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NATIONAL PRIORITIES LIST SITES: Delaware

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

If you wish to purchase copies of any additional State volumes or the National Overview volume, ***Superfund: Focusing on the Nation at Large***, contact:

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INTRODUCTION: 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, property values depreciated. 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 the 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 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.

In the 10 years 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 at others improperly disposed or stored wastes threatened the health of the surrounding community and the environment.

EPA Identified More than 1,200 Serious Sites

EPA has identified 1,236 hazardous waste sites as the most serious in the Nation. These sites comprise the "National Priorities List": sites targeted for cleanup under the Superfund. But site discoveries continue, and EPA estimates that, while some will be deleted after lengthy cleanups, this list, commonly called the NPL, will continue to grow by approximately 100 sites per year, 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 (1,236) are thus a rela-

tively small subset of a larger inventory of potential hazardous waste sites, but they do comprise the most complex and environmentally compelling cases. EPA has logged more than 32,000 sites on its National hazardous waste inventory, and assesses each site within one year of being logged. In fact, over 90 percent of the sites on the inventory have been assessed. Of the assessed sites, 55 percent have been found to require no further Federal action because they did not pose significant human health or environmental risks. The remaining sites are undergoing further assessment to determine if long-term Federal cleanup activities are appropriate.

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.

The 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 hazardous release, or the threat of one. 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 the Superfund 's most noted achievements. Where imminent threats to the public or environment were evident, EPA has completed or monitored emergency actions that attacked the most serious threats to toxic exposure in more than 1,800 cases.

The ultimate goal for a hazardous waste site on the NPL is a permanent solution to an environmental problem that presents a serious (but not an imminent) threat to the public or environment. This often requires a long-term effort. In the last four years, 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. And in 1989 more sites than ever reached the construction stage of the Superfund cleanup process. Indeed construction starts increased by over 200 percent between late 1986 and 1989! Of the sites currently on the NPL, more than 500 — nearly half — have had construction cleanup activity. In addition, over 500 more sites are presently 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. Measuring success by "progress through the cleanup pipeline," EPA is clearly gaining momentum.

EPA MAKES SURE CLEANUP WORKS

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.

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, 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 still being safeguarded. EPA will correct any deficiencies discovered and 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. EPA's job is to analyze the hazards and deploy the experts, but the Agency needs citizen input as it makes choices for affected communities.

Because the people in a community with a Superfund site will be those most directly affected by hazardous waste problems and cleanup processes, 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.

This State volume and the companion National Overview volume provide general Superfund background information and descriptions of activities at each State NPL site. These volumes are intended to clearly describe what the problems are, what 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 IN TANDEM

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. The public 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 volume — ***Superfund: Focusing on the Nation at Large*** — accompanies this State volume. The National Overview 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, the Superfund program's successes in cleaning up the Nation's serious hazardous waste sites, and the vital roles of the various participants in the cleanup process.

This State volume compiles site summary fact sheets on each State 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 State book gives a "snapshot" of the conditions and cleanup progress that has been made at each NPL site in the State through the first half of 1990. Conditions change as our cleanup efforts continue, so these site summaries will be updated periodically to include new information on progress being made.

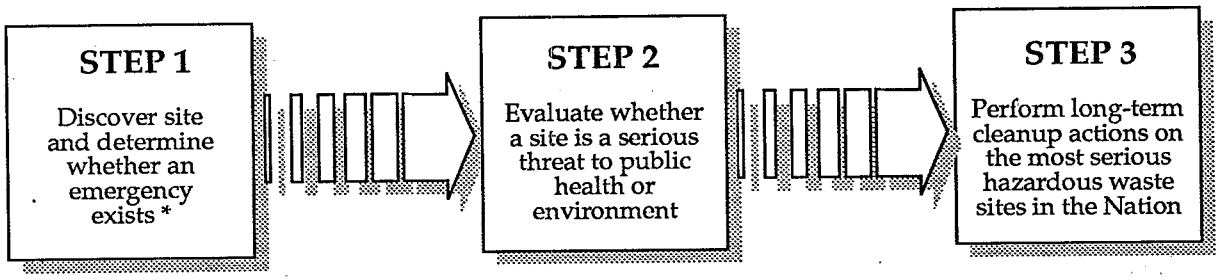
To help you understand the cleanup accomplishments made at these sites, this State volume includes a description of the process for site discovery, threat evaluation and long-term cleanup of Superfund sites. This description — ***How Does the Program Work to Clean Up Sites?*** — will serve as a good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

SUPERFUND:

How Does the Program Work to Clean Up Sites?

The diverse problems posed by the Nation's hazardous waste sites have provided EPA with the challenge to establish a consistent approach for evaluating and cleaning up the Nation's most serious sites. To do this, EPA 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. EPA has established procedures to coordinate the efforts of its Washington, D.C. Headquarters program offices and its front-line staff in 10 Regional Offices with the State 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 EPA or the State or, under their monitoring, by private parties who are potentially responsible for site contamination.

The process for discovery of the site, evaluation of threat, and 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 below provides a summary of this three step process.



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

FIGURE 1

Although this State 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 up to identifying and cleaning up these most serious uncontrolled or abandoned hazardous waste sites in the Nation. This discovery and evaluation process is the starting point for this summary description.

STEP 1: SITE DISCOVERY AND EMERGENCY EVALUATION

How does 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. Or 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 EPA informed about either 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, 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 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 figure out what is contaminating the drinking water supply and the best way to clean it up. Or

EPA may determine that there is no imminent danger from a site, so now 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 requires a long-term cleanup action.

Once a site is discovered and any needed emergency actions are taken, 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 like 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 don't 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 32,000 sites maintained in this inventory.

If the preliminary assessment shows that 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 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 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, EPA developed the Hazard Ranking System (HRS). The HRS is the scoring system 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 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 EPA's **National Priorities List (NPL)**. That's why there are 1,236 sites are on the NPL, but there are more than 32,000 sites in the Superfund inventory. Only NPL sites can have a long-term cleanup paid for from the national hazardous waste trust fund — the Superfund. But the Superfund can and does pay for emergency actions performed at any site, whether *or not it's on the NPL.*

How do people find out whether EPA considers a site a national priority for cleanup using Superfund money?

The public can find out whether a site that concerns them is on the NPL by calling their Regional EPA office at the number listed in this book.

The proposed NPL identifies sites that 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 added 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. Updated at least once a year, it's only after public comments are considered that these proposed worst sites are officially added to the NPL.

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

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. So a five-phase "remedial response" process is used to develop consistent and workable solutions to hazardous waste problems across the Nation:

1. Investigate in detail the extent of the site contamination: **remedial investigation,**
2. Study the range of possible cleanup remedies: **feasibility study,**
3. Decide which remedy to use: **Record of Decision or ROD,**
4. Plan the remedy: **remedial design,** and
5. Carry out the remedy: **remedial action.**

This remedial response process is a long-term effort to provide a permanent solution to an environmental problem that presents a serious, but not an imminent 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 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. But 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 is information that allows 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?

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 carefully compared. 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 use treatment technologies to destroy principal site contaminants. But remedies such as containing the waste on site or removing the source of the problem (like leaking barrels) are often 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 carefully considered 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. 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.

The public has a minimum of 30 days to comment on the proposed cleanup plan after it is published. These comments can either be written or given verbally at public meetings that EPA or the State are required to hold. Neither 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 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 of the 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 6 months to 2 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 complete, 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 decontaminate them — an action that takes limited time and money. In most cases, however, a remedial action may involve different and expensive 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, a remedial cleanup action takes an average of 18 months to complete and costs an average of $26 million per site.

Once the cleanup action is complete, 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 the **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 completed".

It's not until a site cleanup meets all the goals and monitoring requirements of the selected remedy that 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 can actually be deleted from the NPL. Deletions that have occurred are included in the "Construction Complete" category in the progress report found later in this book.

Can 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 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 EPA, and must meet the same standards required for actions financed through the Superfund.

Because these enforcement actions can be lengthy, 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 for repaying the money EPA spends in cleaning up the site.

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

HOW TO:

USING THE STATE VOLUME

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 National Priorities List (NPL) and their locations, as well as the conditions leading to their listing ("Site Description"). They 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 on 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 following two pages show a generic fact sheet and briefly describes the information under each section. The square "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.

Icons in the *Threats and Contaminants* Section

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

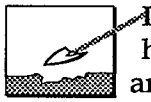
Contaminated **Surface Water and Sediments** on or near the site. (These include lakes, ponds, streams, and rivers.)

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

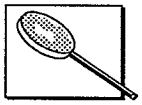
Contaminated **Soil and Sludges** on or near the site.

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

Icons in the *Response Action Status* Section

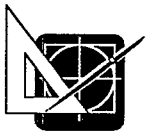


Initial Actions have been taken or are underway to eliminate immediate threats at the site.



Site Studies at the site are planned or underway.

Remedy Selected indicates that site investigations have been concluded and 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 — are currently underway.

