



Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Valley of the Drums Site Profile

Site Description:

A waste disposal area in Bullitt County, Kentucky

Site Size: 13 acres

Primary Contaminants:

Polychlorinated biphenyls (PCBs), heavy metals, polynuclear aromatics (PAHs), and volatile organic compounds (VOCs)

Potential Range of Health Risks**Without EPA Cleanup:**

Skin irritation, increased risk of cancer

Nearby Population Affected:

100 within 1 mile

Ecological Concerns:

Contamination of Wilson Creek and other tributaries of the Ohio River

Year Listed on NPL: 1983

EPA Region: IV

State: Kentucky

Congressional District: 2

Success In Brief

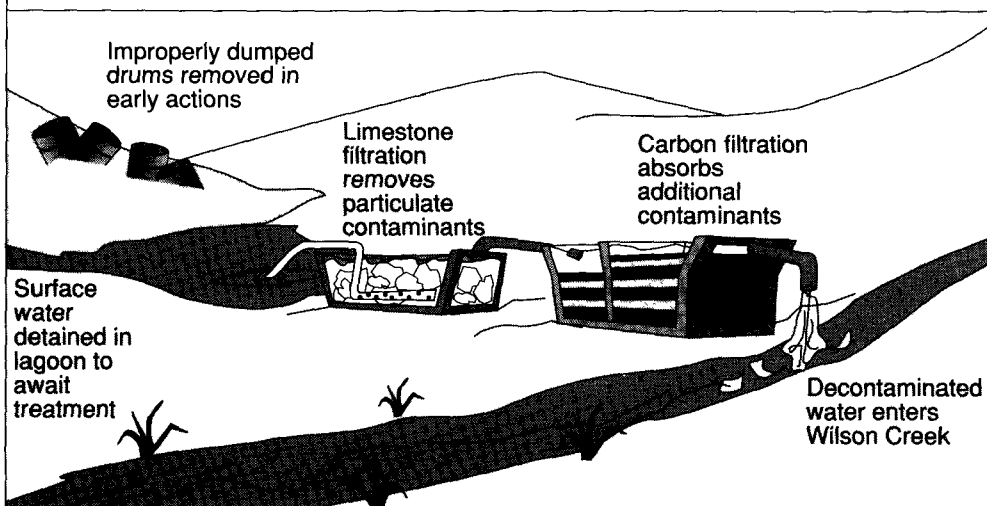
Valley of the Drums Cleanup: A Superfund Benchmark

The Superfund program was designed to mitigate the dangers posed by improper disposal of hazardous waste. The A.L. Taylor site, also known as "Valley of the Drums," was one of the first challenges to Superfund. Valley of the Drums was the scene of one of the largest drum removals in the history of the program. The successful cleanup was accomplished through some notable achievements, including:

- A significant reduction of risks to local citizens and the environment due to several emergency removal actions;
- Use of state-of-the-art cleanup technologies;
- Combined efforts between the U.S. Environmental Protection Agency (EPA) and the Kentucky Department of Natural Resources and Environmental Protection (KDNREP); and
- Recovery of \$1.8 million of EPA's cleanup costs from polluters.

This cooperative effort among EPA, State and local groups culminated in a cleanup of tremendous proportions and a safe community and environment.

Valley of the Drums Surface Water Treatment System



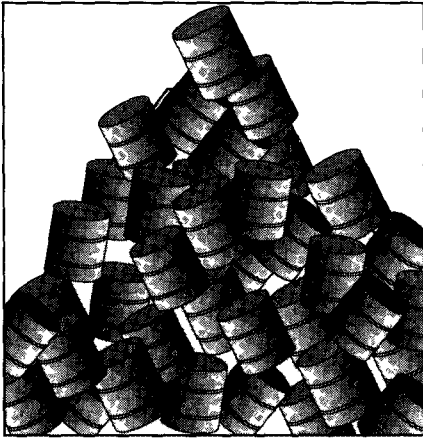
The Site Today

The completion of all cleanup activities at Valley of the Drums is a benchmark in Superfund program achievements. The site has been proposed for deletion from EPA's list of the most serious hazardous waste sites. Close monitoring will continue for the next 30 years to ensure the effectiveness of the cleanup.

