



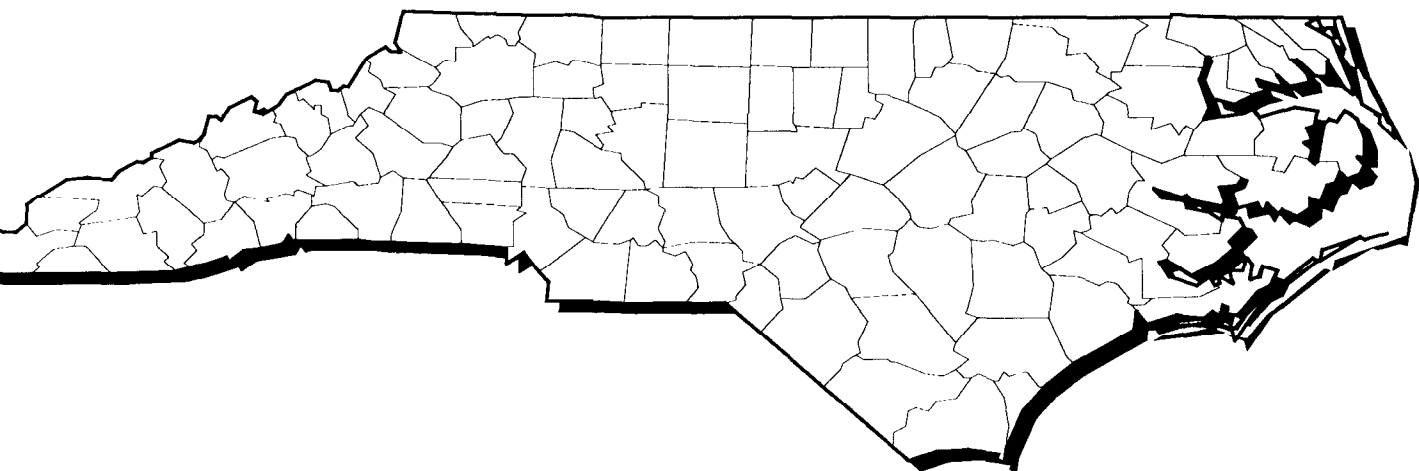
United States
Environmental Protection
Agency

Solid Waste And
Emergency Response
(5102 G)

EPA/540/R-93/031
December 1992
PB93-963232

SUPERFUND:

**Progress at
National
Priority
List Sites**



NORTH CAROLINA 1992 UPDATE



Printed on Recycled Paper

NATIONAL PRIORITIES LIST SITES:
North Carolina

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The complete set of the 49 State reports may be ordered as PB93-963250.

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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-

INTRODUCTION

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.

INTRODUCTION

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



Superfund employee removing drums from a Superfund site.

Program had logged more than 2,300 removal completions since Superfund was established.

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.

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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.

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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.

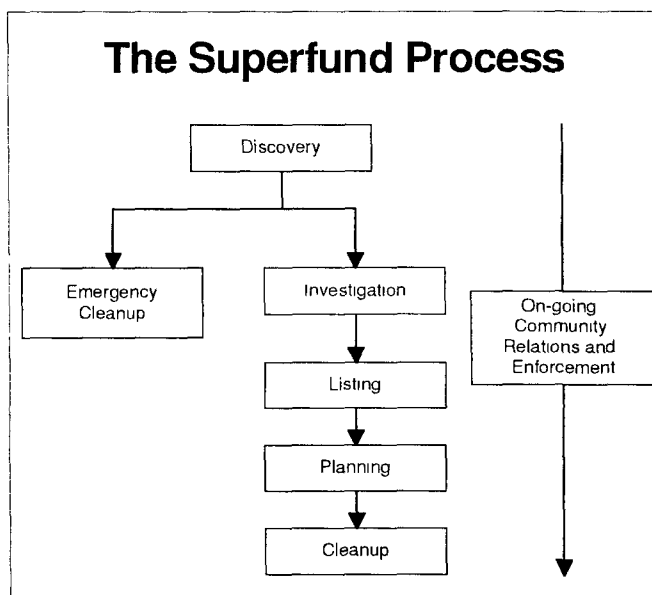
Superfund's cleanup process is arduous and exacting. It requires the best efforts of hundreds of experts in science and engineering, public health, administration and management, law, and many other fields.

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

SITE NAME STATE EPA ID# ABC000000		EPA REGION XX COUNTY NAME LOCATION Other Names:
NPL LISTING HISTORY Provides the dates when the site was Proposed, made Final, and Deleted from the NPL.	Site Description	A
	Site Responsibility:	NPL Listing History Proposed XX/XX/XX Final XX/XX/XX
SITE RESPONSIBILITY Identifies the Federal, State, and/or potentially responsible parties taking responsibility for cleanup actions at the site.	Threats and Contaminants	B
	Cleanup Approach	C
ENVIRONMENTAL PROGRESS Summarizes the actions to reduce the threats to nearby residents and the surrounding environment and the progress towards cleaning up the site.	Response Action Status	D
	Site Facts:	E
	Environmental Progress	
	Site Repository	

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.

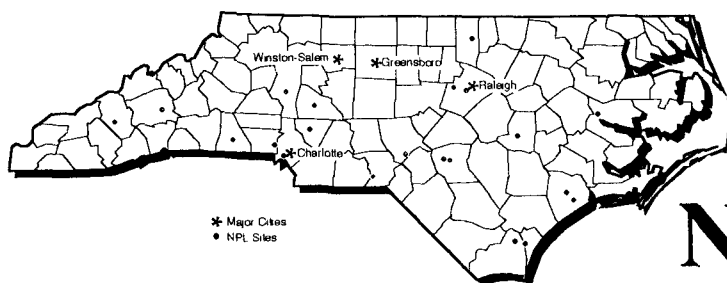


Cleanup Ongoing indicates that the selected cleanup remedies for the contaminated site, or part of the site, currently are underway.



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



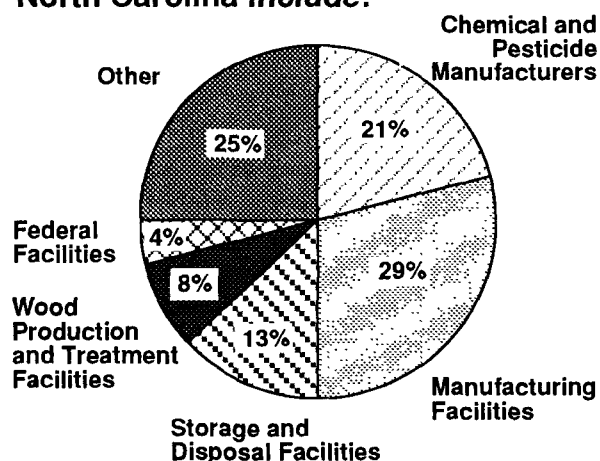
Superfund Activities in North Carolina

The State of North Carolina is located within EPA Region 4, which includes the eight southeastern States. The State covers 52,669 square miles. According to the 1990 Census, North Carolina experienced a 13 percent increase in population between 1980 and 1990, and is ranked tenth in U.S. population with approximately 6,629,000 residents.

The North Carolina Comprehensive Environmental Response Act of 1987 grants the State the authority to order polluters to conduct cleanup activities or, if the polluters refuse, to recover the cost of cleanup from the polluters. In practice, the State must seek voluntary action from the polluters before issuing orders or taking direct action. If a polluter refuses to participate in cleanup activities, the State must demonstrate that a site poses a threat to public health or the environment, as well as prove that its expenses were reasonable for recovering the cost of cleanup. The statute also created the Inactive Hazardous Sites Cleanup Fund, which is used to fund the 10 percent contribution from the State required by the Federal Superfund program in addition to State cleanup activities at Superfund sites, including emergency response actions, removals, studies and design, and long-term cleanup actions. Emergency cleanup actions also are funded by the Emergency Response Fund, established by the North Carolina Waste Management Act. The State requires that a notice and summary of the cleanup plan be published weekly for three weeks in a local newspaper. A copy of the plan also must be filed with the register of deeds before approval. Before a State-funded cleanup can proceed, a 45-day public comment period is required. Currently, 22 sites in the State of North Carolina have been listed as final on the NPL; one has been deleted. One new site has been proposed for listing in 1992.

The Division of Environment, Health, & Natural Resources implements the Superfund Program in the State of North Carolina

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



Facts about the 24 NPL sites in North Carolina:



Immediate Actions (such as removing hazardous substances or restricting site access) were performed at 17 sites.



Two sites endanger sensitive environments.

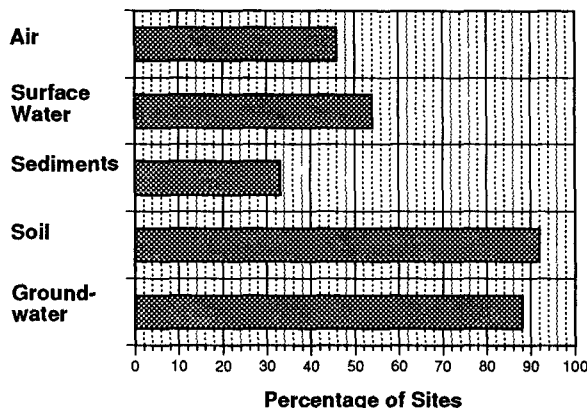


Nineteen sites are located near residential areas.

NORTH CAROLINA

Most Sites Have Multiple Contaminants and Contaminated Media:

Media Contaminated at Sites



Contaminants Found at Sites

Percentage of Sites	
VOCs	67%
Heavy Metals	54%
PCBs	25%
Pesticides/Herbicides	21%
Creosotes	17%
Petrochemicals/Explosives	13%
Bromoform	4%
Dioxin	4%
Plastics	4%

The Potentially Responsible Party Pays...

In the State of North Carolina, potentially responsible parties are paying for or conducting cleanup activities at 14 sites.

For Further Information on NPL Sites and Hazardous Waste Programs in the State of North 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
☎ Division of Environment, Health & Natural Resources: Superfund Section of the Solid Waste Management Division	For information about the State's responsibility in the Superfund Program	(919) 733-2801
☎ 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.

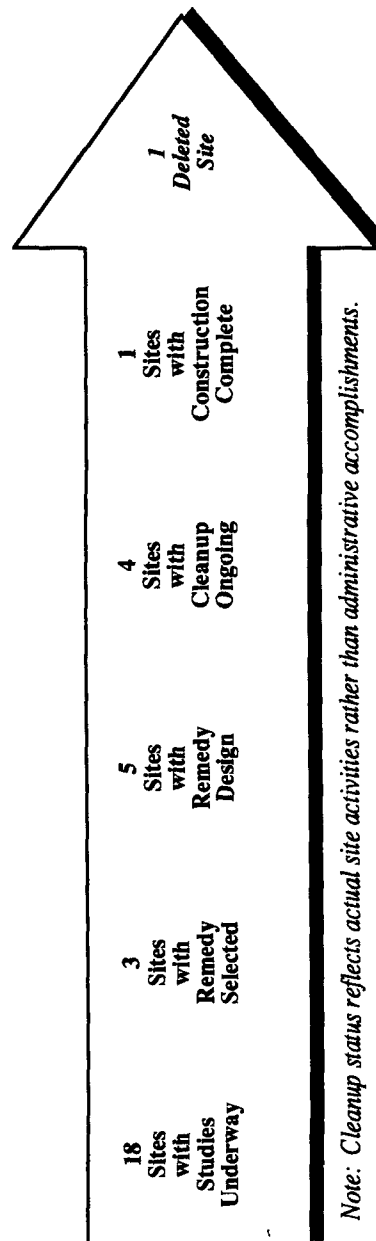
Further information on the activities and progress at each site is given in the site "Fact Sheets" published in this volume.