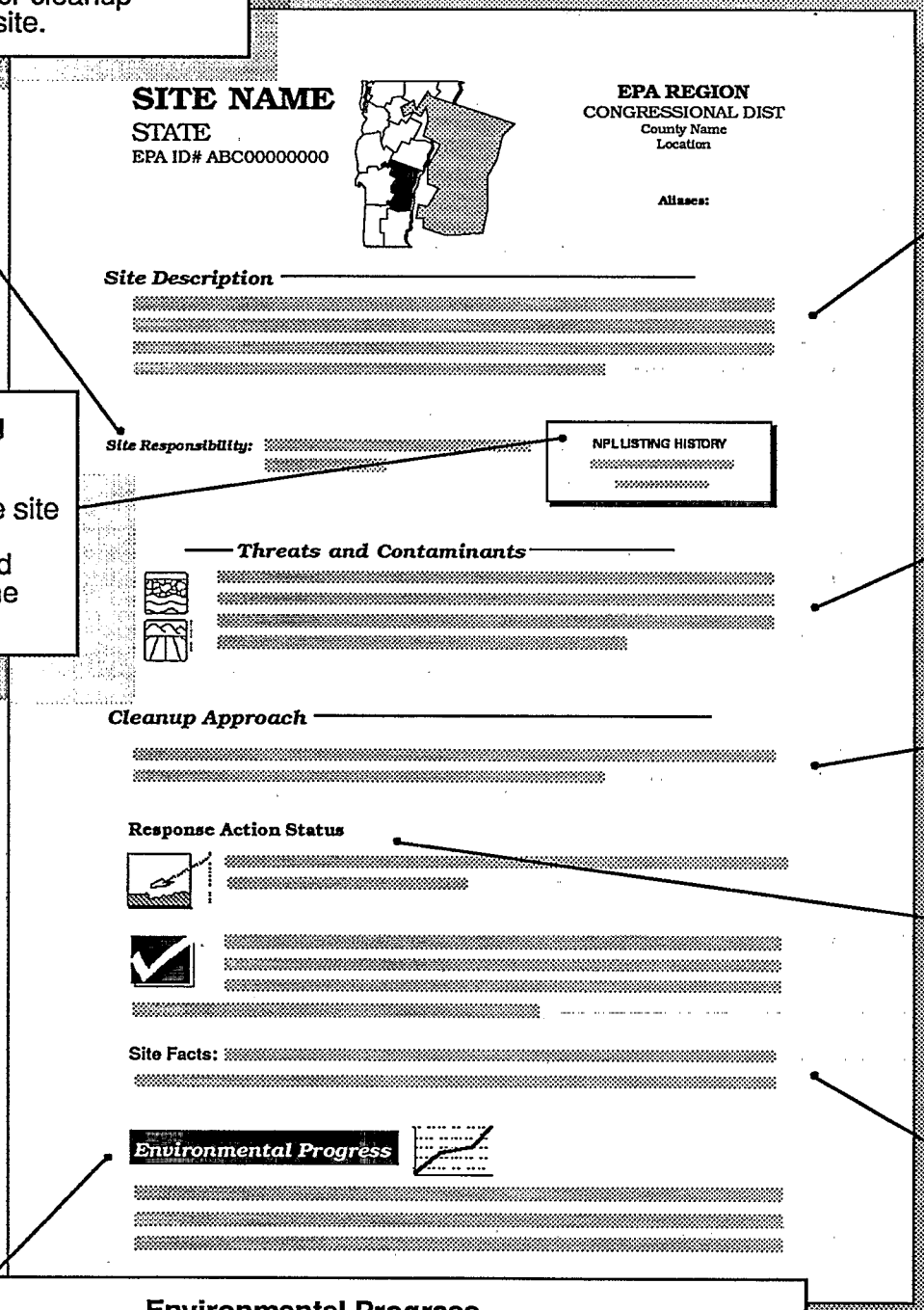
Cleanup Complete shows that all cleanup goals have been achieved for the contaminated site or part of the site.

Site Responsibility

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

NPL Listing History

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



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.

WHAT THE FACT SHEETS CONTAIN

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. Throughout the site description and other sections of the site summary, technical or unfamiliar terms that are *italicized* are presented in the glossary at the end of the book. Please refer to the glossary for more detailed explanation or definition of the terms.

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 are also described. Specific contaminants and contaminant groupings are italicized and explained in more detail in the glossary.

Cleanup Approach

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

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 are often 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.

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 EPA to achieve site cleanup or other facts pertaining to community involvement with the site cleanup process are reported here.

How To

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 is always being made at NPL sites, and EPA will periodically update the Site Fact Sheets to reflect recent actions and publish updated State volumes.

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. EPA is committed to involving the public in the decisionmaking 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 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 to know what the community can realistically expect once the cleanup is complete.

EPA wants to develop cleanup methods that meet community needs, but the Agency can only 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.

NPL Sites in State of Delaware

Delaware is the third smallest state in the nation, covering 2,045 square miles. The State is located on the Atlantic coastal plain with the Piedmont plateau to the north, and sloping to a near sea-level plain. Delaware's population grew by 11.1 percent in the 1980s, and currently has approximately 660,000 residents, ranking 49th in U.S. populations. Principal State industries include chemistry, agriculture, finance, poultry, shellfish, tourism, auto assembly, and food processing. Delaware produces a variety of agricultural products and livestock, nylon, apparel, luggage, and railroad and aircraft equipment.

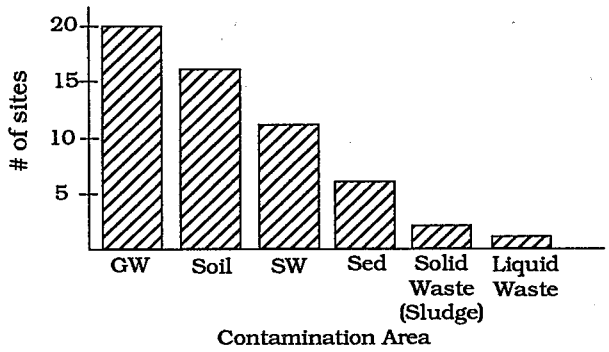
How Many Delaware Sites Are on the NPL?

Proposed	4
Final	16
Deleted	1
	21

Where Are the NPL Sites Located?

Cong. District 01	21 sites

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



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

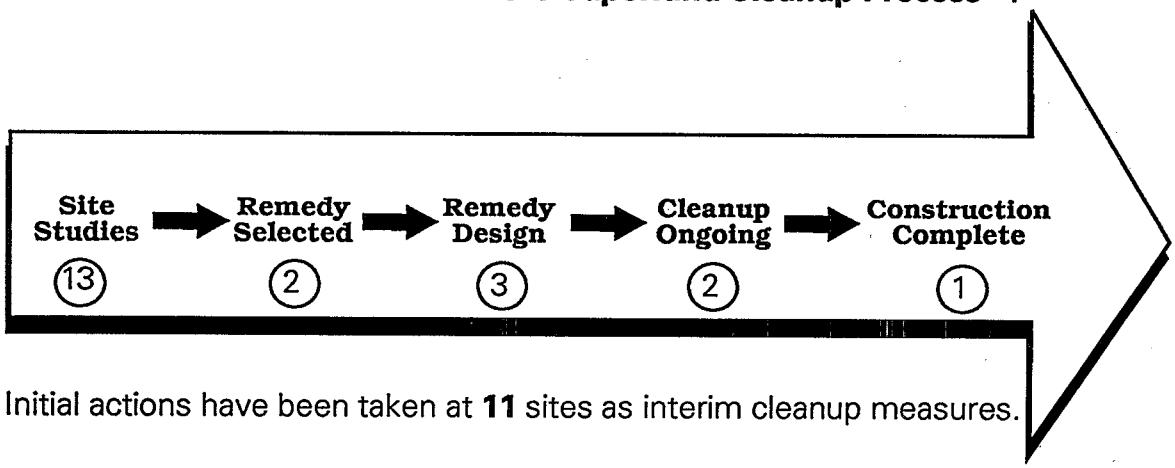
Soil, Solid and Liquid Waste: Heavy metals (inorganics), volatile organic compounds (VOCs), creosote (orgnanics), and polychlorinated biphenyls (PCBs).

Surface Water and Sediment: Heavy metals (inorganics), and volatile organic compounds (VOCs), creosote (orgnanics), and polychlorinated biphenyls (PCBs), petrochemicals, and pesticides.

*Appear at 15% or more sites

continued

Where are the Sites in the Superfund Cleanup Process* ?



Initial actions have been taken at **11** sites as interim cleanup measures.

Who Do I Call with Questions?

The following pages describe each NPL site in Delaware, providing specific information on threats and contaminants, cleanup activities, and environmental progress. Should you have questions, please call one of the offices listed below:

Delaware Superfund Office	(302) 736-3672
EPA Region III Superfund Office	(215) 597-8132
EPA Public Information Center	(202) 475-7751
EPA Superfund Hotline	(800) 424-9346
EPA Region III Superfund Public Relations Office	(215) 597-9905

* Cleanup status reflects phase of site activities rather than administrative accomplishments.

The NPL Progress Report

The following Progress Report lists the State 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 (➡) which indicates the current stage of cleanup at the site.

Large and complex sites are often 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 is currently underway. Emergency or initial actions are taken as an interim measure to provide immediete relief from exposure to hazardous site conditions or to stabilize a site to prevent further contamination.
- ➡ An arrow in the "Site Studies" category indicates that an investigation to determine the nature and extent of the contamination at the site is currently ongoing or planned to begin in 1991.
- ➡ An 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 in the Progress Report are discontinued at the "Remedy Selection" step and resume in the final "Construction Complete" category.
- ➡ An arrow at the "Remedial Design" stage indicates that engineers are currently designing the technical specifications for the selected cleanup remedies and technologies.
- ➡ An arrow marking the "Cleanup Ongoing" category means that final cleanup actions have been started at the site and are currently underway.
- ➡ A 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 may currently be undergoing long-term pumping and treating of groundwater, operation and maintenance or monitoring to ensure that the completed cleanup actions continue to protect human health and the environment.

The sites are listed in alphabetical order. 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 Delaware

Page	Site Name	County	NPL	Date	Initial Response	Site Studies	Remedy Selected	Remedy Design	Cleanup Ongoing	Construction Complete
1	ARMY CREEK LANDFILL	NEW CASTLE	Final	09/08/83	➡	➡	➡	➡		
3	CHEM-SOLV, INC.	KENT	Prop.	06/10/88	➡	➡				
5	COKER'S SANITATION SERVICE	KENT	Final	07/01/87	➡	➡				
7	DELAWARE CITY PVC PLANT	NEW CASTLE	Final	09/01/83	➡	➡	➡	➡	➡	
9	DELAWARE SAND & GRAVEL	NEW CASTLE	Final	09/01/83	➡	➡	➡			
11	DOVER AIR FORCE BASE	KENT	Final	03/13/89	➡	➡				
13	DOVER GAS LIGHT CO	KENT	Final	10/04/89		➡				
15	E.I. DU PONT, NEWPORT	NEW CASTLE	Final	02/16/90		➡				
17	HALBY CHEMICAL	NEW CASTLE	Final	06/01/86		➡				
19	HARVEY & KNOTT DRUM SITE	NEW CASTLE	Final	09/01/83	➡	➡	➡	➡	➡	
21	KENT CTY LANDFILL	KENT	Prop.	06/16/88		➡				
23	KOPPERS COMPANY FACILITIES	NEW CASTLE	Prop.	10/26/89		➡				
25	NCR CORP, MILLSBORO	SUSSEX	Final	07/01/87		➡				
27	NEW CASTLE SPILL	NEW CASTLE	Final	09/08/83		➡	➡			
29	NEW CASTLE STEEL PLANT	NEW CASTLE	Deleted	03/17/89		➡	➡			➡
31	SEALAND LTD.	NEW CASTLE	Prop.	06/16/88	➡	➡				
33	STANDARD CHLORINE COMPANY	NEW CASTLE	Final	07/01/87	➡	➡				
35	SUSSEX COUNTY LANDFILL #5	SUSSEX	Final	10/06/89		➡				

Page	Site Name	County	NPL	Date	Initial Response	Site Studies	Remedy Selected	Remedy Design	Cleanup Ongoing	Construction Complete
37	TYBOUTS CORNER LANDFILL	NEW CASTLE	Final	09/01/83	➡	➡	➡	➡		
39	TYLER REFRIGERATION PIT	KENT	Final	02/21/90	➡	➡				
41	WILDCAT LANDFILL	KENT	Final	09/01/83		➡	➡	➡		

NPL:

Site Fact Sheets

ARMY CREEK LANDFILL

DELAWARE

EPA ID# DED980494496

REGION 3
CONGRESSIONAL DIST. 01
New Castle County
2 miles southwest of New Castle

Alias:
Llangollen Landfill

Site Description

The Army Creek Landfill site occupies 47 acres of a 64-acre parcel. It was used as a *landfill* for municipal and industrial wastes from 1960 to 1968. During that 8-year period, about 2 million cubic yards of refuse were landfilled. The site was previously used as a sand and gravel quarry. Approximately 30% of the waste lies below the seasonal high water table. Army Creek, which forms the southern and eastern border of the site, flows into the Delaware River about 1 mile east of the site. Groundwater contamination was discovered in a nearby residential well in 1972. After studies were conducted by the County, which identified alcohols and acidic compounds in *leachate*, wells were installed to prevent the movement of groundwater toward public water supply wells. The water pumped out of these wells is discharged untreated to Army Creek and Army Pond. About 3,370 people live within 1 mile of the site, which is in a largely rural and light industrial area. Llangollen Estates, a residential development, is several hundred feet beyond the southern edge of the site. An estimated 130,000 people living within 3 miles of the site are served by groundwater supplies. Another NPL site, the Delaware Sand and Gravel Landfill, is located immediately across from Army Creek to the east of the site.

