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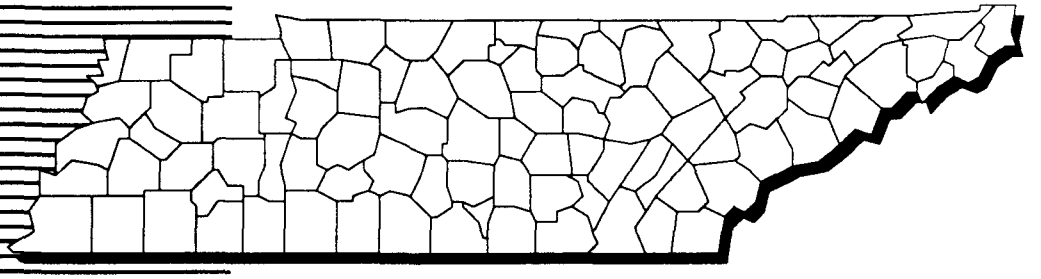
National Priorities List Sites:

TENNESSEE



1991

Publication #9200.5-741A
September 1991

NATIONAL PRIORITIES LIST SITES:
Tennessee

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Emergency & Remedial Response
Office of Program Management
Washington, DC 20460

If you wish to purchase copies of any additional State volumes contact:

National Technical Information Service (NTIS)
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650

The National Overview volume, **Superfund: Focusing on the Nation at Large (1991),** may be ordered as PB92-963253.

The complete set of the overview documents, plus the 49 state reports may be ordered as PB92-963253.

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A Brief Overview

WHY THE SUPERFUND PROGRAM?

As the 1970s came to a close, a series of headline stories gave Americans a look at the dangers of dumping industrial and urban wastes on the land. First there was New York's Love Canal. Hazardous waste buried there over a 25-year period contaminated streams and soil, and endangered the health of nearby residents. The result: evacuation of several hundred people. Then the leaking barrels at the Valley of the Drums in Kentucky attracted public attention, as did the dioxin-tainted land and water in Times Beach, Missouri.

In all these cases, human health and the environment were threatened, lives were disrupted, and property values were reduced. It became increasingly clear that there were large numbers of serious hazardous waste problems that were falling through the cracks of existing environmental laws. The magnitude of these emerging problems moved Congress to enact the Comprehensive Environmental Response, Compensation, and Liability Act in 1980. CERCLA — commonly known as Superfund — was the first Federal law established to deal with the dangers posed by the Nation's hazardous waste sites.

After Discovery, the Problem Intensified

Few realized the size of the problem until the Environmental Protection Agency (EPA) began the process of site discovery and site evaluation. Not hundreds, but thousands of potential hazardous waste sites existed, and they presented the Nation with some of the most complex pollution problems it had ever faced.

Since the Superfund program began, hazardous waste has surfaced as a major environmental concern in every part of the United States. It wasn't just the land that was contaminated by past disposal practices. Chemicals in the soil were spreading into the groundwater (a source of drinking water for many) and into streams, lakes, bays, and wetlands. Toxic vapors contaminated the air at some sites, while improperly disposed or stored wastes threatened the health of the surrounding community and the environment at others.

The EPA Identified More than 1,200 Serious Sites

The EPA has identified 1,245 hazardous waste sites as the most serious in the Nation. These sites comprise the National Priorities List; sites targeted for cleanup under Super-fund. But site discoveries continue, and the EPA estimates that, while some will be deleted after lengthy cleanups, this list, commonly called the NPL, will continue to grow by approximately 50 to 100 sites per year, potentially reaching 2,100 sites by the year 2000.

THE NATIONAL CLEANUP EFFORT IS MUCH MORE THAN THE NPL

From the beginning of the program, Congress recognized that the Federal government could

not and should not address all environmental problems stemming from past disposal practices. Therefore, the EPA was directed to set priorities and establish a list of sites to target. Sites on the NPL (1,245) thus are a relatively small subset of a larger inventory of potential hazardous waste sites, but they do comprise the most complex and compelling cases. The EPA has logged more than 35,000 sites on its national inventory of potentially hazardous waste sites and assesses each site within one year of being logged.

THE EPA IS MAKING PROGRESS ON SITE CLEANUP

The goal of the Superfund program is to tackle immediate dangers first and then move through the progressive steps necessary to eliminate any long-term risks to public health and the environment.

Superfund responds immediately to sites posing imminent threats to human health and the environment at both NPL sites and sites not on the NPL. The purpose is to stabilize, prevent, or temper the effects of a release of hazardous substances, or the threat of one, into the environment. These might include tire fires or transportation accidents involving the spill of hazardous chemicals. Because they reduce the threat a site poses to human health and the environment, immediate cleanup actions are an integral part of the Superfund program.

Immediate response to imminent threats is one of Superfund's most noted achievements. Where imminent threats to the public or environment were evident, the EPA has initiated or completed emergency actions that attacked the most serious threats of toxic exposure in more than 2,700 cases.

The ultimate goal for a hazardous waste site on the NPL is a permanent solution to an environmental problem that presents a serious threat to the public or the environment. This often requires a long-term effort. The EPA has aggressively accelerated its efforts to perform these long-term cleanups of NPL sites. More cleanups were started in 1987, when the Superfund law was amended, than in any previous year. By 1991, construction had started at more than four times as many sites as in 1986! Of the sites currently on the NPL, more than 500 — nearly half — have had construction cleanup activity. In addition, more than 400 more sites presently are in the investigation stage to determine the extent of site contamination and to identify appropriate cleanup remedies. Many other sites with cleanup remedies selected are poised for the start of cleanup construction activity. In measuring success by "progress through the cleanup pipeline," the EPA clearly is gaining momentum.

THE EPA MAKES SURE CLEANUP WORKS

The EPA has gained enough experience in cleanup construction to understand that environmental protection does not end when the remedy is in place. Many complex technologies — like those designed to clean up groundwater — must operate for many years in order to accomplish their objectives.

The EPA's hazardous waste site managers are committed to proper operation and maintenance of every remedy constructed. No matter who has been delegated responsibility for monitoring the cleanup work, the EPA will assure that the remedy is carefully followed and that it continues to do its job.

Likewise, the EPA does not abandon a site even after the cleanup work is done. Every five years, the Agency reviews each site where residues from hazardous waste cleanup still remain to ensure that public and environmental

health are being safeguarded. The EPA will correct any deficiencies discovered and will report to the public annually on all five-year reviews conducted that year.

CITIZENS HELP SHAPE DECISIONS

Superfund activities also depend upon local citizen participation. The EPA's job is to analyze the hazards and to deploy the experts, but the Agency needs citizen input as it makes choices for affected communities.

Because the people in a community where a Superfund site is located will be those most directly affected by hazardous waste problems and cleanup processes, the EPA encourages citizens to get involved in cleanup decisions. Public involvement and comment does influence EPA cleanup plans by providing valuable information about site conditions, community concerns, and preferences.

The State and U.S. Territories volumes and the companion National overview volume provide general Superfund background information and descriptions of activities at each NPL site. These volumes clearly describe what the problems are, what the EPA and others participating in site cleanups are doing, and how we, as a Nation, can move ahead in solving these serious problems.

USING THE STATE AND NATIONAL VOLUMES TOGETHER

To understand the big picture on hazardous waste cleanup, citizens need to hear about both environmental progress across the country and the cleanup accomplishments closer to home. Citizens also should understand the challenges involved in hazardous waste cleanup and the decisions we must make, as a Nation, in finding the best solutions.

The National overview, *Superfund: Focusing on the Nation at Large (1991),* contains important information to help you understand the magnitude and challenges facing the Superfund program, as well as an overview of the National cleanup effort. The sections describe the nature of the hazardous waste problem nationwide, threats and contaminants at NPL sites and their potential effects on human health and the environment, vital roles of the various participants in the cleanup process, the Superfund program's successes in cleaning up the Nation's serious hazardous waste sites, and the current status of the NPL. If you did not receive this overview volume, ordering information is provided in the front of this book.

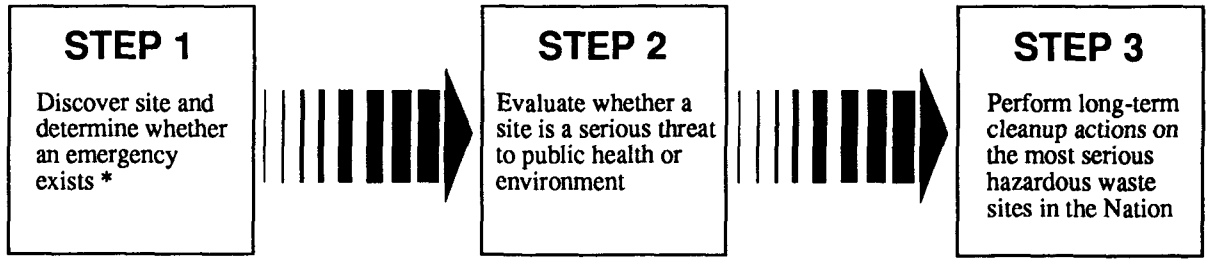
This volume compiles site summary fact sheets on each State or Territorial site being cleaned up under the Superfund program. These sites represent the most serious hazardous waste problems in the Nation and require the most complicated and costly site solutions yet encountered. Each book gives a "snapshot" of the conditions and cleanup progress that has been made at each NPL site. Information presented for each site is current as of April 1991. Conditions change as our cleanup efforts continue, so these site summaries will be updated annually to include information on new progress being made.

To help you understand the cleanup accomplishments made at these sites, this volume includes a description of the process for site discovery, threat evaluation, and long-term cleanup of Superfund sites. This description, *How Does the Program Work to Clean Up Sites?,* will serve as a reference point from which to review the cleanup status at specific sites. A glossary defining key terms as they apply to hazardous waste management and site cleanup is included as Appendix A in the back of this book.

How Does the Program Work to Clean Up Sites?

The diverse problems posed by hazardous waste sites have provided the EPA with the challenge to establish a consistent approach for evaluating and cleaning up the Nation's most serious sites. To do this, the EPA has had to step beyond its traditional role as a regulatory agency to develop processes and guidelines for each step in these technically complex site cleanups. The EPA has established procedures to coordinate the efforts of its Washington, D.C. Headquarters program offices and its front-line staff in ten Regional Offices, with the State and local governments, contractors, and private parties who are participating in site cleanup. An important part of the process is that any time during cleanup, work can be led by the EPA or the State or, under their monitoring, by private parties who are potentially responsible for site contamination.

THREE-STEP SUPERFUND PROCESS



** Emergency actions are performed whenever needed in this three-step process.*

The process for discovery of the site, evaluation of threat, and the long-term cleanup of Superfund sites is summarized in the following pages. The phases of each of these steps are highlighted within the description. The flow diagram above provides a summary of the three-step process.

Although this book provides a current "snapshot" of site progress made only by emergency actions and long-term cleanup actions at Superfund sites, it is important to understand the discovery and evaluation process that leads to identifying and cleaning up these most serious uncontrolled or abandoned hazardous

waste sites in the Nation. The discovery and evaluation process is the starting point for this summary description of Superfund involvement at hazardous waste sites.

STEP 1: SITE DISCOVERY AND EMERGENCY EVALUATION

How does the EPA learn about potential hazardous waste sites?

Site discovery occurs in a number of ways. Information comes from concerned citizens. People may notice an odd taste or foul odor in their drinking water or see half-buried leaking barrels; a hunter may come across a field where waste was dumped illegally. There may be an explosion or fire, which alerts the State or local authorities to a problem. Routine investigations by State and local governments and required reporting and inspection of facilities that generate, treat, store, or dispose of hazardous waste also help keep the EPA informed about actual or potential threats of hazardous substance releases. All reported sites or spills are recorded in the Superfund inventory (CERCLIS) for further investigation to determine whether they will require cleanup.

What happens if there is an imminent danger?

