lay on the ground, and vegetation was spotty where chemical wastes and stillbottoms had been used as fill. The gate and fence had been breached, and signs of trespassing were evident. Approximately 5,900 people live within a 4-mile radius of the site; 240 people live within a mile.

Site Responsibility: This site is being addressed through a combination of Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 09/01/83
Final Date: 09/01/84

Threats and Contaminants



On-site groundwater and soil are contaminated with heavy metals including barium, lead, and manganese, as well as various VOCs from the former disposal activities. Individuals could be harmed if they use contaminated water for drinking, bathing, cooking, or irrigation or if they accidentally ingest contaminated soils.

Cleanup Approach

This site is being addressed in two stages: immediate actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Immediate Actions: In 1983, a group of generators responsible for the chemical wastes found on the site formed a committee and retained a contractor to remove wastes from the site. Workers removed drums and some of the contaminated soil that same year.

Entire Site: Under State supervision, the parties potentially responsible for site contamination are undertaking an intensive study, which will explore the nature and extent of pollution problems at the site. In 1991, initial investigation activities included monitoring well installations, subsurface soil sampling, stream and sediment sampling, and monitoring well sampling. Additional field work will be conducted to provide data to document the presence and extent of groundwater contamination both on and off site. Finally, monitoring wells will be installed on properties east and south of the site for soil gas sampling purposes, site locations will be established for potential soil gas monitoring stations, and a soil gas survey will be performed. The study is scheduled for completion in 1993, at which time the EPA will select the most appropriate remedies for cleanup of the site.

Site Facts: Under a 1983 court order, Leonard Chemical Company cannot resume operation without prior approval of the South Carolina Department of Health and Environmental Control. The parties potentially responsible for site contamination will sign an Administrative Order on Consent to conduct a study to determine the nature and extent of contamination and to identify alternatives for cleanup.

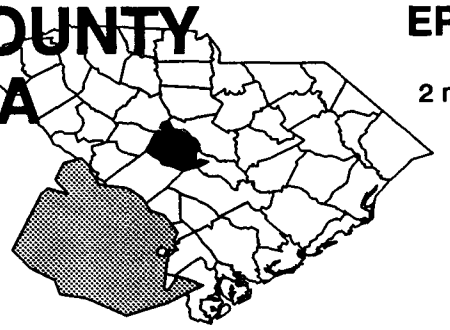
Environmental Progress

The removal of contaminated drums and soils has reduced the potential for exposure to hazardous substances while investigations and cleanup activities take place at the Leonard Chemical Company site.

Site Repository

Not established.

LEXINGTON COUNTY LANDFILL AREA
SOUTH CAROLINA
EPA ID# SCD980558043



EPA REGION 4
Lexington County
2 miles south of Cayce

Site Description

The Lexington County Landfill Area site is a 75-acre sand pit that was licensed as a county landfill in 1971. Before 1980, local industries were allowed to dispose of their wastes, which included asbestos, at the site. Two other dumps lie next to this site: the Cayce Dump, operational in the 1960s, and the unlicensed Bray Park Dump, used prior to 1972. Between 1975 and 1990, groundwater monitoring results were gathered by the South Carolina Department of Health and Environmental Control (SCDHEC), the EPA, and Lexington County. Additional data continues to be collected by SCDHEC and Lexington County. In 1987, the EPA found heavy metals and pesticides in on-site monitoring wells. Approximately 6,200 people get their drinking water from public and private wells within a 3-mile radius of the site. The contaminated shallow aquifer is hydraulically connected to deeper aquifers providing a potential pathway for the spread of contamination. About 250 acres of farmland are irrigated by a well within 3 miles of the site.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 10/04/89

Threats and Contaminants

In 1987, the EPA found heavy metals including arsenic, cadmium, mercury, selenium, as well as pesticides from former disposal practices in on-site monitoring wells. Drinking contaminated groundwater is a possible health threat, as is eating foods that are irrigated by potentially contaminated waters.

Cleanup Approach

This site is being addressed in a single long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Entire Site: The parties potentially responsible for site contamination are planning to undertake an intensive study of its problems. This investigation, which is scheduled to begin in 1992, will explore the nature and extent of groundwater contamination and will recommend the best strategies for final cleanup. Local authorities currently are monitoring the groundwater.

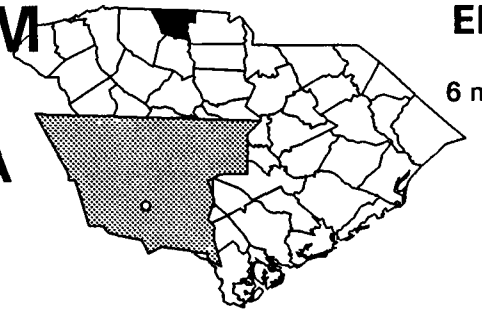
Environmental Progress

After adding this site to the NPL, the EPA performed preliminary investigations and determined that no immediate actions were required at the Lexington County Landfill Area site while studies and cleanup activities are continuing.

Site Repository

Not established.

MEDLEY FARM DRUM DUMP
SOUTH CAROLINA
EPA ID# SCD980558142



EPA REGION 4
Cherokee County
6 miles south of Gaffney

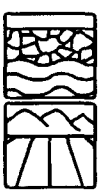
Site Description

The 7-acre Medley Farm Drum Dump site was used as a chemical depository from 1973 to 1978. An anonymous caller informed the State of potential contamination at the site in 1983. When the State visited the site, approximately 5,300 55-gallon drums and 15-gallon pails in various conditions and six unlined lagoons were found. At the State's request, the EPA investigated and found that all the drums were rusted, and some had leaked or were leaking. EPA analyses indicated that the drums contained numerous flammable organic liquids and polychlorinated biphenyls (PCBs). The lagoons held 70,000 gallons of contaminated rainwater and tons of sludges. Approximately 3,300 people reside within a 4-mile radius of the site. Approximately 300 people live within a mile, and 120 people obtain drinking water from private wells within 3 miles of the site. Thickety Creek, a tributary of Jones Creek, is about 300 feet downgradient of the site.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 06/01/86
Final Date: 03/31/89

Threats and Contaminants



The groundwater is contaminated with volatile organic compounds (VOCs) from former site operations. The surface soil also is contaminated with VOCs as well as pesticides. Potential risks may exist for individuals who drink contaminated groundwater. Direct contact with contaminated surface soil and accidental ingestion of soil may pose risks to individuals; however, since the majority of contaminated soil has been removed, the threat of exposure has been reduced.

Cleanup Approach

This site is being addressed in two stages: immediate actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Immediate Actions: In 1983, the EPA removed 2,100 cubic yards of contaminated soil and refuse, 5,300 55-gallon drums and 15-gallon pails of waste, and 70,000 gallons of water and sludges from the six lagoons were transported to a federally regulated hazardous waste facility. The liquids in the lagoons were treated on site and discharged. The lagoons then were filled with clean soils.

Entire Site: In 1991, the parties potentially responsible for the site contamination completed a study on the contamination at the site and in the local groundwater. The study included recommendations for alternative technologies available for the cleanup. The EPA selected the cleanup remedy in mid-1991, which includes pumping groundwater and treating it using air stripping to remove VOCs, and soil vapor extraction to remove VOCs from the soil. Additionally, the remedy calls for continuous monitoring of the site groundwater conditions. The design of the remedy began in late 1991 and is expected to be completed mid-1993.

Site Facts: An Administrative Order on Consent, signed in 1988, outlined the conditions under which the potentially responsible parties were to conduct a study to determine the type and extent of contamination on and off site. In late 1991, the EPA and the potentially responsible parties signed a Consent Decree, in which the parties agreed to design, construct, and implement the remedy selected by the EPA.

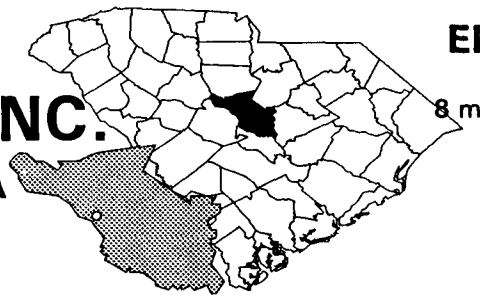
Environmental Progress

The removal of soil and sludge and the treatment of liquid waste in 1983 greatly reduced the potential for people to be exposed to hazardous substances at the Medley Farm Drum Dump site while cleanup design activities are underway to address the final cleanup of the site.

Site Repository

Cherokee County Public Library, 300 East Rutledge Street, Gaffney, SC 29340

PALMETTO RECYCLING, INC.
SOUTH CAROLINA
EPA ID# SCD037398120



EPA REGION 4
Richland County
8 miles north of Columbia

Site Description

The 2-acre Palmetto Recycling, Inc. site reclaimed lead, primarily from lead acid batteries, from 1979 to 1982. In 1981, the South Carolina Department of Health and Environmental Control (SCDHEC) denied applications by Palmetto Recycling for permits to operate a hazardous waste facility and to transport hazardous wastes. SCDHEC determined that wastes remaining at the site included 1,800 gallons of acid wastes in an unlined 5-foot deep pit, 100 drums of liquid caustic wastes, and an unstabilized 260-cubic-foot pile of battery casing scraps. Approximately 4,200 people draw drinking water from an aquifer within 3 miles of the site. Approximately 200 people live within a 1-mile radius of the site; the closest residence is 100 yards away. The site is surrounded by numerous lakes, streams, and rivers. The nearest surface water, the North Branch of Crane Creek, is about 100 yards east of the site and eventually flows into the Broad River. The creek is used for recreation.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 01/22/87
Final Date: 07/07/87

Threats and Contaminants

Heavy metals including lead, cadmium, chromium, and barium have contaminated the soil surrounding the pit and the disposal areas. Direct contact with the contaminated soil posed a potential threat to the public. The contaminants may have entered the food chain through plants and animals that may have bioaccumulated toxic levels of heavy metal contamination. Nearby streams also may be at risk from the migration of site contaminants.

Cleanup Approach

This site is being addressed in two stages: immediate actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Immediate Actions: Between 1984 and 1985, the trustee of the property removed 10,800 gallons of contaminated water from the pit and 365 tons of contaminated soil.

Entire Site: The EPA plans to investigate the site in 1992 to determine the impact of the contamination on and off the site and to determine whether contaminants have migrated from the site. The investigation will recommend the best remedies to clean up the site.