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A Site Snapshot

The Valley of the Drums site was an uncontrolled industrial waste dump covering 13 acres in a small valley in Bullitt County, Kentucky. The site is located in a rural area and approximately 100 people live within one mile. Over 17,000 drums of hazardous waste were discovered on the surface of the site. Investigations



conducted in 1975 by the Kentucky Department of Natural Resources and Environmental Protection

Over 17,000 drums of hazardous waste were discovered on the surface of the site

(KDNREP) revealed that deteriorating and leaking drums had discharged pollutants into Wilson Creek, a tributary of the Ohio River.

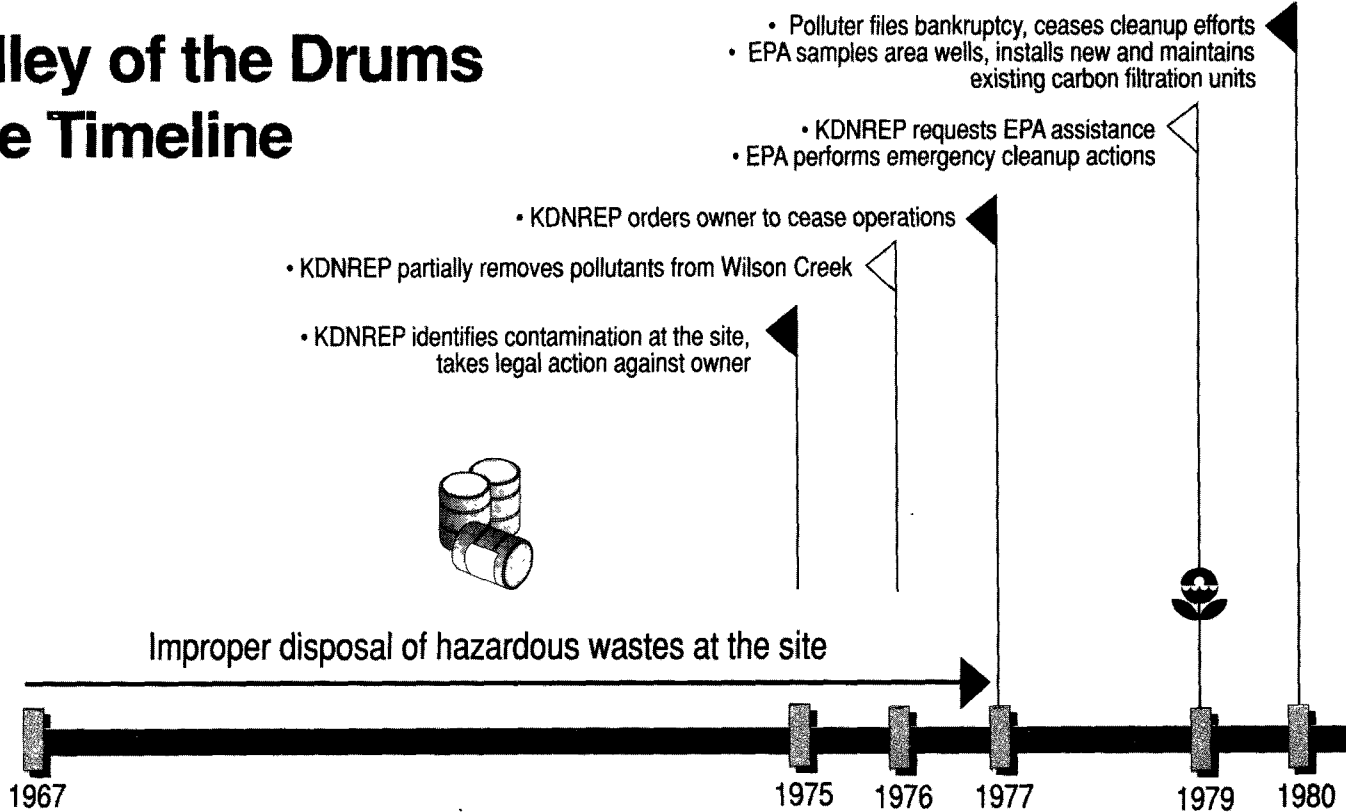
The pollutants identified at this site included: heavy metals, polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs). Contamination on-site

consists of approximately 140 different chemical compounds.