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

Site Name	County	NPL	Date	Initial Response	Site Studies	Remedy Selected	Remedy Design	Cleanup Ongoing	Construction Complete	Deleted
ABC ONE HOUR CLEANERS	ONslow	Final	03/31/89		☐					
ABERDEEN PESTICIDE DUMPS	MOORE	Final	03/31/89	☐	☐	☐	☐			
BENFIELD INDUSTRIES, INC.	HAYWOOD	Final	10/04/89		☐					
BYPASS 601 GROUNDWATER CONTAMINATION	CABARRUS	Final	06/10/86	☐	☐	☐				
CAMP LEJEUNE MILITARY RESERV.	ONslow	Final	10/04/89		☐					
CAPE FEAR WOOD PRESERVING	CUMBERLAND	Final	07/22/87	☐	☐	☐	☐			
CAROLINA TRANSFORMER CO.	CUMBERLAND	Final	07/22/87	☐	☐	☐				
CELANESE CORP. (SHELBY FIBER OPERATIONS)	CLEVELAND	Final	06/01/86		☐	☐	☐	☐		
CHARLES MACON LAGOON & DRUM CHEMTRONICS, INC.	RICHMOND	Final	07/22/87	☐	☐	☐	☐		☐	
F C X, INC. (STATESVILLE PLANT)	BUNCOMBE	Final	09/01/83	☐	☐	☐				
F C X, INC. (WASHINGTON PLANT)	IREDELL	Final	02/16/90	☐	☐					
GEIGY CHEMICAL CORPORATION	BEAUFORT	Final	03/31/89	☐	☐					
GENERAL ELECTRIC CO./SHEPARD FARM	MOORE	Final	10/04/89	☐	☐					
HEVI-DUTY ELECTRIC COMPANY	HENDERSON	Proposed	02/09/89	☐	☐					
JADCO-HUGHES	WAYNE	Final	08/30/90	☐	☐					
JFD ELECTRONICS/CHANNEL MASTER	GASTON	Final	06/01/86	☐	☐	☐	☐			
KOPPERS CO., INC. (MORRISVILLE PLNT)	GRANVILLE	Final	10/04/89	☐	☐					
MARTIN-MARIETTA, SODYECO, INC.	WAKE	Final	03/31/89	☐	☐					
NATIONAL STARCH & CHEMICAL CORP.	MECKLENBURG	Final	09/01/83	☐	☐	☐	☐	☐	☐	
N.C. STATE UNIVERSITY (LOT 86 FARM UNIT #1)	ROWAN	Final	10/04/89		☐	☐	☐			
NEW HANOVER COUNTY AIRPORT	WAKE	Final	06/10/86		☐					
BURNPIT	NEW HANOVER	Final	03/31/89	☐	☐					
PCB SPILLS	HALIFAX	Deleted	03/07/86		☐	☐	☐	☐	☐	✓

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

Site Name	County	NPL	Date	Initial Response	Site Studies	Remedy Selected	Remedy Design	Cleanup Ongoing	Construction Complete	Deleted
POTTER'S SEPTIC TANK SERVICES PITTS	BRUNSWICK	Final	03/31/89	⇨	⇨					
SKINNER LANDFILL	BUTLER	Final	09/08/83		⇨					
SOUTH POINT PLANT	LAWRENCE	Final	09/21/84		⇨					
SUMMIT NATIONAL	PORTAGE	Final	09/08/83	⇨	⇨	⇨				
TRW, INC. (MINERVA PLANT)	STARK	Final	03/31/89	⇨	⇨	⇨	⇨			⇨
UNITED SCRAP LEAD COMPANY, INC.	MIAMI	Final	09/21/84	⇨	⇨	⇨	⇨			
VAN DALE JUNKYARD	WASHINGTON	Final	06/10/86		⇨					
WRIGHT-PATTERSON AIR FORCE BASE	GREENE	Final	10/04/89	⇨	⇨					
ZANESVILLE WELL FIELD	MUSKINGUM	Final	09/08/83		⇨					

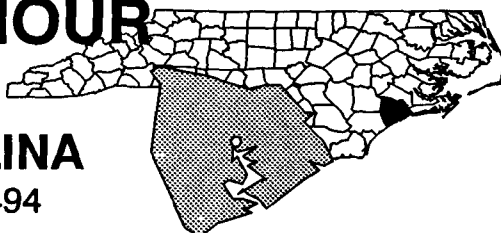


Note: Cleanup status reflects actual site activities rather than administrative accomplishments.

ABC ONE HOUR CLEANERS

NORTH CAROLINA

EPA ID# NCD024644494



EPA REGION 4

Onslow County
Jacksonville

Site Description

The 1-acre ABC One Hour Cleaners site has operated as a dry cleaning operation since 1954. Facilities previously consisted of three buildings, but two of the buildings were joined to form one complex. Workers stored tetrachloroethylene (PCE), a dry-cleaning solvent, in a 250-gallon aboveground tank. The only hazardous wastes known to be generated at the site were from the recycling wastes still that was used to reclaim spent solvents. Until about 1985, wastes were buried on the site, although operators now send them to an EPA-approved hazardous waste facility. A septic tank/soil absorption system, consisting of an underground concrete tank and lid, has always been used to store wastewater. All these processes are housed in the rear building. In 1984, the nearby Camp Lejeune Marine Corps Base, also proposed for the NPL in 1988, sampled 40 community drinking water supply wells. Analysts found organic compounds in three wells near two off-base dry cleaners. Investigations by the North Carolina Department of Natural Resources and Community Development narrowed the source of the contamination to ABC Cleaners. After inspecting the site, the State found that the stored solvent was entering the septic tank/soil absorption system and was polluting groundwater. This system since has been taken out of service. State analysts also identified PCE in a monitoring well at ABC Cleaners and in two community wells near the site. Approximately 41,000 people obtain drinking water from three public well systems within 3 miles of the site.

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

NPL LISTING HISTORY

Proposed Date: 06/24/88

Final Date: 03/31/89

Threats and Contaminants



The groundwater is contaminated with volatile organic compounds (VOCs), mainly PCE. Nearby residents' health may be threatened if they drink or come in direct contact with contaminated groundwater.

Cleanup Approach

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

Response Action Status



Entire Site: The EPA began an intensive study of site conditions in 1989. This investigation will explore the nature and extent of groundwater contamination and will recommend the best strategies for final cleanup. It is slated for completion in 1992, with cleanup activities scheduled to start soon thereafter.

Environmental Progress



After adding this site to the NPL, the EPA performed preliminary site investigations and determined that the ABC One Hour Cleaners site was safe to the surrounding community and the environment while the investigation leading to the selection of final cleanup remedies is taking place.

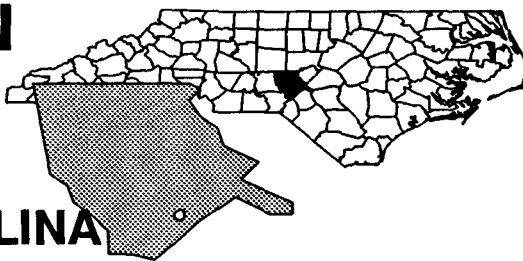
Site Repository



Cnslow County Public Library, 58 Doris Avenue, East, Jacksonville, NC 28540

ABERDEEN PESTICIDE DUMPS NORTH CAROLINA

EPA ID# NCD980843346



EPA REGION 4

Moore County
Aberdeen

Other Names:
Fairway Six Dump
Twin Dumps
McIver Pesticide Dump
Route 211 Dump
Farm Chemicals, Inc. Dump

Site Description

The Aberdeen Pesticide Dumps are a cluster of five pesticide dumps ranging in size from 1/2 to 1 1/2 acres within 2 miles of one another; all but one are privately owned. They were discovered in 1984 during construction of a golf course. That same year, the North Carolina Solid and Hazardous Waste Management Branch found several bags of pesticides and noted a strong chemical odor at the site. State analysis revealed soil contamination caused by various pesticides. Soils at two other properties also were found to be contaminated with pesticides. One property is owned by the town of Aberdeen, and the other, 350 feet away, is privately owned. Both are 500 feet from the Farm Chemicals operation, where a string of owners has manufactured pesticides since the 1930s. A citizen tip led the State to the McIver dump in 1984, where officials found 200 to 300 55-gallon pesticide drums in a leased rubble landfill. Further investigations disclosed another area where pesticides had been dumped. Under a State order, Farm Chemicals and the lessee of the property removed the drums in 1985. After the EPA began emergency cleanup at three of the dumps, the owner of another dump reported site contamination to authorities. The State found a pile of cardboard containers, pesticide bags, powders, and tarry residues. The last discovered dump is located on the site of the long-standing pesticide manufacturer. Soils at all five areas contain pesticide residues and are permeable, facilitating movement of contaminants into groundwater. Nearby Page's Lake also is threatened. Four of Aberdeen's 12 municipal wells are contaminated with forms of lindane; two wells were shut down in 1986 and 1990 because levels were sufficiently elevated to present a health risk. Approximately 15 other off-site wells contained various forms of lindane. The surrounding area is rural. Approximately 3,500 people live within the municipal well service area. In addition, approximately 2,000 people are served by private wells in the area.

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

NPL LISTING HISTORY

Proposed Date: 01/22/87

Final Date: 03/31/89

Threats and Contaminants



Fifteen off-site wells contained various pesticides, as did soil in many unlined trenches. On-site soils contain DDT and its components and toxaphene. People may be exposed to contaminants through direct contact with pure pesticide products in surface and subsurface soil. Other health risks include ingestion or direct contact with contaminated groundwater.

Cleanup Approach

This site is being addressed in four stages: emergency actions and three long-term remedial phases focusing on cleanup of the entire site, the Fairway Six Disposal Area, and the environmental risks and groundwater cleanup.

Response Action Status



Emergency Actions: In 1985, EPA emergency workers removing surface contamination at the Fairway Six Area uncovered three large trenches of buried, concentrated pesticide wastes. Wastes, pure product, packing material, and contaminated soil were excavated and transported to an EPA-approved disposal facility. Wastes and contaminated soil were removed from the Twin Sites Area and the McIver Dump Area "B"; workers shipped more than 450 truckloads to an EPA-approved facility for disposal. In 1985, under State order, two parties potentially responsible for contamination at the McIver Dump Area "B" steam-cleaned, triple-rinsed, and crushed nearly 700 drums and sent them to the Moore County landfill. Another emergency action occurred in 1986 at the Route 211 Area. Five truckloads (100 tons) of pesticide-contaminated soil were shipped off site to an EPA-approved facility for disposal. After pesticides were detected in Aberdeen's drinking water in 1986, EPA emergency workers returned to discover four more trenches thought to contain about 12 million pounds of pesticide wastes at the Fairway Six Area. An on-site mobile incinerator conducted a test burn in which 12,000 pounds of contaminated soil and debris were incinerated. Incinerator ash was stored in 27 on-site 55-gallon drums. In 1988, EPA workers excavated, shredded, screened, and stockpiled about 55 million pounds of pesticide-contaminated materials, which now await further long-term treatment through the remedial program.



Entire Site: The EPA began an intensive study of contamination at this cluster of dumps in 1987. The investigation was completed in mid-1991. The selected remedy entails thermal treatment of approximately 124,000 cubic yards of contaminated soil at one central location. This volume includes the 22,000 cubic yards of soil at the Fairway Six Area.



Fairway Six Disposal Area: The EPA selected a cleanup remedy for this portion of the site in 1989. It features: (1) excavating and blending stockpiled pesticide-contaminated wastes; (2) burning them in a mobile incinerator on site; (3) recycling wastes from this process back into the incinerator; (4) monitoring air emissions; and (5) disposing of residual ash on the site. Union Carbide Corporation agreed to complete the design and to conduct the cleanup activities. In 1991, the EPA amended the cleanup remedy from incineration to thermal desorption.



Environmental Risks and Groundwater: The EPA is undertaking a study of environmental risks associated with the site and of the nature and extent of groundwater contamination. This study was completed in 1991, however, additional field work is necessary in two areas of the site. A remedy for groundwater cleanup is scheduled for selection in 1992.