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

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

Threats and Contaminants

Volatile organic compounds (VOCs), such as benzene and dichloroethane, and heavy metals including chromium and mercury are found in monitoring wells, recovery wells, groundwater, and soils. The surface water of Army Creek contains contamination from cadmium, chromium, mercury, iron, and zinc. People working or trespassing on the site could be exposed to contaminants in the soil by touching or accidentally eating it, by breathing contaminants in the air, or by drinking contaminated groundwater. Methane escaping from the landfill could cause injuries if an explosion occurred.

continued

Cleanup Approach

This site is being addressed in three stages: emergency actions and two *long-term remedial phases* focusing on source control and cleanup of the entire site.

Response Action Status

Emergency Actions: Tires on the site caught fire and threatened to ignite nearby hazardous wastes. The fire was extinguished by the County, and the EPA provided emergency technical support and air monitoring during the fire control efforts. New Castle County installed a groundwater recovery system designed to capture contaminated groundwater. This series of *downgradient* pumping wells is designed to prevent the contamination *plume* from reaching the source of the drinking water supply. Pumping has separated contamination from the water supply and eliminated further *migration* of the plume into the drinking water source.

Source Control: Control of the source of contamination of the site will include: (1) installation of a multi-layer *cap* over the landfill; (2) installation of the downgradient recovery well network; and (3) evaluation of the cap system and the groundwater recovery network for the next 5 years by monitoring well water levels and by pumping water and checking the water quality. After 5 years, an evaluation will be carried out to determine if installation of *upgradient* controls are necessary. At the same time, it also will be decided whether monitoring of well water levels, pumping rates, and water quality should continue. The EPA is in the process of designing the technical specifications for the selected remedy, which is planned for completion in 1990.

Entire Site: A detailed study of the nature and extent of contamination and treatment alternatives for the water being pumped from the groundwater recovery wells began in 1989. This study is scheduled for completion in 1990, resulting in a final selection of a groundwater treatment remedy for recovery wells.

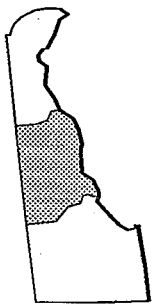
Environmental Progress

The County's installation of pumping wells to prevent the spread of contamination into the drinking water supply and the EPA's emergency response to the on-site fire have made the Army Creek site safer while it awaits further studies into the nature and extent of contamination. Following these studies, the EPA will select and begin cleanup activities at the site.

CHEM-SOLV, INC.

DELAWARE

EPA ID# DED980714141



REGION 3
CONGRESSIONAL DIST. 01
Kent County
Cheswold

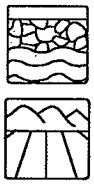
Site Description

The 1 1/2-acre Chem-Solv, Inc. site served as a small solvent distillation facility beginning in 1982. The facility recycled waste solvents by placing a drum on an electric coil heater, which distilled the solvents into a second drum. The contents of the second drum were filtered into a third drum, and the distilled residues stored on site. In 1984, an explosion and fire at the site destroyed the entire distillation facility. Witnesses observed fluids flowing off a concrete pad into the soil. After the fire, the State conducted studies at the upper Columbia Aquifer, which is adjacent to the site, where high concentrations of *volatile organic chemicals* (VOCs) were found in both the upper and lower zones of the *aquifer*. An occupied 3-unit apartment building is located on the site. About 5,500 residents live and are served by private wells within 3 miles of the site.

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

NPL LISTING HISTORY
Proposed Date: 06/10/88

Threats and Contaminants



The groundwater, soil, and one residential well is contaminated with VOCs from site waste disposal practices. The primary threat to human health is drinking the contaminated groundwater. However, at this time, the levels of contaminants reported in residential wells are within acceptable drinking water standards. There is little potential for exposure to any contamination from on-site soil because it was excavated and *air-stripped* in 1985.

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.

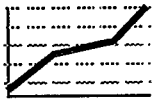
Response Action Status

Immediate Actions: In 1985, the State excavated contaminated soil and began using a process that passes air through the soil to remove VOCs. Also, in 1985, the State started to recover and treat the VOCs in the upper Columbia Aquifer using an air stripping system. The air stripping process used by the State reduced contamination to levels that permitted the soil to be returned to the excavated area.

Entire Site: A group of parties potentially responsible for the site contamination currently is conducting an investigation into the nature and extent of the contamination at the site. The investigation will define the contaminants and recommend alternatives for the final cleanup. The investigation is planned to be completed in 1992.

Site Facts: In 1984 and 1985, the State of Delaware issued orders to one of the potentially responsible parties to cease operations immediately, monitor groundwater, and remove all contaminated soil; however, no actions were taken. In 1988, a *Consent Order* was signed by the potentially responsible parties, the EPA, and the State requiring the potentially responsible parties to conduct an investigation into the contamination at the site.

Environmental Progress

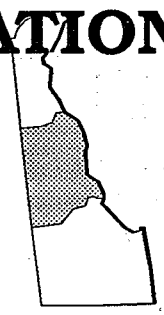


By removing VOCs from the soil and from the Upper Columbia Aquifer, the State has eliminated immediate threats and reduced the potential for exposure to hazardous materials. These actions have made the Chem-Solv, Inc. site safer while the potentially responsible parties complete their investigation and begin final cleanup activities.

COKER'S SANITATION SERVICE

DELAWARE

EPA ID# DED980704860



REGION 3

CONGRESSIONAL DIST. 01

Kent County
Cheswold

Aliases:
Reichold Chem Inc. #1
Coker's Landfill #1 & #2

Site Description

The two Coker's Sanitation Service *landfills* cover 25 acres near Cheswold. Coker's Landfill #1 covers 10 acres and Coker's Landfill #2 covers the remaining 15 acres. They were formerly landfills used for disposal of latex rubber waste *sludges* from what is now the Reichold Chemicals, Inc. plant. Coker's Landfill #1, operated from 1962 until 1976, consists of an unknown number of unlined trenches. Coker's Landfill #2 was used under a State solid waste disposal permit from 1976 to 1980 and consists of 51 lined trenches, a *leachate* collection and monitoring system, and a groundwater monitoring system. The landfills overlie two groundwater systems: the Columbia Aquifer, which is a water table *aquifer* and the Cheswold Aquifer, which is a deeper *artesian* aquifer. Approximately 4,000 people live within a 3-mile radius of the site, and two farms are adjacent to the landfills.

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

NPL LISTING HISTORY
Proposed Date: 04/01/85
Final Date: 07/01/87

Threats and Contaminants

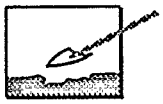
On-site groundwater, sludge, leachate, and soil contamination consists of heavy metals including iron, *volatile organic compounds* (VOCs) including ethylbenzene and toluene, and acrolein from the latex rubber wastes. Off-site monitoring wells have shown the presence of acrolein and ethylbenzene. Potential risks to health are direct contact with contaminated substances on site or accidental ingestion of groundwater or leachate. However, considering the remote, rural, partially restricted nature of the site, the potential for public contact with contaminants on or near the site appears to be slight. There is a potential for contaminants to move off site to the nearby surface water and to the water table aquifer and the regional aquifer, both of which supply city water. Area *wetlands* are also potentially threatened, since drainage from Coker's Landfill #1 runs through a wetlands area to the Willis Branch of the Leipsic River and Coker's Landfill #2 is partially bordered by wetlands.

continued

Cleanup Approach

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

Response Action Status

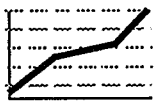


Immediate Action: In 1989, buried drums and a bin were discovered by geomagnetic surveys during the site investigation conducted by the parties potentially responsible for the site contamination. These were excavated, *overpacked*, and incinerated, and the area was fenced for protective purposes.

Entire Site: The soil and groundwater cleanup are the primary focus of site cleanup. The total number of buried drums, their content and effect on the soil and groundwater remain unknown. The parties potentially responsible for site contamination are conducting an investigation of the drums and the entire site to help determine the extent of contamination remaining at the site and to identify alternative technologies for the cleanup. This work is scheduled to be completed in the summer of 1990.

Site Facts: An *Administrative Order on Consent* was signed in 1988 by the EPA and Reichold Chemicals, Inc., Nabisco Brands, Inc., and Rapid American Corp. for an investigation to determine the extent of contamination and to identify alternative technologies for the cleanup.

Environmental Progress



Fencing the area of Coker's Landfills #1 and #2 and the removal of contaminated drums have made the site safer while it awaits the results of the investigation and the selection of a final cleanup remedy for the entire site.

DELAWARE CITY PVC PLANT

DELAWARE

EPA ID# DED980551667

REGION 3
CONGRESSIONAL DIST. 01
New Castle County
2 miles west of Delaware City

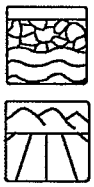
Site Description

The 550-acre Delaware City PVC Plant site was built in 1966 and serves as a *polyvinyl chloride* (PVC) production facility. From 1967 to 1970, earthen *lagoons* were used to dump waste PVC. Until the wastewater treatment plant was built in 1970, a *bermed* area was used to settle PVC *sludges* before the wastewater was discharged. Another area was used to bury sludges from the treatment plant and was then *capped*. The Columbia Formation *aquifer*, which has been found to be contaminated, is used locally as a domestic water supply, and is an important source of drinking water in the area. There are approximately 400 people living within 1 mile of the site. There are also four residences and two manufacturing operations on the site. A water service company that has wells within 3 miles of the site serves an estimated 100,000 people.