Because this site is in a rural area, threats to local citizens were not as pressing as the risk of ecological damage to Wilson Creek, and the potential for contamination to spread to the Ohio River. Evidence of this critical environmental problem was demonstrated by the lack of vegetation on and near various areas of the site property.

Although the site was privately owned and fenced, trespassers faced potential health threats from contact with contaminants present in site soil and surface water. The potential human health effects related to these contaminants range from skin irritation to an increased risk of cancer.

Valley of the Drums Site Timeline



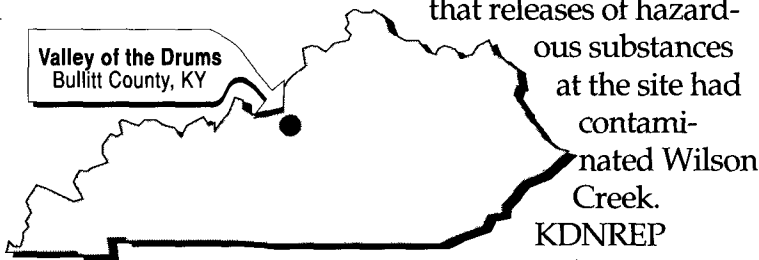
Valley of the Drums: Ten Years of Unlicensed Dumping Produces A Sea of Corroded, Leaking Drums

Site Conditions Require State to Take Immediate Actions

During the 10 years that the Valley of the Drums site was used to dispose of industrial chemicals and municipal refuse, the owner of the property never applied for the required State permits. In that time, many drums were improperly buried on-site and some drums were drained into open pits and recycled. Open pits were also used

for burning solvents and, in the later years of operation, many drums were haphazardly discarded on the site surface.

In 1975, KDNREP discovered that releases of hazardous substances at the site had contaminated Wilson Creek. KDNREP removed some of the drums from the surface as well as some pollutants from Wilson Creek. KDNREP pursued legal actions against the site owner from 1975 until 1977.