Site Facts: In 1983, a U.S. bankruptcy judge issued a court order requiring the trustee of the property to clean up waste and contaminated soil. The judge authorized cleanup of non-hazardous waste in 1984 and hazardous waste in 1985. Cleanup activities were completed by 1986.

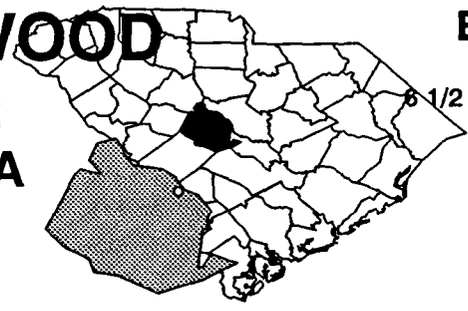
Environmental Progress

The immediate removal of wastes has eliminated the surface contamination and has greatly reduced the potential for people to be exposed to hazardous materials at the Palmetto Recycling, Inc. site while further studies are taking place. All direct contact threats from contaminated soils have been removed.

Site Repository

Not established.

PALMETTO WOOD PRESERVING
SOUTH CAROLINA
EPA ID# SCD003362217



EPA REGION 4
Lexington County
6 1/2 miles northwest of Columbia

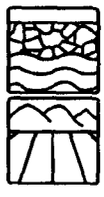
Site Description

The 5-acre Palmetto Wood Preserving (PWP) site is a decommissioned wood preserving facility that operated between 1963 and 1985. In 1963, PWP used two processes for its operation: fluoride-chromate-arsenate-phenol and an acid-copper-chromate process. In 1980, Eastern Forest Products took over the facility and switched to a chromated copper arsenate (CCA) process. Operations consisted of treating wood with a CCA solution under high pressure and allowing the wood to dry under normal conditions. The plant consisted of a pressure vessel, a narrow-gauge rail line, solution storage tanks, a drip shed, and storage and office buildings. All equipment was moved from the site in 1985. The rural area that surrounds the site has a population of approximately 2,000. The shallow aquifer, which supplies drinking water to 2,000 people, is contaminated. The State determined that high levels of chromium have contaminated nearby private wells.

Site Responsibility: This site is being addressed through Federal and municipal actions.

NPL LISTING HISTORY
Proposed Date: 09/01/83
Final Date: 09/01/84

Threats and Contaminants



The groundwater is contaminated with heavy metals including arsenic. On site soil was also contaminated with heavy metals. Off-site soil was contaminated with chromium and pentachlorophenol (PCP) from former process wastes. The State detected high levels of chromium in private wells near the site. People who come in direct contact with or accidentally ingest contaminated water or soils may be at risk.

Cleanup Approach

This site is being addressed in three stages: immediate actions and two long-term remedial phases focusing on cleanup of the soil and the groundwater.

Response Action Status

Immediate Actions: In 1985, the EPA provided a temporary alternative drinking water supply to a residence until a permanent water supply could be provided to the property. In 1990, a municipal water line to the residence was installed. Also in 1990, a fence was installed around the site.

Soil: Soil cleanup began in 1988. Approximately 12,700 cubic yards of contaminated soil were excavated, treated, solidified, and stored to eliminate off-site contaminant migration. The soil cleanup was completed in 1989. In 1990, a sewer line was constructed connecting the city of Cayce's sewage to the city's waste water treatment plant. Construction of the sewer line was completed in 1992.

Groundwater: In 1989, the EPA began developing the designs for a full-scale treatment plant to address the contaminated groundwater at the site. To date, 30 percent of the groundwater engineering design has been completed. However, field investigations discovered that the groundwater contaminant plume has migrated over 1,000 feet from the site property. The groundwater extraction system was therefore redesigned resulting in a larger treatment plant. An early 1992 on-site pilot test of the treatment plants was successful. Based on current data, construction of the groundwater extraction system and the groundwater treatment system should be completed in late 1992.

Site Facts: The EPA and the City of Cayce entered into a Cooperative Agreement in 1990 to construct the sewer line.

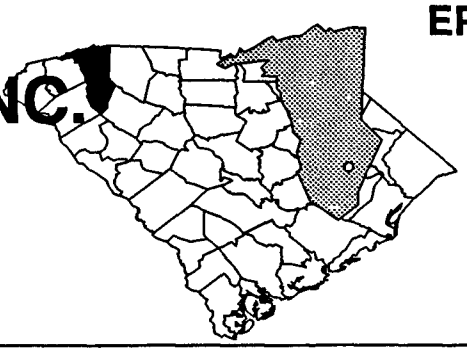
Environmental Progress

The provision of an alternate water supply has eliminated the potential for exposure to hazardous materials from the Palmetto Wood Preserving site through the groundwater. The cleanup of contaminated soils has been completed and further cleanup design activities continue to address contamination in the groundwater.

Site Repository

Lexington County Administration Building, 212 South Lake Drive, Lexington, SC 29072

PARA-CHEM SOUTHERN, INC.
SOUTH CAROLINA
EPA ID# SCD002601656



EPA REGION 4
Greenville County
Near Simpsonville

Site Description

Para-Chem Southern, Inc., has manufactured organic solvents and adhesives on this 100-acre site near Simpsonville since 1965. From 1975 to 1979, approximately 800 to 1,600 drums of organic and inorganic wastes were buried in unlined trenches in three parts of the site. Wastewater from the plant was processed in two unlined lagoons until 1984, when the South Carolina Department of Health and Environmental Control (SCDHEC) issued Para-Chem a permit under the National Pollutant Discharge Elimination System (NPDES) for the discharge of non-contact cooling wash to a tributary of Big Durban Creek. In 1985, SCDHEC found significant contamination in on-site groundwater and surface water, issued a Consent Order, and fined Para-Chem. Under the Order, in 1987, Para-Chem excavated soil from the drum burial areas and filled in one of the two lagoons; the second lagoon is no longer in use. The contaminated soil was moved to an approved hazardous waste facility. During the excavation and fill activities, groundwater contamination was detected. The area is rural and sparsely populated. An estimated 1,500 people obtain drinking water from private wells within three miles of the site. The nearest well is within one mile.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/26/89
Final Date: 08/30/90

Threats and Contaminants

Groundwater and soil are contaminated with volatile organic compounds (VOCs). Sediments and surface water contain heavy metals such as arsenic, barium, and zinc. People who come in direct contact with or accidentally ingest contaminated groundwater, soil, surface water, or sediments may be at risk.

Cleanup Approach

This site is being addressed in two stages: initial actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Initial Actions: In 1987, Para-Chem completed excavating approximately 2,921 tons of drums, plastic containers, wastes, associated soils, and miscellaneous debris from the drum burial areas and filled in one of the two on-site lagoons. The contaminated soil was removed to an approved hazardous waste facility. Para-Chem has installed a groundwater pump and treat system utilizing 14 recovery wells as an interim measure to address the groundwater contamination.

Entire Site: In 1991, Para-Chem is expected to conduct an investigation into the extent and nature of contamination at the site and identify cleanup alternatives. Once the study is completed, the EPA will select a cleanup approach.

Site Facts: The SCDHEC placed the company under a joint wastewater/hazardous waste Consent Order in February 1985, and in January 1986 fined the company for violating its NPDES permit. The Order also addressed the buried drums and a 1985 spill of 3,500 gallons of ethyl acrylate. Since 1986, the company has been fined twice for failure to meet its NPDES permit.

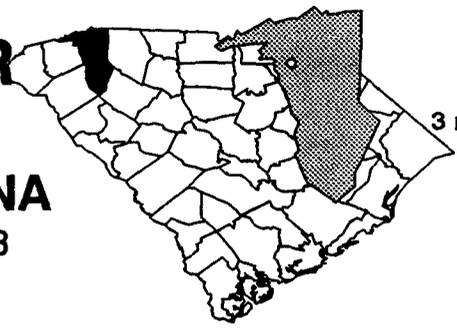
Environmental Progress

The removal of drums and other contaminated debris from the Para-Chem Southern, Inc. site has reduced the threat of exposure to contaminants while investigations are being planned leading to the selection of a final cleanup remedy.

Site Repository

Not established.

ROCHESTER PROPERTY
SOUTH CAROLINA
EPA ID# SCD980840698



EPA REGION 4
Greenville County
3 miles from the town of Travelers

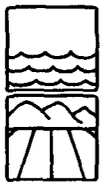
Site Description

The Rochester Property site is composed of 15 acres in a rural area. Colonial Heights Packaging, Inc. disposed of wastes, possibly consisting of wood glue and print binder residues, at this site in 1971 and 1972. Initially, the wastes were trucked to the site in metal drums, which later were placed in four trenches. Three of the trenches were unlined; however, a plastic sheath may have been present in at least one. In 1982, the South Carolina Department of Health and Environmental Control (SCDHEC) discovered the site when one of its employees noticed that waste was oozing from the ground during a routine septic tank investigation on an adjacent property. SCDHEC did not license the site to receive hazardous waste. The State's investigation report estimates that the total amount of waste present on site is about 175 cubic yards. The site is fenced and is located approximately 200 feet upgradient from a small stream. Approximately 1,000 people live within 3 miles of the site, and about 12,500 people live within a 4-mile radius of the site.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 06/01/86
Final Date: 10/04/89

Threats and Contaminants



On-site sediments and soil in and around the four trenches are contaminated by various heavy metals and volatile organic compounds (VOCs) from former disposal activities. Site contaminants have possibly leached into the groundwater that is located about 10 feet below the ground. If contamination exists in the aquifer, residents could be exposed to the contaminants through direct contact with contaminated soils or sediments or by drinking groundwater.

Cleanup Approach

This site is being addressed in two stages: immediate actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Immediate Actions: In 1990, the potentially responsible parties removed approximately 1,610 tons of materials from the contaminated trenches and the area surrounding the trench, excavating to just above the groundwater. Drums in various stages of decomposition were discovered during the excavation and were moved to an off-site area. The trenches were backfilled with clean soil.

Entire Site: In 1992, the parties potentially responsible for the site contamination will begin field work to determine the nature and extent of contamination and to develop cleanup strategies for the remaining contaminants. Upon completion of the study, the EPA will select a final remedy for site cleanup.