Site Facts: Unilateral Administrative Orders were issued to four of the potentially responsible parties, compelling them to implement the cleanup activities at the Fairway Six Disposal Area. One party agreed to comply with the Order.

Environmental Progress



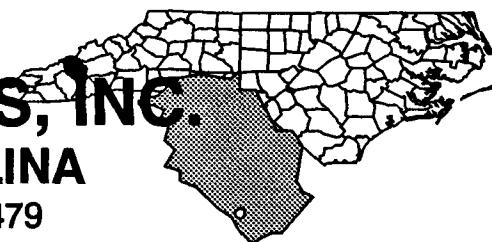
The emergency treatment and/or removal of solid and liquid wastes and soil, as well as the installation of fences, have reduced the potential for exposure to hazardous materials at the Aberdeen Pesticide Dumps site while further cleanup activities are taking place.

Site Repository



Aberdeen Town Hall, 115 North Poplar Street, Aberdeen, NC 28315

**BENFIELD
INDUSTRIES, INC.**
NORTH CAROLINA
EPA ID# NCD981026479



EPA REGION 4
Haywood County
Hazelwood

Site Description

Benfield Industries, Inc. began mixing and packaging bulk chemicals on this 5-acre site in 1976. The company listed a wide range of organic and inorganic chemicals for sale. In 1982, a fire destroyed most of the plant; except for minor mixing operations and cleanup of debris from the fire, operations ceased. In 1986, the owner removed other debris and usable chemicals from the site in preparation to sell the land. The site lies in the flood plain of Richland Creek, next to Browning Branch. Local surface water is used for recreational activities. As of 1985, approximately 1,800 people used drinking water from private wells within a 3-mile radius of the site.

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

NPL LISTING HISTORY

Proposed Date: 06/24/88

Final Date: 10/04/89

Threats and Contaminants



In 1985, the North Carolina Division of Health Services found high concentrations of polycyclic aromatic hydrocarbons (PAHs), produced from chemical packaging activities, in the soil on the western portion of the site and in other areas. If contaminants enter groundwater, people who drink such water may be threatened.

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 EPA initiated an intensive study to evaluate site contamination. This investigation will examine the nature and extent of pollution problems on the site and will recommend the best strategies for final cleanup. It began in early 1991 and is scheduled to conclude in 1992, at which time EPA will select the most effective cleanup methods. As part of the remedial investigation, the site was surrounded by a six foot chain linked fence.

Environmental Progress



After adding this site to the NPL, the EPA performed preliminary investigations and determined that no immediate actions were needed at the Benfield Industries site while further investigations and cleanup activities are taking place.

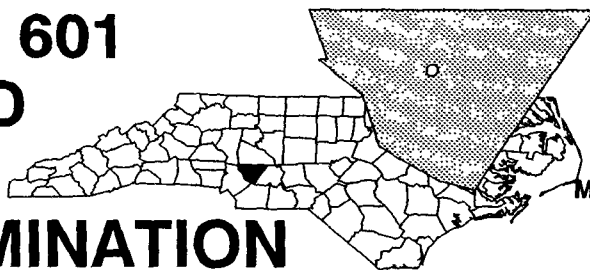
Site Repository



Hazelwood Town Hall, 101 West Georgia Avenue, Hazelwood, NC 28738

BYPASS 601 GROUND WATER CONTAMINATION NORTH CAROLINA

EPA ID# NCD044440303



EPA REGION 4

Cabarrus County
Concord

Other Names:
Martin's Scrap Recycling, Inc.

Site Description

The ByPass 601 Ground Water Contamination site is an area in Concord where the groundwater is contaminated with lead from multiple sources. The best known source is the Martin Scrap Recycling (MSR) Facility, which occupies approximately 13 acres. Past practices included disposing of waste acid on site or selling it for reclamation and using spent battery casings for fill material on site. In 1982, the Department of Health Services for North Carolina notified the site owner that waste materials must be cleaned up or the facility must be closed. In response, the owner removed 2 to 6 inches of soil in the operations area and sold it for reclamation, along with process waste by-products. A permit for hazardous waste disposal was granted to the facility in 1983; groundwater contamination was discovered that same year. Ten other potential sources have been identified and are under investigation. Approximately 3,000 people live in this rural community. Private wells are near the site, and the closest home is within 500 feet.

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

NPL LISTING HISTORY

Proposed Date: 10/01/84

Final Date: 06/10/86

Threats and Contaminants



The groundwater, soil, and surface water are contaminated with heavy metals including lead and chromium. Human health could be threatened if people come in direct contact with contaminated sediments or waters or ingest contaminated groundwater. Public access to the site is restricted by a fence and difficult terrain.

Cleanup Approach

This site is being addressed in three stages: initial actions and two long-term remedial phases focusing on cleanup of the Martin Scrap Recycling area and of the additional sources of contamination.

Response Action Status



Initial Actions: The EPA sampled soil around battery casings in other disposal areas around the MSR facility and is expected to remove the battery casings and contaminated soil to the MSR facility for inclusion in the final remedy.



Martin Scrap Recycling Area: The EPA selected a remedy that entails excavation, consolidation, and capping of contaminated soils. The engineering design of the remedy was completed in 1991.



Additional Sources: In 1990, the EPA began a study to determine the nature and extent of groundwater contamination. Additionally, the EPA is attempting to identify sources of the groundwater contamination. To date, ten sources have been identified. This study is scheduled for completion in 1993.

Environmental Progress



By performing site sampling and the expected removal of battery casings, the EPA will make the ByPass 601 Ground Water Contamination site safer while investigations are being completed and cleanup activities begin.

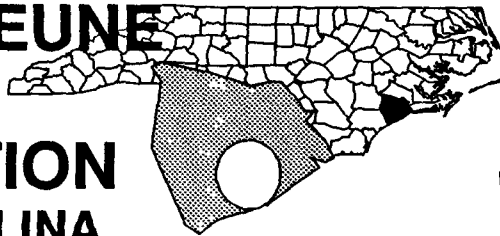
Site Repository



Charles A. Cannon Memorial Library, 27 Union Street, North Concord, NC 28025

CAMP LEJEUNE MILITARY RESERVATION NORTH CAROLINA

EPA ID# NC6170022580



EPA REGION 4

Onslow County
Jacksonville

Other Names:
USMC Camp LeJeune Marine
Corps Base
USMC New River
Marine Corps Air Station

Site Description

Camp LeJeune Military Reservation, a U.S. Marine Corps Base established in 1941, covers 170 square miles in Onslow County. The complex has a number of facilities, including the Marine Corps Air Station New River, which adjoins the base. The main functions of the base are to provide housing, training, logistical, and administrative support for Fleet Marine Force Units. The Navy has identified 77 potential waste disposal areas in Camp LeJeune and has designated 23 as posing a potential threat to public health and the environment. The Navy has detected pesticides in the soil and various contaminants in the groundwater. Several on-base drinking water wells have been closed. Approximately 13,800 people obtain drinking water from wells within 3 miles of the contamination on the site, with the nearest well being 3,500 feet away from one of the areas of contamination. Groundwater is the sole source of drinking water for the base and the surrounding communities. Surface water from the base drains into the Atlantic Ocean via the New River. Both bodies of water are used for fishing and recreational activities.

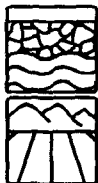
Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY

Proposed Date: 06/24/88

Final Date: 10/04/89

Threats and Contaminants



The groundwater is contaminated with volatile organic compounds (VOCs), such as fuels and chlorinated solvents, from the former disposal activities. Soils are contaminated with mercury, pesticides including DDT, DDE, and aldrin, and polychlorinated biphenyls (PCBs). Because the soil at the site is permeable, conditions are favorable for contaminants to move further into the groundwater. Although several drinking water wells on the base have been shut down, the contaminant plume may affect other wells. People who drink the contaminated water may be at risk.

Cleanup Approach

The site is being addressed in nine long-term remedial phases focusing on cleanup of seventeen sub-sites.

Response Action Status



Sub-site 21, Sub-site 24, and Sub-site 78: The U.S. Marine Corps is currently studying the nature and extent of contamination at Sub-sites 21, 24, and 78. Possible contaminants include pesticides, PCBs, fly ash, solvents, paint stripping compounds, and VOCs such as PCE. The investigation is expected to be completed in 1994, at which time a remedy will be selected to address final cleanup of the contaminants. An interim investigation addressing the PCE contamination of a shallow aquifer also is underway. This study will determine the best alternatives for containing and cleaning up two plumes in the shallow aquifer. The interim remedy is expected to be selected in 1992.



Sub-site 6 and Sub-site 9: Field work exploring possible sources of contamination such as pesticides, PCBs, and solvents at Sub-site 6 and potential oil, solvents, and contaminated fuels at the fire training pit on Sub-site 9 is expected to begin in late 1992. Once the investigation is completed, expected in 1994, alternative cleanup options will be selected.



Sub-site 48: Field work exploring the nature and extent of mercury contamination at this Sub-site is expected to begin in late 1992. The investigation is expected to be completed in 1994, at which time a final cleanup remedy will be selected for the Sub-site.



Sub-site 69: Field work is expected to begin in late 1992 at this chemical dump Sub-site. The study will be exploring the nature and extent, as well as the possible sources of contamination, including pesticides and other chemical agents. Once the investigation is completed, scheduled for 1995, final cleanup remedies will be selected to address contamination at Sub-site 69.



Sub-site 2 and Sub-site 74: An investigation is scheduled to begin in 1993 to explore the nature and extent of contamination at Sub-site 2 and Sub-site 74. The study will be exploring potential contaminants at these sites including pesticides, PCBs, and grease. Once the investigation is completed, expected in 1994, alternative cleanup options will be selected.



Sub-site 35, Sub-site 36, and Sub-site 41: In 1995, an investigation is expected to begin exploring the nature and extent of contamination at these Sub-sites. The investigation will address potential sources of contamination including municipal and industrial wastes, hydraulic fluids, solvents, and ordinances. The study will identify alternative cleanup options for final remedy selection for the Sub-sites.



Sub-site 1, Sub-site 28, and Sub-site 30: In 1994, an investigation is planned to begin exploring the nature and extent of contamination at these Sub-sites. Potential sources of contamination that will be addressed include petroleum waste, oil, lubricants, battery acids, mixed industrial wastes, and sludge mixed with lead from fuel storage tanks. The investigation is expected to be completed in 1995, at which time alternative cleanup options will be identified to address the Sub-sites' contaminants.



Sub-site 16: An investigation is scheduled to begin in 1994 to explore the nature and extent of waste oil contaminants at this tire debris site. The investigation is expected to be completed in 1995, at which time alternative cleanup options will be identified to address the Sub-site's contaminants.



Sub-site 73: In 1995, an investigation is scheduled to begin exploring the nature and extent of contamination at Sub-site 73. The study will address the 400,000 gallons of waste oils and 20,000 gallons of waste battery acid that possibly contaminate the Sub-site. Once the study is completed, expected in 1996, alternative cleanup options will be selected.

Site Facts: Camp LeJeune is participating in the Installation Restoration Program, a specially funded program established by the Department of Defense (DOD) in 1978, to identify, investigate, and control the migration of hazardous contaminants at military and other DOD facilities.

Environmental Progress



Presently, the DOD is monitoring drinking water supplies, and subsequently is closing wells when contaminant levels exceed health standards. These practices have reduced risks from contamination at this site. After placing the Camp LeJeune Military Reservation site on the NPL, the EPA conducted an initial investigation and determined that the site does not presently pose an immediate threat to the surrounding communities or the environment while studies leading to a final cleanup remedy selection are being conducted by the U.S. Marine Corps.