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

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

Threats and Contaminants



The groundwater is contaminated with *volatile organic compounds* (VOCs) from the waste disposal pits. The soil is contaminated with VOCs and vinyl chloride. Contaminated groundwater in the drinking supply poses a health threat, and on-site workers also may be exposed to contaminants by coming into direct contact with the soils. In addition, nearby workers and residents may be exposed to VOCs released to the air during the groundwater cleanup process.

Cleanup Approach

This site is being addressed in four stages: immediate actions and three *long-term remedial phases* focusing on the lagoon areas, groundwater treatment, and the PVC storage area and sludge pits.

continued

Response Action Status

Immediate Actions: Alternate water supplies were provided to users of on-site residential wells and off-site water supply wells to eliminate the threat from contaminated groundwater.

Lagoon Areas: The remedies selected for cleanup of the lagoon area include: (1) excavating sludge and contaminated soils and disposing of residuals off-site; (2) installing a double synthetic liner in a pond, off-grade batch pits, and *aeration* basins; and (3) monitoring groundwater contamination by using test wells. The parties potentially responsible for the site contamination have prepared the technical specifications and design for the selected cleanup. Cleanup at the lagoon areas has started and is expected to be completed by the end of 1990.

Groundwater: The remedies selected for groundwater contamination include: (1) installing groundwater recovery wells at the northern and southern edges of the contaminated *plume*; (2) reusing groundwater collected in plant operations or routing it through the plant's wastewater treatment unit; (3) installing additional monitoring wells to evaluate the recovery system; and (4) providing an alternate source of water for residents using any existing contaminated water-supply wells. The potentially responsible parties have designed the technical specifications for the cleanup remedy; the cleanup is scheduled to start in 1990.

Former PVC Storage Area and Sludge Pits: The remedies selected for cleaning up these sites include: (1) covering and capping the areas; (2) covering the existing synthetic membrane with a drainage layer and a second membrane; and (3) establishing a vegetative cover on topsoil. The potentially responsible parties are currently completing an engineering design to construct the cap for the PVC storage areas and sludge pits.

Site Facts: In 1984, The EPA and the State entered into a *Consent Order* with the potentially responsible parties to perform a site investigation and all necessary cleanup actions to eliminate contamination at the site. In 1987, a second agreement was reached by the EPA and the potentially responsible parties that specified the cleanup responsibilities for each participating party.

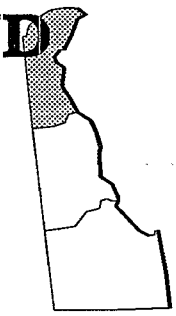
Environmental Progress

The provision of an alternate water supply to residents and area businesses and the start of cleanup activities at the lagoon areas of the Delaware City PVC Plant site have eliminated the potential for exposure to contaminated groundwater. Contamination levels at the Delaware City PVC Plant are being reduced as cleanup activities continue and groundwater and additional disposal areas are addressed.

DELAWARE SAND & GRAVEL

DELAWARE

EPA ID# DED000605972



REGION 3

CONGRESSIONAL DIST. 01

New Castle County

2 miles southwest of the City of New Castle

Alias:

Delaware Sand & Gravel Company Landfill

Site Description

The 27-acre Delaware Sand & Gravel site is an inactive industrial waste *landfill* located adjacent to another NPL site, the Army Creek Landfill. The site has four disposal areas, referred to as the Drum Disposal, Inert Disposal, Ridge, and Grantham South areas. Between 1968 and 1976, the site accepted household and construction wastes and approximately 7,000 drums containing liquids and *sludges* from perfume, plastics, paint, and petroleum refining processes. The Drum Disposal area is believed to be the major source of organic contamination of the groundwater. In 1984, approximately 600 drums were removed from the surface of the Drum Disposal area, and it was then covered with soil and a vegetative cover. The Ridge area consists of contaminated soil and drums, storage tanks, and debris scattered on the surface. The Inert Disposal area contains various domestic wastes, cars, trucks, and storage tanks scattered on the surface. The Grantham South area is believed to contain inert wastes and chemical wastes. Approximately 2,000 people live within 1 mile of the site. The site is located in a sparsely populated and lightly industrialized area. Properties adjoining the site include two residences, a health club and ball field, and a maintenance garage. The nearest residence is about 30 feet from the edge of the landfill. The Llangollen Estates housing development is about 1/2 mile southwest of the site. Underlying the landfill is the Potomac *Aquifer*, which is accessed about 1 1/4 miles south of the site and is used as a public water source.

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

NPL LISTING HISTORY

Proposed Date: 10/01/81

Final Date: 09/01/83

Threats and Contaminants

The groundwater is contaminated with *volatile organic compounds* (VOCs) and lead from former disposal practices. Heavy metals including arsenic, cadmium, chromium, and mercury have also been detected in off-site groundwater. The soil is contaminated with VOCs, *polychlorinated biphenyls* (PCBs), and heavy metals. Specific contaminants detected in Army Creek include cadmium, chromium, mercury, iron, and zinc. The greatest threat to health is accidental ingestion of groundwater that has become contaminated by site releases and which is used as the drinking water supply for 5,000 people. Workers, trespassers, and nearby residents may be exposed to contaminants in soil and air.

continued

Cleanup Approach

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

Response Action Status

Immediate Actions: To reduce the threat of groundwater contamination, New Castle County installed a recovery system *downgradient* of the site to prevent contaminated water from reaching the nearby private well field. In 1984, the EPA removed approximately 600 drums from the Drum Disposal area. Drum staging pads, consisting of a compacted clay base for the pads and a clay dike around them to prevent contaminants from escaping, were constructed. Drums were removed and placed in the staging cells. Air monitoring was conducted in the work area and at the site perimeter to determine the impact of site activities on *ambient air*. The flammable solids and PCB materials were bulked, drummed, and safely disposed. A drum shredder was used to process non-flammable solids for disposal. Shredded material was placed in box trailers and shipped to disposal facilities. Work areas of the site were regraded, hydroseeded, and spread with mulch.

Entire Site: The selected actions for remaining cleanup activities include: (1) excavation and on-site treatment of approximately 36,000 tons of contaminated soil and wastes from the Drum Disposal and Ridge areas; (2) on- or off-site disposal of residual ash; (3) reshaping of the excavated area and establishment of a vegetative cover; (4) removal and off-site disposal of all surface debris from the Inert area; (5) *capping* of buried waste materials; (6) construction of a cap over the Grantham South area; and (7) a groundwater pump and treatment system with discharge to Army Creek and continued groundwater monitoring. The groundwater recovery system is being coordinated with activity at the neighboring Army Creek Landfill Superfund site. Continued monitoring in the area indicates that the groundwater recovery system has been effective in controlling groundwater contaminant *migration*.

Site Facts: In 1976, the State issued an enforcement action requiring the *potentially responsible parties* for the site contamination to discontinue disposal activities.

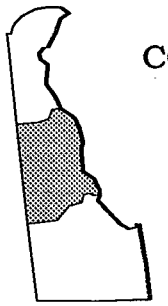
Environmental Progress

Numerous cleanup activities have been completed at the Delaware Sand & Gravel site, including removing contaminated materials; air monitoring; and regrading, hydroseeding, and spreading mulch over the site. The groundwater recovery system is successfully controlling the spread of contamination from the site while final cleanup actions are completed.

DOVER AIR FORCE BASE

DELAWARE

EPA ID# DE8570024010



REGION 3
CONGRESSIONAL DIST. 01
Kent County
Dover

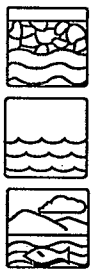
Site Description

The 3,700-acre Dover Air Force Base (AFB) site is the base of operation for the 436th Military Airlift Wing. The base contains 13 areas on site that were used for disposing industrial waste. An estimated 23,000 cubic feet of waste were disposed of from 1951 to 1970. The base's operation generated numerous wastes, some in drums, including paints, solvents, and oil. These wastes were disposed of in various on-base locations including the fire training areas. All disposal sites are earth-covered to a depth of 3 feet, with the exception of the construction debris *landfill*. Access to the site is restricted. There are approximately 1,000 people living on base, and 39,000 people living within a 3-mile radius of the site. The distance from the base to the nearest residence is about 1 mile, and the site is located in a commercial and residential area that is densely populated. The base well system serves about 3,000 people and is routinely monitored by the Air Force.

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

NPL LISTING HISTORY
Proposed Date: 10/01/84
Final Date: 03/13/89

Threats and Contaminants



Specific contaminants detected in on-site groundwater include cadmium and *volatile organic compounds (VOCs)* from former waste disposal practices. A variety of VOCs have been detected in off-site groundwater including *trichloroethylene* (TCE) and carbon tetrachloride. VOCs have also been detected in the *sediments*. VOCs and heavy metals including mercury, chromium, and cadmium have been detected in on-site stream waters. Potential health threats include exposure to contaminated groundwater used for potable purposes and ingestion of contaminated fish and wildlife. Direct contact with contaminated surface water or sediments during recreational or site activities by area residents and workers is also a concern. A nearby freshwater *wetlands* is threatened by site contamination.

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.

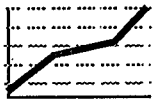
Response Action Status

Initial Actions: The Air Force has cleaned the industrial waste basins and a drum site and has provided an alternate water supply to affected residents.

Entire Site: The Air Force currently is conducting an investigation into the nature and extent of the contamination at the site. The investigation will define the contaminants and will recommend alternatives for the final cleanup. The investigation is planned to be completed in 1990. As an early action, the Air Force will suggest source controls and interim removal of contamination floating on the water table, as well as the removal of contaminated soils.

Site Facts: The EPA, the Air Force, and the State of Delaware have entered into an *Interagency Agreement* (IAG) for comprehensive cleanup and compliance with Federal standards. The Dover Air Force Base is also participating in the *Installation Restoration Program* (IRP), which is a federally funded Department of Defense (DOD) mechanism to identify, investigate, and control hazardous waste on military or DOD installations.

Environmental Progress

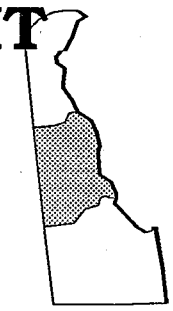


By cleaning the industrial waste basins and drum sites and providing an alternate water supply to residents and workers at the base, the Air Force has reduced the risk of immediate threats at the Dover AFB site while it awaits further investigation and cleanup activities.