As soon as a potential hazardous waste site is reported, the EPA determines whether there is an emergency requiring an immediate cleanup action. If there is, they act as quickly as possible to remove or stabilize the imminent threat. These short-term emergency actions range from building a fence around the contaminated area to keep people away, or temporarily relocating residents until the danger is addressed, to providing bottled water to residents while their local drinking water supply is being cleaned up or physically removing wastes for safe disposal.

However, emergency actions can happen at any time an imminent threat or emergency warrants them. For example, if leaking barrels are found when cleanup crews start digging in the ground or if samples of contaminated soils or air show that there may be a threat of fire or explosion, an immediate action is taken.

STEP 2: SITE THREAT EVALUATION

If there isn't an imminent danger, how does the EPA determine what, if any, cleanup actions should be taken?

Even after any imminent dangers are taken care of, in most cases, contamination may remain at the site. For example, residents may have been supplied with bottled water to take care of their immediate problem of contaminated well water, but now it's time to determine what is contaminating the drinking water supply and the best way to clean it up. The EPA may determine that there is no imminent danger from a site, so any long-term threats need to be evaluated. In either case, a more comprehensive investigation is needed to determine if a site poses a serious, but not imminent, danger and whether it requires a long-term cleanup action.

Once a site is discovered and any needed emergency actions are taken, the EPA or the State collects all available background information not only from their own files, but also from local records and U.S. Geological Survey maps. This information is used to identify the site and to perform a preliminary assessment of its potential hazards. This is a quick review of readily available information to answer the questions:

- Are hazardous substances likely to be present?

- How are they contained?
- How might contaminants spread?
- How close is the nearest well, home, or natural resource area such as a wetland or animal sanctuary?
- What may be harmed — the land, water, air, people, plants, or animals?

Some sites do not require further action because the preliminary assessment shows that they do not threaten public health or the environment. But even in these cases, the sites remain listed in the Superfund inventory for record-keeping purposes and future reference. Currently, there are more than 35,000 sites maintained in this inventory.

If the preliminary assessment shows a serious threat may exist, what's the next step?

Inspectors go to the site to collect additional information to evaluate its hazard potential. During this *site inspection,* they look for evidence of hazardous waste, such as leaking drums and dead or discolored vegetation. They may take some samples of soil, well water, river water, and air. Inspectors analyze the ways hazardous materials could be polluting the environment, such as runoff into nearby streams. They also check to see if people (especially children) have access to the site.

How does the EPA use the results of the site inspection?

Information collected during the site inspection is used to identify the sites posing the most serious threats to human health and the environment. This way, the EPA can meet the requirement that Congress gave them to use Superfund monies only on the worst hazardous waste sites in the Nation.

To identify the most serious sites, the EPA developed the Hazard Ranking System (HRS). The HRS is the scoring system the EPA uses to assess the relative threat from a release or a potential release of hazardous substances from a site to surrounding groundwater, surface water, air, and soil. A site score is based on the likelihood that a hazardous substance will be released from the site, the toxicity and amount of hazardous substances at the site, and the people and sensitive environments potentially affected by contamination at the site.

Only sites with high enough health and environmental risk scores are proposed to be added to the NPL. That's why 1,245 sites are on the NPL, but there are more than 35,000 sites in the Superfund inventory. Only NPL sites can have a long-term cleanup paid for from Superfund, the national hazardous waste trust fund. Superfund can, and does, pay for emergency actions performed at any site, whether or not it's on the NPL.

Why are sites proposed to the NPL?

Sites proposed to the NPL have been evaluated through the scoring process as the most serious problems among uncontrolled or abandoned hazardous waste sites in the U.S. In addition, a site will be proposed to the NPL if the Agency for Toxic Substances and Disease Registry issues a health advisory recommending that people be moved away from the site. The NPL is updated at least once a year, and it's only after public comments are considered that these proposed worst sites officially are added to the list.

Listing on the NPL does not set the order in which sites will be cleaned up. The order is influenced by the relative priority of the site's health and environmental threats compared to other sites, and such factors as State priorities, engineering capabilities, and available tech-

nologies. Many States also have their own list of sites that require cleanup; these often contain sites that are not on the NPL and are scheduled to be cleaned up with State money. And, it should be noted again that any emergency action needed at a site can be performed by the Superfund, whether or not a site is on the NPL.

A detailed description of the current progress in cleaning up NPL sites is found in the section of the 1991 National overview volume entitled *Cleanup Successes: Measuring Progress.*

How do people find out whether the EPA considers a site a national priority for cleanup under the Superfund Program?

All NPL sites, where Superfund is responsible for cleanup, are described in the State and Territorial volumes. The public also can find out whether other sites, not on the NPL, are being addressed by the Superfund program by calling their Regional EPA office or the Superfund Hotline at the numbers listed in this book.

STEP 3: LONG-TERM CLEANUP ACTIONS

After a site is added to the NPL, what are the steps to cleanup?

The ultimate goal for a hazardous waste site on the NPL is a permanent, long-term cleanup. Since every site presents a unique set of challenges, there is no single all-purpose solution. A five-phase "remedial response" process is used to develop consistent and workable solutions to hazardous waste problems across the Nation:

1. *Remedial Investigation*: investigate in detail the extent of the site contamination
2. *Feasibility Study*: study the range of possible cleanup remedies
3. *Record of Decision or ROD*: decide which remedy to use
4. *Remedial Design*: plan the remedy
5. *Remedial Action*: carry out the remedy

This remedial response process is a long-term effort to provide a permanent solution to an environmental problem that presents a serious threat to the public or environment.

The first two phases of a long-term cleanup are a combined *remedial investigation and feasibility study* (RI/FS) that determine the nature and extent of contamination at the site and identify and evaluate cleanup alternatives. These studies may be conducted by the EPA or the State or, under their monitoring, by private parties.

Like the initial site inspection described earlier, a remedial investigation involves an examination of site data in order to better define the problem. However, the remedial investigation is much more detailed and comprehensive than the initial site inspection.

A remedial investigation can best be described as a carefully designed field study. It includes extensive sampling and laboratory analyses to generate more precise data on the types and quantities of wastes present at the site, the type of soil and water drainage patterns, and specific human health and environmental risks.

The result of the remedial investigation is information that allows the EPA to select the cleanup strategy that is best suited to a particular site or to determine that no cleanup is needed.

Placing a site on the NPL does not necessarily mean that cleanup is needed. It is possible for

a site to receive an HRS score high enough to be added to the NPL, but not ultimately require cleanup actions. Keep in mind that the purpose of the scoring process is to provide a preliminary and conservative assessment of *potential* risk. During subsequent site investigations, the EPA may find either that there is no real threat or that the site does not pose significant human health or environmental risks.

How are cleanup alternatives identified and evaluated?

The EPA or the State or, under their monitoring, private parties identify and analyze specific site cleanup needs based on the extensive information collected during the remedial investigation. This analysis of cleanup alternatives is called a *feasibility study*.

Since cleanup actions must be tailored exactly to the needs of each individual site, more than one possible cleanup alternative is always considered. After making sure that all potential cleanup remedies fully protect human health and the environment and comply with Federal and State laws, the advantages and disadvantages of each cleanup alternative are compared carefully. These comparisons are made to determine their effectiveness in the short and long term, their use of permanent treatment solutions, and their technical feasibility and cost.

To the maximum extent practicable, the remedy must be a permanent solution and must use treatment technologies to destroy principal site contaminants. Remedies such as containing the waste on site or removing the source of the problem (like leaking barrels) often are considered effective. Often, special pilot studies are conducted to determine the effectiveness and feasibility of using a particular technology to clean up a site. Therefore, the combined remedial investigation and feasibility study can take between 10 and 30 months to complete, depending on the size and complexity of the problem.

Does the public have a say in the final cleanup decision?

Yes. The Superfund law requires that the public be given the opportunity to comment on the proposed cleanup plan. Their concerns are considered carefully before a final decision is made.

The results of the remedial investigation and feasibility study, which also point out the recommended cleanup choice, are published in a report for public review and comment. The EPA or the State encourages the public to review the information and take an active role in the final cleanup decision. Fact sheets and announcements in local papers let the community know where they can get copies of the study and other reference documents concerning the site. Local information repositories, such as libraries or other public buildings, are established in cities and towns near each NPL site to ensure that the public has an opportunity to review all relevant information and the proposed cleanup plans. Locations of information repositories for each NPL site described in this volume are given in Appendix B.

The public has a minimum of 30 days to comment on the proposed cleanup plan after it is published. These comments can be written or given verbally at public meetings that the EPA or the State are required to hold. Neither the EPA nor the State can select the final cleanup remedy without evaluating and providing written answers to specific community comments and concerns. This "responsiveness summary" is part of the EPA's write-up of the final remedy decision, called the Record of Decision, or ROD.

The ROD is a public document that explains the cleanup remedy chosen and the reason it

was selected. Since sites frequently are large and must be cleaned up in stages, a ROD may be necessary for each contaminated resource or area of the site. This may be necessary when contaminants have spread into the soil, water, and air and affect such sensitive areas as wetlands, or when the site is large and cleaned up in stages. This often means that a number of remedies, using different cleanup technologies, are needed to clean up a single site.

If every cleanup action needs to be tailored to a site, does the design ofthe remedy need to be tailored, too?

Yes. Before a specific cleanup action is carried out, it must be designed in detail to meet specific site needs. This stage of the cleanup is called the *remedial design.* The design phase provides the details on how the selected remedy will be engineered and constructed.

Projects to clean up a hazardous waste site may appear to be like any other major construction project but, in fact, the likely presence of combinations of dangerous chemicals demands special construction planning and procedures. Therefore, the design of the remedy can take anywhere from six months to two years to complete. This blueprint for site cleanup includes not only the details on every aspect of the construction work, but a description of the types of hazardous wastes expected at the site, special plans for environmental protection, worker safety, regulatory compliance, and equipment decontamination.

Once the design is completed, how long does it take to actually clean up the site, and how much does it cost?

The time and cost for performing the site cleanup, called the *remedial action,* are as varied as the remedies themselves. In a few cases, the only action needed may be to remove drums of hazardous waste and to decontaminate them, an action that takes limited time and money. In most cases, however, a remedial action may involve different and expensive cleanup measures that can take a long time.

For example, cleaning polluted groundwater or dredging contaminated river bottoms can take several years of complex engineering work before contamination is reduced to safe levels. Sometimes the selected cleanup remedy described in the ROD may need to be modified because of new contaminant information discovered or difficulties that were faced during the early cleanup activities. Taking into account these differences, each remedial cleanup action takes an average of 18 months to complete and ultimately costs an average of $26 million to complete all necessary cleanup actions at a site .

Once the cleanup action is completed, is the site automatically "deleted" from the NPL?

No. The deletion of a site from the NPL is anything but automatic. For example, cleanup of contaminated groundwater may take up to 20 years or longer. Also, in some cases, *long-term monitoring* of the remedy is required to ensure that it is effective. After construction of certain remedies, operation and maintenance (e.g., maintenance of ground cover, groundwater monitoring, etc.), or continued pumping and treating of groundwater may be required to ensure that the remedy continues to prevent future health hazards or environmental damage and ultimately meets the cleanup goals specified in the ROD. Sites in this final monitoring or operational stage of the cleanup process are designated as "construction complete."

It's not until a site cleanup meets all the goals and monitoring requirements of the selected

remedy that the EPA can officially propose the site for *deletion* from the NPL, and it's not until public comments are taken into consideration that a site actually can be deleted from the NPL. All sites deleted from the NPL and sites with completed construction are included in the progress report found later in this book.

Can a site be taken off the NPL if no cleanup has taken place?

Yes. But only if further site investigation reveals that there are no threats present at the site and that cleanup activities are not necessary. In these cases, the EPA will select a "no action" remedy and may move to delete the site when monitoring confirms that the site does not pose a threat to human health or the environment.