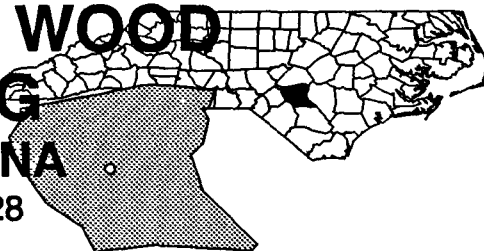
Site Repository



Onslow County Library, 58 Dorris Avenue, East, Jacksonville, NC 28540

CAPE FEAR WOOD PRESERVING NORTH CAROLINA

EPA ID# NCD003188828



EPA REGION 4

Cumberland County
Fayetteville

Site Description

The 41-acre Cape Fear Wood Preserving site contains a 10-acre wood preserving facility. From 1953 until 1983, wood was treated, using both the creosote and the chromated-copper-arsenate (CCA) process. Process wastes were deposited in an unlined treatment lagoon and a surface impoundment. Wastes also were allowed to discharge from a sump into a drainage ditch. Contaminants have been found in the soil, groundwater, a drainage ditch, and a diked pond on the site. Buildings contain asbestos, and CCA crystals were spilled under the process building. The site is vacant, and access is unrestricted. Approximately 1,000 people live within 1/4 mile of the site. About 16,000 people living within 3 miles of the site depend on public wells as a source of drinking water. Land across the road from the site is used for agricultural purposes, and an unnamed creek is nearby.

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

NPL LISTING HISTORY

Proposed Date: 06/10/86

Final Date: 07/22/87

Threats and Contaminants



The groundwater is contaminated with heavy metals including arsenic and chromium, as well as benzene and polycyclic aromatic hydrocarbons (PAHs). The sediments from the pond and surface water from the drainage ditch also are contaminated with PAHs. The soil is contaminated with PAHs and arsenic. People who accidentally come in direct contact with or ingest contaminated soil, sediments, groundwater, or surface water may be exposed to hazardous materials.

Cleanup Approach

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

Response Action Status



Initial Actions: In 1985, the EPA pumped water out of the pond and added fly ash to solidify the sludge. The mixture was removed down to the water table, which was about 7 feet below the surface. The pond then was filled in with soil from the site. A portion of sediment from an unnamed creek also was removed. In addition, sludge was removed from a septic tank. Soils from an unlined lagoon used for disposing CCA-related waste also were removed, backfilled, and regraded. In 1986, the EPA removed creosote from a tank, solidified the creosote with fly ash, and stored these residues on site, under a covered shed. In 1987, the EPA repaired pipes from the tanks, pumped liquids from the pond into on-site tanks, and backfilled the pit. In 1988, the owner dug up the drainage ditch, installed several new drainage ditches, and removed the dike.



Entire Site: In 1989, the EPA selected a remedy for the site that includes: excavating the soil, washing the soil to reduce the volume of contaminated soils, treating contaminated soils by bioremediation to remove the organics, solidifying soils as necessary to contain inorganics, and then placing it back in the excavated area; and extracting the groundwater for treatment. The technical specifications and design for the selected cleanup were approved by the Agency in late 1991. Cleanup is scheduled to begin in late 1992.

Environmental Progress



Initial actions, including pumping and treating contaminated pond water, removing contaminated sediments from a creek, and repairing pipes and drainage ditches, have made the Cape Fear Wood Preserving site safe until further cleanup activities are completed.

Site Repository



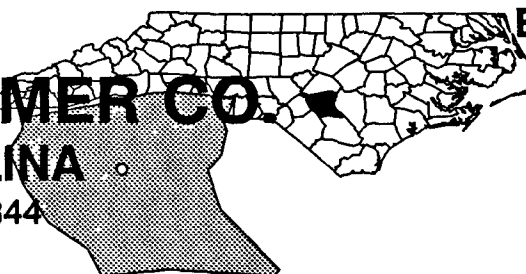
Cumberland County Public Library, 300 Maiden Lane, Fayetteville, NC 28301

CAROLINA

TRANSFORMER CO.

NORTH CAROLINA

EPA ID# NCD003188844



EPA REGION 4

Cumberland County
Near East Fayetteville

Site Description

The Carolina Transformer Co. site is on an approximately 5-acre parcel located in a rural area near East Fayetteville. The site formerly was used as an electrical transformer recycling facility. In response to citizen concerns in 1978, the EPA conducted sampling which revealed contamination of the soil and a shallow residential drinking water well near the site, and trace contamination in Carolina Transformer's deep industrial well. The house with the contaminated shallow well was connected to the public water system in 1979. In 1989, the North Carolina Environmental Services Division inspected the abandoned site and found 98 capacitors, 18 of which were ruptured and leaking onto the soil. The nearest residence is located approximately 250 feet from the site. An estimated 3,000 people reside within a 3-mile radius of the site. A food processing facility also is located next to the site.

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

NPL LISTING HISTORY

Proposed Date: 01/22/87

Final Date: 07/22/87

Threats and Contaminants



Private wells near the site were sampled and contained volatile organic compounds (VOCs); polychlorinated biphenyls (PCBs)-carrier compounds from the former transformer recycling operations were found in a shallow residential drinking water well about 250 feet west of the site. Soil on the site and nearby surface waters are contaminated with PCBs and PCB-carrier compounds (chlorobenzenes). Removing contaminated soils and filling in the excavated areas with clean fill have reduced potential risks on site, but exposure to off-site contaminated soils, sediments, and surface waters still may exist. Potential risks exist to individuals who come in direct contact with or accidentally ingest contaminated surface water, groundwater, soils, or sediments; inhale contaminated dusts; or consume agricultural crops that contain bioaccumulated contaminants.

Cleanup Approach

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

Response Action Status



Immediate Actions: In 1984, the EPA removed 975 tons of contaminated soil, transported it to a federally approved facility, and then fenced the area.

Residences with contaminated groundwater were connected to the public water supply. In early 1990, the EPA completed a removal of 98 leaking capacitors that had been disposed of at the site after the 1984 removal activities were completed.



Entire Site: The EPA completed an investigation into the nature and extent of contamination at the site in mid-1991. The final cleanup remedy includes solvent extraction of the contaminated soil; extraction and treatment of groundwater; demolition of the roof and walls of the building remaining on site; and disposal of residual solid waste and debris. The design phase for the remedy is expected to begin in late 1992.

Site Facts: The EPA has sued Carolina Transformer Co. for cost recovery and treble damages for not complying with an Administrative Order to clean up the site.

Environmental Progress



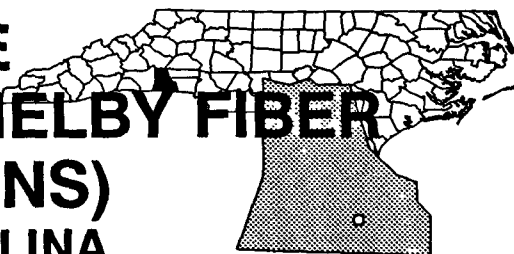
The removal of contaminated soils from the site, the provision of a safe drinking water source, and the construction of a fence have reduced the potential for exposure to hazardous materials at the Carolina Transformer Co. site while the technical design phase for the final cleanup remedy is being planned.

Site Repository



Cumberland County Public Library, 300 Maiden Lane, Fayetteville, NC 28301

**CELANESE
CORP. (SHELBY FIBER
OPERATIONS)
NORTH CAROLINA**
EPA ID# NCD003446721



EPA REGION 4

Cleveland County
Shelby

Other Names:
Fiber Industries, Inc.
Shelby Fiber Operations

Site Description

The Celanese Corporation began operations in 1983 on 450 acres of this site near Shelby. The plant, a polyester raw material production facility, consists of a manufacturing area, a wastewater treatment area, a waste disposal area, and a recreational and tree farming area. Operations at the site began in 1960 by Fibers Industries, Inc., a manufacturer of polyester polymer chips and filament yarn. Chemical wastes were disposed of directly into a drainage ditch during the early years of operation, prior to completion of the wastewater treatment plant. Treated effluent has been discharged to Buffalo Creek since the mid-1960s, when the treatment plant was completed. In addition, there are several areas that have been used for waste storage and disposal, including a buried waste area and a drum landfill. Oils and solvents were burned in a small open area during the 1960s. When the storage of waste chemicals and solvents ceased in the mid-1970s, drums were removed and properly disposed of, and the landfill was covered. Approximately 21 acres of open area were used for landfarming of non-hazardous sludge during the late 1970s for a project authorized by the State and monitored by North Carolina State University. Monitoring wells on the site are contaminated with organic chemicals. Approximately 500 people live within a mile of the site. The closest well is about 1,500 feet away, and 47 wells are within 1/4 mile of the site. Buffalo Creek is 3,500 feet away and is the source of the plant's drinking water. Land within 1/2 mile is used for forestry and agricultural activities.

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

NPL LISTING HISTORY

Proposed Date: 10/15/84
Final Date: 06/10/86

Threats and Contaminants



Groundwater, soils, and sediments are contaminated with volatile organic compounds (VOCs) including benzene and trichloroethene, semi-volatiles including ethylene glycol, and heavy metals including chromium and arsenic. Surface water is contaminated with chromium and phthalates. If nearby residents drink contaminated groundwater from private wells, they may be at risk. People who trespass on the site and come into direct contact with or accidentally ingest contaminated groundwater, surface water, soil, or sediments may be at risk.

Cleanup Approach

The site is being addressed in two long-term remedial phases focusing on cleanup of the groundwater and controlling the source of contamination.

Response Action Status



Groundwater: In 1988, the EPA selected a remedy to clean up the groundwater that includes pumping the groundwater, removing contaminants with an air stripper, and treating the air before releasing it into the atmosphere. In addition, the water is subjected to treatment by microorganisms. It also is being treated by forcing the groundwater through tanks containing activated carbon, a specially treated material that attracts the contaminants. This is followed by discharging the water to the on-site wastewater treatment plant. If the effluent contains metals, it is treated further by adding chemicals that will cause the metals to collect at the bottom of the treatment container. The selected remedy is treating contaminated groundwater successfully and controlling off-site migration. Cleanup activities began in 1988 and are still in progress.



Source Control: The remedy selected by the EPA in 1989 to clean up the source of contamination includes excavating the contaminated soils, sludges, and stream sediments and incinerating them on site; mixing the incinerator ash and sediments with a hardening agent, such as lime or cement, to form a solid and disposing of it on site; filling the excavated areas with clean soil; and monitoring the site for contamination. Construction of the incinerators is completed, and excavation of the source waste began in early 1991. Cleanup activities are expected to be completed in 1992.

Environmental Progress



The groundwater treatment system construction is completed, and groundwater is being treated, thus controlling contaminant migration. Incineration and solidification of the source waste is near completion at the Celanese Corp. (Shelby Fiber Operations) site.

Site Repository



Cleveland County Library System, 104 Howie Drive, Shelby, NC 28151

CHARLES MACON LAGOON & DRUM STORAGE NORTH CAROLINA

EPA ID# NCD980840409

EPA REGION 4

Richmond County

1 1/2 miles southwest of Cordova

Other Names:

Macon Site 1 Mile South of Cordova



Site Description

The Charles Macon Lagoon & Drum Storage site is an abandoned, 16-acre hazardous waste storage facility. According to a 1980 inspection by the State of North Carolina, there were 11 lagoons on the site containing waste oil and sludges and 2,175 drums containing various chemicals. Eight of these lagoons were unlined and overflowing. Operations at the site ceased in 1981. In 1982, the State ordered the owner's estate to clean up the site. The estate removed 300 drums and installed two on-site monitoring wells. In 1985, the EPA detected chemicals in monitoring wells downgradient of the site. Approximately 1,100 people draw drinking water from private wells within 3 miles of the site, most of which are upgradient. There are four residences within 100 yards of the facility. The Pee Dee River is a mile away; and two ponds, two streams, and a swamp are located between the river and the site.