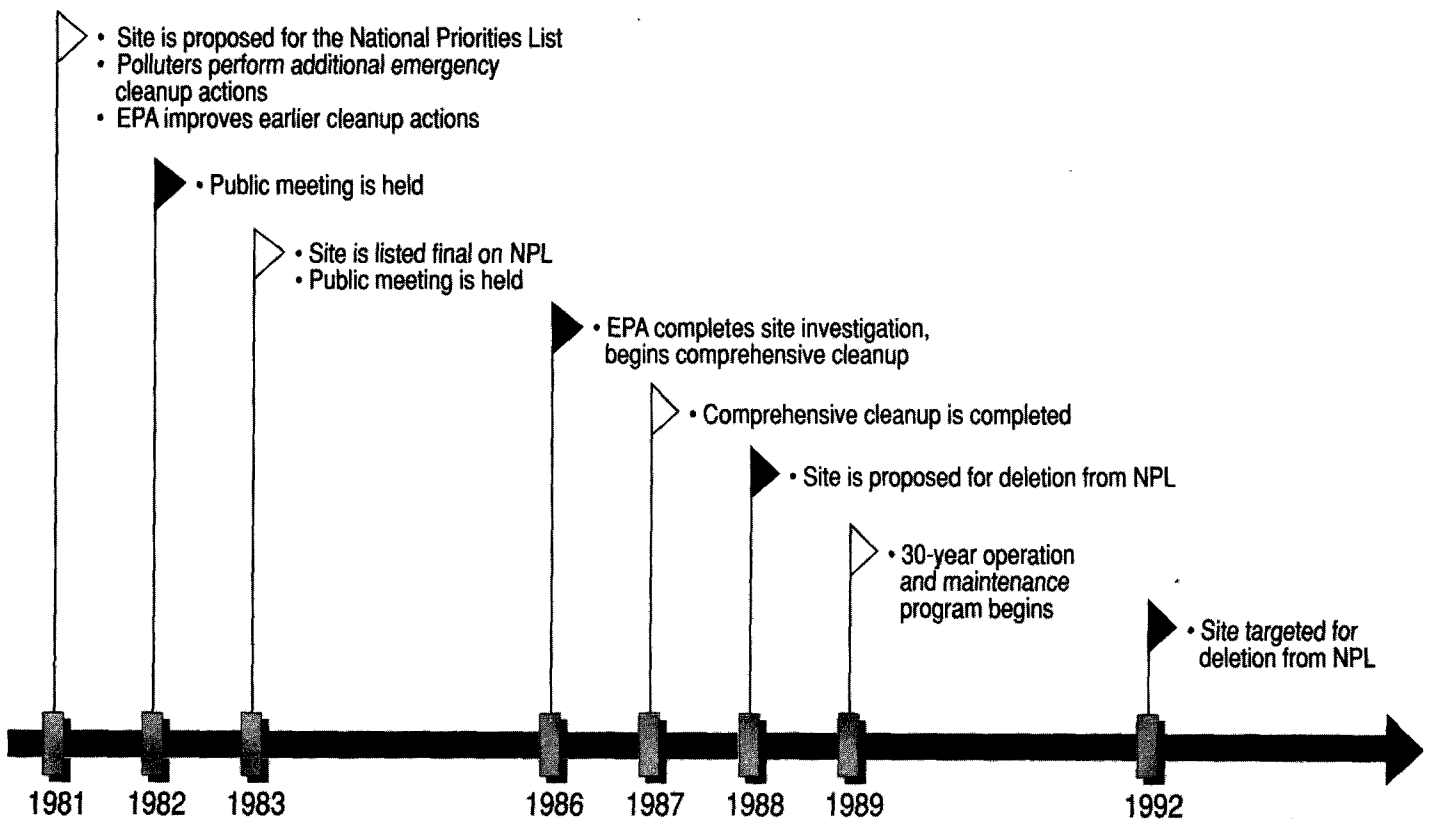


In 1977 the state ordered the owner of the property to cease improper dumping operations. However, it was not until the owner died later that same year that the plant was finally closed.

State Requests Assistance from EPA

In January 1979, at the request of KDNREP, EPA investigated and confirmed the presence of oil and hazardous substances at the Valley of the Drums site. As a result, in March 1979, EPA used federal funds to stop runoff

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Superfund Program Provides Mechanism for EPA to Pursue Polluters of Valley of the Drums

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contaminated with oils and chemicals from entering Wilson Creek.

Under the authority of the Clean Water Act, emergency actions performed early in 1979 by EPA included:

- Securing, segregating, organizing, and marking surface drums;
- Constructing an underflow dam in Wilson Creek to trap floating contaminants for removal;
- Installing devices in Wilson Creek to force soluble contaminants to the surface of the water for removal;
- Re-routing surface water runoff to a detention lagoon where it could be safely contained before entering the treatment system; and
- Designing and installing a limestone and carbon water treatment system to decontaminate surface water before releasing it into Wilson Creek.

These actions addressed the most pressing threats to the environment.



A Somber Lineup A seemingly endless parade of drums at the Valley of the Drums site include many leaking hazardous chemicals. Contaminants spilled into the nearby surface water. Little vegetation in the affected area survives.

Superfund Provides Mechanism for Enforcing Environmental Laws

Prior to 1980, federal and state officials lacked clearly defined authority for holding polluters accountable for indiscriminant dumping. Hence, tens of thousands of uncontrolled hazardous waste sites are now

scattered across the United States.