In other cases, sites may be "removed" from the NPL if new information concerning site cleanup or threats show that the site does not warrant Superfund activities.

A site may be removed if a revised HRS scoring, based on updated information, results in a score below the minimum for NPL sites. A site also may be removed from the NPL by transferring it to other appropriate Federal cleanup authorities, such as RCRA, for further cleanup actions.

Removing sites for technical reasons or transferring sites to other cleanup programs preserves Superfund monies for the Nation's most pressing hazardous waste problems where no other cleanup authority is applicable.

Can the EPA make parties responsible for the contamination pay?

Yes. Based on the belief that "the polluters should pay," after a site is placed on the NPL, the EPA makes a thorough effort to identify and find those responsible for causing contamination problems at a site. Although the EPA is willing to negotiate with these private parties and encourages voluntary cleanup, it has the authority under the Superfund law to legally force those potentially responsible for site hazards to take specific cleanup actions. All work performed by these parties is closely guided and monitored by the EPA and must meet the same standards required for actions financed through the Superfund.

Because these enforcement actions can be lengthy, the EPA may decide to use Superfund monies to make sure a site is cleaned up without unnecessary delay. For example, if a site presents an imminent threat to public health and the environment or if conditions at a site may worsen, it could be necessary to start the cleanup right away. Those responsible for causing site contamination are liable under the law (CERCLA) for repaying the money the EPA spends in cleaning up the site.

Whenever possible, the EPA and the Department of Justice use their legal enforcement authorities to require responsible parties to pay for site cleanups, thereby preserving Superfund resources for emergency actions and for sites where no responsible parties can be identified.

How to Use the State Book

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

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

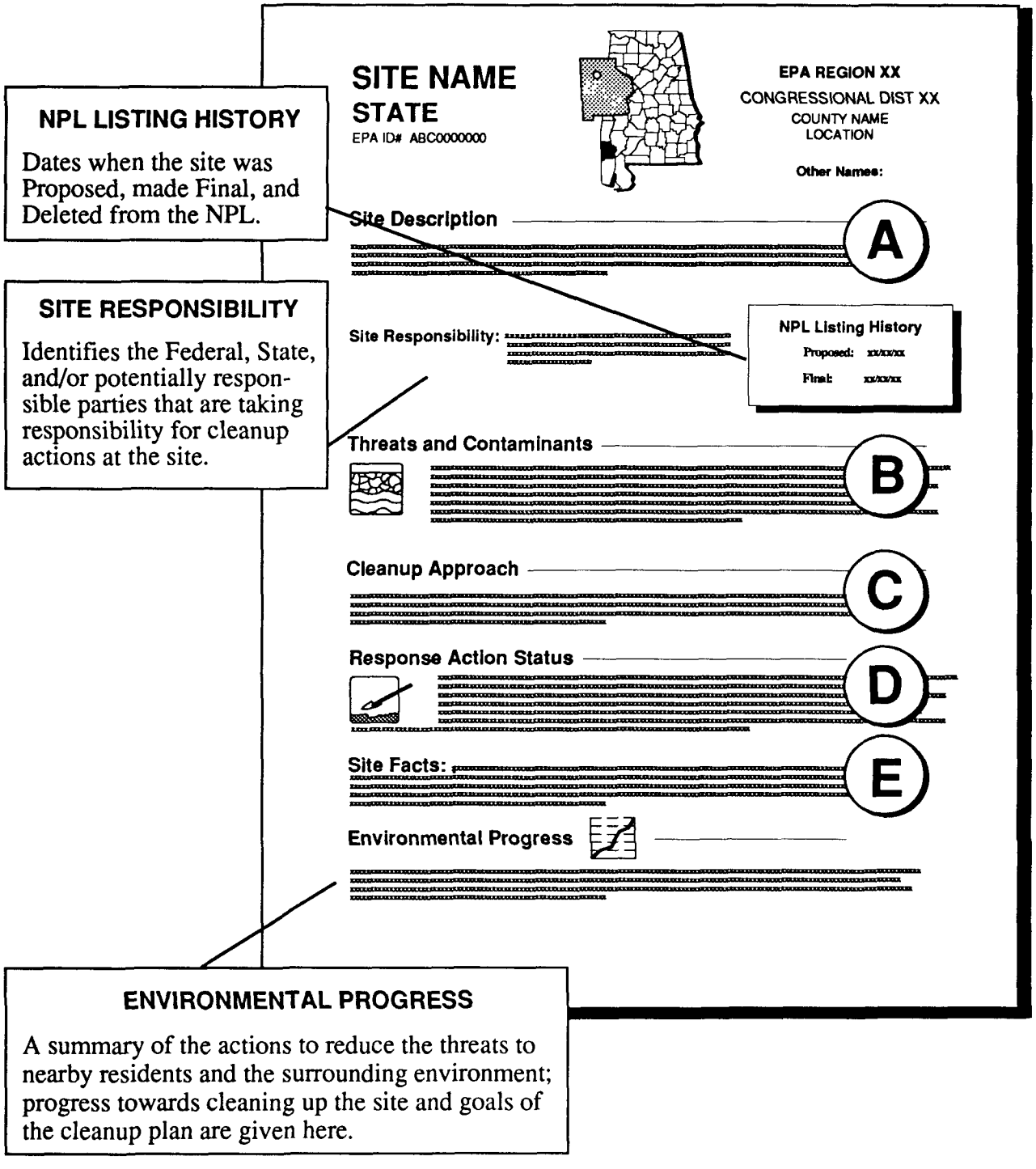
HOW CAN YOU USE THIS STATE BOOK?

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

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

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

THE VOLUME



NPL LISTING HISTORY

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

SITE RESPONSIBILITY

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

ENVIRONMENTAL PROGRESS

A summary of the actions to reduce the threats to nearby residents and the surrounding environment; progress towards cleaning up the site and goals of the cleanup plan are given here.

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

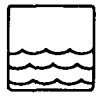
Additional information on activities and events at the site are included in this section. Often details on legal or administrative actions taken by the EPA to achieve site cleanup or other facts pertaining to community involvement with the site cleanup process are reported here.

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 Contaminated *Groundwater* 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.)

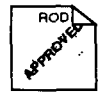
Contaminated *Soil and Sludges* on or near the site. (This contamination category may include bulk or other surface hazardous wastes found on the site.)

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

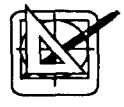
Icons in the Response Action Status Section

Initial 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.

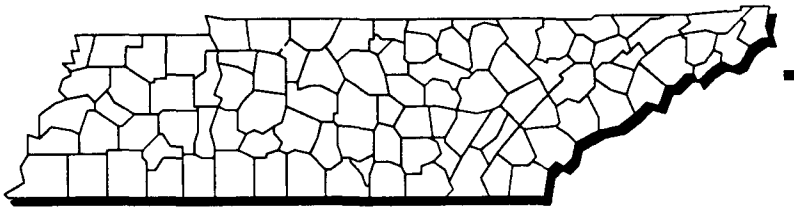


Remedy Design means that engineers are preparing specifications and drawings for the selected cleanup technologies.

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.

Environmental Progress summarizes the activities taken to date to protect human health and to clean up site contamination.



The State of Tennessee

Bordered by eight states, Tennessee is located within EPA Region 4, which includes eight southeastern states. The state covers 42,144 square miles and consists of rugged country in the east, the Great Smoky Mountains, low ridges of the Appalachian Valley, the flat Cumberland Plateau, and the Eastern Gulf Coastal Plain, which is laced with meandering streams. Tennessee has experienced a 6% increase in population between 1980 and 1990, according to the 1990 Census, and currently has approximately 4,877,000 residents, ranking 17th in U.S. populations. Principal state industries are trade, services, and the manufacturing of machinery, transportation equipment, foods, refined petroleum, and apparel.

How Many NPL Sites Are in the State of Tennessee?

Proposed	0
Final	14
Deleted	0
	14

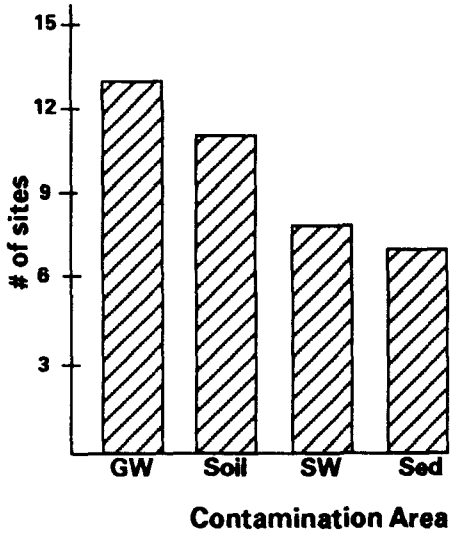
Where Are the NPL Sites Located?

Congressional Districts 2, 3, 5, 6	1 site
Congressional Districts 4, 8	2 sites
Congressional Districts 7, 9	3 sites

What Type of Sites Are on the NPL in the State of Tennessee?

# of sites	type of sites
5	Disposal Facilities
2	Electronics & Electrical Equipment
2	Lumber & Wood Treatment
2	Federal Facilities
1	Municipal & Industrial Facilities
1	Chemical & Allied Products
1	Electric Power Production & Distribution

How Are Sites Contaminated and What Are the Principal* Chemicals?



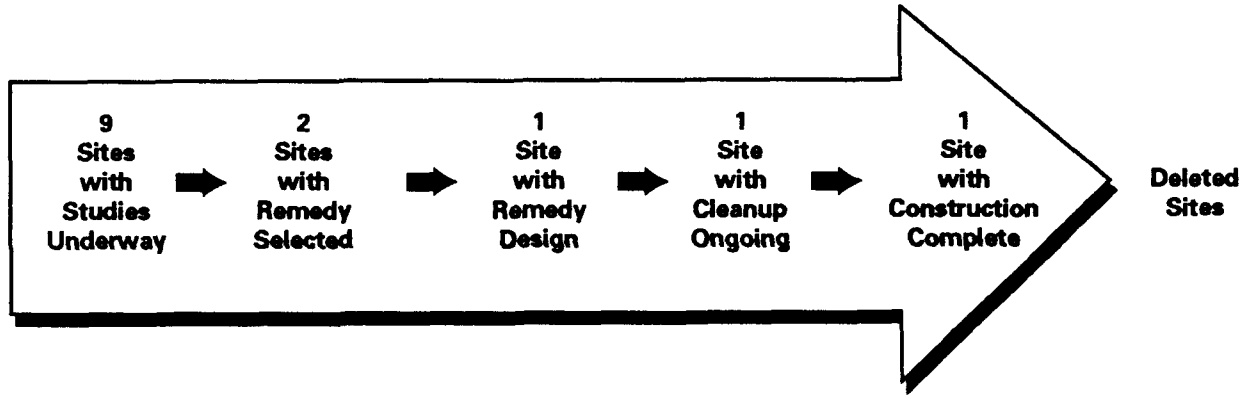
Groundwater: Heavy metals (inorganics), volatile organic compounds (VOCs), creosote (organics), and pesticides.

Soil: Heavy metals (inorganics), volatile organic compounds (VOCs), pesticides, creosote (organics), and radiation.

Surface Water and Sediments: Heavy metals (inorganics), volatile organic compounds (VOCs), and pesticides.

*Appear at 15% or more sites

Where Are the Sites in the Superfund Cleanup Process?†



In addition to the activities described above initial actions have been taken at 12 sites as interim cleanup measures.

†Cleanup status reflects phases of site activities rather than administrative accomplishments.

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 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.

- 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 is 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.