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

NPL LISTING HISTORY

Proposed Date: 01/22/87

Final Date: 07/22/87

Threats and Contaminants



Groundwater downstream from the site is contaminated with trichloroethylene (TCE) and heavy metals including barium and chromium. Sediments from the pond are contaminated with toluene. Sludge is contaminated with heavy metals and creosote. People who accidentally come in direct contact with or ingest contaminated groundwater, sediments, sludge, or soil may be at risk.

Cleanup Approach

The 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 all the remaining drums on the site and excavated and filled in 10 lagoons. The remaining lagoon contains solidified waste sludge, crushed empty drums, and contaminated soil and is covered with 3 feet of clay.



Entire site: The parties potentially responsible for the contamination on the site are studying the type and extent of the contamination. Once the study is completed, expected in 1991, alternatives for site cleanup will be recommended. The final cleanup remedy for the site was selected in late 1991. Cleanup will involve innovative technologies for on-site cleanup and pumping and treatment for the groundwater.

Site Facts: In 1982, the State issued an order to the owner to clean up the site. In 1987, the EPA filed an action against several parties potentially responsible for contamination at the site.

Environmental Progress



Removing the 55-gallon drums and filling in 10 of the 11 lagoons reduced the potential for exposure to hazardous materials at the Charles Macon Lagoon and Drum Storage site while the EPA is selecting the technical design to use for the final cleanup.

Site Repository

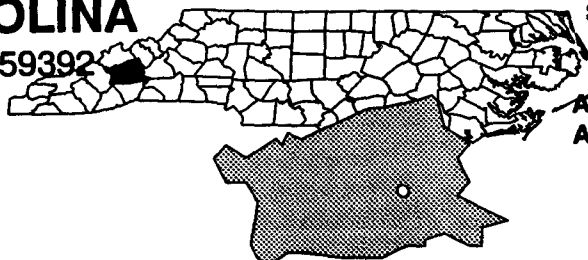


Thomas H. Leath Memorial Library, 412 East Franklin Street, Rackingham, NC 28379

CHEMTRONICS, INC.

NORTH CAROLINA

EPA ID# NCD095459392



EPA REGION 4

Buncombe County
Swannanoa Township

Other Names:
Amcel Production, Inc.
Amcel Propulsion, Inc.

Site Description

Disposal activities at the Chemtronics, Inc. site involve 10 acres of a 1,027-acre parcel of land. The active industrial plant has had several owners/operators since it was first developed in 1952. A variety of products were manufactured at the site, including explosives, rocket fuel, and pharmaceuticals. By-products of these manufacturing activities were deposited in 23 areas on site and three areas off site. Two areas were particularly involved: one area consisted of eight abandoned acid and organic waste pits; the other contained two lined basins used for the neutralization and equalization of waste before it was discharged into local wastewater facilities. Solid wastes and solvents were burned on site before 1971. From 1971 to 1975, liquid waste was disposed of in on-site pits and trenches, while solid and explosive wastes were burned. Acid and organic wastes also were disposed of in pits and trenches starting in 1975. In 1979, the disposal pits were closed. Two monitoring wells near the pits were found to be contaminated. There are several residences within several hundred feet of the off-site disposal areas. The site is adjacent to Bee Tree Creek, and the Pisgah National Forest is to the north of the site. One of the reported waste disposal areas, a municipal landfill, has been proposed for development as a mobile home park.

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



Groundwater and soils are contaminated with volatile organic compounds (VOCs), explosives such as TNT, heavy metals including chromium, and benzylic acid. Surface water is contaminated with VOCs, explosives, and bromoform. People who come in direct contact with or accidentally ingest contaminated groundwater, surface water, or soil may be at risk.

Cleanup Approach

The 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 1985, the EPA removed two drums of hazardous materials and disposed of them in a federally approved facility.



Entire Site: The remedy selected by the EPA to clean up the site includes: covering the waste disposal areas with a cap, which includes a high-density polyethylene membrane, clean soil, and planting vegetation; installing a gas collection and ventilation system, if necessary; pumping and treating groundwater by using air stripping, carbon adsorption, or bioremediation and sedimentation; sampling of the pond water and sediments, and, if necessary, cleanup; and sediment, groundwater, and surface water monitoring. Treated groundwater will be discharged to a local treatment facility. The parties potentially responsible for the site contamination prepared the technical specifications for cleaning up the site which were approved by the EPA in 1991. A number of extraction wells were installed in 1990, and the construction of a groundwater treatment system will begin in 1992. Currently more extraction wells, piezometers, and additional monitoring wells are being installed. The disposal areas are being prepared for capping. All drilling should be completed by early 1992. Heavy earth moving operations (capping of the disposal areas) began in early 1992 and are expected to be completed by mid-1992. All cleanup construction activities are expected to be completed by late 1992.

Site Facts: The EPA and two of the potentially responsible parties signed an Administrative Order on Consent on September 30, 1985 to perform a study of the nature and extent of contamination on the site. The EPA issued an order on March 22, 1989 to all three of the potentially responsible parties (Celanese, Chemtronics, and Northrop) to conduct the engineering design and actual cleanup for the site. Each potentially responsible party is in compliance with the Administrative Order.

Environmental Progress



By removing the drums of hazardous materials, the EPA eliminated any immediate threats posed by the Chemtronics, Inc. site while cleanup activities begin.

Site Repository

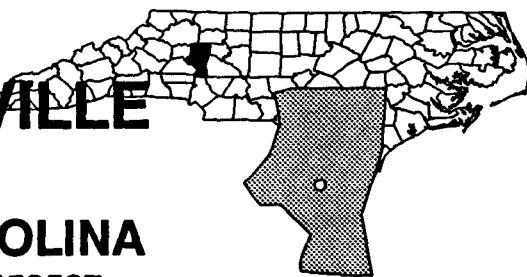


Martha Ellison Library, Warren Wilson College, 701 Warren Wilson Road, Swannanoa, NC 28778

FCX, INC. (STATESVILLE PLANT)

NORTH CAROLINA

EPA ID# NCD095458527



EPA REGION 4

Iredell County
Statesville

Site Description

From 1940 through 1985, FCX, Inc. (Statesville Plant) repackaged and distributed agricultural chemicals at this 5-acre site. Liquid and powdered pesticides were repackaged at the site until 1969. Reportedly, between 5,000 and 10,000 pounds of pesticides were buried under a concrete warehouse floor some time before 1969. Also, spills occurred in areas where pesticides were handled. Soil and groundwater collected at the site in 1986 are contaminated. The company filed for bankruptcy in September of 1985 and began liquidating its assets. Private and public wells within 3 miles of the site provide drinking water to an estimated 12,000 people. The site is bordered on its northern and western sides by Burlington Textile Mill and Carnation Milk Company.

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



The soil is contaminated with pesticides such as chlordane and DDT, as well as with coal tar distillates and halogenated organic solvents. The groundwater contains pesticides including lindane, chlordane and DDT, and halogenated organic solvents. Human health would be threatened through direct contact with contaminants or if contaminated groundwater were to enter private wells. A private well upgradient of the site contains volatile organic compounds (VOCs) including tetrachloroethylene.

Cleanup Approach

The 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 1989, the EPA installed four new monitoring wells onsite and fenced the site. Results of sampling showed groundwater contamination. Soil sampling outside the warehouse detected low levels of pesticides, but suspected buried pesticides were not found.



Entire Site: The EPA has begun a study of the nature and extent of groundwater and soil contamination remaining at the site and the alternative technologies available for cleanup. Field work for these studies is expected to be completed in 1992, with cleanup actions scheduled to start in 1993.

Environmental Progress



Initial assessments indicate that the site does not pose an immediate hazard to human health or the environment while investigations are underway and cleanup alternatives for the site are being selected.

Site Repository

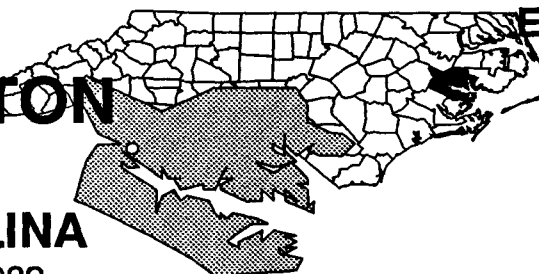


Not established.

FCX, INC. (WASHINGTON PLANT)

NORTH CAROLINA

EPA ID# NCD981475932



EPA REGION 4

Beaufort County
Washington

Other Names:
Washington Plant

Site Description

FCX, Inc. (Washington Plant) began repackaging and selling agricultural chemicals in 1945 on this 6-acre site. During these operations, a large trench was filled with pesticide wastes and other agricultural chemicals in the early 1970s. The company filed for bankruptcy and began liquidating its assets in 1985. The chemicals from the trench may move into shallow groundwater connected to the underlying aquifer. This deeper aquifer is the major source of drinking water in the area. Approximately 2,850 people draw drinking water from wells within 3 miles of the site. The area is mainly agricultural. The site is bordered by a railroad and a wetland.

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

NPL LISTING HISTORY

Proposed Date: 06/24/88
Final Date: 03/31/89

Threats and Contaminants



The soil of the disposal trench contains pesticides, such as DDT and chlordane, as well as mercury. Direct contact with the contaminated soil is a potential threat to public health, but is unlikely since the area is fenced. If contamination spreads from soils into the deeper aquifer, individuals may ingest contaminants in drinking water.

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 1988, the EPA began to excavate the contaminated soil and analyze it on site. The site also was fenced. The EPA stored and covered all contaminated soil on site and then backfilled the excavated area with clean soil. In early 1992, an additional 2,000 yards of contaminated soil were excavated.



Entire Site: FCX, Inc. is conducting a study into the extent and nature of contamination at the trench and main warehouse and the alternative technologies for cleanup. The study began in 1990 and is scheduled to end in 1993.

Site Facts: The EPA filed an Administrative Order to compel FCX, Inc. and Fred Webb, Inc. to remove pesticides from the trench area.

Environmental Progress



The initial actions, including excavating and storing contaminated soil and fencing the site, have made the FCX, Inc. (Washington Plant) site safer while investigations leading to cleanup activities are taking place.

Site Repository



Not established.

GEIGY CHEMICAL CORPORATION (ABERDEEN PLANT) NORTH CAROLINA

EPA ID# NCD981927502



EPA REGION 4

Moore County
Aberdeen

Site Description

The Geigy Chemical Corporation (Aberdeen Plant) site covers 1 acre and has been occupied by various chemical companies since 1947. From 1949 to 1955, Geigy produced solid and liquid pesticides on the site. The facility includes four aboveground storage tanks, an office building, and two warehouses. In 1985, the State detected pesticides in private and municipal wells. In 1987, the EPA detected pesticides in the surface and subsurface soils on the site. The aboveground storage tanks were removed in 1989, and two warehouses were removed in 1991. The Aberdeen Public Water Supply System and numerous private wells within 3 miles of the site serve approximately 7,400 people. The Sandhill Aquifer underneath the site supplies all the drinking water for Moore County. Drainage from the site collects in several unnamed tributaries of Aberdeen Creek. The creek is used for recreational activities.

Site Responsibility: The site is being addressed through a combination of Federal and potentially responsible parties' action.

NPL LISTING HISTORY

Proposed Date: 06/24/88

Final Date: 10/04/89

Threats and Contaminants



The groundwater is contaminated with lindane and toxaphene. The soil is contaminated with pesticides including toxaphene, DDT, and lindane. Trespassers on this site who come in direct contact with or accidentally ingest contaminated groundwater and soil may be at risk. Individuals frequenting Aberdeen may be exposed to contaminants through direct contact with surface water.

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 1989, the parties potentially responsible for the site contamination removed approximately 460 tons of pesticide-contaminated soil and debris to an approved facility. A second action was conducted in 1991, involving the removal of 227 tons of pesticide-contaminated soil to an approved facility for disposal. Six 30-gallon drums containing concentrated surface debris were sent to an approved incinerator facility for thermal treatment. The site also has been fenced.