DOVER GAS LIGHT COMPANY

DELAWARE

EPA ID# DED980693550



REGION 3
CONGRESSIONAL DIST: 01
Kent County
Dover

Site Description

The 1-acre Dover Gas Light Company site operated as a coal *gasification* plant from 1859 to 1948 and produced gas for street lamps from coal. When the plant was closed in 1948, the structures, except for a brick garage, were demolished. Some steel and scrap iron were removed, but tanks and other process equipment containing coal oil, coal tar, coke, and possibly *acid* were buried on site. In 1984, remains of a coal gasification plant were found buried on the site. The site is currently used as a museum. Approximately 10,000 people are within 1 mile of the site and an estimated 454,000 people are served by public and private wells within 3 miles of the site. Seven of Dover's 14 municipal supply wells are located within 1 mile of the site. The closest supply well, 1,000 feet from the the site, draws from the Cheswold *aquifer*, part of Dover's municipal water system. Also nearby are a cemetery, an historic church, and a State museum.

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

Specific contaminants detected in the groundwater and soil include *volatile organic compounds* (VOCs), lead, and *polycyclic aromatic hydrocarbons* (PAHs) from former site activities. Possible health threats include drinking or touching the contaminated groundwater or soil. Contaminated groundwater may threaten nearby water supplies; however, a 1988 sampling of two wells closest to the site did not show signs of contamination.

Cleanup Approach

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

continued

Response Action Status

Entire Site: The parties potentially responsible for the site contamination currently are conducting an investigation into the groundwater contamination at the site. The investigation will define the contaminants and will recommend alternatives for final groundwater cleanup. The investigation is planned to be completed in 1991, after which the potentially responsible parties, under EPA supervision, will begin cleanup of the site using the cleanup technologies selected.

Environmental Progress

After listing the Dover Gas Light Company site on the NPL, the EPA determined that site conditions did not currently threaten nearby residents or the environment while the potentially responsible parties, under EPA supervision, are conducting investigations and cleanup activities at the site.

E.I. DU PONT, NEWPORT

DELAWARE

EPA ID# DED980555122

REGION 3

CONGRESSIONAL DIST. 01

New Castle County

Along the Christiana River in Newport

Aliases:
Newport Pigments
Du Pont Newport Pigments Plant

Site Description

The E.I. Du Pont, Newport site is a pigment manufacturing facility consisting of two industrial *landfills*: the 7-acre North Disposal Area and the 15-acre South Disposal Area. From 1902 to 1929, the plant manufactured lithopone, a white inorganic pigment. In 1929, Du Pont purchased the plant and continued to produce lithopone along with other organic and inorganic pigments. As part of the plant operations, the waste was disposed of in the landfills. Ciba-Geigy purchased the pigment plant in 1984 while Du Pont retained a magnetic tape manufacturing facility. Approximately 21,000 people reside within a 3-mile radius of the site. Also within 3 miles of the site are 3 public water supply wells that serve approximately 150,000 people. There are a number of private supply wells within 1/2 mile of the site. Fifteen residential wells and the three public water supply wells are threatened by groundwater contamination. The site is within a 100-year floodplain, with *wetlands* and the Christiana River located nearby. The Christiana River is used for recreational purposes.

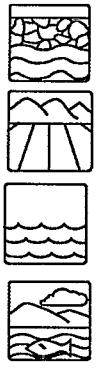
Site Responsibility: This site is being addressed through Federal and *potentially responsible parties'* actions.

NPL LISTING HISTORY

Proposed Date: 01/22/87

Final Date: 02/16/90

Threats and Contaminants



Heavy metals and chlorinated solvents from past disposal practices have been detected in the groundwater. Monitoring well information indicated contamination of the underlying Columbia and Potomac *aquifers*. Heavy metals have been detected at the landfills, underneath the Ciba-Geigy plant, and in wetland *sediments* and surface water. Groundwater contamination poses health risks to individuals who drink it. The groundwater may also migrate and eventually affect the private wells in the area and the Christiana River. Nearby wetlands may be threatened by site flooding.

continued

Cleanup Approach

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

Response Action Status

Entire Site: The parties potentially responsible for the site contamination started an investigation in 1988 to determine the extent of the contamination and to identify alternative cleanup technologies. The investigation is scheduled to be completed in 1991. After completion of the studies, the potentially responsible parties, under EPA supervision, will begin cleanup of contaminants at the site.

Site Facts: Du Pont entered into an *Administrative Order* with the EPA in 1988, under which Du Pont agreed to perform a study to determine the nature and extent of the contamination and to identify alternative cleanup technologies.

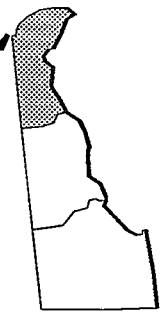
Environmental Progress

After adding this site to the NPL, the EPA performed a preliminary evaluation at the E.I. Du Pont, Newport site and determined that it did not currently pose an immediate threat to public health and the environment while further investigations continue and cleanup technologies are being developed.

HALBY CHEMICAL

DELAWARE

EPA ID# DED980830954



REGION 3
CONGRESSIONAL DIST. 01
New Castle County
Wilmington

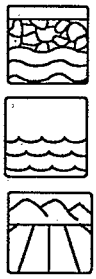
Site Description

The 13-acre Halby Chemical site operated as a chemical manufacturing facility from 1948 to 1977. Wastewater from the production of chemicals at the plant was discharged into a 1 1/2-acre unlined *lagoon* and then discharged into the Lobdell Canal. Currently, the lagoon receives intertidal flow through an interstate highway drainage ditch. Drums from a storage area were also found to be leaking. Preliminary sampling results indicate significant contamination of lagoon *sediment* in the vicinity of the former process buildings. There is also significant soil contamination underlying the *backfilled* portions of the waste lagoon. Approximately 1,800 people live within 1 mile of the site. Area residents receive water from the Artesian Water Company which draws water from several uncontaminated wells. There is only one known residential well and one public well within 3 miles of the site.

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

NPL LISTING HISTORY
Proposed Date: 09/01/85
Final Date: 06/01/86

Threats and Contaminants



The groundwater is contaminated with cyanide, *volatile organic compounds* (VOCs), and heavy metals including iron and manganese from chemical process wastes. Sampling of the lagoon sediments revealed high levels of *carbon disulfide*, zinc, arsenic, and lead. The surface water is contaminated with arsenic and heavy metals including lead, cadmium, and mercury. Cyanide was detected in the soil. Potential health threats include ingestion of and direct contact with groundwater, surface water, and soil. Worker contact with contaminated soil on site is minimal because access to the drum area is restricted and the work areas are away from contaminated areas on site.

continued

Cleanup Approach

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

Response Action Status

Entire Site: The EPA is conducting an investigation into the contamination at the site. The investigation will define the contaminants and recommend alternatives for the final cleanup. This investigation is scheduled for completion in 1990, at which time the EPA will select appropriate cleanup technologies.

Environmental Progress

After adding the Halby Chemical site to the NPL, the EPA performed preliminary investigations and determined that conditions at the site did not pose an immediate threat to public health or to its surroundings while further investigations are under way.

HARVEY & KNOTT DRUM SITE

DELAWARE

EPA ID# DED980713093

REGION 3
CONGRESSIONAL DIST. 01
New Castle County
About 5 miles from Kirkwood

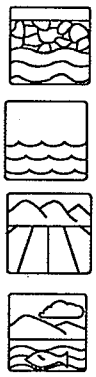
Site Description

The Harvey & Knott Drum site operated as an open dump and burning area between 1963 and 1969 on a portion of a 20-acre site. The facility accepted sanitary, municipal, and industrial wastes believed to be *sludges*, paint pigments, and solvents. Wastes were emptied onto the ground surface into excavated trenches or left in drums, some of which were buried on site. Several hundred drums remain on site. A security fence, enclosing about 2 1/2 acres, was erected around the most visible areas of contamination. The enclosed area includes drum stockpiles, waste piles, and a small pond. Trailer homes and a residential development are located to the north of the property. Water supplies for some of the nearby residences are obtained from a shallow water-table *aquifer*. There are approximately 300 people living within 1 mile of the site. The site facility is set back several hundred feet from the highway in an open field in a relatively undeveloped area and is surrounded by woodlands. *Wetlands* are located to the south of the site.

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

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

Threats and Contaminants



Specific contaminants detected in the groundwater include *volatile organic compounds* (VOCs) including ethylbenzene and toluene and heavy metals including arsenic, cadmium, and lead. Heavy metals were detected in on-site *sediments* and surface water. Specific contaminants detected in soils and sediments include VOCs, heavy metals, and *polychlorinated biphenyls* (PCBs). Potential health threats include ingestion, inhalation, and direct contact with contaminated groundwater. Trespassers and workers may be exposed to contaminants in on-site soil and waste through accidental ingestion, direct contact, and inhalation at levels that pose health concerns. Contaminated surface soils beyond the west property boundary pose similar concerns for persons entering that area. Wetlands may also be threatened.

continued

Cleanup Approach

The site is being addressed in three stages: immediate actions and two *long-term remedial phases* focusing on drum removal and groundwater pumping and treatment.

Response Action Status

Immediate Actions: The State supplied emergency drinking water to affected residents in 1981. In 1982, the EPA completed immediate measures which included: installing a security fence, *overpacking* and staging 43 leaking drums, and conducting a sampling survey. In addition, 17 monitoring wells were installed to identify the nature and extent of groundwater contamination. In 1983 and 1984, 46 drums were removed and disposed of off site, a soil *berm* and a surface drainage ditch around a PCB-contaminated waste pile was constructed, 500 empty drums were crushed and staged, and 200 partially filled drums were staged.

Drum removal: The final selection of cleanup technologies to address contaminated drums includes: (1) the removal of surface and subsurface drums; (2) extraction and on-site treatment of surface water; (3) excavation of sediments, soil, and bulk wastes with off-site disposal at an approved facility; (4) disposal of sludges, drums, and other debris at an off-site facility; (5) extraction and treatment of groundwater using *effluent* to flush contaminants from on-site surface and subsurface soils; and (6) preparation of the site for a flushing pipe network entailing grading, covering with clean soil, and revegetation. Cleanup activities are presently under way.

Groundwater Pumping and Treatment: The EPA currently is conducting an investigation into the nature and extent of the groundwater contamination at the site. The investigation will define the contaminants of concern and will recommend alternatives for the final groundwater cleanup. The investigation is planned to be completed in 1991.

Site Facts: In 1977, a *Consent Decree* was entered into between EPA and a party potentially responsible for the contamination for the party to conduct an investigation into the nature and extent of contamination at the site. In 1988, a Consent Decree was entered between EPA and another potentially responsible party. In 1988, EPA filed suit against a responsible party to recover costs.