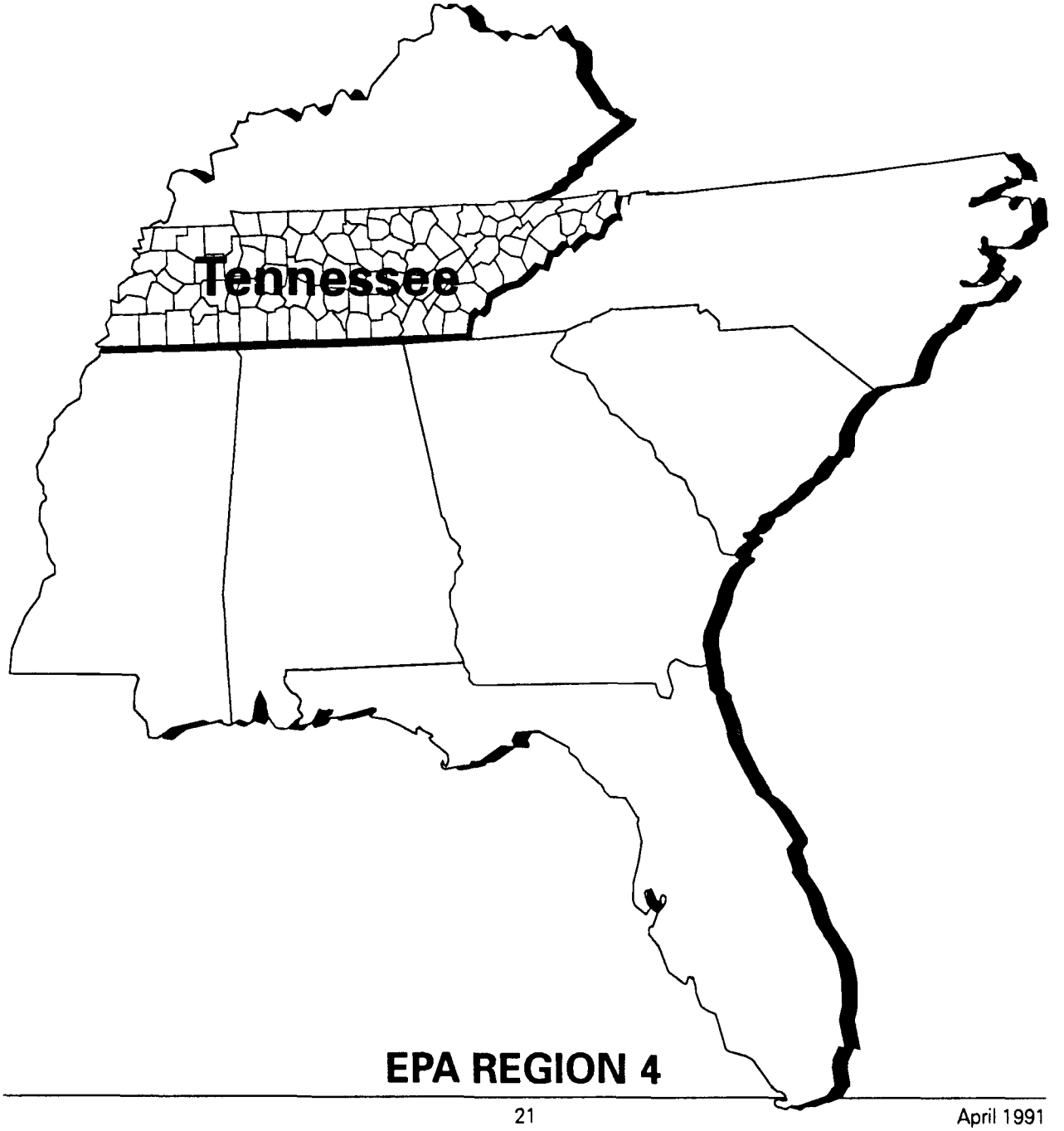
- A check in the "Deleted" category indicates that the site cleanup has met all human health and environmental goals and that the EPA has deleted the site from the NPL.

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 Tennessee

Page	Site Name	County	NPL	Date	Initial Response	Site Studies	Remedy Selected	Remedy Design	Cleanup Ongoing	Construction Complete	Deleted
23	AMERICAN CREOSOTE WORKS	MADISON	Final	06/01/86	⇨	⇨	⇨	⇨	⇨		
25	AMNICOLA DUMP	HAMILTON	Final	09/01/83		⇨	⇨	⇨			
27	ARLINGTON BLENDING AND PACKAGING	SHELBY	Final	07/07/87	⇨	⇨					
29	CARRIER AIR CONDITIONING CO.	SHELBY	Final	02/16/90	⇨	⇨					
31	GALLAWAY PITS	FAYETTE	Final	09/01/83	⇨	⇨	⇨	⇨	⇨	⇨	
33	LEWISBURG DUMP	MARSHALL	Final	09/01/83		⇨	⇨				
35	MALLORY CAPACITOR COMPANY	WAYNE	Final	10/04/89	⇨	⇨					
37	MILAN ARMY AMMO PLANT	CARROLL/ GIBSON	Final	08/21/87	⇨	⇨					
39	MURRAY-OHIO DUMP	LAWRENCE	Final	09/01/83	⇨	⇨					
41	MURRAY-OHIO MANUFACTURING CO. (HORSESHOE BEND DUMP)	LAWRENCE	Final	08/30/90	⇨	⇨					
43	NORTH HOLLYWOOD DUMP	SHELBY	Final	09/08/83	⇨	⇨	⇨				
45	OAK RIDGE RESERVATION (USDOE)	ANDERSON	Final	11/21/89	⇨	⇨					
47	VELSICOL CHEMICAL CORP.	HARDEMAN	Final	09/01/83	⇨	⇨					
49	WRIGLEY CHARCOAL PLANT	HICKMAN	Final	03/31/89	⇨	⇨					

Summary of Site Activities



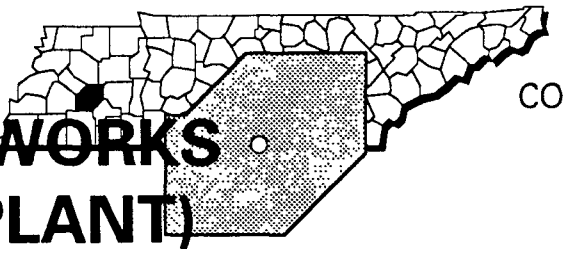
EPA REGION 4

Who Do I Call with Questions?

The following pages describe each NPL site in Tennessee, providing specific information on threats and contaminants, cleanup activities, and environmental progress. Should you have questions, please call the EPA's Region 4 Office in Atlanta, Georgia or one of the other offices listed below:

EPA Region 4 Superfund Community Relations Office	(404) 347-3454
EPA Region 4 Superfund Office	(404) 347-5065
EPA Superfund Hotline	(800) 424-9346
EPA Headquarters Public Information Center	(202) 260-2080
Tennessee Superfund Office	(615) 741-6287

AMERICAN CREOSOTE WORKS (JACKSON PLANT)



TENNESSEE

EPA ID# TND007018799

EPA REGION 4
CONGRESSIONAL DIST. 08
Madison County
South of Jackson

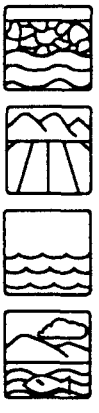
Site Description

The 60-acre American Creosote Works (Jackson Plant) site was a wood-treatment plant that began operations in the early 1930s and continued until late 1981, when the company filed for bankruptcy. Originally, the site consisted of the treatment buildings, pressure cylinders, boiler room tanks, oil storage tanks, tank cars, and railroad tracks. There also were four large wastewater lagoons, two sand filter units, and drip yards. Operators used creosote and pentachlorophenol (PCP) to treat and preserve wood. Workers discharged process wastewater directly to Old River Run until 1973, when a levee was built around the facility to contain surface water runoff and wastewater. From 1974 to 1975, the plant installed a wastewater treatment system. The pits created during construction of the levee were used to store treated process water and derivative sludges. Subsequently, flooding from the accumulation of rainfall caused the lagoons to overflow into the main process area. Jackson has a population of 49,000. A city well field lies approximately 1 1/2 miles east of the site, and several public and private wells are located within a 3-mile radius. The closest homes are located within a mile of the site. Homes with private wells are located upgradient from the site, a situation that lessens risk. The south fork of the Deer River, less than 1/4 mile from the site, receives runoff from the site via Central Creek and an unnamed tributary that follows the southern border of the site. Wetlands lying along both sides of the river support a large variety of wildlife species.

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

NPL LISTING HISTORY
Proposed Date: 10/01/84
Final Date: 06/01/86

Threats and Contaminants



Groundwater underlying the facility and on-site soils are contaminated with volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals from the wood-treating processes. Sediments contain PAH levels similar to those in soils and low levels of dieldrin, a pesticide. Cleanup workers may incur a health risk if they accidentally ingest contaminated soil or water.

Cleanup Approach

The site is being addressed in three stages: immediate actions and two long-term remedial phases focusing on cleanup of the entire site and the water.

Response Action Status

Immediate Actions: In 1983, the EPA removed 30 million gallons of water from the site, treated 500,000 gallons of contaminated water, and solidified more than 100,000 cubic yards of sludge from on-site lagoons and treatment areas. Workers placed the solidified materials in an old lagoon and capped it with clay to await further cleanup. In 1986, EPA emergency staff treated about 225,000 gallons of contaminated water from the storage tanks using hydrated lime and polymers, and 28,000 gallons of oil were consolidated in one secured tank. Workers built covers for the treatment system and open storage tanks. In 1988, the tank area and a large portion of the site was fenced. As of 1989, the EPA completed a modification of the drainage system on the river side of the site, an effort being overseen by the State of Tennessee.

Entire Site: The following cleanup actions were selected in 1989 and have been completed: (1) the contaminated soils and sludge were removed from the process area and incinerated off site; (2) all tank liquids were treated and disposed of; (3) a security fence was installed around most of the site; and (4) the process area was cleaned up. Some construction debris still remains at the site. The State repaired the levee on the river side of the site, and a drainage pipe to the river was installed. Further cleanup activities are underway and are planned for completion in 1991. Treatability studies for tank sludges have been completed. Treatability studies for the bioremediation of surface soils still need to be performed.

Water: Pending selection of the final remedy for cleaning up the water, the EPA intends to monitor water levels behind the dikes and pump, treat as needed, and discharge impounded water. Information is still being gathered to model the groundwater flow, and the semi-confining clay layer under the site needs to be re-examined. Although the necessary preliminary studies are still underway, the EPA plans to include removal of structures from outside the process area and other incidental construction in the final remedy.

Site Facts: A Superfund State Contract was signed in May 1989. Meetings with the U.S. Army Corps of Engineers and U.S. Geological Survey (USGS) have been held concerning dike construction and groundwater characterization. In 1989, the EPA signed an Interagency Agreement with the USGS for a hydrogeological study to determine the nature and extent of contamination to the hydrology of the site. In March 1990, the USGS began the field work for this study, which is scheduled for completion in 1993.

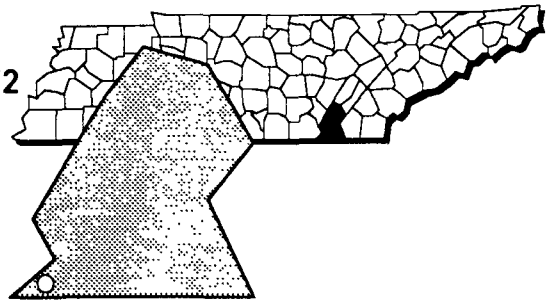
Environmental Progress

The numerous immediate actions to treat and contain wastes and secure the site with a fence have reduced the potential for exposure to hazardous materials at the American Creosote Works (Jackson Plant) site. Final source control cleanup is nearly completed, and further investigations leading to the selection of a final groundwater remedy are taking place.