Entire Site: The potentially responsible parties are studying the type and extent of contamination at the site. Various alternatives for the cleanup will be recommended once the study is completed in 1992. After the EPA selects the most appropriate remedies, design and construction of the final site cleanup will begin.

Site Facts: In 1988, the EPA and Ciba-Geigy Corp., Olin Corp., and Kaiser Aluminum and Chemical Corp. signed an Administrative Order. This agreement specified how these parties would conduct the study into the type and extent of contamination at the site.

Environmental Progress



The initial actions to remove contaminated soils and debris, in addition to fencing the site, have reduced the potential for exposure to hazardous materials at the Geigy Chemical Corporation site while investigations and cleanup activities are taking place.

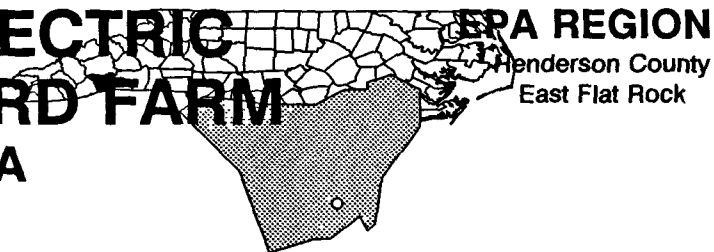
Site Repository



Aberdeen Town Hall, 115 North Poplar Street, Aberdeen, NC 28315

GENERAL ELECTRIC CO./SHEPHERD FARM NORTH CAROLINA

EPA ID# NCD079044426



Site Description

The General Electric Co./Shepherd Farm site consists of the 50-acre General Electric property and a 3-acre dry pond or ravine known as Shepherd Farm, located 2,500 feet southwest of the General Electric plant. Since 1955, the Lighting System Division of General Electric has manufactured various types of luminaire systems at the site. Wastes resulting from these production processes were disposed of at Shepherd Farm from 1957 to 1970. The disposal process involved burning the wastes and then bulldozing them into the ground. Wastes were also disposed of at the Seldon Clark property, located across the street from General Electric; other nearby areas may have received wastes from General Electric. The EPA, the State, and General Electric conducted studies between 1976 and 1989 which identified site contaminants and pathways of contaminant migration. Site contaminants were later discovered in 19 off-site private wells. This migration of contaminants is believed to have resulted from the rupture of a drainline that carried wastewater from the manufacturing plant to the treatment ponds. Residences that used these wells were connected to the municipal water supply. Other wells within 4 miles of the site once supplied drinking water to an estimated 4,400 people; the nearest of these wells is within a mile of the site. A trailer park is now located on a portion of the old dump.

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

NPL Listing History
Proposed Date: 02/07/92

Threats and Contaminants



On-site and off-site groundwater and sediments are contaminated with various heavy metals and volatile organic compounds (VOCs). On-site wastewater treatment ponds and sludge impoundments are contaminated with polychlorinated biphenyls (PCBs) and heavy metals, including chromium, copper, lead, nickel and zinc. PCBs also were detected in the soil of the trailer park.

Cleanup Approach

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

Response Action Status



Immediate Actions: Residences using contaminated water from 19 private wells were connected to the municipal water supply.



Entire Site: General Electric, under EPA supervision, will undertake a study of the nature and extent of site contamination. This study, scheduled to begin in early 1993, will help determine the best alternatives for cleanup at the site.

Site Facts: Interim Status under Subtitle C of the Resource Conservation and Recovery Act (RCRA) was granted to the General Electric plant in 1980, when they filed a RCRA Part A permit application. In 1984, General Electric became a RCRA hazardous waste generator. Because of this change, this site now qualifies for listing on the NPL, as stated in the EPA's NPL/RCRA policy.

Environmental Progress



Municipal water has been provided to residents. Initial site investigations indicate that the General Electric Co./Shepherd Farm site poses no immediate threat to the health and safety of the nearby population while additional investigations are underway and activities are being planned for permanent cleanup of the site.

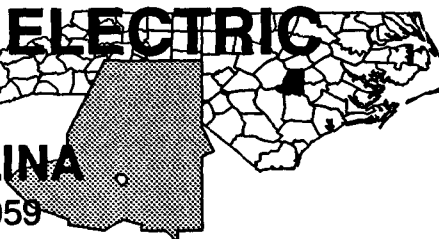
Site Repository



Not established.

HEVI-DUTY ELECTRIC COMPANY NORTH CAROLINA

EPA ID# NCD039102959



EPA REGION 4

Wayne County
2 miles south of Goldsboro

Site Description

Beginning in 1968, Hevi-Duty Electric Company manufactured dry and liquid power transformers on a portion of a 125-acre parcel of land. In 1979, 1,000 gallons of transformer oil containing polychlorinated biphenyls (PCBs) were spilled from an underground storage tank. The company removed the soil from the spill area and buried it in an unlined pit on the northern end of the property. In 1976, PCB-contaminated soil from an underground storage tank area was removed and buried in a plastic-lined pit, under supervision of the State. In 1986, a spill from a cracked pipeline on a tanker truck resulted in 1,400 gallons of oil running into culverts and an open drainage ditch. The majority of the oil was recovered. Another spill of 1,500 gallons occurred when an underground oil line cracked. The State conducted tests in 1986 and found contaminants in the groundwater. Approximately 7,600 people obtain drinking water from public wells within 3 miles of the site; the nearest well is 2,000 feet away. Approximately 15,000 people live within 4 miles of the site. The site drains into the Neuse River, which is nearly 4,700 feet from the plant. This river is used for recreational fishing.

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

NPL LISTING HISTORY

Proposed Date: 05/05/89

Final Date: 08/30/90

Threats and Contaminants



The air, groundwater, soil, and surface water are contaminated with PCBs. People who come in direct contact with or accidentally ingest contaminated groundwater or soils may be at risk. Contaminated air on the site may pose a health threat to those who breathe it. Because the site drains into the Neuse River, people who eat fish from it may suffer adverse health effects.

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 1976, contaminated soil was removed from an underground storage tank area. In 1986, Hevi-Duty cleaned up an oil spill by pumping groundwater to flush oil out of the ground.



Entire Site: Hevi-Duty is studying the environmental condition of the site. After this study is completed, the EPA will select the most effective remedies, and cleanup activities will begin soon thereafter.

Site Facts: In 1985, the EPA and Hevi-Duty signed a Consent Agreement, under which the company paid a civil penalty for a PCB spill from an underground storage tank.

Environmental Progress



After proposing this site to the NPL, the EPA performed preliminary investigations and determined that no additional immediate actions were needed at the Hevi-Duty Electric Company site while further studies are being conducted.

Site Repository



Not established.

JADCO-HUGHES FACILITY

NORTH CAROLINA

EPA ID# NCD980729602



EPA REGION 4

Gaston County
Belmont
15 miles west of
Charlotte, NC

Site Description

From 1971 to 1975, C.A. Hughes operated a solvent reclamation and storage facility at this 6-acre site in Belmont. Workers reprocessed chemical waste from industries to recover whatever could be resold, storing the residues on the site. In 1975, Jadco, another firm, leased the site, equipment, and operation. A large quantity of drums had accumulated by 1975, when operations ceased. The drums, in various stages of decay, were stacked at several locations. The site also held several large storage tanks. By 1978, up to 18,000 drums were removed. Contaminated soil and debris were placed in an unlined landfill on site, and the site was regraded. In 1983, bulk storage tanks and other drums were removed; however, spillage and leakage resulted in contamination of the soil predominantly with organic solvents and partially with heavy metals. In 1984, an estimated 4,700 people used wells within 3 miles of the site as a source of drinking water. Roughly 40 to 50 residences lie within a 1,000-foot radius of the site, with the closest being 50 feet away. All homes have access to a public water supply, although some residents may still be using water from private wells. Migration of contaminants into groundwater is likely, because the landfill is unlined and only 6 feet above the water table. A ditch that drains the site flows into the Catawba River, and Belmont's drinking water intake is 2 1/2 miles downstream from the confluence of the river and ditch. Trace amounts of site-related contaminants have been detected in a private well that is no longer in use.

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

NPL LISTING HISTORY

Proposed Date: 10/01/84

Final Date: 06/01/86

Threats and Contaminants



On-site sediments contain heavy metals including chromium, lead, and nickel. Polychlorinated biphenyls (PCBs) in contaminated sediments and soils were cleaned up in one area of the site, but remain a concern site-wide. PCBs and nickel have been found in sediments off site. The soil contains heavy metals and volatile organic compounds (VOCs) including methylene chloride and toluene. On- and off-site surface water has been shown to be contaminated with metals such as barium and dichloroethane. Groundwater is contaminated with VOCs and heavy metals including lead, nickel, barium, and beryllium. People may be harmed by direct contact with contaminated surface water and sediment or by drinking contaminated water. Migration of contaminants to the groundwater is a priority concern.

Cleanup Approach

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

Response Action Status



Initial Actions: In 1990, PCB-contaminated soils and sediments were removed from the southeastern swale area of the site.



Entire Site: Under the EPA's monitoring, the parties potentially responsible for contamination at the site began a study of its pollution problems in 1986. This investigation was completed in 1990. The EPA selected a remedy which includes treatment of soils using soil vacuum extraction and soil flushing techniques. Groundwater will be pumped and treated and disposed of either in a local wastewater treatment plant or in a tributary, in accordance with national discharge permits. Surface water is being re-routed and culvert is being repaired to eliminate surface water contamination. Design of the cleanup remedies is underway and is scheduled for completion in 1993.

Site Facts: The North Carolina Department of Justice issued a complaint requiring Jadco-Hughes to remove waste from the site some time in or after 1975. The potentially responsible parties conducted a study to determine the type and extent of contamination under a Consent Order.

Environmental Progress



Excavation and disposal of the PCB-contaminated soil and sediments reduced the potential of direct contact while engineering designs for the cleanup of the site are being planned.

Site Repository



Gaston County Public Library, Belmont Public Library Branch, 111 Central Avenue,
Belmont, NC 28012

**JFD ELECTRONICS/
CHANNEL MASTER
NORTH CAROLINA**
EPA ID# NCD122263825



EPA REGION 4
Granville County
Oxford

Site Description

From 1962 to 1979, JFD Electronics manufactured television antennas at this 13-acre site on Industrial Drive in Oxford. The owners built a 1/2-acre lagoon in 1964 to 1965 to dispose of sludge generated by wastewater treatment. A chromate conversion process and copper/nickel electroplating generated most of this wastewater. When Channel Master bought the property in 1980, the company filled half the lagoon and used it as a truck parking lot. A local department store rents a building on the property as a warehouse. Channel Master believes that approximately 25 percent of the site is contaminated. The problem appears to be associated with leaking underground tanks of waste oil used by the former owner and with an area where trucks carrying waste oil had been rinsed. Approximately 2,500 people get their drinking water from private wells within 3 miles of the site; the closest is about 2,000 feet to the southeast. The site also drains to an unnamed tributary of Fishing Creek, which is used for recreational fishing.

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



Volatile organic compounds (VOCs) were detected in both on- and off-site shallow and deep monitoring wells. The current owner contracted for several studies of the site, and chromium, lead, and other heavy metals were found in the sludge and soils but were removed in 1988. VOCs are contaminating the surface water, sediments, and groundwater. People could be at risk if they accidentally ingest or come in direct contact with the contaminated groundwater, soil, and sludges.

Cleanup Approach

The 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: Channel Master has contracted for several studies of the site. One study developed a plan for cleaning up the lagoon and contaminated soil. Cleanup work was started in 1987 and completed in 1988.



Entire Site: In 1989, the EPA began an intensive study of groundwater contamination at the site, exploring the nature and extent of its pollution problems. This investigation, which also will recommend the best strategies for final cleanup, is scheduled for completion in 1992.