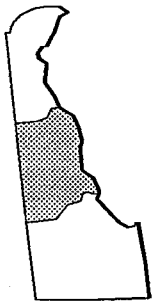
Environmental Progress

By providing an emergency drinking water supply to affected residents, installing a security fence around the site, and removing all the surface and subsurface leaking drums, the EPA has significantly reduced the potential for exposure to hazardous materials at the Harvey & Knott Drum site. Cleanup of the groundwater and further measures to remove contaminated drums, soils, sediments, and surface water from the site currently are being addressed.

KENT CITY LANDFILL

DELAWARE

EPA ID# DED980705727



REGION 3

CONGRESSIONAL DIST. 01

Kent County

About 2 miles north of Houston

Site Description

The 129-acre Kent City Landfill site was operated by the County from 1969 to 1980. Among the wastes accepted were residential trash, pesticides, *sludges* from poultry processing plants, oil sludges, hospital wastes, waste polymers, and solvents. The *landfill* holds an estimated 2 million cubic yards of waste and fill materials. The wastes were deposited in unlined trenches. In 1980, the County covered the landfill with 3 to 5 feet of sandy soil and planted grass and other vegetation. In 1986, the EPA found contaminants in a monitoring well that is in the water table *aquifer* underlying the site. The EPA also found contaminated *leachate* seeping from the landfill. Approximately 1,300 people use private wells within 3 miles of the site. About 1,200 acres of cropland within 3 miles of the site are irrigated by well water, and surface water near the site is used for recreational purposes.

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

NPL LISTING HISTORY

Proposed Date: 06/16/88

Threats and Contaminants

The groundwater is contaminated with *creosotes* and heavy metals including chromium, arsenic, and manganese from former disposal practices at the site. The soil is contaminated with heavy metals including iron, manganese, barium, and cobalt. People who trespass on the unfenced site and who accidentally touch or swallow contaminated groundwater or leachate may be at risk.

Cleanup Approach

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

continued

Response Action Status

Entire Site: The parties potentially responsible for the site contamination will conduct a study to determine the nature and extent of contamination. This study, planned for 1991, will recommend alternatives for the final cleanup. After completion of the study, the potentially responsible parties, under EPA supervision, will perform cleanup activities to reduce groundwater and soil contamination to acceptable levels.

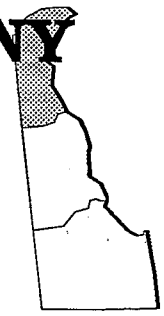
Environmental Progress

After adding this site to the NPL, the EPA performed a preliminary investigation and determined that contamination at the Kent City Landfill site does not currently pose an immediate threat to the public or the environment while waiting for investigation and cleanup activities to begin.

KOPPERS COMPANY FACILITIES

DELAWARE

EPA ID# DED980552244



REGION 3
CONGRESSIONAL DIST. 01
New Castle County
Newport

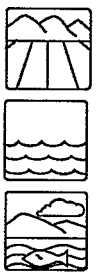
Site Description

The 317-acre Koppers Company Facilities site operated as a wood preserving plant from 1929 until 1971. During operations, Koppers loaded railroad ties and telephone poles into cylinders and pressure-injected them with either *creosote* or a mixture of fuel oil and *pentachlorophenol* (PCP). A pond filled with water and used for fire protection, and a *sump* where *effluent* from the treatment process was collected, were in the treatment area. In 1971, Koppers sold the site to Du Pont. As part of the sales agreement, Koppers removed chemicals in the process tanks. Du Pont removed all structures from the site; the site currently is vacant. In 1984, the EPA detected creosote compounds in on-site soil and in nearby creek *sediments*. The Artesian Water Company draws drinking water from three wells within 3 miles of the site and blends the water with other water to serve its 150,000 customers. The three wells tap the Lower Potomac Formation, hydraulically connected to the overlying Columbia Formation, permitting water to move between them. *Wetlands* are found both on and around the site.

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

NPL LISTING HISTORY
Proposed Date: 10/26/89

Threats and Contaminants



Soil and nearby creek and pond sediments are contaminated with *polycyclic aromatic hydrocarbons* (PAHs) from the wood preserving treatment processes. Potential health threats to people include accidental ingestion of and direct contact with contaminated soil and sediments. Wetlands may also be threatened.

continued

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 is planning to conduct an investigation to determine the nature and extent of contamination at the site. This investigation is scheduled to begin in 1990. Alternative cleanup technologies will be selected and cleanup activities will begin soon thereafter.

Environmental Progress

At the time this summary was written, this site had just obtained NPL status and it was too early to discuss environmental progress. The EPA will be performing a study to assess the need for any intermediate actions required to make the site safer while waiting for cleanup actions to begin. Results of this assessment will be described in our next edition.

NCR PLANT, MILLSBORO

DELAWARE

EPA ID# DED043958388

REGION 3

CONGRESSIONAL DIST. 01

Sussex County

1/2 mi southeast of Millsboro

Alias:
First Freedom Center

Site Description

NCR Corp. manufactured sales terminals from 1974 until 1981 at this 63-acre site 1/2 mile southeast of Millsboro. Between 1967 and 1974, the company ran electroplating processes that produced a chromium-bearing waste. Workers treated this waste on site, and disposed of resulting *sludges* in an unlined pit. NCR subsequently excavated this material. Two of three concrete-lined storage *lagoons* on site contained toxic materials that were later drained and removed. In 1981, the First National Bank of Maryland bought the property, now known as First Freedom Center. NCR assumed all environmental responsibilities in the deed of sale. The State required NCR to monitor groundwater after the site was closed. Monitoring results showed that groundwater under the property was contaminated with *volatile organic compounds* (VOCs) and metals. The contaminated groundwater is entering Iron Branch Creek, which flows into a recreational stream called Indian River. Riverview is located close to the site and is a community of about 30 small houses that draw drinking water supplies from groundwater wells. About 4,700 people depend on public and private wells within 3 miles of the site as a source of drinking water. The nearest well is 10 feet away from the site, and the nearest people are 150 feet away. An estimated 1,000 people live within 1 mile; 4,164 are within 3 miles of the site.

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

NPL LISTING HISTORY

Proposed Date: 04/01/85

Final Date: 07/01/87

Threats and Contaminants

The groundwater and sludge are contaminated with VOCs including *trichloroethylene* (TCE) and total and hexavalent chromium. A *plume* of solvent waste has reached Iron Branch Creek, but no domestic supply wells are affected.

Cleanup Approach

The site is being addressed in a single *long-term remedial phase* directed at cleanup of the entire site.

Response Action Status

Entire Site: NCR excavated chromium-bearing sludge from an unlined pit and drained and removed toxic materials from two concrete-lined storage lagoons. NCR continued to monitor groundwater after site closure, and installed 22 wells for that purpose. In 1988 an *air stripper* and a recovery well were put into operation in an effort to prevent off-site *migration* of contaminants. Under State supervision, NCR is conducting an intensive study of groundwater contamination at the site. This investigation, which will explore the nature and extent of pollution and will recommend the best strategies for final cleanup, is expected to be completed in late 1990.

Site Facts: A *Consent Order* for NCR to undertake initial response measures, and a study to determine the nature and extent of contamination and to identify alternatives for cleanup was signed in 1988. The State ordered NCR to undertake an EPA-approved site *closure* in 1981.

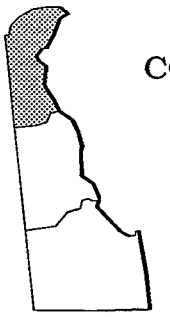
Environmental Progress

The removal of contaminated sludge and the installation of monitoring wells to chart contaminant levels, as well as the construction of an air stripper and recovery well, have reduced the potential for exposure to hazardous materials at the NCR plant site while further cleanup activities are taking place.

NEW CASTLE SPILL

DELAWARE

EPA ID# DED058980442



REGION 3

CONGRESSIONAL DIST. 01

New Castle County
New Castle

Aliases:
Witco Chem. Co.
Tris Spill Site

Site Description

Since 1954 the Witco Chemical Company processed materials used in the production of plastic foam on this 6-acre site in New Castle. Operators stored drums containing pre-polymer feedstocks and spent solvents on the southern boundary of their property adjacent to the New Castle Board of Water and Light (NCBW&L) property. In 1977, employees of NCBW&L noticed dead grass near the drum storage area. Shortly after sampling, during which contaminants at levels above the accepted State and EPA levels were found, the NCBW&L was directed by the Delaware Department of Natural Resources and Environmental Control (DNREC) to pump the shallow *aquifer* and to discharge the water to the nearby *wetlands*. The surrounding area is industrial and residential; 5,500 people live within 3 miles of the site. The closest home is 750 feet from the site. The shallow aquifer being used by the NCBW&L was taken out of service, and measures are being taken to prevent its future use. Approximately 7,000 people are now served by another source for their water supply.

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

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

Threats and Contaminants

Trichloroethylene (TCE) is found in the groundwater, but is believed to be from an off site source now under investigation. The groundwater also is contaminated with *volatile organic compounds* (VOCs) including acetone and xylene. Tris, a flame retardant, which can be related back to Witco's activities, was detected in soils near the drum storage area. On-site soil is contaminated with VOCs, *polychlorinated biphenyls* (PCBs), TCE, *creosote*, and phthalates from plastics production. Drinking contaminated groundwater from the aquifer would normally pose a health threat to people. However, a new water supply has been provided to residents found to be at risk. Wetlands are adjacent to the site and are threatened by *runoff* of surface contamination. The site is unrestricted and may pose a threat to residents who come in direct contact with contaminated areas.

continued

Cleanup Approach

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

Response Action Status

Entire Site: From 1977 to 1978, the NCBW&L, under DNREC's instruction, pumped the groundwater from the shallow aquifer into the nearby wetlands to prevent migration of Tris into aquifers beneath the site. The final decision from the EPA requires quarterly monitoring of the shallow aquifer groundwater for Tris until the accepted safe level is reached in an estimated 4 – 5 years, and annual monitoring of the deeper groundwater aquifer, surface water, and sediments of the wetland. Institutional controls will be developed to restrict well development in the shallow aquifer. A 5-year effectiveness review would re-evaluate the effectiveness of this remedy.

Environmental Progress

By using an alternative municipal water source and by pumping and treating the contaminated groundwater, the potential for exposure to hazardous materials at the New Castle Spill site has been reduced. Groundwater and surface water monitoring is presently under way at the site to ensure continued environmental progress.