AMNICOLA DUMP

TENNESSEE

EPA ID# TND980729172



EPA REGION 4

CONGRESSIONAL DIST. 03

Hamilton County

In Chattanooga, along the east bank of the Tennessee River

Site Description

The 18-acre inactive Amnicola Dump site, located in Chattanooga, was used for clay mining operations in the 1930s, and several water-filled pits were left behind. These subsequently were used for disposal of construction debris. The City operated the dump between 1964 and 1973, incinerating waste wood on site and disposing of the ashes over 12 acres. The operation was closed in 1973 due to concerns about unauthorized dumping and leachate seeping into the Tennessee River. Streams of leachate containing low concentrations of trichloroethylene (TCE) leave the site seasonally and enter the Tennessee River; however, water quality downstream has not been noticeably affected. The former site owner burned, stored, and handled creosote railroad ties, activities that contributed to elevated contamination in the surface soil. The site lies in an industrial area, and about 150,000 people live within a 2-mile radius of the site. No residential areas are in the immediate vicinity, and the nearest population center is about 1/2 mile away. The site is situated along the eastern bank of the Tennessee River, 1/2 mile upstream from the city intake, although no site-related contaminants have been identified.

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, debris, and soil on the site contain polycyclic aromatic hydrocarbons (PAHs) and heavy metals including chromium from the incineration of waste wood. Sediments are polluted with phenols. People can be exposed to pollutants by coming in direct contact with contaminated soil or leachate or inhaling contaminants that evaporate into the air. The Tennessee River flows by the site and may be affected by contamination from the site.

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 selected a final cleanup remedy for this site in 1989. It is intended to reduce the risks associated with exposure to contaminated, on-site surface soils and features: (1) excavating contaminated surface soil and debris and screening out debris; (2) treating contaminated soil by solidifying it to keep chemicals from moving; (3) restoring the ground surface to its original condition; (4) imposing restrictions on groundwater use and land use; (5) quarterly groundwater monitoring for four years; and (6) conducting a public health assessment five years after cleanup. The engineering design for the cleanup activities commenced in 1989.

Site Facts: In 1991, the EPA and the parties potentially responsible for site contamination signed a Consent Decree for these parties to take over engineering design and cleanup activities in mid-1991.

Environmental Progress

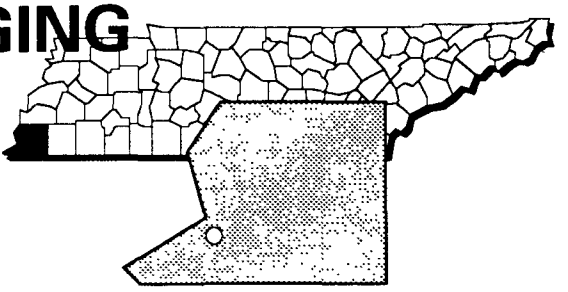
After adding this site to the NPL, the EPA performed preliminary investigations and determined that no immediate actions were needed at the Amnicola Dump site while cleanup activities are being planned.

ARLINGTON BLENDING AND PACKAGING

TENNESSEE

EPA ID# TND980468557

EPA REGION 4
CONGRESSIONAL DIST. 09
Shelby County
Arlington



Site Description

From 1971 to 1978, the 1/2-acre Arlington Blending and Packaging site housed a pesticide blending and packaging operation. When the site was abandoned for economic reasons, operators left behind deteriorating bags of pesticides and 1,000 to 1,200 drums, many of which were leaking. In the mid-1970s, the State took action against the company for its violations of the Clean Water Act, demanding that it reduce pesticide contamination in tributaries leading to the Loosahatchie River Canal. The 1976 report issued by the company in response satisfied State concerns. In 1979, after sampling the site and an adjacent housing development, the State recommended that the developer install a fence between the homes and the plant and apply 1 to 2 inches of clean topsoil in the backyards of the two homes closest to the plant. Between 1980 and 1983, the site owner removed some pesticide wastes from the site. Excavation of contaminated soil was performed in 1990 after investigators discovered pesticides in the yard of a nearby residence. There is a small residential area to the east of the site; the closest home is 50 feet away. Approximately 2,700 people live within 3 miles of the site, drawing drinking water from two water systems serving the communities of Arlington and Gallaway. An Arlington well is within 1,200 feet of the site. The site is in the flood plain of the Loosahatchie River Canal. The probable drainage route from the site leads to a nearby canal that is used for recreation.

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

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

Threats and Contaminants

In 1983, the EPA discovered high concentrations of various pesticides in on-site soils and around the housing development. In 1985, the State detected pesticides in a shallow monitoring well from the deteriorating bags left on the site. The three water-bearing zones under the site are used as drinking water sources and have the potential for contamination from pesticide residues at the site. The upper zone is contaminated with chlordane and other pesticides. Although removal actions have reduced the potential for exposure of people to contaminants, any remaining groundwater contamination could threaten people who drink it.

Cleanup Approach

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

Response Action Status

Immediate Actions: In 1983, the EPA removed 3,500 gallons of chemicals from the drums, collected debris, and excavated 1,920 cubic yards of contaminated surface soils both on and off the site. All materials were transported to EPA-approved disposal facilities. In 1990, the EPA, while conducting an investigation, discovered a significant concentration of pesticides in the backyard of a residence adjacent to the site. Immediate actions included the excavation and backfilling of the affected property, which eliminated the health risks posed to the residents.

Soil and Groundwater: The EPA has completed an intensive study of soil and groundwater pollution at the site. The proposed remedy includes: excavation and decontamination of contaminated soil, with placement of the treated soil in excavated areas; dechlorination of liquids with off-site disposal; on-site activated carbon treatment of the contaminated groundwater, with discharge of the treated groundwater into surface water; and on-side solidification of soils containing arsenic and other trace metals. The design of the remedy is scheduled to begin in 1991 after its final acceptance, which will occur upon completion of a public review period.

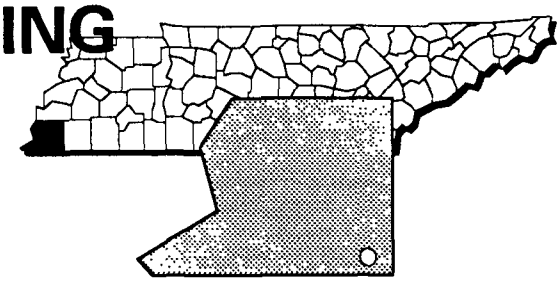
Environmental Progress

The immediate soil and drum removal actions described above have reduced the potential for exposure to hazardous materials at the Arlington Blending and Packaging site while cleanup activities are being chosen and designed.

CARRIER AIR CONDITIONING COMPANY

TENNESSEE

EPA ID# TND044062222



EPA REGION 4
CONGRESSIONAL DIST. 07
Shelby County
Collierville

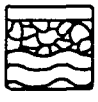
Site Description

Carrier Air Conditioning Company, part of United Technologies, manufactures air conditioners on approximately 145 acres of land. Three releases of trichloroethylene (TCE) to the environment have been documented. Starting in 1972, Carrier operated an unlined, 200-cubic-foot lagoon for storage of TCE-contaminated paint sludges, which leaked from 1972 to 1980. In 1978, a filter cover failed on a vapor degreaser, spilling 2,000 to 5,000 gallons of TCE. A third release occurred in 1985 when, following a period of heavy rainfall, an unknown volume of TCE leaked from underground pipes. The company was able to recover 542 gallons of TCE. As a result of this spill, wells were installed at the facility to monitor the Memphis Sands Aquifer. The Carrier facility is located within 2,000 feet of Water Plant Well #2 of the City of Collierville. An estimated 12,800 people obtain drinking water from wells in the aquifer within 3 miles of the site.

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

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

Threats and Contaminants



TCE was detected in several monitoring wells at the facility in 1986 from plant operations. Low levels of TCE were found in both wells at Water Plant #2 of the City of Collierville. Soil samples collected at the spill site by the State in 1986 contained TCE. Direct contact with contaminated groundwater or soil may pose risks to people on the site, as may drinking or accidentally eating contaminated materials.

Cleanup Approach

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

Response Action Status

Immediate Actions: In 1980, Carrier removed wastes and soil from the lagoon and sent them to an EPA-regulated hazardous waste facility.

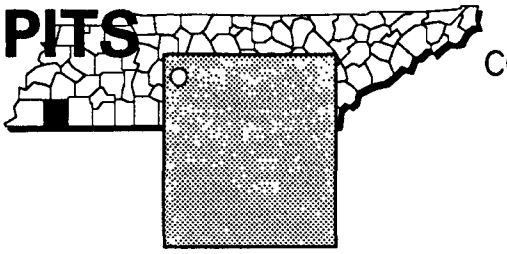
Entire Site: In 1989, the parties potentially responsible for site contamination began a study of the nature and extent of site contamination, along with an assessment of techniques for site cleanup. It is expected to be completed by late 1991, at which time the EPA will assess the cleanup alternatives and make a final remedy selection.

Site Facts: The EPA and Carrier entered into an Administrative Order, requiring the potentially responsible parties to conduct a study to determine the extent of the contamination and to evaluate the technologies available for the cleanup.

Environmental Progress

The removal of wastes and soil has reduced risks to the public health and the environment. After adding this site to the NPL, the EPA performed preliminary investigations and determined that there are no immediate threats at the Carrier Air Conditioning Company while investigations are taking place.

GALLAWAY PITS
TENNESSEE
EPA ID# TND980728992



EPA REGION 4
CONGRESSIONAL DIST. 07
Fayette County
2 miles northeast of Gallaway

Other Names:
Gallaway Dump

Site Description

The Gallaway Pits site is on a 10-acre parcel of land that was extensively mined for sand and gravel, producing a landscape dotted with water-filled pits up to 50 feet deep. The site was used for unlicensed dumping of municipal and industrial wastes. Disposal of hazardous materials at the site occurred for an undetermined period of time, probably in the 1970s and 1980s. Wastes included pesticides, glass jars containing solid waste, residential trash, demolition debris, and appliances. Drums containing liquid waste were disposed of by emptying the drums into a small pond or by placing the entire drum into the pond. The site is underlain by sand and gravel, which facilitates the migration of the wastes on site and the possibility of contamination of the groundwater, surface water, and the soil. Approximately 50 homes are located within 1/2 mile of the site; the closest home is 1,600 feet away. These residents obtain drinking water from wells.

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

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

Threats and Contaminants

Pesticides including chlordane and toxaphene from the former waste disposal activities could have contaminated the groundwater, soil, and surface water. Direct contact with and ingestion of contaminated groundwater, surface water, or soil posed potential risks to individuals.

Cleanup Approach

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

Response Action Status

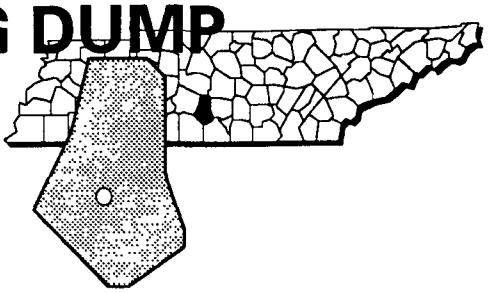
Immediate Actions: The EPA set up a water treatment system in 1983 to treat water from the pits at the rate of 100 gallons per minute. Approximately 360,000 gallons of water were treated, and 475 cubic yards (66 truckloads) of soil were removed and disposed of.

Entire Site: The EPA completed the following activities to clean up the site: excavation of contaminated sediments from the water pits on site and dilution of contaminated water in some water pits with the city water to meet water quality standards. The diluted water subsequently was discharged to an unnamed tributary. In addition, the groundwater was monitored, and a cap, designed and constructed to prevent the migration of contaminants, was installed. A fence also was erected around the site. The EPA completed the site cleanup in 1987 and will continue monitoring the site for 30 years. EPA has published a public notice announcing plans to delete the site from the NPL.

Environmental Progress

All cleanup activities have been completed at the Gallaway Pits site. The site now is safe to nearby residents and the environment while the EPA continues to monitor the site and prepares plans to delete it from the NPL.