The initial removal activities at the Valley of the Drums site were conducted by EPA and KDNREP prior to the existence of the Superfund program. Once enacted, Superfund provided a mechanism for EPA and KDNREP to identify and pursue various polluters responsible for contaminating the site.

In 1981, KDNREP contacted six polluters who voluntarily removed approximately 30 percent of the waste remaining on the surface of the site. In 1986, EPA

The number of drums and the magnitude of contamination at the site was so great that further emergency actions were deemed necessary

entered into negotiations with four polluters to gain their involvement in comprehensive site cleanup activities.

However, these negotia-

tions did not lead to an agreement. Thus, EPA continued to perform site clean-up activities using Superfund monies.

In October 1991, EPA settled with four polluters for \$ 1.8 million of the costs associated with emergency and comprehensive cleanup, thereby minimizing the burden on the Superfund.

EPA's Emergency Actions Alleviate Immediate Threats and Pave Way for Comprehensive Cleanup

EPA Addresses Worst Threats Immediately

In addition to the enforcement authority established by Superfund, the new law developed methods to distinguish and treat two classes of site contamination. Site cleanup activities are categorized as those which pose an imminent threat to the environment, called emergency actions, and those concerned with comprehensive, restorative site

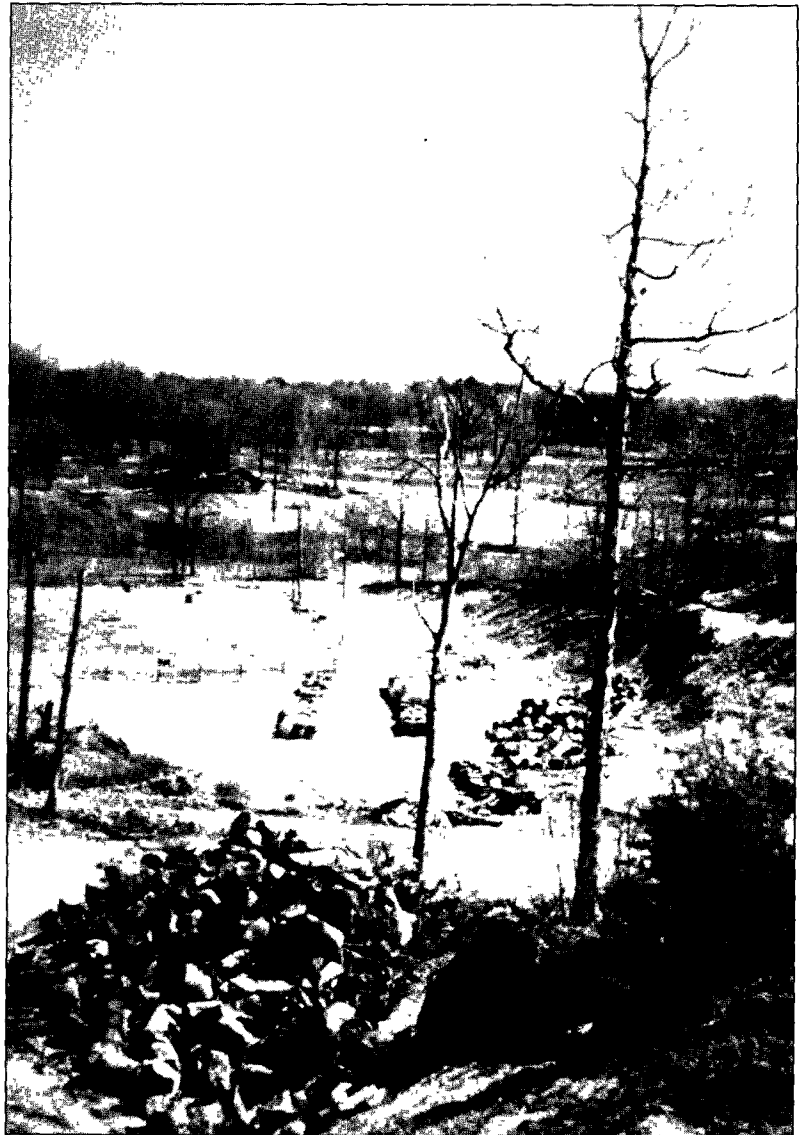
Steep slopes and severe soil erosion from no vegetation caused additional cleanup challenges

cleanup. At the Valley of the Drums site, the Superfund program started with emergency actions and proceeded through final comprehensive cleanup activities.