NEW CASTLE STEEL PLANT

DELAWARE

EPA ID# DED980705255

REGION 3

CONGRESSIONAL DIST. 01

New Castle County
Near the Delaware River in the
City of New Castle

Alias:
Deemer Steel Company

Site Description

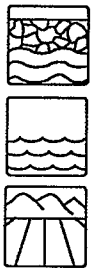
For 80 years, Deemer Steel used the 3-acre New Castle Steel Plant *landfill* to dispose of its process wastes. Until the plant closed in 1987, workers dumped foundry sands, slag, coke, iron oxide scale, baghouse dust, and metal scrap into two disposal areas separated by a drainage channel that runs to the Delaware River. Regulations in 1980 indicated that the baghouse dust was a hazardous waste because of unacceptable levels of cadmium, chromium, and lead. The site was placed on the NPL in 1982 because of potential groundwater contamination. The EPA subsequently changed the regulation and the baghouse dust was no longer considered a hazardous waste. Although metals associated with the site have entered soils, *sediments*, surface water, and groundwater, the EPA has determined that contamination levels at the site are not threatening and do not necessitate a need for cleanup actions.

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

NPL LISTING HISTORY

Proposed Date: 12/01/82
Final Date: 09/01/83
Deletion Date: 03/17/89

Threats and Contaminants



The groundwater, sediments, soil, and surface water were contaminated with low levels of heavy metals including arsenic, chromium, lead, cadmium, and nickel from the wastes disposed of on site. However, contamination levels are low and do not pose threats to nearby residents or the environment.

Cleanup Approach

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

Response Action Status

Entire Site: After years of data collection and study, including an intensive investigation undertaken by the Deemer Steel Company, both the EPA and the State have determined that this site constitutes no significant threat to human health and the environment. The selected remedy is "no action", indicating that no further actions are required to clean up the site.

Environmental Progress

Because the site studies indicate that site contamination has attenuated and no longer poses a risk to the public or the environment, the EPA, in conjunction with the State, deleted the New Castle Steel Plant from the NPL in 1989.

SEALAND LTD.

DELAWARE

EPA ID# DED981035520

REGION 3

CONGRESSIONAL DIST. 01

New Castle County
Mount Pleasant

Site Description

Operations at the 2-acre Sealand Ltd. site began in 1971, when Adams Laboratory rented the property from Conrail, Inc. to operate a rendering plant. In 1979, the owner reportedly cleaned up the property after its tenant abandoned the plant.
The property remained unused until it was rented by the Sealand Limited and Oil Industry in 1982 to operate a waste oil recycling plant. The operation accepted coal tar, gas tar, and ink oil wastes, allegedly for recycling, but instead stored them on site in tanks and drums. When the tenants abandoned the facility in 1983, the site contained 22 storage tanks, a boiler house, mixing chambers, pressure vessels, several hundred 55-gallon drums containing assorted *creosote*-related chemicals, and a 10,000-gallon wooden storage tank. A State investigation in 1983 revealed that the wooden tank and numerous drums were leaking. Analyses of the tanks, drums, and soil detected *polycyclic aromatic hydrocarbons* (PAHs), creosotes, solvents, and other toxic organic compounds. A combined State and EPA study in 1984 showed contaminants in an on-site monitoring well. Soils on the site are *permeable* and groundwater is shallow, conditions that ease the movement of contaminants into groundwater. The area is primarily agricultural and residential. Private wells within 3 miles of the site provide drinking water to an estimated 1,000 people.

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

NPL LISTING HISTORY

Proposed Date; 06/16/88

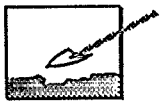
Threats and Contaminants

The groundwater is contaminated with acenapthalene. The soil is contaminated with PAHs, creosotes, solvents, and other toxic compounds from the former recycling operation. Possible health threats include consuming or coming in direct contact with the contaminated materials at the site.

Cleanup Approach

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

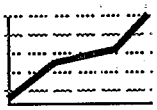
Response Action Status



Emergency Actions: In 1983, in response to the imminent threat to human health, the EPA removed 240,800 gallons of coal tar, 320 drums, and 80 cubic yards of solid waste. Workers transported the hazardous materials to an EPA-approved facility, cleaned the storage tanks, and *capped* the site with a layer of clay and topsoil to keep rainwater and *runoff* from spreading pollutants.

Entire Site: The parties potentially responsible for the site contamination are conducting an intensive study of the nature and extent of site contamination, scheduled for completion in early 1991. Once the study has been completed, the EPA will select the final remedy for the site.

Environmental Progress

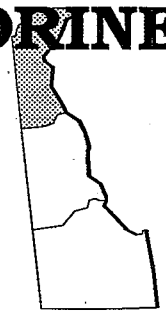


By removing contaminated materials from the Sealand Ltd. site, the EPA has eliminated immediate dangers to area residents and the environment while the potentially responsible parties, under EPA monitoring, complete site investigations and begin further cleanup activities.

STANDARD CHLORINE COMPANY

DELAWARE

EPA ID# DED041212473



REGION 3
CONGRESSIONAL DIST. 01
New Castle County
Delaware City

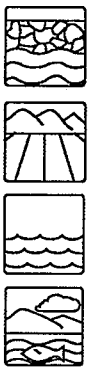
Site Description

The 46-acre Standard Chlorine Company site manufactures chlorinated benzenes, and was listed on the NPL due to a 1980 benzene spill from a railroad tanker car onto the property. An additional spill occurred in 1986; 569,000 gallons of various *volatile organic compounds* (VOCs) spilled after a 375,000-gallon tank of VOCs split open, collapsed, and damaged three nearby tanks of VOCs, causing the latter tanks to partially spill. About 152,000 people draw groundwater from public and private wells within a 3-mile radius of the site. Approximately 30 people reside within 1 mile of the site.

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

NPL LISTING HISTORY
Proposed Date: 09/01/85
Final Date: 07/01/87

Threats and Contaminants



Chlorobenzenes from spilled material have been found in the groundwater, soil, and surface water. People may be exposed to the chemicals by touching contaminated soil, drinking contaminated water, or accidentally ingesting contaminated soil. *Wetlands* near the site may also be threatened by contamination emanating from the spill areas.

Cleanup Approach

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

Response Action Status

Emergency Actions: The EPA took the following emergency actions in response to the January 1986 spill: (1) excavating a drainage ditch; (2) building a filter fence along the mouth of the wetland coves; (3) constructing an earthen dike and pre-excavation sampling to isolate the upper portions of the wetland from contaminants; (4) excavating contaminated sediments upstream of the dike; (5) building a basin to trap contaminated sediments in tidal areas of the cove (between the dike and the filter fence).

Entire Site: Under State order, the parties potentially responsible for the site contamination are conducting an intensive study of the impact the spill has had on local groundwater quality. The investigation will explore the nature and extent of the groundwater contamination and will identify the best strategies for cleanup. The study is scheduled for completion in late 1991.

Environmental Progress

Emergency actions undertaken by the EPA, including excavating a drainage ditch, building a filter fence, constructing an earthen dike to protect nearby wetlands, excavating contaminated sediments, and building a trap basin greatly reduced contamination possibilities at the site. After a study is completed by the potentially responsible parties, final cleanup actions will begin at the Standard Chlorine Company site.

SUSSEX COUNTY LANDFILL #5

DELAWARE

EPA ID# DED980494637

REGION 3

CONGRESSIONAL DIST. 01

Sussex County

Laurel

Site Description

The inactive 37 1/2-acre Sussex County Landfill #5 operated from 1970 until 1979. It accepted municipal wastes and, according to a 1978 Congressional report, an unknown quantity of various *volatile organic compounds* (VOCs). Wastes were deposited in the ground below the water table, threatening groundwater. In 1986, the EPA detected several organic chemicals and solvents in five on-site monitoring wells. The *landfill* overlies the Columbia Formation, which is connected to and recharges the Manokin *Aquifer*. Together, the two provide drinking water to people within 3 miles of the site. A private well is located 1,000 feet from the site. Public and private wells within 3 miles of the site provide drinking water to an estimated 5,700 people and irrigate 5,100 acres of cropland.

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

NPL LISTING HISTORY

Proposed Date: 06/16/88

Final Date: 10/06/89

Threats and Contaminants

Five groundwater monitoring wells showed contamination from VOCs including benzene and vinyl chloride from former disposal practices. Possible health threats include drinking or coming in direct contact with the contaminated groundwater. *Bioaccumulation of* contaminants in locally raised livestock and crops is a threat if contaminated groundwater is used for watering or irrigation.

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 landfill was closed by the Delaware Department of Natural Resources (DNREC) in 1979. The DNREC installed monitoring wells on the site as a part of the *closure* plan. In 1984, DNREC conducted a preliminary assessment which indicated that a *leachate plume* extended 400 to 500 feet *downgradient* of the site. In 1984, the EPA inspected the site and detected elevated levels of VOCs in the groundwater. Several more wells have been installed in the vicinity of the landfill and are monitored on a regular basis by Sussex County as part of the requirements of an agreement between the County and DNREC. An intensive investigation of the site is scheduled to begin in 1990. The EPA will investigate the nature and extent of groundwater contamination and will recommend cleanup strategies for the site. The study is expected to be completed in 1993.

Site Facts: The County and DNREC have entered into an agreement to establish a groundwater management program near the landfill. The County will monitor on-site wells and adjacent domestic wells regularly.

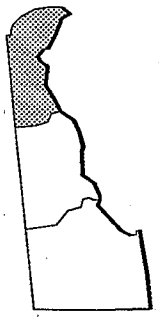
Environmental Progress

The EPA evaluated the Sussex County Landfill and determined that the site does not currently pose an immediate threat to nearby residents. By closing the landfill, the State has eliminated the possibility of further contamination at the site while investigations and cleanup activities are pursued.

TYBOUTS CORNER LANDFILL

DELAWARE

EPA ID# DED000606079



REGION 3

CONGRESSIONAL DIST. 01

New Castle County

10 miles south of Wilmington

Site Description

Tybouts Corner Landfill was constructed in a sand and gravel pit located in northern Delaware, 10 miles south of Wilmington and 4 miles west of the Delaware River. The main *landfill* area is about 47 acres and is located near the confluence of Pigeon Run Creek and Red Lion Creek. The fill ranges from 5 to 40 feet thick. Between 1968 and 1971, this privately owned landfill accepted both municipal and industrial wastes, including *volatile organic compounds* (VOCs) and various other organic and inorganic chemicals. Tybout's Corner was built without a clay liner or other impervious material below the fill, and no clay *cap* was placed on top of the fill after it was abandoned. EPA studies have revealed that two shallow *aquifers* beneath the site are contaminated with the above-mentioned chemicals. About 42 homes and facilities surround the entire landfill property and most of these have wells that draw from the aquifers contaminated by the site. Some of these residences are less than 100 feet from the landfill. In addition, the landfill is located in an area of extensive groundwater development, both for municipal supplies and large industrial facilities. The possibility for contaminating the upper hydrologic zone of the Potomac Formation, an important regional aquifer, exists.