Environmental Progress



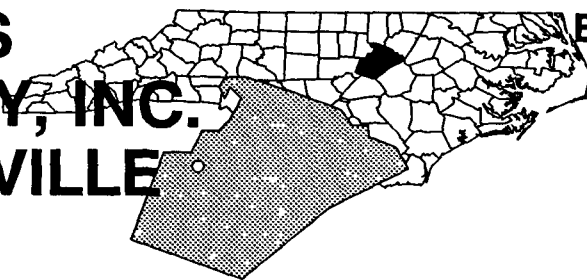
The cleanup of the lagoon and contaminated soil has reduced the threat of continued contamination of the groundwater. After adding the JFD Electronics site to the NPL, the EPA performed preliminary evaluations of the site conditions and determined that the site does not currently pose an immediate threat to the surrounding community or the environment while cleanup activities continue and further studies into the final groundwater remedy are taking place.

Site Repository



Granville County Library System, Richard H. Thorton Library, Main and Spring Streets,
Oxford, NC 27565

**KOPPERS
COMPANY, INC.
(MORRISVILLE
PLANT)
NORTH CAROLINA
EPA ID# NCD003200383**



EPA REGION 4

Wake County
1 mile northwest of
Morrisville

Site Description

The Koppers Company, Inc. (Morrisville Plant) site covers 52 acres and was used as a saw mill until 1959 when it was sold to Unit Structures, Inc., which produced glue-laminated wood products. Koppers Company purchased the site in 1962 and continued the glue-laminated process. From 1968 to 1975, Koppers treated wood with pentachlorophenol (PCP) at the site. Wastewater from the PCP process was discharged to an on-site pond for the first 6 months of operation and then to two unlined lagoons nearby. The owners closed the lagoons in 1977 and sprayed the liquids that remained in them over a field on the northeastern corner of the property. They mixed the sludge with soil and spread it over the lagoon area. In 1982, the owners found PCP in on-site soil, wells, pond water, and sediment. Koppers sold the plant to an unrelated company that retained the name Unit Structures, Inc. Koppers, however, kept 10 acres of the original site where PCP was used. Unit Structures, Inc. still is an active facility. Groundwater within 3 miles of the site is a source of drinking water for 2,200 people. The North Carolina Solid and Hazardous Waste Branch detected trace contaminants in some off-site wells. Koppers installed over 3 miles of public water lines to residences where PCP or isopropyl ether was detected in the drinking water. Water from the northeastern corner of the site drains toward Crabtree Creek, 2 miles away. Water from the southeastern corner drains to Koppers Pond, which was used for fire protection. Occasional overflow from Koppers Pond reaches Medlin's Pond, which is used for fishing and irrigating garden crops.

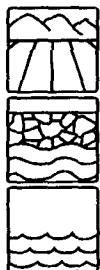
Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY

Proposed Date: 06/24/88

Final Date: 03/31/89

Threats and Contaminants



The owner found soil, groundwater, surface water, and sediments contaminated with PCP in the early 1980s. Dioxins and furans also are found on site. The site is unfenced, making it possible for people and animals to come into direct contact with contaminated soils or water. Possible health threats include coming into direct contact with or accidentally ingesting any of these contaminated materials.

Cleanup Approach

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

Response Action Status



Emergency Actions: In 1980 and 1986, Koppers removed soil contaminated with PCP from the lagoon area and transported it to an EPA-approved hazardous waste facility, although contaminated soil remained on the site. In 1989, under EPA monitoring, more than 3 miles of public water supply lines were extended by Koppers to affected homes near the site.



Entire Site: In 1989, under EPA monitoring, the parties potentially responsible for site contamination began a thorough study of the type and extent of soil and water pollution at the site. Additional fieldwork was conducted to define the extent of dioxins in soils, and to confirm earlier groundwater results. Reports will be finalized in mid-1992. The proposed remedy for groundwater is pumping and treatment, however, soil cleanup methods are still under investigation.

Site Facts: An Administrative Order was issued to the potentially responsible party to install a water line. A second Administrative Order was issued to conduct site investigations.

Environmental Progress



The emergency removal of soil and provision of an alternate water supply have reduced the potential for exposure to contaminants at the site or through the drinking water supply while investigations and cleanup activities are taking place.

Site Repository



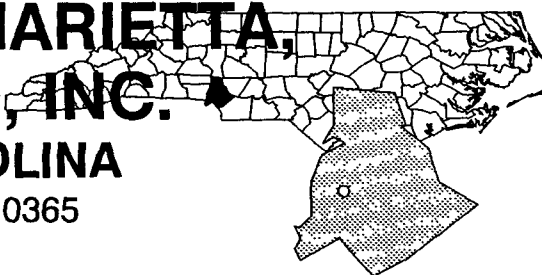
Wake County Dept. of the Public Library, Cary Public Library Branch, 310 South Academy St., Cary, NC 27511

MARTIN-MARIETTA, SODYECO, INC. NORTH CAROLINA

EPA ID# NCD001810365

EPA REGION 4

Mecklenburg County
10 miles west of Charlotte



Site Description

Chemical dyes have been made since 1936 on the 1,300-acre Martin-Marietta site. Opened by Sodyeco, the plant was taken over by American Martin-Marietta in 1958 and sold to Sandoz Chemicals Company in 1983. The plant has manufactured liquid sulfur and vat and disperse dyes, as well as other chemicals from various industries. The first indication of potential contamination at the site was the discovery in 1980 of organic solvents in the company's drinking water well and nearby private wells. On-site disposal of distillation tars and dye clarification cake resulted in extensive groundwater and soil pollution. Analysts traced the source of contamination to three trenches of buried wastes. The company excavated the wastes and disposed of them off site. It was later realized that five areas on the site are probable sources of soil and groundwater contamination. Area A operated as a landfill between the 1930s and 1974. It accepted sulfur residues and dyes, fiber clothes, empty metal and cardboard drums and cartons, non-acidic and non-flammable chemicals, chemical wastes, and construction debris. This area currently is covered with asphalt and buildings. Area B operated as a landfill from 1973 to 1978 and received wastes previously sent to Area A. Area B was being used as a parking lot covered with gravel. Area C, now a grassy area, once contained the remains of laboratory and production samples, distillation tars, and waste solvents. These are the trenches cleaned up in the early 1980s, but available analytical techniques allowed some soil contamination to go undetected. Area D contained two wastewater settling ponds that have been taken out of service. This area currently holds a lined freshwater pond and a fuel oil storage tank. Area E is a drainage basin receiving discharge from the old plant manufacturing area. No wastes are known to have been deposited there. Approximately 4,500 people in Mount Holly live directly across the river from the site, and the City of Belmont, with 4,600 people, is 3 1/2 miles downriver. Belmont's public water intake is downstream of the site. The residents of Mount Holly and Belmont depend upon local groundwater for drinking water.

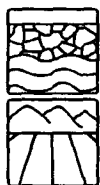
Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY

Proposed Date: 12/01/82

Final Date: 09/01/83

Threats and Contaminants



On-site groundwater and soil are polluted with volatile organic compounds (VOCs). Groundwater contamination is worst at Areas C, D, and E. Soil contamination is highest in Areas C and D; the soil at Area E is uncontaminated. Area residents are not at risk of being exposed to site contamination, as a result of early excavation of dangerous wastes. However, the public drinking water supply may become polluted as groundwater contamination migration occurs. Groundwater discharges into the Catawba River, which is a source of drinking water for the plant and area residents.

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: Contaminated wastes and secondary soils were excavated and removed from the site.



Entire Site: The EPA selected a remedy for this site in 1987, which includes: (1) extracting contaminated groundwater and treating it on site; (2) discharging treated groundwater to an off-site stream; (3) continuing cleanup until contaminated water meets cleanliness goals; (4) capping Area B (the truck staging area) with asphalt to keep rainfall and runoff from spreading contaminants; and (5) treating contaminated soil in Area C (trench area) on site to remove organic contaminants. Cleanup actions began in 1989 and are being performed by the potentially responsible parties, under EPA monitoring. The asphalt cap has been completed in Area B. Extraction wells have been installed and are operating. The groundwater pump and treatment process has been expanded and may require operation until 1999. The cleanup of Areas C and D has begun. The evaluation of results will be available for the EPA's review in early 1992.

Environmental Progress



The cleanup actions undertaken so far, including groundwater treatment, removal of highly contaminated wastes and secondary soils, and capping of contaminated areas have reduced the potential for exposure to hazardous substances at the Martin-Marietta Sodyeco site while final cleanup actions are underway.

Site Repository

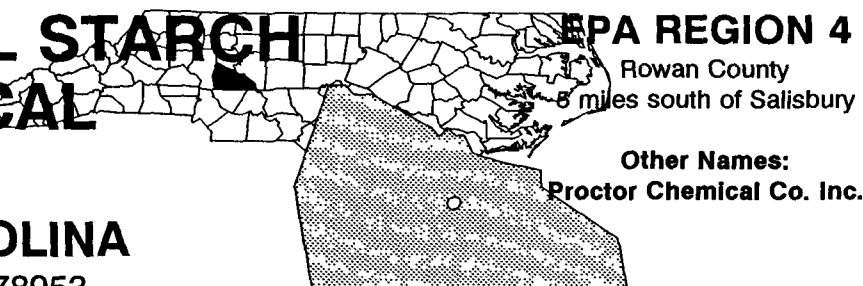


Mt. Holly Public Library, 245 West Catawba Avenue, Mt. Holly, NC 28120

NATIONAL STARCH & CHEMICAL CORP.

NORTH CAROLINA

EPA ID# NCD991278953



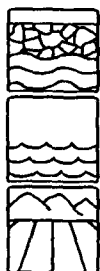
Site Description

The National Starch & Chemical Corporation (NSCC) site is located on a 500-acre parcel occupied by the NSCC-owned Cedar Springs Road Plant that currently manufactures textile finishing and specialty chemicals. From 1971 to 1978, NSCC disposed of approximately 350,000 gallons of reaction vessel wash waters in trenches constructed on a 5-acre tract of land located behind the plant. Trenches in this area also received liquid waste from the plant, and it was absorbed into the ground. After the absorption rate substantially declined, the trenches were backfilled and seeded. Site monitoring in 1976 and 1977 revealed shallow groundwater contamination adjacent to or within the trench area. Consequently, the North Carolina Department of Natural and Economic Resources requested that NSCC stop on-site waste disposal activities. Since 1978, production plant process waters have been pre-treated in a facility near the production area and discharged to the Salisbury publicly owned treatment works (POTW). The main area of contamination identified at the site is the trench area; however, low levels of surface water contamination are currently under investigation. The plant is located in a rural area that depends heavily on wells for drinking water. Approximately 7,700 people use public and private wells within 3 miles of the site for drinking water and other domestic purposes. Since the site and the surrounding areas lie above a bedrock aquifer, residents drinking water from this source could become affected by site-related contaminants; however, no off-site contamination of groundwater has been detected.

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

NPL LISTING HISTORY
Proposed Date: 04/01/85
Final Date: 10/04/89

Threats and Contaminants



The groundwater, surface water, and sediments are contaminated with heavy metals and volatile organic compounds (VOCs). Soil contaminated with VOCs and lead has been cleaned up, making the site safer, but residual contamination still remains in subsurface soils. The soil is contaminated with VOCs and lead. People who come in direct contact with or accidentally ingest the contaminated groundwater may be exposed to a potential health threat. Recreational uses of Grants Creek or its tributaries also may cause a health threat due to possible contamination of the water. The northeastern tributary shows very low levels of contaminants at the site; however, these contaminants are removed prior to leaving the site property.

Cleanup Approach

The site is being addressed in three long-term remedial phases focusing on groundwater, soil, and surface water cleanup.