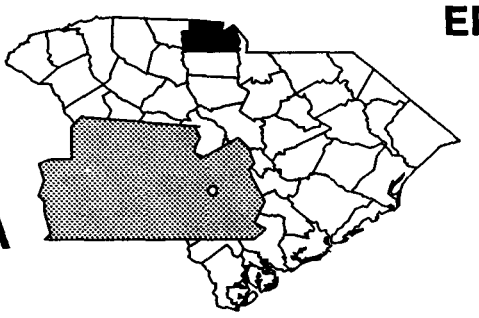
Environmental Progress

The immediate removal of contaminated soil and drums has reduced the potential for people to be exposed to hazardous materials at the Rochester Property site while investigations into a permanent cleanup remedy continue.

Site Repository

Not established.

ROCK HILL CHEMICAL COMPANY
SOUTH CAROLINA
EPA ID# SCD980844005



EPA REGION 4
York County
Rock Hill

Other Names:
Rutledge Property

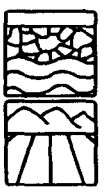
Site Description

The Rock Hill Chemical Company operated a solvent distillation facility in the 1960s on this 4 1/2-acre site located in a light commercial and residential area. The company distilled paint solvents and may have recovered textile dye products. Some of the residue from the bottoms of the storage tanks and drums was placed in piles on the ground and was later covered with dirt and construction debris. The facility was abandoned after it burned in 1965. In 1985, the EPA discovered several aboveground tanks, an underground tank, a sludge pile, and an area of discolored soil. An unnamed tributary to the Catawba River drains the site. Approximately 1,100 people obtain drinking water from wells within 3 miles of the site. The South Carolina Department of Health and Environmental Control advised a nearby business to stop using its well. Fort Mills draws drinking water for an estimated 5,500 people from an intake into the Catawba River, approximately 2 miles downstream of the site.

Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 02/16/90

Threats and Contaminants



An on-site well and possibly a nearby trailer park well are contaminated with various volatile organic compounds (VOCs) from former disposal practices. Wastes and soil samples were contaminated with lead, polychlorinated biphenyls (PCBs), chromium, and VOCs. A possible health threat may occur if people drink contaminated water from the unnamed tributary to the Catawba River or from the contaminated on-site well.

Cleanup Approach

This site is being addressed in two stages: immediate actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Immediate Actions: In 1986, First Federal Savings and Loan, one of two present owners of the site, transported approximately 41 cubic yards of paint sludges and stillbottoms to a federally regulated hazardous waste facility. Disposal of tank sludges and visibly contaminated soil, as well as the removal of the tanks from the Rutledge portion of the site, were completed in 1989.

Entire Site: The EPA is about to begin field work to investigate the nature and extent of contamination and to develop and select alternative cleanup strategies for the remaining site contamination. Upon completion of the study the EPA will select a final remedy for site cleanup.

Site Facts: In 1987, under an EPA Administrative Order, Rutledge Enterprises discharged approximately 2,000 gallons of wastewater contaminated with solvents, in limited amounts every day, into the city sewer system for treatment in the municipal sewage treatment plant.

Environmental Progress

The immediate removal and disposal of waste have reduced the potential for people to be exposed to hazardous materials at the Rock Hill Chemical Company. These actions help to protect the public health and the environment while further investigations are taking place. All direct contact threats from contaminated soils have been eliminated.

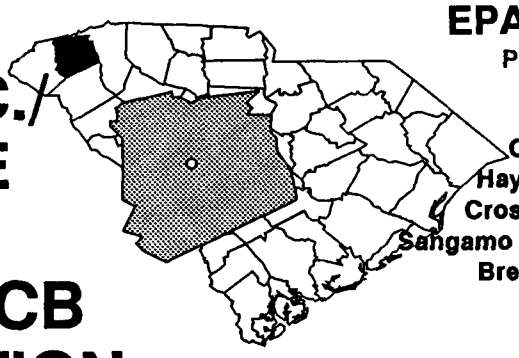
Site Repository

Not established.

SANGAMO WESTON, INC./ TWELVE-MILE CREEK/LAKE HARTWELL PCB CONTAMINATION

SOUTH CAROLINA

EPA ID# SCD003354412



EPA REGION 4

Pickens County
Pickens

Other Names:
Haygood Reservoir
Cross Roads Church
Sangamo Weston-Pickens Plant
Breazeale Property
Nix Site

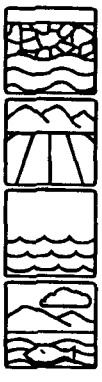
Site Description

This 224-acre site encompasses the Sangamo Weston plant itself, at least six former dumps used by the company, and the Twelve-Mile Creek watershed, which includes Lake Hartwell. Sangamo Weston, Inc. manufactured electric capacitors that, from 1955 to 1976, used polychlorinated biphenyls (PCBs) for a non-conducting fluid. Solid waste, sludges, and liquid wastes were stored or disposed of in piles, landfills, and impoundments. The EPA is continuing to search for any additional sources of contamination, and may expand the site if contamination is found to extend further than site boundaries. PCBs have been found in the runoff leaving the plant, downstream tributaries of Twelve-Mile Creek, Lake Hartwell, and the distribution system of the Easley-Central Water plan, which provides drinking water to 14,500 people. A Clemson University intake in the Twelve-Mile Creek arm of Lake Hartwell serves approximately 16,000 students and employees. Swimming in the Six-Mile and the Twelve-Mile Creeks has been banned. A fish advisory for Lake Hartwell remains in effect, and the State may extend the advisory to the nearby Tugaloo River.

Site Responsibility: This site is being addressed through a combination of Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 01/22/87
Final Date: 02/16/90

Threats and Contaminants



On-site groundwater and soil are contaminated with volatile organic compounds (VOCs) and PCBs from the former site activities. Private wells are in use within the area of contamination. PCB levels detected in the fish of Lake Hartwell and the tributary system vary with each sampling but tend to be well above an acceptable limit. People may be harmed if they fail to heed warning signs and come in direct contact with or ingest contaminated fish, soil, or water.

Cleanup Approach

This site is being addressed in three stages: initial actions and two long-term remedial phases focusing on the Twelve-Mile Creek watershed and cleanup of the entire site.

Response Action Status

Initial Actions: The State and the Federal government periodically have sampled the area. Sangamo removed some soil at two disposal sites in 1975 and placed the soil in a landfill on the plant property. In 1986, Sangamo placed a fence around the site and installed a temporary cap on contaminated portions of the site.

Twelve-Mile Creek Watershed: The EPA will investigate the nature and extent of contamination in the Twelve-Mile Creek watershed, including portions of Lake Hartwell, and will take into account the data derived from fish studies performed by the South Carolina Department of Health and Environmental Control. Revised work plans have been received and field work for the investigation is scheduled to begin in 1991. Sediment and biological investigations of Twelve-Mile Creek watershed are on-going. Phase II of sediment investigations and continuing biological investigations are scheduled for 1992.

Entire Site: In 1987, Sangamo conducted soil and groundwater investigations on and around the site properties. Based on these investigations, a remedy was selected for cleanup of the site in 1990. Soil will be treated using a low temperature thermal separation method. Groundwater will be extracted and treated. Engineering designs are scheduled to begin in 1992.

Site Facts: In 1986, the EPA negotiated a Consent Order with Sangamo-Weston to study the contamination at one of the dumps. Under an additional Consent Order signed in 1987, Sangamo-Weston will study six dumps and the Pickens Plant.

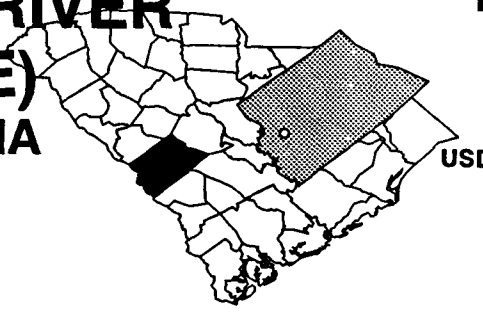
Environmental Progress

The soil removal, capping, and site security measures have reduced the potential for people to be exposed to hazardous substances at the Sangamo/Twelve-Mile Creek/Lake Hartwell site while further studies are taking place and cleanup activities are being planned.

Site Repository

Pickins County Public Library, Easley Branch, 110 West First Avenue, Easley, SC 29640

SAVANNAH RIVER SITE (USDOE)
SOUTH CAROLINA
EPA ID# SC1890008989



EPA REGION 4
Aiken County
Aiken

Other Names:
USDOE Savannah River Plant
Savannah River Plant

Site Description

Since 1953, the Savannah River Site (USDOE) has produced nuclear materials for national defense on a 198,737-acre site. Tritium is currently the primary product of the Savannah River Site. First operated by the Atomic Energy Commission, it is now operated by the U.S. Department of Energy (DOE). The Savannah River Site operations include five reactors, two chemical separation areas, a target and fuel fabrication facility, a defense waste processing facility, and various support facilities. The operations at the site generate a variety of radioactive, chemical, and mixed wastes, some of which have been released into the environment. Past and present disposal practices include seepage basins for liquids, pits, and piles for solid wastes and landfills for low-level radioactive wastes. In 1987, the DOE reported that shallow groundwater on various parts of the site had been contaminated. One of these areas, the A-Area Burning/Rubble Pit, received degreasers and solvents from 1953 through 1973. Another area that received drums of waste solvents has contaminated the soil. A small quantity of depleted uranium was released in 1984 into Upper Three Runs Creek. The creek and all other surface water from the plant flow into the Savannah River. The area around the Savannah River is heavily wooded and ranges from dry hilltops to swampland. The 3,200 residents of Jackson receive drinking water from wells within 3 miles of hazardous substances at the site. The 17,000 employees at the facility also use these wells.

Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 07/14/89
Final Date: 11/21/89

Threats and Contaminants

The groundwater contains volatile organic compounds (VOCs) from degreasing solvents; heavy metals including lead, chromium, mercury, and cadmium; and radionuclides including tritium, uranium, fission products, and plutonium. The soil is contaminated with VOCs including trichloroethylene (TCE). Heavy metals, organics, and radionuclides have been detected in the air at the site. The health of people could be threatened if they drink or come in direct contact with contaminated well water at the Savannah River Site. The Upper Three Runs Creek and all other surface water from the site flows into the Savannah River, which is a major navigable river that forms the southern border between South Carolina and Georgia. Along this bank of the river is a 10,000-acre wetland known as the Savannah River Swamp, an environmentally sensitive area. The swamp is contaminated with chromium, mercury, radium, thorium, and uranium.

Cleanup Approach

This site is being addressed in numerous long-term remedial phases focusing on cleanup of 64 discrete areas of the site.