LEWISBURG DUMP
TENNESSEE
EPA ID# TND980729115



EPA REGION 4
CONGRESSIONAL DIST. 06
Marshall County
1/2 mile north of Lewisburg

Site Description

The 20-acre Lewisburg Dump operated as a municipal dump for 20 to 25 years. The site includes a 4-acre landfill and a 2-acre quarry pond. A State-sponsored geological survey found the site unfit for use as a sanitary landfill, and it was closed in 1979. The dump accepted mostly municipal waste and some industrial waste, such as inorganic chemicals and solvents. Waste partially filled a former limestone quarry that contains a shallow lagoon fed by groundwater. Runoff from the site enters an unnamed tributary to Big Rock Creek. The dump lies in a remote area; approximately 30 people reside in the nearest homes to the site, which are about 1/2 mile away. Private wells are located within 1/4 mile from the site.

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

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

Threats and Contaminants

The groundwater, soil, leachate, and surface water are contaminated with lead from the site's dump activities. Sediments on site contain lead and cyanide, and off-site sediments showed contamination from heavy metals including lead, barium, manganese, zinc, copper, and aluminum, as well as various volatile organic compounds (VOCs). Direct contact with or accidentally ingesting contaminated groundwater, surface water, or soil may be harmful.

Cleanup Approach

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

Response Action Status

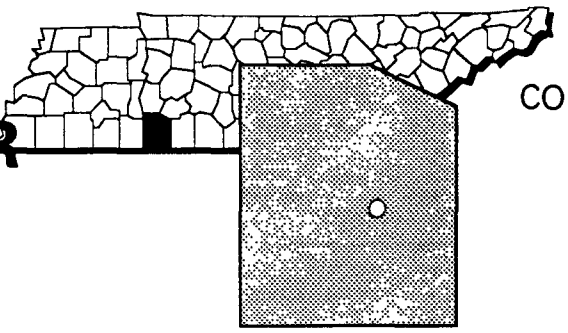
Entire Site: In 1987, under EPA orders, several parties potentially responsible for site contamination began an intensive study of its pollution problems. The first phase of this investigation explored the nature and extent of site contamination; the second prescribed the best alternatives for final cleanup. The final draft of the study was reviewed by the EPA and the U.S. Geologic Survey (USGS). The investigation indicated the groundwater is contaminated at very low levels; however, monitoring and testing of the groundwater will be continued during design of the cleanup actions. The selected remedy includes regrading the cap and clearing the site of vegetation and garbage to prevent further infiltration. The design of the selected remedy is scheduled to begin in 1991.

Site Facts: The EPA signed a Consent Order with several potentially responsible parties to perform the study characterizing the contamination at the site. The parties recently agreed to pay the full costs of the selected cleanup actions.

Environmental Progress

After extensive investigations at the Lewisburg Dump, the EPA and the USGS have determined that no immediate threats exist while cleanup activities are being planned.

MALLORY CAPACITOR COMPANY
TENNESSEE



EPA REGION 4
CONGRESSIONAL DIST. 05
Wayne County
Waynesboro

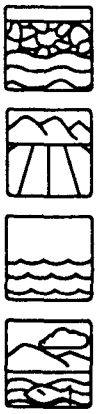
Site Description

Electrical capacitors were manufactured on the 8 1/2-acre Mallory Capacitor site from 1969 to 1984. The operators first used polychlorinated biphenyls (PCBs) as the dielectric fluid in the capacitors, switching to a plastics chemical in 1978. The factory changed hands when Dart Industries purchased it in 1979. Dart later sold the property in 1980 to Emhart Industries, Inc. As part of the sales agreement with Emhart, certain PCB wastes, a buried tank, and contaminated soil were removed from the site and sent to an approved PCB disposal facility. The plant continued to operate, but voluntarily closed in 1984 when PCBs were discovered throughout the site. The EPA found that PCBs entered the environment through spills, leaks, and intentional discharges. The plant is located in a small community. Approximately 900 people get drinking water from wells and springs within 3 miles of the site. The site is in the flood plain of the Green River. Surface water within 3 miles of the site is used for fishing and swimming.

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

NPL LISTING HISTORY
Proposed Date: 01/22/87
Final Date: 10/04/89

Threats and Contaminants



PCBs and volatile organic compounds (VOCs) have been detected in groundwater. Off-site wells, soil, and downstream sediments are contaminated with low levels of PCBs and volatile organic compounds (VOCs) such as trichloroethylene (TCE). Coming in direct contact with or accidentally ingesting contaminated groundwater and soil pose a human health threat. The presence of PCBs and VOCs poses a threat to the environment, as they are toxic to aquatic wildlife.

Cleanup Approach

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

Response Action Status

Immediate Actions: Some cleanup was specified as part of the sales agreement when the site was transferred to its current owner in 1979. Workers removed certain PCB wastes, a buried tank, and contaminated soil from the site and sent them to an approved PCB disposal facility. Before the start of the field work on the site study, a potentially responsible party removed, and sent to an approved disposal facility, approximately 20,100 tons of PCB-contaminated soil and 3,400 cubic yards of plant debris from 1988 to 1989.

Entire Site: In 1989, the potentially responsible parties installed several monitoring wells off site to better define the extent of the contamination. Under EPA orders and monitoring, the parties conducted an intensive investigation of the site's pollution problems. The study focused on the extent of PCB and VOC contamination. The EPA is expected to select a cleanup remedy in 1991.

Site Facts: The potentially responsible parties, working with the EPA under an Administrative Order, completed a study of the nature and extent of the contamination and identified possible cleanup solutions.

Environmental Progress

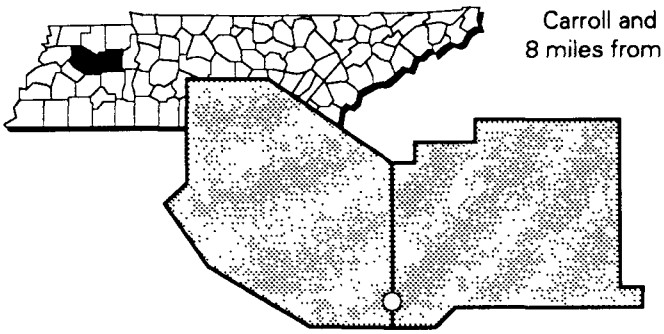
The immediate removal of contaminated soil and debris reduced the potential for exposure to contaminated materials at the Mallory Capacitor Company site while investigations leading to selection of the cleanup alternatives are taking place.

MILAN ARMY AMMUNITION PLANT

TENNESSEE

EPA ID# TN0210020582

EPA REGION 4
CONGRESSIONAL DIST. 08
Carroll and Gibson Counties
8 miles from the town of Milan



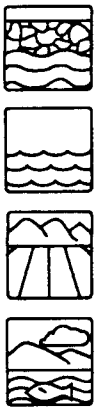
Site Description

The Milan Army Ammunition Plant site comprises 22,540 acres and is located in a rural area. The plant currently produces munitions for the Army and is operated by Martin Marietta Ordnance Systems, Inc. The "O"-Line, a conventional munition demilitarization facility at Milan, has operated since 1942. The major mission of the "O"-Line is to remove TNT and other explosives from munitions by injecting a high-pressure stream of hot water and steam into the open cavity of the munitions. The resulting wastewater from these operations subsequently was discharged into 11 unlined settling ponds. The "O"-Line Pond Area is on the NPL, and 10 other areas are Solid Waste Management Units under the Resource Conservation and Recovery Act (RCRA). Approximately 9,000 people live in the town of Milan, located 5 miles from the facility and 8 miles from the NPL site. The nearest off-site residence is located approximately a mile from the facility. There are 1,400 employees of Martin Marietta, the current operator, working at the site. Three water supply wells serve the residents of Milan. Some private wells are located less than 3 miles from the area of known groundwater contamination. More than 13,000 people within 5 miles of the facility depend on groundwater as a source of drinking water.

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

NPL LISTING HISTORY
Proposed Date: 06/10/86
Final Date: 08/21/87

Threats and Contaminants



On- and off-site groundwater, surface water, and sediments are contaminated with explosives and heavy metals including cadmium, mercury, and lead; volatile organic compounds (VOCs) such as chloroform, benzene, and methylene chloride, and nitrates and nitrites. Area residents may be subject to exposure to contaminants when drinking or coming into direct contact with polluted groundwater. Site-related contaminants have been detected in off-site surface water used for the watering of livestock, irrigation, and recreational purposes. Area residents could be exposed to contaminants in the surface water or by eating fish, crops, and locally raised meat and dairy products that contain bioaccumulated contaminants.

Cleanup Approach

The site is being addressed in three stages: initial actions and two long-term remedial phases directed at cleanup of the "O"-Line Ponds Area and of the entire site.

Response Action Status

Initial Actions: The Army had the unlined settling ponds dredged in 1971, and the soils were placed near the side of the ponds. Areas of surface soils suspected to be contaminated with the remnants of explosives were removed, and a multi-layer cover was placed on top of the ponds and the dredged soils in 1984. Wells to monitor the migration of site-related contaminants into the groundwater have been installed, and more wells will be installed. Activities associated with post-closure, such as maintenance of the grounds and fences, are underway. Regular sampling and analysis to monitor groundwater contamination of existing wells continues.

"O"-Line Ponds Area: The Army is investigating contaminants at the "O"-Line Ponds Area. The EPA reviewed the initial actions at the "O"-Line Ponds Area in 1987 to determine whether they are comparable to EPA guidelines for the investigation into the most effective ways to clean up the site and to ensure that it complies with the National Contingency Plan, the Federal regulations by which Superfund actions are conducted. An investigation of cleanup remedies started in 1990 at the "O"-Line Ponds Area and 10 other RCRA Solid Waste Management Units. A study of the feasibility of various cleanup alternatives will be started in 1991.

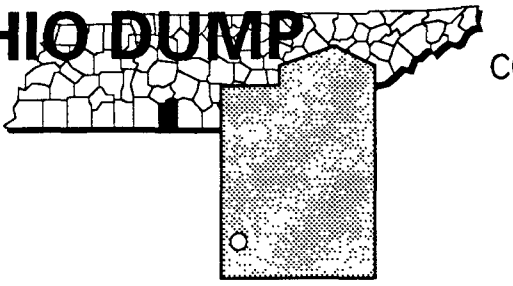
Entire Site: A contract to perform an investigation into the best and most effective ways to clean up the "O"-Line Ponds, the open burning grounds, and 10 other Solid Waste Management Units was awarded in April 1989. The resulting cleanup activities will be designed to meet EPA standards for removing the site from the NPL. The investigation is expected to be completed by 1993.

Site Facts: Milan Army Ammunition Plant 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. The Army conducted a survey of area residents in 1988 to determine if they were concerned about potential health risks posed by the site. The results indicated a high degree of public interest and moderate concern for potential risks. The Milan Army Ammunition Plant has established a committee to review technical aspects of the site cleanup. This group includes private citizens from the community and local government.

Environmental Progress

The covering of the "O"-Line Ponds and excavation of contaminated soils have made the site safer while further investigations continue, which will lead to selection of the final cleanup remedies for the Milan Army Ammunition Plant site.

MURRAY-OHIO DUMP
TENNESSEE
EPA ID# TND980728836



EPA REGION 4
CONGRESSIONAL DIST. 04
Lawrence County
Lawrenceburg

Other Names:
Murray Ohio Site #2

Site Description

The 27-acre Murray-Ohio industrial dump accepted paint and electroplating sludges from 1963 until 1982. Wastes are buried on about 6 acres, and there is another 1/4-acre disposal area located 1,000 feet away from the site. Seeps containing heavy metal contamination have been observed along drainageways. Groundwater under the site and a tributary of Shoal Creek are thought to be contaminated with chromium. Shoal Creek is approximately a mile from the site. The main site was capped, revegetated, and is periodically maintained. Approximately 2,600 people live within 3 miles of the site. The closest residence is about 1/3 mile away. Public and private water supply wells lie within a 3-mile radius.