Response Action Status



Groundwater: Design technologies were completed by the party potentially responsible for the site contamination, and cleanup action began in 1990. The actions selected by the EPA for the cleanup of groundwater include: installation of a groundwater interception and extraction system, a pre-treatment system, and final discharge to the Salisbury POTW. In order to discharge the groundwater, effluent criteria defined in the Salisbury National Pollutant Discharge Elimination System (NPDES) permit must be met. Modifications were made to the pretreatment design to meet the POTW pretreatment standards. Extraction wells have been installed, and off-site monitoring wells are to be installed soon. Groundwater pumping and treatment continue over the long term.



Soil Contamination: The potentially responsible party conducted a study of the type and extent of on-site soil contamination and evaluated alternative cleanup actions. In 1990, a remedy was selected, which entails natural soil flushing, soil monitoring, and deed restrictions on the site. The engineering design of the selected remedy is currently being finalized.



Surface Water Contamination: Additional fieldwork will be conducted to determine the nature and extent of surface water contamination and to explore the best strategies for final cleanup. The study is expected to be completed in mid-1993.

Site Facts: The State ordered a stop to on-site disposal activities after sampling in 1976 and 1977 showed shallow groundwater contamination.

Environmental Progress



After adding the National Starch & Chemical Corp. site to the NPL, the EPA determined that the site does not pose an imminent threat to the surrounding community or the environment while the cleanup of groundwater and soil is taking place.

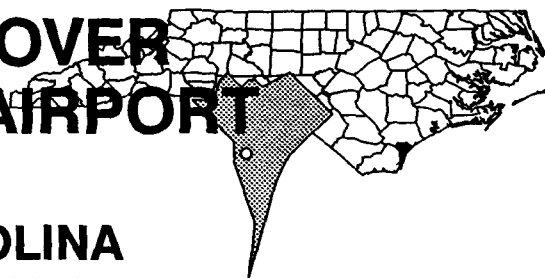
Site Repository



Rowan Public Library, 201 West Fisher Street, Salisbury, NC 28144

NEW HANOVER COUNTY AIRPORT BURN PIT NORTH CAROLINA

EPA ID# NCD981021157



EPA REGION 4
New Hanover County
Wilmington

Site Description

The New Hanover County Airport Burn Pit was constructed by the County in 1968. From 1968 to 1979, the Cape Fear Technical Institute used the pit for fire-training purposes, burning jet fuel and gasoline in the burn pit, and extinguishing the fires with water. The Wilmington Fire Department used the burn pit for fire-training purposes from 1968 to 1976. Jet fuel and drainage from petroleum fuel storage tanks in the area were burned, and the fires were extinguished with water, carbon dioxide, and dry chemicals. Some time prior to 1982, materials used in river spill cleanups were dumped into the pit. In addition, fuel oil, kerosene, and oil from oil spill cleanups were burned in the pit. The pit held approximately 22,500 gallons, of which 85 percent is water. In 1986, the North Carolina Division of Health Services discovered heavy metals in the soil around the pit and numerous organics in other soil samples. Surface water within 3 miles downstream of the site is used for recreational activities, and there is an estuary wetland approximately 1 mile from the site at the probable point of runoff from the site. Approximately 6,300 people obtain drinking water from public and private wells within 3 miles of the site. A private well is approximately 1,500 feet to the northwest of the site.

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

NPL LISTING HISTORY

Proposed Date: 06/24/88

Final Date: 03/31/89

Threats and Contaminants



The soil is contaminated with heavy metals, volatile organic compounds (VOCs), and petrochemicals. Sludges are contaminated with barium. There is a possible health threat from direct contact with the soil. Direct contact with contaminated water in a nearby creek may be a health threat as well. Based on preliminary investigations, groundwater contamination remains on site. An estuary wetland is located approximately 1 mile from the site.

Cleanup Approach

The 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 1990, the potentially responsible parties, under EPA supervision, removed approximately 2,000 cubic yards of sludge and soils, piping, tanks, and training structures from the site.



Entire Site: An investigation of the nature and extent of site contamination and a study of alternatives for cleaning up the site contaminants were started in 1990. The investigation is scheduled for completion in 1992, with a decision on a cleanup plan expected shortly thereafter.

Site Facts: A Consent Order for removal of the contaminants by the potentially responsible parties was signed in June 1990.

Environmental Progress



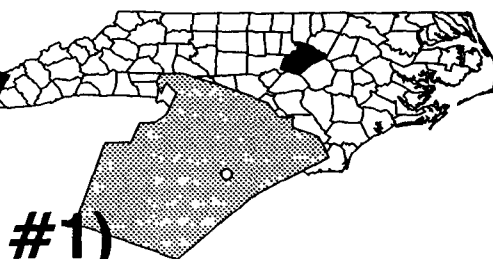
Removal of sludge, soils, and debris from the New Hanover County Airport Burn Pit site has reduced the threat of exposure to contaminants while investigations leading to final cleanup activities are taking place.

Site Repository



New Hanover County Public Library, 201 Chestnut Street, Wilmington, NC 28401

**N.C. STATE
UNIVERSITY
(LOT 86,
FARM UNIT #1)
NORTH CAROLINA**
EPA ID# NCD980557656



EPA REGION 4

Wake County
Raleigh

Site Description

The 1 1/2-acre North Carolina State University site is situated to the north of Carter-Finley Stadium in Raleigh. The site was used by the North Carolina State University science laboratories and agricultural research facilities as a waste disposal area. From 1969 to 1980, the University disposed of solvents, pesticides, heavy metals, acids, and some low-level radioactive laboratory wastes. The wastes are buried in containers that are placed in 10-foot trenches. Analysis of groundwater from the wells indicates the presence of high levels of organic contamination. The site is completely fenced and is located approximately 100 feet away from any public access point. The closest residence is approximately 2,000 feet away from the site. Approximately 150,000 people live within 4 1/2 miles of the site. Most of these residents use city-supplied water, which is not contaminated. However, there are a few residents who use groundwater from private wells.

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

NPL LISTING HISTORY

Proposed Date: 10/05/84

Final Date: 06/10/86

Threats and Contaminants



The groundwater is contaminated with various volatile organic compounds (VOCs) and heavy metals including lead. Ingesting and coming in direct contact with contaminated groundwater is a potential health hazard.

Cleanup Approach

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

Response Action Status



Entire Site: The University's Department of Marine, Earth, and Atmospheric Sciences has monitored the site extensively since 1981. One background and three downgradient wells were drilled to a depth of about 10 feet below the water table. The EPA currently is investigating the nature and extent of the contamination in the site. A report of the study is expected in 1993. The selection of the remedies to be used for site cleanup will be determined by the EPA that same year.

Environmental Progress



After adding this site to the NPL, the EPA performed preliminary investigations and determined that the North Carolina State University site posed no immediate threats while investigations are taking place.

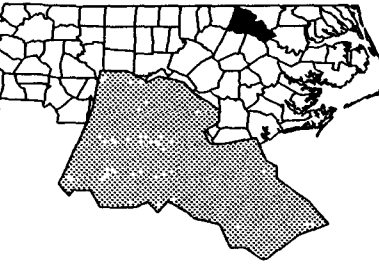
Site Repository



Not established.

PCB SPILLS NORTH CAROLINA

EPA ID# NCD980602163



EPA REGION 4

Halifax and 13 counties
243 miles of N.C. highway

Site Description

The PCB Spills site falls along 243 miles of highway where 30,000 gallons of waste transformer oil contaminated with polychlorinated biphenyls (PCBs) were deliberately discharged in several areas along the shoulders of the highway in 14 counties of North Carolina. The State conducted several studies and determined that contaminants did not travel from the discharge areas into surrounding areas, including rivers, lakes, or streams. Therefore, the populations surrounding these numerous locations and the plant and animal life have not been affected.

Site Responsibility: This site was addressed through Federal actions.

NPL LISTING HISTORY

Proposed Date: 12/30/82

Final Date: 09/08/83

Deleted: 03/07/86

Threats and Contaminants



The soil was contaminated with PCBs. After cleanup investigations were completed, it was determined that contamination did not move from the discharge areas into surface water, plant life, or groundwater; therefore, there is no health threat associated with the spills.

Cleanup Approach

The site was addressed in a single long-term remedial phase focusing on cleanup of the entire spill area.

Response Action Status



Entire Site Area: In 1982, the EPA and the State of North Carolina initiated cleanup actions to: construct a landfill for disposal of PCB waste; remove, transport, and dispose of contaminated soils; and reconstruct the highway shoulders. The disposal of contaminated soil was completed in 1982, and the landfill was capped, graded, and vegetated. Sampling was conducted during cleanup at the beginning and ending points of the contaminated strips to ensure that all contaminated soils were removed. Random samples were collected from the areas after soils were removed. No soils contaminated with PCBs above the accepted levels were left in place. These areas then were excavated and filled with clean soil. As a result of the completed cleanup actions and the elimination of site contamination, the EPA, in consultation with the State, deleted the site from the NPL on March 7, 1986.

Environmental Progress



The contaminated soil from the spill area has been excavated and moved to a closely monitored landfill. Testing indicated no contamination was present in the groundwater, surface water, or plant or animal life in the area of the PCB spill. The site is once again safe for the public and the surrounding environment and has been deleted from the NPL.

Site Repository

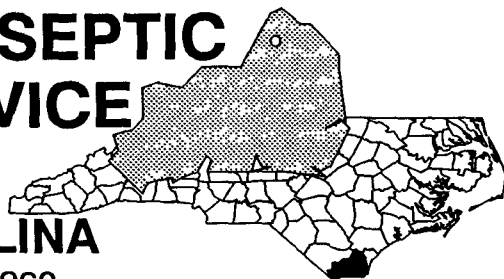


Not established.

POTTER'S SEPTIC TANK SERVICE PITS

NORTH CAROLINA

EPA ID# NCD981023260



EPA REGION 4

Brunswick County
Sandy Creek, approximately
18 miles west of Wilmington

Site Description

The Potter's Septic Tank Service Pits site covers 5 acres of land. In 1976, the U.S. Coast Guard was notified of an oil spill in Rattlesnake Branch Creek. The Coast Guard and the North Carolina Department of Natural and Economic Resources traced the oil spill to one of the four disposal pits at the site. In 1983, the present owner informed the North Carolina Department of Human Resources that he had uncovered sludge in his front yard. The State found contaminants in his well and shut it down. The EPA found contaminants in the soil and groundwater on the site. Approximately 1,800 people obtain drinking water from private wells within 3 miles of the site.

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

NPL LISTING HISTORY

Proposed Date: 06/24/88
Final Date: 03/31/89

Threats and Contaminants



The groundwater is contaminated with volatile organic compounds (VOCs) including benzene and xylene, phenols, and other petroleum compounds. The soil is contaminated with heavy metals, chloroform, phenols, VOCs, and other petroleum compounds. People who use contaminated well water may be at risk. Direct contact with contaminated soil was a health threat, especially to children playing in the area, before the removal of contaminated soil and sludge.

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 U.S. Coast Guard and the North Carolina Department of Natural and Economic Resources removed 40,000 gallons of oil from the stream and pits and 150 truckloads of oil sludge and oil-stained soil. Thick oil sludge that could not be removed was mixed with sand and buried on the site. In 1984, the EPA removed approximately 3 million pounds of contaminated soil from the site and transported it to a federally approved hazardous waste facility.



Entire Site: The EPA began studying the nature and extent of contamination at the site in 1989. Once their studies are completed, scheduled for mid-1992, the EPA will determine the best strategies for cleanup.

Environmental Progress



The initial soil and sludge removal actions described above have eliminated the possibility of contact threats from contaminated soil at the Potter's Septic Tank Service Pits site while investigations and cleanup activities are taking place.

Site Repository



Columbus County Library, Route 2, Highway 87, Riegelwood, NC 28456

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 ground-water 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.

GLOSSARY

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].

GLOSSARY

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 inundated 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.

GLOSSARY

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 contaminants 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.

GLOSSARY

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 con-

tamination 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.

GLOSSARY

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.

GLOSSARY

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, Dichloroethylene	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.