Response Action Status

Initial Actions: Cleanup of groundwater contamination with VOCs was initiated in 1985. Source control measures have been performed at a number of old disposal areas at the Savannah River Site. DOE has constructed the Defense Waste Processing Facility which will be used to treat high-level radioactive wastes currently stored in tanks onsite. Nine hazardous waste land disposal units have been closed under the Resource Conservation Recovery Act (RCRA) program.

M-Area: In 1989, the DOE began studies into the nature and extent of contamination at M-Area. These studies will focus on the shallow and deep groundwater and a settling basin at the site. Studies are expected to be completed by 1992. Cleanup actions are expected to be separated into three phases.

Metallurgic Laboratory: The DOE began an investigation into the nature and extent of contamination at the metallurgic laboratory in late 1989. This study is expected to be completed in mid-1992, at which time remedies for cleanup of the laboratory will be evaluated.

Gunsites: In early 1990, the DOE began studies of the contamination at gunsites 720 and 113. These studies are expected to be completed in late 1992, at which time remedies for cleanup of the gunsites will be evaluated.

Central Shops: In 1991, the DOE began investigations into the nature and extent of contamination at the Central Shops. These studies also are evaluating sludge in this area. The investigations are expected to be completed in early 1995.

Old TNX Seepage Basin: The DOE began to study the nature and extent of contamination at the old TNX seepage basin in late 1991. This study is expected to be completed in mid-1995, at which time remedies for cleanup will be assessed.

PAR Pond: In mid-1991, the DOE began studies of the nature and extent of contamination of the PAR pond sludge area. Remedies for cleanup will be evaluated upon completion of this study, slated for early 1995.

Inactive Ponds: The DOE began an extensive investigation of the nature and extent of contamination of the F- and H-Area inactive ponds in early 1992. Upon completion of this study, slated for late 1995, remedies for cleanup of these inactive ponds will be evaluated.

D-Area: The DOE began an investigation of the contamination of the D-Area ash basin in mid-1991. This study is expected to be completed in early 1995, at which time remedies for cleanup will be assessed.

F-Area: In mid-1990, the DOE began investigations into the nature and extent of contamination in the F-Area. These studies are evaluating both the seepage basin and the groundwater in this area and are expected to be completed in late 1992.

H-Area: In mid-1990, the DOE began investigations of the contamination at the H-Area. These studies are evaluating impacts at both the seepage basin and the groundwater in this area and is expected to be completed in early 1993.

G-Area: The DOE began an investigation into the nature and extent of oil seepage at the G-Area in mid-1991. This study is expected to be completed in late 1995, at which time remedies for cleanup of the G-Area will be evaluated.

K-Area: The DOE began an extensive study of the contamination of the K-Area sludge pond in mid-1991. This study is expected to be completed in early 1995, at which time remedies for cleanup of the sludge pond will be reviewed.

L-Area: The DOE began an investigation into the nature and extent of the contamination of the L-Area rubble pit 13 in mid-1991. This study is expected to be completed in late 1994, at which time remedies for cleanup will be assessed.

Rubble Piles: The DOE began investigations into the nature and extent of contamination of the A-Area rubble pile 7 and the K-Area rubble pile 6 in mid-1991. These studies are expected to be completed in 1995, at which time remedies for cleanup will be assessed.

Other Areas: Studies are planned to begin in 1992 in 50 other site areas where contaminants have been identified. The focus of these investigations will be described in future editions.

Site Facts: In 1989, the DOE and the EPA signed a Federal Facilities Agreement, which will govern the site studies and cleanup activities. In March 1991, the EPA and the DOE entered into a RCRA Federal Facility Compliance Agreement. In addition to the Federal Facilities Agreements, site studies and cleanup activities will be overseen by the EPA through the settlement agreements and the RCRA permit.

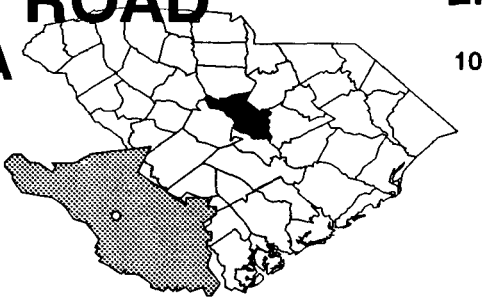
Environmental Progress

After adding this site to the NPL, the EPA and the DOE performed preliminary investigations and have performed several initial actions at the Savannah River Site (USDOE) to reduce site threats while investigations leading to final cleanup activities are taking place.

Site Repository

Thomas Cooper Library, Government Documents Department, University of South Carolina, Columbia, SC 29208

SCRDI BLUFF ROAD
SOUTH CAROLINA
EPA ID# SCD000622787



EPA REGION 4
Richland County
10 miles from Columbia

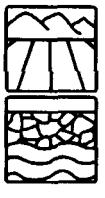
Site Description

The South Carolina Recycling and Disposal, Inc. (SCRDI) Bluff Road site covers 4 acres, 2 of which were used for waste storage. Approximately 7,500 drums of toxic, flammable, and reactive wastes were removed in 1982 by a group of hazardous waste generators; numerous smaller containers also were removed. Two small ponds at the northern end of the site are remnants of lime slurry disposal ponds used by the acetylene manufacturer that once occupied the property. Surface water and sediment may run into a tributary of Myers Creek, which discharges into the Congaree Swamp National Monument. The site is in a rural and remote area. The nearest residence is 1 mile away, with approximately 3,500 people living within 4 miles of the site. Recreational facilities, which include a community center with a swimming pool, are a mile east of the site. Approximately 1,200 people work at the Westinghouse Nuclear Fuel Facility less than 1/8 mile away.

Site Responsibility: This site is being addressed through a combination of Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/01/81
Final Date: 09/01/83

Threats and Contaminants



The site contamination is limited to on-site soil and groundwater in a shallow aquifer. Soils contain volatile organic compounds (VOCs) and low levels of pesticides, polychlorinated biphenyls (PCBs), and heavy metals. Groundwater in the surficial aquifer also is contaminated with VOCs. There have been no signs of contaminant migration to Myers Creek, located 3,200 feet from the contaminated aquifer. Ingestion of the contaminated groundwater poses a threat to human health, though contact with the soil presents no serious health risks.

Cleanup Approach

This site is being addressed in two stages: immediate actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Immediate Actions: In 1982, the parties potentially responsible for the site contamination removed about 7,500 drums containing a wide variety of toxic, flammable, and reactive wastes.

Entire Site: The State initiated a study on the extent and nature of contamination at the site in 1984. This study, however, was not completed. A new study was conducted by the potentially responsible parties, and a method for cleaning up the site was selected by the EPA in 1990. Treatment of the contaminated groundwater includes extracting, air stripping, and reinjecting the groundwater until cleanup goals are met. Vapor extraction will be used to treat the contaminated soil. The engineering design of the selected remedy was scheduled to begin in 1991, with actual cleanup expected to start the following year. However, site access problems have delayed implementation of the engineering design work.

Site Facts: A group of the parties potentially responsible for contamination at the site conducted studies to determine the extent of the contamination at the site under an Administrative Order entered into with the EPA in 1988.

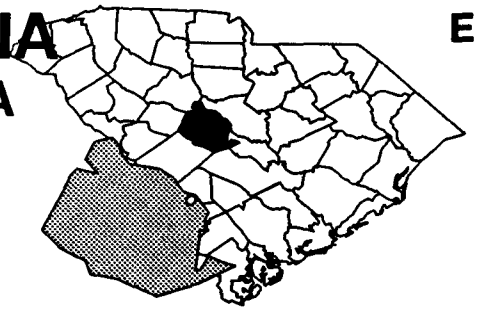
Environmental Progress

The immediate removal of drums reduced the potential for people to be exposed to hazardous substances at the SCRDI Bluff Road site while cleanup activities are being planned.

Site Repository

Richland County Library, Landmark Sq. Branch, Landmark Sq. Shopping Center, 6864 Garners Ferry Road, Columbia, SC 29209

SCRDI DIXIANA
SOUTH CAROLINA
EPA ID# SCD980711394



EPA REGION 4
Lexington County
Near Cayce

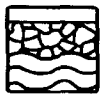
Site Description

At one time, the 2-acre South Carolina Recycling and Disposal, Inc. (SCRDI) Dixiana site contained over 1,100 drums of materials such as paints, solvents, acids, waste oils, phenols, and dyes. In 1978, SCRDI leased the site for drum storage of industrial wastes. Instances of poor handling practices, leaky drums, and exposure to the weather created a number of discharges to the environment prior to drum removal. In 1978, the State filed a suit against the site owners. The resulting court order specified that the site no longer receive wastes and that the wastes on site be contained. In 1980, as a result of SCRDI's failure to contain the wastes, a State court found SCRDI in contempt, which resulted in the company being placed in receivership. Shortly thereafter, SCRDI removed all drums and visibly contaminated soil. Spilled dye, a suspected carcinogen, contaminated the shallow groundwater. Approximately 1,200 people use water supply wells within 3 miles of the site. The State has advised two nearby families not to use their well water.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 07/01/82
Final Date: 09/01/83

Threats and Contaminants



The groundwater contains volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), pesticides, and heavy metals from former site activities. Even though the groundwater is known to be contaminated, there is no one presently at risk as a result of the current site contamination. Groundwater contamination is moving off site in response to hydraulic gradients in various interconnected aquifers.

Cleanup Approach

This site is being addressed in a single long-term remedial phase focusing on groundwater cleanup.

Response Action Status

Groundwater: The remedies selected by the EPA included extracting contaminated groundwater, treating it to acceptable concentration levels, and discharging the treated water to the sewer system of a neighboring city. Construction of the extraction well, piping system, and treatment system building has been completed. Groundwater treatment began in 1992 after the receiving sewer line was constructed. Cleanup of the site is expected to be completed in 1995.

Site Facts: The South Carolina Department of Health and Environmental Control denied a waste management permit and filed a suit against SCRDI in 1978. A family of five people, whose home is located above the plume, was temporarily relocated while the extraction system was constructed and installed in 1990.

Environmental Progress

The groundwater cleanup activities and removal of drums have reduced the potential for exposure to hazardous materials at the SCRDI Dixiana site while the groundwater treatment and monitoring actions are continuing.