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 may contain contamination from heavy metals including chromium, nickel, and zinc, as well as volatile organic compounds (VOCs). Sediments and off-site surface water in a small tributary to Shoal Creek may be contaminated with heavy metals and also manganese and iron. Human health threats may arise from exposure to hazardous substances in contaminated groundwater, sediment, soil, and surface water. Groundwater poses the most significant health risk. Private wells within 1/3 mile of the site may be affected.

Cleanup Approach

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

Response Action Status

Immediate Actions: Murray-Ohio Manufacturing capped and vegetated the site in 1981.

Soil and Water: Murray-Ohio Manufacturing began an intensive study of soil and water pollution at the site in 1990. This investigation is exploring the nature and extent of contamination. The EPA expects a report on the study to be completed in mid-1991. Following this, an evaluation of cleanup alternatives will be undertaken.

Site Facts: A Consent Order was agreed to in 1990, which requires Murray-Ohio Manufacturing to complete the study of the contamination at the site.

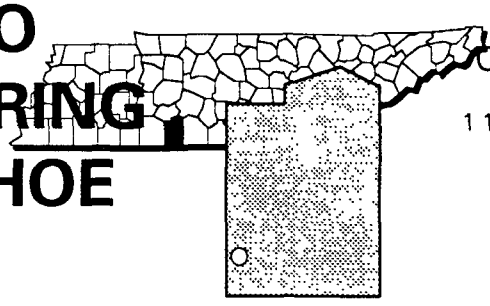
Environmental Progress

The immediate capping of the site reduced the potential for exposure at the Murray-Ohio Dump and helped to minimize the migration of contaminants while further investigations leading to the selection of cleanup activities are taking place.

MURRAY-OHIO MANUFACTURING CO. (HORSESHOE BEND DUMP)

TENNESSEE

EPA ID# TND981014954



EPA REGION 4
CONGRESSIONAL DIST. 04
Lawrence County
1 1/2 miles southwest of Lawrenceburg

Other Names:
Murray-Ohio Dump
Horseshoe Bend Dump

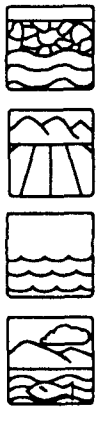
Site Description

Before 1956, a City of Lawrenceburg hydroelectric plant operated on the 12-acre Murray-Ohio Manufacturing Co. (Horseshoe Bend Dump) site. Beginning around 1956, workers poured paint sludge and other wastes into shallow pits at the site. They partially filled the pits after the liquid part of the wastes had soaked in and then placed drummed waste into them. In 1963, a large fire at the site produced toxic smoke and fumes that caused eye and lung irritation to residents near the site. Fish were killed in nearby Shoal Creek because of the fire. Following this, the operators apparently abandoned the dump. Since then, it has been used only for occasional dumping of household trash. In recent years, a nearby landowner restricted the access to the site. During a 1983 inspection, the Tennessee Division of Solid Waste Management found partially buried leaking drums at the site. Approximately 19,000 people obtain drinking water from wells and springs within 3 miles of the site. The City of Lawrenceburg gets part of its water supply from a large spring located a mile northeast of the site. Downstream from the dump, local residents use Shoal Creek for fishing and recreation.

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

NPL LISTING HISTORY
Proposed Date: 06/24/88
Final Date: 08/30/90

Threats and Contaminants



The groundwater and soil may be contaminated with heavy metals including lead, zinc, nickel, and cadmium; volatile organic compounds (VOCs) may be present in groundwater and soil, as well. There is a possible risk to human health resulting from exposure through accidental ingestion of or direct contact with contaminated groundwater and soils. Geologic conditions make it easy for water to move under the site. Springs, caves, and sinkholes are plentiful, and the groundwater is near the land surface. These conditions help contaminants move through the groundwater under the site.

Cleanup Approach

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

Response Action Status

Immediate Action: Six thousand cubic yards of municipal waste and paint sludge were sent to an incinerator in 1989.

Entire Site: A Consent Order was signed in 1990, which required the Murray-Ohio Manufacturing Company and the City of Lawrenceburg, with EPA monitoring, to study contamination at the site. This study is exploring the nature and extent of any soil, groundwater, and surface water contamination. It is scheduled to be completed in 1991. Following completion of the report on this study, alternatives for cleanup will be explored.

Site Facts: Notice letters were sent to two parties potentially responsible for the site contamination, the City of Lawrenceburg and the Murray-Ohio Manufacturing Company. Murray-Ohio returned a positive response indicating that they wanted to conduct the study to determine the nature and extent of contamination. Both Murray-Ohio and the City of Lawrenceburg signed the Consent Order.

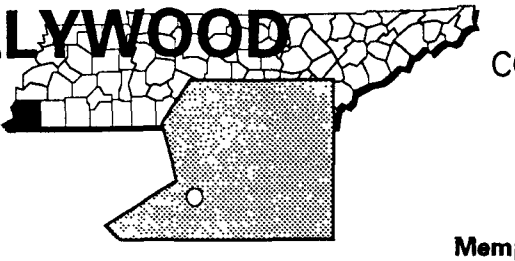
Environmental Progress

The removal of municipal wastes and paint sludges has reduced the potential for exposure at the Murray-Ohio Manufacturing Co. (Horseshoe Bend Dump) site while further investigations are taking place.

NORTH HOLLYWOOD DUMP

TENNESSEE

EPA ID# TND980558894



EPA REGION 4
CONGRESSIONAL DIST. 09
Shelby County
North Memphis

Other Names:
Hollywood Dump
Memphis Public Works/Hollywood Dump

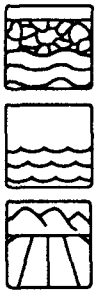
Site Description

The 70-acre North Hollywood Dump site was used as a municipal dump from the 1930s until the City closed it in 1967. However, some dumping of non-chemical refuse probably continued until 1980. In the late 1940s, the Hayden Chemical Company used the dump to dispose of wastes generated in the production of sodium hydrochloride. Hayden later was bought out by Velsicol Chemical Corporation, which continued the practice of dumping at the site. At one time, pesticide-contaminated sludge from a closed sewer line leading to the Velsicol plant was removed and buried in a small area known as the "Endrin Pit." In 1980, the EPA found pesticide products in surface soil, groundwater, and pond sediments on the dump. Because of high community concern in the early 1980s, the State of Tennessee recommended this site as the State's highest priority hazardous waste site. Approximately 10,000 people live within 3 miles of the dump site. An elementary school is situated close to the dump.

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

NPL LISTING HISTORY
Proposed Date: 10/01/81
Final Date: 09/08/83

Threats and Contaminants



The groundwater and surface water are contaminated with pesticides including endrin and heavy metals including copper, lead, and arsenic. The soil is contaminated with pesticides and heavy metals including lead. Accidentally drinking or otherwise coming into contact with contaminated groundwater, surface water, or soil could adversely affect the health of people. Also, people may be exposed to contaminants that may have entered the food chain through contaminated fish caught in ponds on or near the dump.

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, the EPA took an emergency action to slow the movement of contaminants from the site. Also, the EPA installed a chain-link fence around the site and began a program to monitor the wastes on site. In 1981, a technical assistance group made up of representatives from the State, the City of Memphis, Shelby County, local industry, and the EPA, removed some of the chemical wastes from the surface.

Entire Site: In 1982, the EPA assumed the lead role from the State to complete investigations into the extent and nature of contamination at the North Hollywood Dump site. The potentially responsible parties took over in 1984. The study, completed in 1990, recommends retrofitting the landfill so that it measures up to legal sanitation standards. The selected remedy includes: placement of a 2-foot clay cap, grading, and revegetation; drainage of an adjacent 70-acre pond known to hold contaminated sediments; installing a 3-foot cover over the contaminated sediments; and the removal of fish found to be contaminated, followed by re-stocking of the pond. Groundwater will be monitored to ensure contamination levels remain low. In addition, the site will be fenced and restrictions on future use of the site will be put in place. The engineering design of the selected remedy is scheduled to begin in late 1991.

Site Facts: The State of Tennessee ordered the potentially responsible parties to investigate the site under State monitoring, which was agreed to in 1984. In late 1988, the EPA replaced the State in the monitoring role.

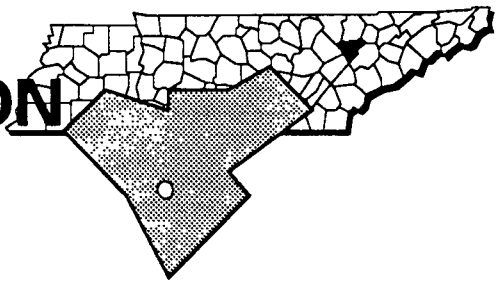
Environmental Progress

The emergency actions to remove chemical wastes have reduced the potential for exposure to contaminated materials while further investigations and cleanup activities continue at the North Hollywood Dump site.

OAK RIDGE RESERVATION (USDOE)

TENNESSEE

EPA ID# TN1890090003



EPA REGION 4
CONGRESSIONAL DIST. 02
Anderson County
Oak Ridge

Other Names:
USDOE Oak Ridge

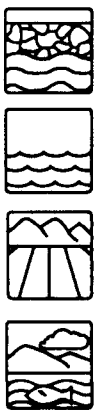
Site Description

The Oak Ridge Reservation site, operated by the U.S. Department of Energy (DOE), covers 58,000 acres. The site consists of three major operating facilities: a research lab that includes nuclear reactors, chemical and biological research programs, and production labs; a production complex that formerly enriched uranium-235 by gaseous diffusion; and a plant that formerly enriched uranium-235 by an electromagnetic process and now produces nuclear weapon components, processes nuclear materials, and performs other functions that relate to energy and the national defense. Site operations generate a variety of radioactive, non-radioactive, and mixed (radioactive and non-radioactive) hazardous wastes, many of which in the past were disposed of or stored on site. Leakage from inactive disposal and storage facilities, coupled with spills and other accidental releases, has contaminated many areas in and around the site. The DOE estimates that 773,000 pounds of elemental mercury were released in the 1950s and 1960s, and 170,000 pounds of mercury are in the sediments and floodplain of a 15-mile stretch of East Fork Poplar Creek, whose headwaters are near one of the site's production facilities. Approximately 500 pounds of mercury annually leave this watershed. An estimated 43,200 people obtain water from intakes along a 118-mile stretch below this site on the Tennessee River. Wetlands in the Blyth Ferry Water Fowl Management Area also are near the contaminated area.

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

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

Threats and Contaminants



Heavy metals, organics, and radionuclides have been detected in on-site groundwater, surface water, and soil. Mercury and cesium-137 have been detected in sediments of the Tennessee River near Chattanooga, approximately 118 miles downstream of the site. Mercury has been detected in the sediments at East Fork Poplar Creek. Soils in and along the creek are contaminated with mercury. People who drink contaminated groundwater may be at risk. East Fork Poplar Creek flows through the City of Oak Ridge, exposing people to mercury-contaminated soils in the easily accessible areas of the creek floodplains. Wetlands may be threatened from site-related contaminants.

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 DOE removed soil at several locations along the East Fork Poplar Creek where mercury levels were particularly high.

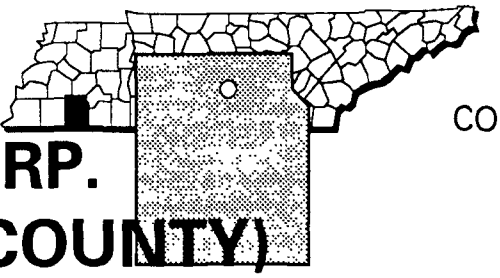
Entire Site: The DOE began a comprehensive study in 1989 to determine the type and extent of contamination and to identify alternatives for the cleanup. Investigations thus far have shown that several areas have been contaminated by a variety of sources. The cleanup of the site will be performed under a number of phases to be determined when the study is completed.