Although early cleanup activities and drum removals were performed in the late seventies by KDNREP, EPA and polluters, the number of drums and magnitude of contamination at the site was so great that further emergency actions were deemed necessary.

EPA removed all remaining surface drums and upgraded the water treatment system installed during the emergency actions of 1979. These 1981 emergency activities satisfactorily reduced

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A Desolate Landscape A small portion of the 17,000 drums found on the Valley of the Drums site are arranged in jumbled masses on the sides of a barren landscape. A decade of improper hazardous waste storage left segments of the topsoil unable to sustain vegetation, increasing the problem of soil erosion along the steep manmade inclines. Cleanup for the site included removal of drums, burying wastes under a clay soil cap to prevent further surface contamination, and a series of efforts to improve water in the area.

Valley of the Drums: Contamination is Contained; Cleanup Deemed a Success

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the threat to the environment. In 1983, Valley of the Drums was placed on the National Priorities List (NPL), EPA's roster of the nation's most serious uncontrolled or abandoned hazardous waste sites.

Inclusion on the NPL meant that EPA would see to the comprehensive cleanup and restoration of the Valley of the Drums site.

Valley of the Drums Undergoes Comprehensive Treatment

Comprehensive cleanup activities began in 1984 after a study was conducted to identify the full extent of contamination at the site. This study confirmed that discharge of contaminants from the site was attributable to surface water runoff.

The comprehensive cleanup plan, completed in 1986, was designed to eliminate the remaining contaminants threatening Wilson Creek.



This plan was finalized in 1986, and in 1987 comprehensive cleanup activities began. These actions involved:

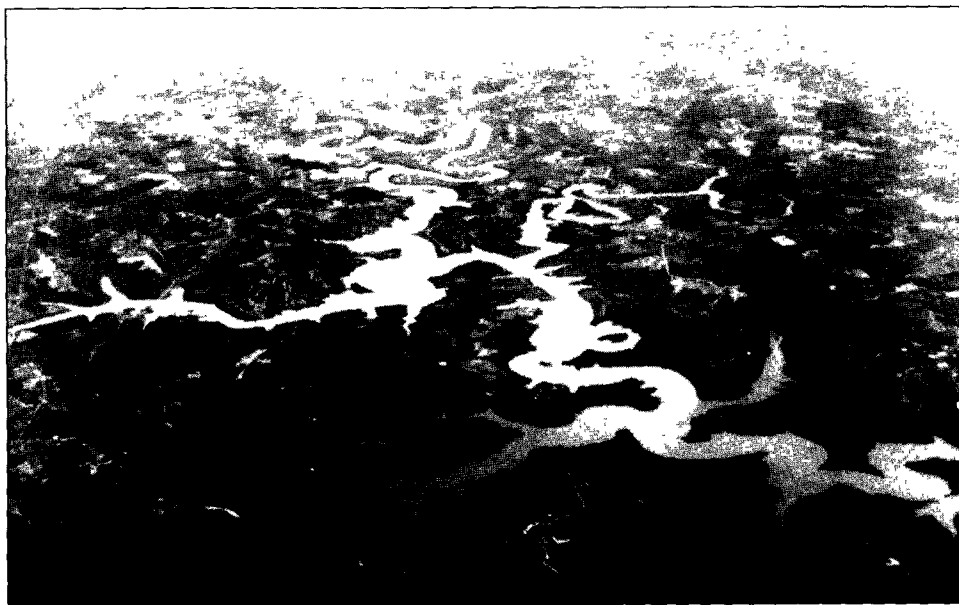
- Building six-foot-high security fences with gates and posting warning signs;
- Installing a clay soil cap to

- contain underground waste;
- Excavating wastes and drums and re-burying them underneath the cap;
- Seeding the cap and surrounding areas with a mixture of grasses and mulched straw;
- Relining previously built ditches;
- Installing new drains; and
- Installing additional monitoring wells to gauge effectiveness of the clay cap.