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

NPL LISTING HISTORY

Proposed Date: 10/01/81

Final Date: 09/01/83

Threats and Contaminants

Local drinking water wells and soils are contaminated with VOCs and other organic compounds from former disposal practices. Surface water is contaminated with hazardous organic and inorganic substances. Drinking and coming into contact with contaminated water may threaten the health of people in the area.

continued

Cleanup Approach

This site is being addressed in two stages: immediate actions and a *long-term remedial phase* divided into two segments: source control and groundwater cleanup.

Response Action Status

Immediate Actions: The EPA installed a fence in 1982. Between 1984 and 1986, the EPA extended the public water lines to provide service to all 42 residences and facilities surrounding the landfill. The EPA repaired and reconstructed the site security fence around the site and posted warning signs in 1987.

Source Control and Groundwater Cleanup: The selected remedies chosen for this site in 1986 organized the work into two phases. Phase 1: Source Control includes: (1) excavation of all municipal and industrial wastes, as well as contaminated subsoils in the west fill and consolidation with the main fill; (2) *capping* of the consolidated main fill area with a multi-layered cap to prevent rainwater from washing away contaminants; (3) installation of a subsurface drain or trench system; (4) implementation of a health and safety plan; and (5) establishment of a monitoring program. Phase 2: Groundwater Cleanup will consist of the following steps: workers will pump and treat, or otherwise dispose of, the area of contaminated groundwater off site in the upper hydrologic zone of the Potomac Formation. If disposal is called for, it will occur either on site or off site at a local sewage treatment plant. Restrictions to prevent use of contaminated groundwater will be applied. The EPA began designing the remedy in spring of 1988, and the parties potentially responsible for site contamination took over responsibility for the design in the spring of 1989. Cleanup activities are scheduled to begin in 1991.

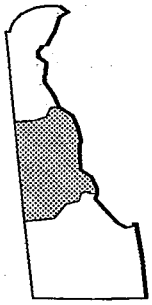
Environmental Progress

With the construction of a fence around the site to limit access and the provision of a safe drinking water source to affected residents and businesses, the EPA has made the Tybouts Corner Landfill site much safer while it is undergoing further cleanup activities.

TYLER REFRIGERATION PIT

DELAWARE

EPA ID# DED980705545



REGION 3
CONGRESSIONAL DIST. 01
Kent County
Smyrna

Site Description

From 1952 to 1969, Tyler Refrigeration, located on a 3-acre parcel of land, used solvents to *degrease* and clean refrigeration equipment, and dumped the spent solvents, paint room wastes, and *sludges* into a 500 cubic yard unlined disposal pit. In the 1970s, Clark Equipment Company excavated the pit to a depth of 20 feet, filled it in, *capped* it with 6 inches of topsoil and clay, and planted vegetation. The site is now occupied by Metal Masters, an active manufacturer of commercial kitchen equipment. Public access is unrestricted, but most of the old pit's surface area has been paved. In 1982, the EPA detected elevated levels of three solvents in the soils. Since 1977, *trichloroethylene* (TCE) has been detected in Smyrna's municipal wells. The State believes that the Tyler pit is a likely contributor to this pollution, although there may be other sources. About 6,700 people within 3 miles of the site get their drinking water from wells, both municipal and private. Approximately 4,700 people rely on the public water supplies; 60 homes stand within 1/4 mile of the site, with the closest being within 300 feet. Several private wells are reported in the vicinity of the site, but none are *downgradient* of the site.

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

NPL LISTING HISTORY
Proposed Date: 06/01/86
Final Date: 02/21/90

Threats and Contaminants

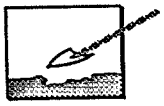
The groundwater is contaminated with *volatile organic compounds* (VOCs) including TCE from former process wastes. The soil contains elevated levels of VOCs, including toluene, dichloroethane, and TCE. Ingestion of contaminated groundwater from the existing private wells may pose a health threat; however, none of the wells are downgradient of the site.

continued

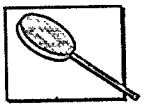
Cleanup Approach

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

Response Action Status



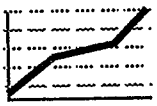
Immediate Action: To remove TCE contamination in the municipal wells, the town improved the efficiency of its *air-stripping* process and added an activated carbon filtration unit to its water treatment system. The treatment system continues to operate.



Groundwater: In 1990, the parties potentially responsible for the site contamination will begin an intensive study of the groundwater contamination at this site. This investigation will reveal the nature and extent of the pollution and pinpoint the best cleanup strategies. It is scheduled for completion in 1992; once completed, the EPA will select the final remedies for cleanup of the groundwater and other contaminated areas at the Tyler site.

Site Facts: A *Consent Order* was signed by Clark Equipment Company in 1989 to perform the site investigation and is awaiting signature by the EPA. The EPA is currently negotiating Consent Orders with other potentially responsible parties.

Environmental Progress



By improving the air-stripping process and adding an activated carbon filtration unit to its water treatment system, the town of Smyrna has eliminated TCE contamination from municipal wells, making the public water supply safe while investigations continue at the site.

WILDCAT LANDFILL

DELAWARE

EPA ID# DED980704951

REGION 3

CONGRESSIONAL DIST. 01

Kent County

2 1/2 miles south of Dover, adjacent to the St. Jones River

Site Description

From 1962 until 1973, a *landfill* operated on 44 of the 84-acre Wildcat Landfill site, situated next to the St. Jones River in Dover, 1/2 mile west of the Dover Air Force Base (AFB) NPL site. The privately owned site accepted municipal and industrial waste until it was closed under a State order for numerous violations of a State permit. Operators dumped wastes into *wetlands* and frequently left them uncovered. Groundwater is contaminated with heavy metals, organics, and low levels of *polychlorinated biphenyls* (PCBs). Open and empty metal drums, tires, solid latex, and municipal trash were scattered over the surface of the site. A 3-acre pond, which collects surface drainage from the western half of the landfill, lies immediately west of the landfill. Monitoring of drinking water wells in 1987 showed no contamination, but contaminant levels in groundwater underneath and *downgradient* of the site are at levels of public health concern. The St. Jones River, which borders the site, is used for recreational fishing and boating. Two trailer parks, the Dover AFB housing complex, and 12 residences are located within 1/2 mile of the site. Local residents rely on groundwater for drinking water supplies and are served by public or private wells. There are 24 active wells within 1/2 mile and 16 within 1,000 feet of the site.

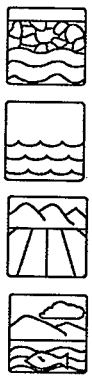
Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY

Proposed Date: 12/01/82

Final Date: 09/01/83

Threats and Contaminants



The groundwater is contaminated with chlordane, methylene chloride, and xylenes. On-site *leachate*, surface water, soils, and *sediments* contain PCBs and chlordane, a pesticide. Accidentally ingesting contaminated groundwater, surface water, soil, sediments, contaminated aquatic organisms or coming into direct contact with contaminated groundwater, surface water, soil, sediments, and air may threaten the health of people at or near the site. The State has issued a health advisory on fish caught from the St. Jones River. The St. Jones marshlands are threatened, and lead has been detected in snapping turtles on the site.

continued

Cleanup Approach

The site is being addressed in two *long-term remedial phases* focusing on source control and pond cleanup.

Response Action Status

Source Control: Cleanup activities for this site have been separated into two phases. The first deals with the landfill itself, and the second addresses the 3-acre pond at the northwestern corner of the landfill. The remedy selected for landfill cleanup features: (1) restricting development of the site and preventing installation of drinking water wells on or near the site; (2) grading, covering, and seeding on-site areas where direct risks of contact with contaminants have been identified; (3) removing and disposing of drums; (4) replacing two domestic wells adjacent to the site; and (5) monitoring groundwater. The engineering design for this work was started in October 1988 and is scheduled for completion in 1990, when cleanup activities are slated to begin, with completion scheduled for 1992.

Pond Cleanup: The remedy for the 3-acre pond that drains the western half of the landfill features filling in the existing pond and building a new shallow pond southeast of the landfill. The engineering design for pond cleanup was started in 1988 and is scheduled for completion in 1990, at which time cleanup activities are slated to begin.

Environmental Progress

The EPA has selected the cleanup technologies for the source control and the pond cleanup phases of the cleanup activities. The engineering designs are being completed for both phases, and the work is scheduled to begin in 1990. While these activities are taking place, the EPA has determined that the nearby population and the environment are not at risk.

GLOSSARY:

TERMS USED IN THE FACT SHEETS

This glossary defines the italicized terms used in the site fact sheets for the State of Delaware. The terms and abbreviations contained in this glossary are often defined in the context of hazardous waste management as described in the site fact sheets, and apply specifically to work performed under the Superfund program. Therefore, these terms may have other meanings when used in a different context.

Administrative Order On Consent: A legal and enforceable agreement between EPA and the parties potentially responsible for site contamination. Under the terms of the Order, the potentially responsible parties 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 EPA directing the parties potentially responsible to perform site cleanups or studies (generally, 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.

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.

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

Backfill: To refill an excavated area with removed earth; or the material itself that is used to refill an excavated area.

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.

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 is generally mounded or sloped so water will drain off.

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 its hazard to human health and the environment.

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

Consent Decree: A legal document, approved and issued by a judge, formalizing an agreement between 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 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].

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 with prolonged exposure.

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

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.

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

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.

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

Lagoon: A shallow pond where sunlight, bacterial action, and oxygen work to purify wastewater. Lagoons are typically used for the storage of wastewaters, sludges, liquid wastes, or spent nuclear fuel.

Landfill: A disposal facility where waste is placed in or on land.

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.

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 a number of these phases.

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

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.

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.

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 emersion oils, and caulking compounds. PCBs are also produced in certain combustion processes. PCBs are extremely persistent in the environment because they are very stable, non-reactive, and highly heat resistant. Burning them produces even more toxins. Chronic exposure to PCBs is believed to cause liver damage. It is also 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.

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. This means that PRPs may sign a consent decree or administrative order on consent [see Administrative Order on Consent] to participate in site cleanup activity without admitting liability.

Runoff: The discharge of water over land into surface water. It can carry pollutants from the air and land into receiving waters.

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

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

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

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 also Volatile Organic Compounds].

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

Volatile Organic Compounds (VOCs): VOCs are made 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.

Wetland: An area that is regularly saturated by surface or groundwater and, under normal circumstances, 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.