Site Facts: The DOE has removed contaminated soil and is conducting studies that require the DOE to close some units on site, conduct post-closure monitoring, and evaluate over 500 solid waste management units.

Environmental Progress

The soil cleanup performed at the Oak Ridge Reservation site has significantly reduced immediate threats while further studies and investigations take place.

VELSICOL CHEMICAL CORP. (HARDEMAN COUNTY)



EPA REGION 4
CONGRESSIONAL DIST. 07
Hardeman County
Toone

TENNESSEE

EPA ID# TND980559033

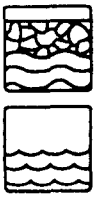
Site Description

Velsicol Corporation purchased and used 242 acres of land as the Hardeman County landfill for disposal of pesticides and volatile organic compounds (VOCs), beginning in 1964. As of 1973, when the site was closed, waste had been disposed of in three specific areas, covering a total of approximately 27 acres. Approximately 130,000 drums of plant waste were disposed of in these three areas in trenches and were covered with 3 feet of soil. In 1980, a low permeability cap was installed over the surface of the three disposal areas, the surface was regraded to facilitate surface water drainage, sediment ponds were backfilled, and topsoil and seed for revegetation were applied. Currently, the site is fenced with barbed wire and has a locked gate. Approximately 60 people live within a 1-mile radius of the site. Since 1979, private wells in the vicinity have not been used for drinking water; alternate water supplies have been provided. There are public supply wells within a 3-mile radius of the site; however, monitoring data indicates that these wells are not contaminated.

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

NPL LISTING HISTORY
Proposed Date: 12/01/82
Final Date: 09/08/83

Threats and Contaminants



The groundwater and surface water are contaminated with various VOCs and chloroform. Capping, regrading, fencing, and security have virtually eliminated direct contact with the contaminants on the site. However, there may be a health threat if the contaminated groundwater in the area is used for drinking water.

Cleanup Approach

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

Response Action Status

Immediate Actions: As a result of chlorinated hydrocarbons detected in two residential wells adjacent to the site in 1979, Velsicol provided an alternate water source to 26 homes that were located within a 1-mile radius of the site. In 1980, capping, surface regrading, backfilling, and revegetating were performed.

Groundwater: In 1989, Velsicol Chemical Company began a study of the type and extent of groundwater contamination and an evaluation of alternative cleanup remedies. The investigation was completed in 1991. The proposed plan for groundwater cleanup, currently undergoing public review, includes extraction of groundwater and treatment using settling tanks, air stripping, and carbon adsorption followed by the discharge of treated water to nearby surface water. In addition, fencing of the property, restrictions on use of wells, and monitoring the effectiveness of the remedy are included. Design of the cleanup activities will begin soon after the remedies are selected.

Source Control: In 1991, the Velsicol Chemical Company will initiate studies into the nature and extent of contamination sources at the site. These studies are expected to be completed by 1993.

Site Facts: Under an Administrative Order on Consent, Velsicol agreed to complete the remedial investigation and feasibility study, under EPA monitoring. Several citizens in the area around the site have been involved in litigation with the Velsicol Chemical Company concerning pollution of their wells. Concerns about groundwater contamination were very high about 10 years ago, when water supply wells became contaminated but have lessened since alternate water supplies were provided. According to recent information, the citizens' litigation has been settled.

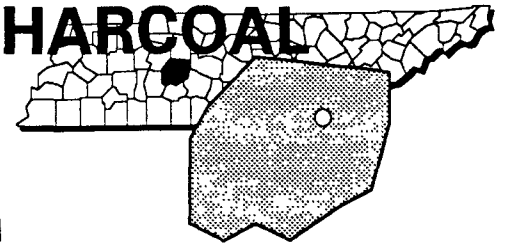
Environmental Progress

The initial actions to cap the surface of the site, secure access to the site, and provide an alternate water supply to nearby residents have eliminated immediate threats at the Velsicol Chemical Corp. (Hardeman County) site while further investigations leading to cleanup activities are taking place.

WRIGLEY CHARCOAL PLANT

TENNESSEE

EPA ID# TND980844781



EPA REGION 4
CONGRESSIONAL DIST. 09
Hickman County
Old Charcoal Road, Wrigley

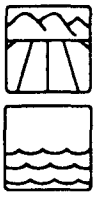
Site Description

The Wrigley Charcoal Plant site covers approximately 200 acres in and around the town of Wrigley. From the late 1800s to the early 1960s, a number of companies, including the Tennessee Products Corporation, produced charcoal briquettes, iron products, and wood alcohol on the site. After industrial and boot-legging activities ended, the Tennessee Farmers Co-op acquired the site and later sold a portion of it to an individual. During a 1985 inspection, the Tennessee Division of Solid Waste Management discovered pits containing a tar-like substance, waste piles, and old drums. Leachate was entering the north fork of Mill Creek, which is adjacent to the site. In 1985, the State, and, in 1986, the EPA detected toluene, benzenes, and phenols in the wastes and the leachate. The Bon Aqua Utility District maintains a drinking water intake in Mill Creek 1 1/2 miles downstream of the site. This intake serves an estimated 5,500 people. Approximately 300 people obtain drinking water from wells 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 leachate and wastes on the site contain volatile organic compounds (VOCs) including toluene, benzene, and phenol. The north fork of Mill Creek is contaminated with the same elements as those found in the leachate. Health threats include the accidental ingestion of or direct contact with the wastes on site. Geologic conditions at the site make it easy for contaminants to move into the shallow groundwater, which lies about 25 feet below the site.

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 1988, the EPA stabilized the tar pits by building a 16-foot berm to prevent erosion and seasonal flooding. A stream was rerouted to prevent leachate from entering Mill Creek. In 1989, the EPA excavated and shipped six truckloads of tar to a recycling facility. The recycling was incomplete, because large amounts of debris were still present in the tar.

Entire Site: The EPA installed five new monitoring wells in a study to evaluate the nature and extent of the contamination. The study is expected to be completed in 1991. Additional studies may be conducted, if necessary. The results of the study will help the EPA determine the engineering methods needed to clean up the site.

Site Facts: In 1989, the EPA sent out notice letters to the parties potentially responsible for the site contamination and asked them to participate in the site investigation. The public is concerned about the quality of the north fork of Mill Creek and the groundwater.

Environmental Progress

Stabilizing the tar pits and removing some of the contaminated materials from the Wrigley Charcoal Plant site have lessened any immediate threats to the community or the environment. Studies by the EPA are assessing the site contamination to determine the best permanent remedy for the site.

Glossary: Terms Used in the Fact Sheets

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.

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).

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 it 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.

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% or more of the drinking water of an area.

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

GLOSSARY

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

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

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

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

Carbon Disulfide: A degreasing agent formerly used extensively for parts washing. This compound has both inorganic and organic properties, which increase cleaning efficiency. However, these properties also cause chemical reactions that increase the hazard to human health and the environment.

Carbon Treatment: [see Carbon Adsorption].

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

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

Characterization: The sampling, monitoring, and analysis of a site to determine the

extent and nature of toxic releases. Characterization provides the basis for acquiring the necessary technical information to develop, screen, analyze, and select appropriate cleanup techniques.

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

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

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

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

Comment Period: A specific interval during which the public can review and comment on various documents and EPA actions related to site cleanup. For example, a comment period is provided when the EPA proposes to add sites to the NPL. 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. 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.

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 and/or the costs incurred by the government that the parties will reimburse, as well as 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.

GLOSSARY

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.

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.

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.

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; and/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; together, they are commonly referred to as the RI/FS [see Remedial Investigation].

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

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

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

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

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

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

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: Underground 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. It possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

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

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 and/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].

Leachate [n]: The liquid that trickles through or drains from waste, carrying soluble components from the waste. **Leach, Leaching [v.t.]:** The process by which soluble chemical components are dissolved and carried through soil by water or some other percolating liquid.

Leachate 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.

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.

Neutrals: Organic compounds that have a relatively neutral pH, complex structure and, due to their organic bases, are easily absorbed into the environment. Naphthalene, pyrene, and trichlorobenzene 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 within that period.

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 is 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.

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

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

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

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

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

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

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

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

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

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

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

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

Potentially Responsible Parties (PRPs): Parties, including owners, who may have contributed to the contamination at a Superfund site and may be liable for costs of response actions. Parties are considered PRPs until they admit liability or a court makes a determination of liability. PRPs may sign a Consent Decree or Administrative Order on Consent to participate in site cleanup activity 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.

GLOSSARY

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 stones.

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. Together they are customarily referred to as the RI/FS [see Feasibility Study].

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

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

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

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

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 to store waste.

Riparian Habitat: Areas adjacent to rivers and streams that have a high density, diversity, and productivity of plant and animal species relative to nearby uplands.

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

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

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

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

Seepage Pits: A hole, shaft, or cavity in the ground used for 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.

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

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

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

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

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

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

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

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

Trichloroethylene (TCE): A stable, colorless liquid with a low boiling point. TCE has many industrial applications, including use as

a solvent and as a metal degreasing agent. TCE may be toxic to people when inhaled, ingested, or through skin contact and can damage vital organs, especially the liver [see Volatile Organic Compounds].

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

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

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

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

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

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

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

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

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

Water Table: The upper surface of the groundwater.

Weir: A barrier to divert water or other liquids.

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

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

APPENDIX B

Information Repositories for NPL Sites in Tennesse

Information Repositories for NPL Sites in the State of Tennessee

Repositories are established for all NPL sites so that the public can obtain additional information related to site activities. Some sites may have more than one repository location, however, the primary site repository is listed below. All public access information pertaining to the site will be on file at these repositories. The quantity and nature of the documentation found in the repositories depends on the extent of activity and cleanup progress for each site and may include some or all of the following: community relations plans, announcements for public meetings, minutes from public meetings, fact sheets detailing activities at sites, documents relating to the selection of cleanup remedies, press releases, locations of other public information centers, and any other documents pertaining to site activities.

Site Name	Site Repository
AMERICAN CREOSOTE WORKS	Jackson-Madison County Library, 433 Lafayette Street, East, Jackson, TN 38301
AMNICOLA DUMP	Chattanooga Hamilton County Bicentennial Library, Local History Dept., 1001 Broad St., Chattanooga, TN 37402
ARLINGTON BLENDING AND PACKAGING	Arlington Public Library, 11968 Walker Street, Arlington, TN 38002
CARRIER AIR CONDITIONING COMPANY	Memphis Shilby County Public Library, 91 Walnut Street, Collierville, TN 38017
GALLAWAY PITS	Gallaway City Hall, 607 Watson Drive, Gallaway, TN 38036
LEWISBURG DUMP	Marshall County Memorial Library, 310 Farmington Pike, Lewisburg, TN 37091
MALLORY CAPACITOR COMPANY	Wayne County Public Library, U.S. Highway 64, East Waynesboro, TN 38485
MILAN ARMY AMMUNITION PLANT	Contact the Region 4 Superfund Community Relations Office
MURRAY-OHIO DUMP	Lawrenceberg Public Library, 519 East Garnes Road, Lawrenceburg, TN 38464
MURRAY-OHIO MANUFACTURING CO.	Lawrenceberg Public Library, 519 East Garnes Road, Lawrenceburg, TN 38464
NORTH HOLLYWOOD DUMP	Memphis-Shelby County Public Library, 1850 Peabody Avenue, Memphis, TN 38104
OAK RIDGE RESERVATION/U.S. DEPT. OF ENERGY	Oak Ridge Public Library, 1401 Oak Ridge Turnpike, Oak Ridge, TN 37830
VELSICOL CHEMICAL COMPANY	Velsicol Hardeman County Public Library, 213 North Washington Street, Belivaar, TN 38008
WRIGLEY CHARCOAL	Hickman County Public Library, 120 West Swann Street, Centerville, TN 37033

* U.S. G.P.O.:1992-311-893:60645