Severe soil erosion, created by a lack of vegetation and the very steep slopes cut by Mr. Taylor in the northern and western sides of the site, proved to be an additional challenge for the Superfund team. The potential dangers of continued erosion prompted EPA to customize the clay cap with terraces to ensure that it would continue to function properly.

A Complex Waterway At Risk

This photo shows the winding pathway of the Ohio River. Contaminants entered the Ohio's tributary, Wilson Creek, and could have had a disastrous effect had cleanup actions not returned the water to its unsullied state.



Continued Site Monitoring Is Essential To Ensure Effective Operations

The monitoring program for Valley of the Drums began in the summer of 1988. An EPA oversight team is ensuring that all barriers remain intact and that no fumes or liquids penetrate the clay cap.

Quarterly visits to the site are made to observe the visible surface conditions of the site and security features. Wilson Creek and local ground water are sampled regularly.

If no contamination is detected, the cap is effectively containing the contaminants. To date, all cleanup measures have been successful.



▲ Framed by drums, members of the cleanup team use protective breathing apparatus during monitoring activities. The site, which is protected by fences to minimize direct contact, will be monitored regularly to ensure that the many containment and cleanup measures continue to operate effectively.

EPA Anticipates Deletion of Valley of the Drums From National Priorities List in 1992

Because the long-term cleanup of this site has been successful, the site was proposed for deletion from the NPL in 1988. A deletion record was prepared that contains all documents and materials cataloging site activities.

Site documents were placed in a local repository and at the EPA's Regional office. A notice that the site is scheduled for deletion was printed in a local newspaper and in the *Federal*

Register, and the public was given an opportunity to comment on the proposal to delete the site from the NPL.

EPA did not receive any objections to the proposed deletion.

The site will be deleted from the NPL based on the findings of a five-year review, which is expected to be completed later this year.

A five-year review is always conducted at Superfund sites

where high levels of hazardous substances are present. These reviews continue until contaminants are reduced to levels which allow unrestricted property use.

If unexpectedly high levels of contamination are found as a result of periodic investigations, EPA conducts additional testing on-site and, if necessary, modifies the cleanup method to be protective of ecological health.

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Community Relations at Valley of the Drums

Community relations at the Valley of the Drums have been very positive. Public meetings were held in 1982 and in 1983 to discuss comprehensive cleanup alternatives at the site. Citizens expressed appreciation for the rapid attention EPA gave the site.

The only declaration of public disapproval of site activities arose when the State proposed on-site incineration in 1979. The incineration plan was discontinued at

that time and the clay cap alternative was chosen instead. EPA kept the public informed throughout cleanup and continues to offer information to anyone interested in the site.

Any questions concerning the site should be directed to:
Community Relations Coordinator;
U.S. EPA, Region IV;
345 Courtland Street, NE;
Atlanta, GA 30365; (404) 347-3004.

For additional copies of this or other *Superfund At Work* updates, contact the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, telephone (703) 487-4650.

If you wish to be added to our mailing list or to comment on this bulletin's content, length or format, please call (703) 603-8984 or send a letter to *Superfund At Work* (5502G), 401 M Street SW, Washington, DC 20460.

Success at Valley of the Drums

The drum removal effort at the Valley of the Drums site was one of the earliest and largest in Superfund history.

The expected deletion of the site later this year confirms EPA's ability to effectively eliminate the dangers that improper waste disposal practices pose to the environment.

In addition, EPA has recovered \$1.8 million from polluters.



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