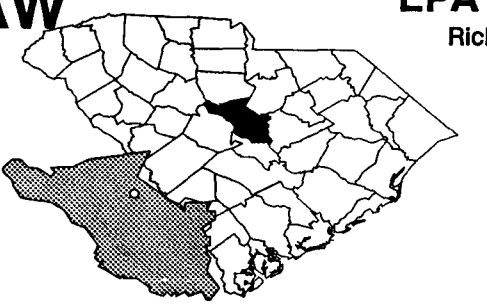
Site Repository

R.M. Smith Library, 1006 12th Street, Cayce, SC 29033

TOWNSEND SAW CHAIN CO.

SOUTH CAROLINA

EPA ID# SCD980558050



EPA REGION 4
Richland County
Pontiac

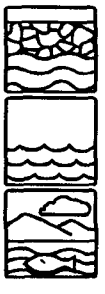
Site Description

The Townsend Saw Chain Co. covers approximately 50 acres in Pontiac, near Columbia. The previous owner was Dictaphone Co., which sold out to Townsend in 1971. Since 1972, the small manufacturing facility on site has been used for the manufacture of saw chains. Between 1966 and 1981, waste rinsewaters were disposed of by direct discharge to the ground surface in a low-lying area adjacent to the facility. Although public water has recently become available in the area, private wells within 3 miles of the site still serve an estimated 1,400 people. The nearest well is less than a mile from the site. A private well near the site was closed in 1981 to 1982, and the residence was connected to the public water system. Two creeks and two ponds are within 2 miles of the site; one, Woodcreek Lake, is used for recreational activities. Freshwater wetlands are within 1 mile of the site.

Site Responsibility: This site is being addressed through Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 02/16/90

Threats and Contaminants



A 1985 South Carolina Department of Health and Environmental Control (SCDHEC) study showed high levels of cadmium and chromium in groundwater at the site. A surface water sample taken at a spring near the site contained several volatile organic compounds (VOCs), including dichloroethane and trichloroethylene (TCE). A residence near the site was hooked up to the city water supply in 1981 and 1982. Potential risks may exist for those individuals who drink or come in direct contact with the contaminated surface water and groundwater. Creeks, ponds, and wetlands within 1 mile of the site may be threatened with runoff from the site.

Cleanup Approach

The site is being addressed in two stages: initial actions and a long-term remedial phase directed at cleanup of the entire site.

Response Action Status

Initial Actions: The company has been pumping contaminated groundwater to the surface, treating it to remove the chromium, and spraying the treated water into a wooded area since 1982. A private well near the site was closed in 1982 and those residents using the well were hooked up to the public water system. Presently, this system is being redesigned and upgraded to address deficiencies found by the South Carolina Department of Health and Environmental Control (SCDHEC) in 1988.

Entire Site: In 1991, a potentially responsible party signed an agreement to perform a study of the nature and extent of site contamination and to evaluate possible remedies for cleanup. The potential for release of contaminants into a nearby tributary of Spears Creek will also be investigated. These studies will continue during 1992. Upon completion of these studies, the EPA will evaluate recommended alternatives and select the most appropriate remedies for cleanup of the site.

Site Facts: In 1988, the State issued an Administrative Order requesting Townsend to install additional recovery and monitoring wells. The wells were installed in 1989.

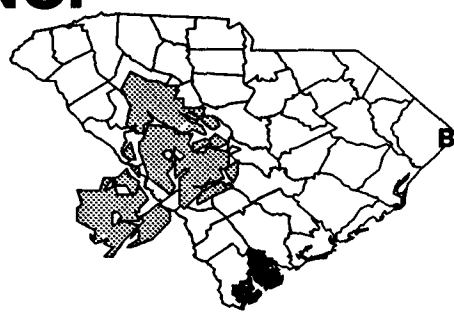
Environmental Progress

Pumping and treating the contaminated groundwater have significantly reduced the potential for exposure to contamination and reduced migration of contaminants in the groundwater while the studies into a final remedy are being planned.

Site Repository

Not established.

WAMCHEM, INC.
SOUTH CAROLINA
EPA ID# SCD037405362



EPA REGION 4
Beaufort County
Burton

Other Names:
Beaufort Chemical and Research Company

Site Description

The 21-acre Wamchem, Inc. site is located on a small island in the midst of a salt marsh near McCalleys Creek, a tidal stream. From 1959 to 1972, the Beaufort Chemical and Research Company owned and operated the site, producing dyes for the textile industry. In 1972, the M. Lowenstein Company purchased the facility and continued operations until 1981. Liquid wastes generated at the site were discharged to a drainage ditch leading to two unlined ponds. A ditch later was extended from one of the ponds, discharging wastes directly into McCalleys Creek. Waste treatment methods changed, and the ponds and ditches were replaced by an unlined holding pond and a waste lagoon in 1972; however, these were soon replaced by two spray fields and a concrete-lined holding pond in 1975. In 1977, the South Carolina Department of Health and Environmental Control (SCDHEC) required the company to use a spray-irrigation technique to improve its wastewater process. The wastes discharged onto the spray fields consisted of neutralized sulfuric acid and process water. The surface water is contaminated, but it does not constitute a major threat to water supplies at this time. Approximately 2,000 people within a 3-mile radius depend on drinking water from the shallow aquifer that lies below the site.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 09/01/83
Final Date: 09/01/84

Threats and Contaminants

The contaminants in the groundwater and soil include volatile organic compounds (VOCs) such as benzene, toluene, xylenes, and acetone from former site operations. The site is considered to be a habitat for the loggerhead turtle, a federally listed threatened species, and a probable habitat for the short-nosed sturgeon, a federally listed endangered species. Also, the site is located in an environmentally sensitive area composed of salt marshes, tidal streams, and fragile estuary habitats supporting abundant natural resources.

Cleanup Approach

This site is being addressed in a single long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Entire Site: Based upon a comprehensive site investigation performed by the parties potentially responsible for site contamination, the EPA has selected the final cleanup actions to be used at the site. These actions include: (1) installing a groundwater pump and treatment system using carbon adsorption and air stripping of VOCs and releasing the decontaminated water into a nearby stream; and (2) excavating and treating 2,000 cubic yards of contaminated soil to remove contaminants, followed by on-site disposal of the soil and groundwater monitoring. The responsible party is currently completing the engineering designs of the soil and groundwater treatment activities, and cleanup of the contamination is scheduled to begin in mid-1992.

Site Facts: The EPA and the potentially responsible parties have signed a Consent Decree, which describes the cleanup actions that they are required to perform.

Environmental Progress

After adding this site to the NPL, the EPA performed preliminary investigations and determined that no immediate actions were required at the Wamchem, Inc. site prior to initiation of the pending soil and groundwater cleanup actions.

Site Repository

Beaufort County Library 710 Craven Street Beaufort, SC 29902

GLOSSARY

Terms Used in the NPL Book

This glossary defines terms used throughout the NPL Volumes. The terms and abbreviations contained in this glossary apply specifically to work performed under the Superfund program in the context of hazardous waste management. These terms may have other meanings when used in a different context. A table of common toxic chemicals found at NPL sites, their sources, and their potential threats is located on page G-15

Acids: Substances, characterized by low pH (less than 7.0), that are used in chemical manufacturing. Acids in high concentration can be very corrosive and react with many inorganic and organic substances. These reactions possibly may create toxic compounds or release heavy metal contaminants that remain in the environment long after the acid is neutralized.

Administrative Order On Consent: A legal and enforceable agreement between the EPA and the parties potentially responsible for site contamination. Under the terms of the Order, the potentially responsible parties (PRPs) agree to perform or pay for site studies or cleanups. It also describes the oversight rules, responsibilities, and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. This Order is signed by PRPs and the government; it does not require approval by a judge.

Administrative Order [Unilateral]: A legally binding document issued by the EPA, directing the parties potentially responsible to perform site cleanups or studies (generally, the EPA does not issue Unilateral Orders for site studies). This type of Order is not signed by the PRPs and does not require approval by a judge.

Aeration: A process that promotes breakdown of contaminants in soil or water by exposing them to air.

Agency for Toxic Substances and Disease Registry (ATSDR): The Federal agency within the U.S. Public Health Service charged with carrying out the health-related responsibilities of CERCLA.

Air Stripping: A process whereby volatile organic chemicals (VOCs) are removed from contaminated material by forcing a stream of air through the contaminated material in a pressurized vessel. The contaminants are evaporated into the air stream. The air may be further treated before it is released into the atmosphere.

Ambient Air: Any unconfined part of the atmosphere. Refers to the air that may be inhaled by workers or residents in the vicinity of contaminated air sources.

Applicable or Relevant and Appropriate Requirements (ARARs): Federal, State, or local laws which apply to Superfund activities at NPL sites. Both emergency and long-term actions must comply with these laws or provide sound reasons for allowing a waiver. ARARs must be identified for each site relative to the characteristics of the site, the substances found at the site, or the cleanup alternatives being considered for the site.

GLOSSARY

Aquifer: An underground layer of rock, sand, or gravel capable of storing water within cracks and pore spaces, or between grains. When water contained within an aquifer is of sufficient quantity and quality, it can be tapped and used for drinking or other purposes. The water contained in the aquifer is called groundwater. A "sole source aquifer" supplies 50 percent or more of the drinking water of an area.

Artesian (Well): A well made by drilling into the earth until water is reached, which, due to internal pressure, flows up like a fountain.

Asbestos: A mineral fiber that can pollute air or water and is known to cause cancer or asbestosis when inhaled.

Attenuation: The naturally occurring process by which a compound is reduced in concentration over time through adsorption, degradation, dilution, or transformation.

Background Level: The amount of a substance typically found in the air, water, or soil from natural, as opposed to human, sources.

Baghouse Dust: Dust accumulated in removing particulates from the air by passing it through cloth bags in an enclosure.

Bases: Substances characterized by high pH (greater than 7.0), which tend to be corrosive in chemical reactions. When bases are mixed with acids, they neutralize each other, forming salts.

Berm: A ledge, wall, or a mound of earth used to prevent the migration of contaminants.

Bioaccumulate: The process by which some contaminants or toxic chemicals gradually collect and increase in concentration in living tissue, such as in plants, fish, or people, as they breathe contaminated air, drink contaminated water, or eat contaminated food.

Biological Treatment: The use of bacteria or other microbial organisms to break down toxic organic materials into carbon dioxide and water.

Bioremediation: A cleanup process using naturally occurring or specially cultivated microorganisms to digest contaminants and break them down into non-hazardous components.

Bog: A type of wetland that is covered with peat moss deposits. Bogs depend primarily on moisture from the air for their water source, are usually acidic, and are rich in plant residue [see Wetland].

Boom: A floating device used to contain oil floating on a body of water or to restrict the potential overflow of waste liquids from containment structures.

Borehole: A hole that is drilled into the ground and used to sample soil or ground-water.

Borrow Pit: An excavated area where soil, sand, or gravel has been dug up for use elsewhere.

Cap: A layer of material, such as clay or a synthetic material, used to prevent rainwater from penetrating and spreading contaminated materials. The surface of the cap generally is mounded or sloped so water will drain off.

Carbon Adsorption: A treatment system in which contaminants are removed from groundwater and surface water by forcing water through tanks containing activated carbon, a specially treated material that attracts and holds or retains contaminants.

Carbon Disulfide: A degreasing agent formerly used extensively for parts washing. This compound has both inorganic and organic

properties, which increase cleaning efficiency. However, these properties also cause chemical reactions that increase the hazard to human health and the environment.

Carbon Treatment: [see Carbon Adsorption].

Cell: In solid waste disposal, one of a series of holes in a landfill where waste is dumped, compacted, and covered with layers of dirt.

CERCLA: [see Comprehensive Environmental Response, Compensation, and Liability Act].

Characterization: The sampling, monitoring, and analysis of a site to determine the extent and nature of toxic releases. Characterization provides the basis for acquiring the necessary technical information to develop, screen, analyze, and select appropriate cleanup techniques.

Chemical Fixation: The use of chemicals to bind contaminants, thereby reducing the potential for leaching or other movement.

Chromated Copper Arsenate: An insecticide/herbicide formed from salts of three toxic metals: copper, chromium, and arsenic. This salt is used extensively as a wood preservative in pressure-treating operations. It is highly toxic and water-soluble, making it a relatively mobile contaminant in the environment.

Cleanup: Actions taken to eliminate a release or threat of release of a hazardous substance. The term "cleanup" sometimes is used interchangeably with the terms remedial action, removal action, response action, or corrective action.

Closure: The process by which a landfill stops accepting wastes and is shut down under Federal guidelines that ensure the protection of the public and the environment.

Comment Period: A specific interval during which the public can review and comment on various documents and EPA actions related to site cleanup. For example, a comment period is provided when the EPA proposes to add sites to the NPL. Also, there is minimum 3-week comment period for community members to review and comment on the remedy proposed to clean up a site.

Community Relations: The EPA effort to establish and maintain two-way communication with the public. The goals of community relations programs include creating an understanding of EPA programs and related actions, assuring public input into decision-making processes related to affected communities, and making certain that the Agency is aware of, and responsive to, public concerns. Specific community relations activities are required in relation to Superfund cleanup actions [see Comment Period].

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): Congress enacted the CERCLA, known as Superfund, in 1980 to respond directly to hazardous waste problems that may pose a threat to the public health and the environment. The EPA administers the Superfund program.

Confluence: The place where two bodies of water, such as streams or rivers, come together.

Confined Aquifer: An aquifer in which groundwater is confined under pressure that is significantly greater than atmospheric pressure.

Consent Decree: A legal document, approved and issued by a judge, formalizing an agreement between the EPA and the parties potentially responsible for site contamination. The decree describes cleanup actions that the potentially responsible parties are required to perform, or the costs incurred by the government that the parties will reimburse, and the roles, responsibilities, and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. If a settlement between the EPA and a potentially responsible party includes cleanup actions, it must be in the form of a Consent Decree. A Consent Decree is subject to a public comment period.

Consent Order: [see Administrative Order on Consent].

Containment: The process of enclosing or containing hazardous substances in a structure, typically in a pond or a lagoon, to prevent the migration of contaminants into the environment.

Contaminant: Any physical, chemical, biological, or radiological material or substance whose quantity, location, or nature produces undesirable health or environmental effects.

Contingency Plan: A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or other accident that releases toxic chemicals, hazardous wastes, or radioactive materials into the environment.

Cooperative Agreement: A contract between the EPA and the States, wherein a State agrees to manage or monitor certain site cleanup responsibilities and other activities on a cost-sharing basis.

Cost Recovery: A legal process by which potentially responsible parties can be required to pay back the Superfund program for money it spends on any cleanup actions [see Potentially Responsible Parties].

Cover: Vegetation or other material placed over a landfill or other waste material. It can be designed to reduce movement of water into the waste and to prevent erosion that could cause the movement of contaminants.

Creosotes: Chemicals used in wood preserving operations and produced by distillation of tar, including polycyclic aromatic hydrocarbons and polynuclear aromatic hydrocarbons [see PAHs and PNAs]. Contaminating sediments, soils, and surface water, creosotes may cause skin ulcerations and cancer through prolonged exposure.

Culvert: A pipe used for drainage under a road, railroad track, path, or through an embankment.

Decommission: To revoke a license to operate and take out of service.

Degradation: The process by which a chemical is reduced to a less complex form.

Degrease: To remove grease from wastes, soils, or chemicals, usually using solvents.

Deletion: A site is eligible for deletion from the NPL when Superfund response actions at the site are complete. A site is deleted from the NPL when a notice is published in the Federal Register.

De minimis: This legal phrase pertains to settlements with parties who contributed small amounts of hazardous waste to a site. This process allows the EPA to settle with small, or *de minimis* contributors, as a single group rather than as individuals, saving time, money, and effort.

Dewater: To remove water from wastes, soils, or chemicals.

Dike: A low wall that can act as a barrier to prevent a spill from spreading.

Dioxin: An organic chemical by-product of pesticide manufacture which is known to be one of the most toxic man-made chemicals.

Disposal: Final placement or destruction of toxic, radioactive, or other wastes; surplus or banned pesticides or other chemicals; polluted soils; and drums containing hazardous materials. Disposal may be accomplished through the use of approved secure landfills, surface impoundments, land farming, deep well injection, or incineration.

Downgradient: A downward hydrologic slope that causes groundwater to move toward lower elevations. Therefore, wells *downgradient* of a contaminated groundwater source are prone to receiving pollutants.

Ecological Assessment: A study of the impact of man-made or natural activity on living creatures and their environment.

Effluent: Wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

Emission: Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities.

Emulsifiers: Substances that help in mixing materials that do not normally mix; e.g., oil and water.

Endangerment Assessment: A study conducted to determine the risks posed to public health or the environment by contamination at NPL sites. The EPA or the State conducts the study when a legal action is to be taken to direct the potentially responsible parties to clean up a site or pay for the cleanup. An endangerment assessment supplements an investigation of the site hazards.

Enforcement: EPA, State, or local legal actions taken against parties to facilitate settlements; to compel compliance with laws, rules, regulations, or agreements; or to obtain penalties or criminal sanctions for violations. Enforcement procedures may vary, depending on the specific requirements of different environmental laws and related regulatory requirements. Under CERCLA, for example, the EPA will seek to require potentially responsible parties to clean up a Superfund site or pay for the cleanup [see Cost Recovery].

Erosion: The wearing away of land surface by wind or water. Erosion occurs naturally from weather or surface runoff, but can be intensified by such land-related practices as farming, residential or industrial development, road building, or timber-cutting. Erosion may spread surface contamination to off-site locations.

Estuary (estuarine): Areas where fresh water from rivers and salt water from nearshore ocean waters are mixed. These areas may include bays, mouths of rivers, salt marshes, and lagoons. These water ecosystems shelter and feed marine life, birds, and wildlife.

Evaporation Ponds: Areas where sewage sludge or other watery wastes are dumped and allowed to dry out.

Feasibility Study: The analysis of the potential cleanup alternatives for a site. The feasibility study usually starts as soon as the remedial investigation is underway. In this volume, the feasibility study is referred to as a site study [see also Remedial Investigation].

Filtration: A treatment process for removing solid (particulate) matter from water by passing the water through sand, activated carbon, or a man-made filter. The process is often used to remove particles that contain contaminants.

Flood Plain: An area along a river, formed from sediment deposited by floods. Flood plains periodically are innundated by natural floods, which can spread contamination.

Flue Gas: The air that is emitted from a chimney after combustion in the burner occurs. The gas can include nitrogen oxides, carbon oxides, water vapor, sulfur oxides, particles, and many chemical pollutants.

Fly Ash: Non-combustible residue that results from the combustion of flue gases. It can include nitrogen oxides, carbon oxides, water vapor, sulfur oxides, as well as many other chemical pollutants.

French Drain System: A crushed rock drain system constructed of perforated pipes, which is used to drain and disperse wastewater.

Gasification (coal): The conversion of soft coal into gas for use as a fuel.

General Notice Letter: [See Notice Letter].

Generator: A facility that emits pollutants into the air or releases hazardous wastes into water or soil.

Good Faith Offer: A voluntary offer, generally in response to a Special Notice letter, made by a potentially responsible party, consisting of a written proposal demonstrating a potentially responsible party's qualifications and willingness to perform a site study or cleanup.

Groundwater: Water that fills pores in soils or openings in rocks to the point of saturation. In aquifers, groundwater occurs in sufficient quantities for use as drinking and irrigation water and other purposes.

Groundwater Quality Assessment: The process of analyzing the chemical characteristics of groundwater to determine whether any hazardous materials exist.

Halogens: Reactive non-metals, such as chlorine and bromine. Halogens are very good oxidizing agents and, therefore, have many industrial uses. They are rarely found by themselves; however, many chemicals such as polychlorinated biphenyls (PCBs), some volatile organic compounds (VOCs), and dioxin are reactive because of the presence of halogens.

Hazard Ranking System (HRS): The principal screening tool used by the EPA to evaluate relative risks to public health and the environment associated with abandoned or uncontrolled hazardous waste sites. The HRS calculates a score based on the potential of hazardous substances spreading from the site through the air, surface water, or groundwater and on other factors such as nearby population. The HRS score is the primary factor in deciding if the site should be on the NPL.

Hazardous Waste: By-products of society that can pose a substantial present or potential hazard to human health and the environment when improperly managed. Hazardous waste possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

Heavy Metals: Metallic elements with high atomic weights, such as arsenic, lead, mercury, and cadmium. Heavy metals are very hazardous even at low concentrations and tend to accumulate in the food chain.

Herbicide: A chemical pesticide designed to control or destroy plants, weeds, or grasses.

Hot Spot: An area or vicinity of a site containing exceptionally high levels of contamination.

Hydrocarbons: Chemical compounds that consist entirely of hydrogen and carbon.

Hydrology: The properties, distribution, and circulation of water.

Hydrogeology: The geology of groundwater, with particular emphasis on the chemistry and movement of water.

Impoundment: A body of water or sludge confined by a dam, dike, floodgate, or other barrier.

Incineration: A group of treatment technologies involving destruction of waste by controlled burning at high temperatures, e.g., burning sludge to reduce the remaining residues to a non-burnable ash that can be disposed of safely on land, in some waters, or in underground locations.

Infiltration: The movement of water or other liquid down through soil from precipitation (rain or snow) or from application of wastewater to the land surface.

Influent: Water, wastewater, or other liquid flowing into a reservoir, basin, or treatment plant.

Injection Well: A well into which waste fluids are placed, under pressure, for purposes of disposal.

Inorganic Chemicals: Chemical substances of mineral origin, not of basic carbon structure.

Installation Restoration Program: The specially funded program established in 1978 under which the Department of Defense has been identifying and evaluating its hazardous waste sites and controlling the migration of hazardous contaminants from those sites.

Intake: The source from where a water supply is drawn, such as from a river or water body.

Interagency Agreement: A written agreement between the EPA and a Federal agency that has the lead for site cleanup activities, setting forth the roles and responsibilities of the agencies for performing and overseeing the activities. States often are parties to interagency agreements.

Interim (Permit) Status: Conditions under which hazardous waste treatment, storage, and disposal facilities, that were operating when regulations under the RCRA became final in 1980, are temporarily allowed by the EPA to continue to operate while awaiting denial or issuance of a permanent permit. The facility must comply with certain regulations to maintain interim status.

Lagoon: A shallow pond or liquid waste containment structure. Lagoons typically are used for the storage of wastewaters, sludges, liquid wastes, or spent nuclear fuel.

Landfarm: To apply waste to land or incorporate waste into the surface soil, such as fertilizer or soil conditioner. This practice commonly is used for disposal of composted wastes and sludges.

Landfill: A disposal facility where waste is placed in or on land. *Sanitary* landfills are disposal sites for non-hazardous solid wastes. The waste is spread in layers, compacted to the smallest practical volume, and covered with soil at the end of each operating day. Secure *chemical* landfills are disposal sites for hazardous waste. They are designed to minimize the chance of release of hazardous substances into the environment [see Resource Conservation and Recovery Act].

Leach, Leaching [v.t.]: The process by which soluble chemical components are dissolved and carried through soil by water or some other percolating liquid.

Leachate [n]: The liquid that trickles through or drains from waste, carrying soluble components from the waste.

Leachate Collection System: A system that gathers liquid that has leaked into a landfill or other waste disposal area and pumps it to the surface for treatment.

Liner: A relatively impermeable barrier designed to prevent leachate (waste residue) from leaking from a landfill. Liner materials include plastic and dense clay.

Long-term Remedial Phase: Distinct, often incremental, steps that are taken to solve site pollution problems. Depending on the complexity, site cleanup activities can be separated into several of these phases.

Long-term Response Action: An action which requires a continuous period of on-site activity before cleanup goals are achieved. These actions typically include the extraction and treatment of groundwater and monitoring actions.

Marsh: A type of wetland that does not contain peat moss deposits and is dominated by vegetation. Marshes may be either fresh or saltwater and tidal or non-tidal [see Wetland].

Migration: The movement of oil, gas, contaminants, water, or other liquids through porous and permeable soils or rock.

Mill Tailings: [See Mine Tailings].

Mine Tailings: A fine, sandy residue left from mining operations. Tailings often contain high concentrations of lead, uranium, and arsenic or other heavy metals.

Mitigation: Actions taken to improve site conditions by limiting, reducing, or controlling toxicity and contamination sources.

Modeling: A technique using a mathematical or physical representation of a system or theory that tests the effects that changes on system components have on the overall performance of the system.

Monitoring Wells: Special wells drilled at specific locations within, or surrounding, a hazardous waste site where groundwater can be sampled at selected depths and studied to obtain such information as the direction in which groundwater flows and the types and amounts of contaminates present.

National Priorities List (NPL): The EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term cleanup under Superfund. The EPA is required to update the NPL at least once a year.

Natural Attenuation: [See Attenuation].

Neutrals: Organic compounds that have a relatively neutral pH, complex structure and, due to their organic bases, are easily absorbed into the environment. Water is the most commonly known neutral, however, naphthalene, pyrene, and trichlorobenzene also are examples of neutrals.

Nitroaromatics: Common components of explosive materials, which will explode if activated by very high temperatures or pressures; 2,4,6-Trinitrotoluene (TNT) is a nitroaromatic.

Notice Letter: A General Notice Letter notifies the parties potentially responsible for site contamination of their possible liability. A Special Notice Letter begins a 60-day formal period of negotiation during which the EPA is not allowed to start work at a site or initiate enforcement actions against potentially responsible parties, although the EPA may undertake certain investigatory and planning activities.

The 60-day period may be extended if the EPA receives a good faith offer from the PRPs within that period. [See also Good Faith Offer].

On-Scene Coordinator (OSC): The predesignated EPA, Coast Guard, or Department of Defense official who coordinates and directs Superfund removal actions or Clean Water Act oil- or hazardous-spill corrective actions.

Operation and Maintenance: Activities conducted at a site after a cleanup action is completed to ensure that the cleanup or containment system is functioning properly.

Organic Chemicals/Compounds: Chemical substances containing mainly carbon, hydrogen, and oxygen.

Outfall: The place where wastewater is discharged into receiving waters.

Overpacking: Process used for isolating large volumes of waste by jacketing or encapsulating waste to prevent further spread or leakage of contaminating materials. Leaking drums may be contained within oversized barrels as an interim measure prior to removal and final disposal.

Pentachlorophenol (PCP): A synthetic, modified petrochemical that may be used as a wood preservative because of its toxicity to termites and fungi. It is a common component of creosotes and can cause cancer.

Perched (groundwater): Groundwater separated from another underlying body of groundwater by a confining layer, often clay or rock.

Percolation: The downward flow or filtering of water or other liquids through subsurface rock or soil layers, usually continuing downward to groundwater.

Pesticide: A substance or mixture of substances intended to prevent, destroy, or repel any pest. If misused, pesticides can accumulate in the foodchain and contaminate the environment.

Petrochemicals: Chemical substances produced from petroleum in refinery operations and as fuel oil residues. These include fluoranthene, chrysene, mineral spirits, and refined oils. Petrochemicals are the bases from which volatile organic compounds (VOCs), plastics, and many pesticides are made. These chemical substances often are toxic to humans and the environment.

Phenols: Organic compounds that are used in plastics manufacturing and are by-products of petroleum refining, tanning, textile, dye, and resin manufacturing. Phenols are highly poisonous.

Physical Chemical Separation: The treatment process of adding a chemical to a substance to separate the compounds for further treatment or disposal.

Pilot Testing: A small-scale test of a proposed treatment system in the field to determine its ability to clean up specific contaminants.

Plugging: The process of stopping the flow of water, oil, or gas into or out of the ground through a borehole or well penetrating the ground.

Plume: A body of contaminated groundwater flowing from a specific source. The movement of the groundwater is influenced by such factors as local groundwater flow patterns, the character of the aquifer in which groundwater is contained, and the density of contaminants [see Migration].

Pollution: Generally, the presence of matter or energy whose nature, location, or quantity produces undesired health or environmental effects.

Polycyclic Aromatic Hydrocarbons or Polyaromatic Hydrocarbons (PAHs): PAHs, such as pyrene, are a group of highly reactive organic compounds found in motor oil. They are a common component of creosotes and can cause cancer.

Polychlorinated Biphenyls (PCBs): A group of toxic chemicals used for a variety of purposes including electrical applications, carbonless copy paper, adhesives, hydraulic fluids, microscope immersion oils, and caulking compounds. PCBs also are produced in certain combustion processes. PCBs are extremely persistent in the environment because they are very stable, non-reactive, and highly heat resistant. Chronic exposure to PCBs is believed to cause liver damage. It also is known to bioaccumulate in fatty tissues. PCB use and sale was banned in 1979 with the passage of the Toxic Substances Control Act.

Polynuclear Aromatic Hydrocarbons (PNAs): PNAs, such as naphthalene, and biphenyls, are a group of highly reactive organic compounds that are a common component of creosotes, which can be carcinogenic.

Polyvinyl Chloride (PVC): A plastic made from the gaseous substance vinyl chloride. PVC is used to make pipes, records, raincoats, and floor tiles. Health risks from high concentrations of vinyl chloride include liver cancer and lung cancer, as well as cancer of the lymphatic and nervous systems.

Potable Water: Water that is safe for drinking and cooking.

Potentially Responsible Parties (PRPs): Parties associated with a Superfund site who may be liable for the cost of remedying the release of hazardous substances. This may include owners or operators of the site or transporters who disposed of materials at the site. PRPs may admit liability, or liability may be determined by a court of law. PRPs may sign a Consent Decree or Administrative Order on Consent to participate in the site cleanup without admitting liability.

Precipitation: The removal of solids from liquid waste so that the solid and liquid portions can be disposed of safely; the removal of particles from airborne emissions. Electrochemical precipitation is the use of an anode or cathode to remove the hazardous chemicals. Chemical precipitation involves the addition of some substance to cause the solid portion to separate.

Preliminary Assessment: The process of collecting and reviewing available information about a known or suspected waste site or release to determine if a threat or potential threat exists.

Pump and Treat: A groundwater cleanup technique involving the extracting of contaminated groundwater from the subsurface and the removal of contaminants, using one of several treatment technologies.

Radionuclides: Elements, including radium and uranium-235 and -238, which break down and produce radioactive substances due to their unstable atomic structure. Some are man-made, and others are naturally occurring in the environment. Radon, the gaseous form of radium, decays to form alpha particle radiation, which cannot be absorbed through skin. However, it can be inhaled, which allows alpha particles to affect unprotected tissues directly and thus cause cancer. Radiation also occurs naturally through the breakdown of granite.

RCRA: [See Resource Conservation and Recovery Act].

Recharge Area: A land area where rainwater saturates the ground and soaks through the earth to reach an aquifer.

Record of Decision (ROD): A public document that explains which cleanup alternative(s) will be used to clean up sites listed on the NPL. It is based on information generated during the remedial investigation and feasibility study and consideration of public comments and community concerns.

Recovery Wells: Wells used to withdraw contaminants or contaminated groundwater.

Recycle: The process of minimizing waste generation by recovering usable products that might otherwise become waste.

Remedial Action (RA): The actual construction or implementation phase of a Superfund site cleanup following the remedial design [see Cleanup].

Remedial Design: A phase of site cleanup where engineers design the technical specifications for cleanup remedies and technologies.

Remedial Investigation: An in-depth study designed to gather the data necessary to determine the nature and extent of contamination at a Superfund site, establish the criteria for cleaning up the site, identify the preliminary alternatives for cleanup actions, and support the technical and cost analyses of the alternatives. The remedial investigation is usually done with the feasibility study. In this volume, the remedial investigation is referred to as a site study [see also Feasibility Study].

Remedial Project Manager (RPM): The EPA or State official responsible for overseeing cleanup actions at the site.

Remedy Selection: The selection of the final cleanup strategy for the site. At the few sites where the EPA has determined that initial response actions have eliminated site contamination, or that any remaining contamination will be naturally dispersed without further cleanup activities, a "No Action" remedy is selected [see Record of Decision].

Removal Action: Short-term immediate actions taken to address releases of hazardous substances [see Cleanup].

Residual: The amount of a pollutant remaining in the environment after a natural or technological process has taken place, e.g., the sludge remaining after initial wastewater treatment, or the particulates remaining in air after the air passes through a scrubber.

Resource Conservation and Recovery Act (RCRA): A Federal law that established a regulatory system to track hazardous substances from the time of generation to disposal. The law requires safe and secure procedures to be used in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent new, uncontrolled hazardous waste sites.

Retention Pond: A small body of liquid used for disposing of wastes and containing overflow from production facilities. Sometimes retention ponds are used to expand the capacity of such structures as lagoons the store waste.

Runoff: The discharge of water over land into surface water. It can carry pollutants from the air and land and spread contaminants from its source.

Scrubber: An air pollution control device that uses a spray of water or reactant or a dry process to trap pollutants in emissions.

Sediment: The layer of soil, sand, and minerals at the bottom of surface waters such as streams, lakes, and rivers, that absorbs contaminants.

Seeps: Specific points where releases of liquid, usually leachate, form from waste disposal areas, particularly along the lower edges of landfills.

Seepage Pits: A hole, shaft, or cavity in the ground used for the storage of liquids, usually in the form of leachate, from waste disposal areas. The liquid gradually leaves the pit by moving through the surrounding soil.

Septage: Residue remaining in a septic tank after the treatment process.

Sinkhole: A hollow depression in the land surface in which drainage collects; associated with underground caves and passages that facilitate the movement of liquids.

Site Characterization: The technical process used to evaluate the nature and extent of environmental contamination, which is necessary for choosing and designing cleanup measures and monitoring their effectiveness.

Site Inspection: The collection of information from a hazardous waste site to determine the extent and severity of hazards posed by the site. It 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 that requires a prompt removal action.

Slag: The fused refuse or dross separated from a metal in the process of smelting.

Sludge: Semi-solid residues from industrial or water treatment processes that may be contaminated with hazardous materials.

Slurry Wall: Barriers used to contain the flow of contaminated groundwater or subsurface liquids. Slurry walls are constructed by digging a trench around a contaminated area and filling the trench with an impermeable material that prevents water from passing through it. The groundwater or contaminated liquids trapped within the area surrounded by the slurry wall can be extracted and treated.

Smelter: A facility that melts or fuses ore, often with an accompanying chemical change, to separate the metal. Emissions from smelters are known to cause pollution.

Soil Gas: Gaseous elements and compounds that occur in the small spaces between particles of soil. Such gases can move through or leave the soil or rock, depending on changes in pressure.

Soil Vapor Extraction: A treatment process that uses vacuum wells to remove hazardous gases from soil.

Soil Washing: A water-based process for mechanically scrubbing soils in-place to remove undesirable materials. There are two approaches: dissolving or suspending them in the wash solution for later treatment by conventional methods, and concentrating them into a smaller volume of soil through simple particle size separation techniques [see Solvent Extraction].

Stabilization: The process of changing an active substance into inert, harmless material, or physical activities at a site that act to limit the further spread of contamination without actual reduction of toxicity.

Solidification/Stabilization: A chemical or physical reduction of the mobility of hazardous constituents. Mobility is reduced through the binding of hazardous constituents into a solid mass with low permeability and resistance to leaching.

Solvent: A substance capable of dissolving another substance to form a solution. The primary uses of industrial solvents are as cleaners for degreasing, in paints, and in pharmaceuticals. Many solvents are flammable and toxic to varying degrees.

Solvent Extraction: A means of separating hazardous contaminants from soils, sludges, and sediment, thereby reducing the volume of the hazardous waste that must be treated. It generally is used as one in a series of unit operations. An organic chemical is used to dissolve contaminants as opposed to water-based compounds, which usually are used in soil washing.

Sorption: The action of soaking up or attracting substances. It is used in many pollution control systems.

Special Notice Letter: [See Notice Letter].

Stillbottom: Residues left over from the process of recovering spent solvents.

Stripping: A process used to remove volatile contaminants from a substance [see Air Stripping].

Sumps: A pit or tank that catches liquid runoff for drainage or disposal.

Superfund: The program operated under the legislative authority of the CERCLA and Superfund Amendments and Reauthorization Act (SARA) to update and improve environmental laws. The program has the authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health, welfare, or the environment. The "Superfund" is a trust fund that finances cleanup actions at hazardous waste sites.

Surge Tanks: A holding structure used to absorb irregularities in flow of liquids, including liquid waste materials.

Swamp: A type of wetland that is dominated by woody vegetation and does not accumulate peat moss deposits. Swamps may be fresh or saltwater and tidal or non-tidal [see Wetlands].

Thermal Treatment: The use of heat to remove or destroy contaminants from soil.

Treatability Studies: Testing a treatment method on contaminated groundwater, soil, etc., to determine whether and how well the method will work.

Trichloroethylene (TCE): A stable, colorless liquid with a low boiling point. TCE has many industrial applications, including use as a solvent and as a metal degreasing agent. TCE may be toxic to people when inhaled, ingested, or through skin contact and can damage vital organs, especially the liver [see Volatile Organic Compounds].

Unilateral [Administrative] Order: [see Administrative Order].

Upgradient: An upward hydrologic slope; demarks areas that are higher than contaminated areas and, therefore, are not prone to contamination by the movement of polluted groundwater.

Vacuum Extraction: A technology used to remove volatile organic compounds (VOCs) from soils. Vacuum pumps are connected to a series of wells drilled to just above the water table. The wells are sealed tightly at the soil surface, and the vacuum established in the soil draws VOC-contaminated air from the soil pores into the well, as fresh air is drawn down from the surface of the soil.

Vegetated Soil Cap: A cap constructed with graded soils and seed for vegetative growth, to prevent erosion [see Cap].

Vitrification: The process of electrically melting wastes and soils or sludges to bind the waste in a glassy, solid material more durable than granite or marble and resistant to leaching.

Volatile Organic Compounds (VOCs): VOCs are manufactured as secondary petrochemicals. They include light alcohols, acetone, trichloroethylene, perchloroethylene, dichloroethylene, benzene, vinyl chloride, toluene, and methylene chloride. These potentially toxic chemicals are used as solvents, degreasers, paints, thinners, and fuels. Because of their volatile nature, they readily evaporate into the air, increasing the potential exposure to humans. Due to their low water solubility, environmental persistence, and widespread industrial use, they are commonly found in soil and groundwater.

Waste Treatment Plant: A facility that uses a series of tanks, screens, filters, and other treatment processes to remove pollutants from water.

Wastewater: The spent or used water from individual homes or industries.

Watershed: The land area that drains into a stream or other water body.

Water Table: The upper surface of the groundwater.

Weir: A barrier to divert water or other liquids.

Wetland: An area that is regularly saturated by surface or groundwater and, under normal circumstances, is capable of supporting vegetation typically adapted for life in saturated soil conditions. Wetlands are critical to sustaining many species of fish and wildlife. Wetlands generally include swamps, marshes, and bogs. Wetlands may be either coastal or inland. Coastal wetlands have salt or brackish (a mixture of salt and fresh) water, and most have tides, while inland wetlands are non-tidal and freshwater. Coastal wetlands are an integral component of estuaries.

Wildlife Refuge: An area designated for the protection of wild animals, within which hunting and fishing are either prohibited or strictly controlled.

Some Common Contaminants at NPL Sites

Contaminant Category	Example Chemical Types	Sources	Potential Health Threats*
Heavy Metals	Arsenic, Barium, Beryllium, Cadmium, Cobalt, Copper, Chromium, Lead, Manganese, Mercury, Nickel, Silver, Selenium, Zinc	Electroplating, batteries, paint pigments, photography, smelting, thermometers, fluorescent lights, solvent recovery	Tumors, cancers, and kidney, brain, neurological, bone and liver damage
Volatile Organic Compounds (VOCs)	Trichloroethylene (TCE), Perchloroethylene (PCE), Acetone, Benzene, Ketone, Methyl chloride, Toluene, Vinyl Chloride, Dichlorethylene	Solvents and degreasers, gasoline octane enhancers, oils and paints, dry cleaning fluids, chemical manufacturing.	Cancers, kidney and liver damage, impairment of the nervous system resulting in sleepiness and headaches, leukemia
Pesticides/ Herbicides	Chlordane, DDT 4-4, DDE, Heptachlor, Aldrin, Endrin, Atrazine, Dieldrin, Toxaphene	Agricultural applications, pesticide and herbicide production	Various effects ranging from nausea to nervous disorders. Dioxin is a common by-product of the manufacture of pesticides and is both highly toxic and a suspected carcinogen.
Polychlorinated biphenyls (PCBs)	—	Electric transformers and capacitors, insulators and coolants, adhesives, caulking compounds, carbonless copy paper, hydraulic fluids.	Cancer and liver damage.
Creosotes	Polyaromatic hydrocarbons (PAHs), Polynuclear aromatics (PNAs), Phenolic Tars, Pentachlorophenol (PCP)	Wood preserving, fossil fuel combustion	Cancers and skin ulcerations with prolonged exposure
Radiation (Radionuclides)	Radium-226, Radon, Uranium-235, Uranium-238	Mine tailings, radium products, natural decay of granites	Cancer

Sources: *Toxic Chemicals—What They Are, How They Affect You (EPA, Region 5)*
Glossary of Environmental Terms (EPA, 1988)

**The potential for risk due to these contaminants is linked to a number of factors; for example, the length and level of exposure and environmental and health factors such as age.*

*U.S. G.P.O.:1993-341-835:81021