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Environmental Protection
Agency

Office of Solid Waste and
Emergency Response
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EPA

Superfund Today

FOCUS ON CONSTRUCTION COMPLETION

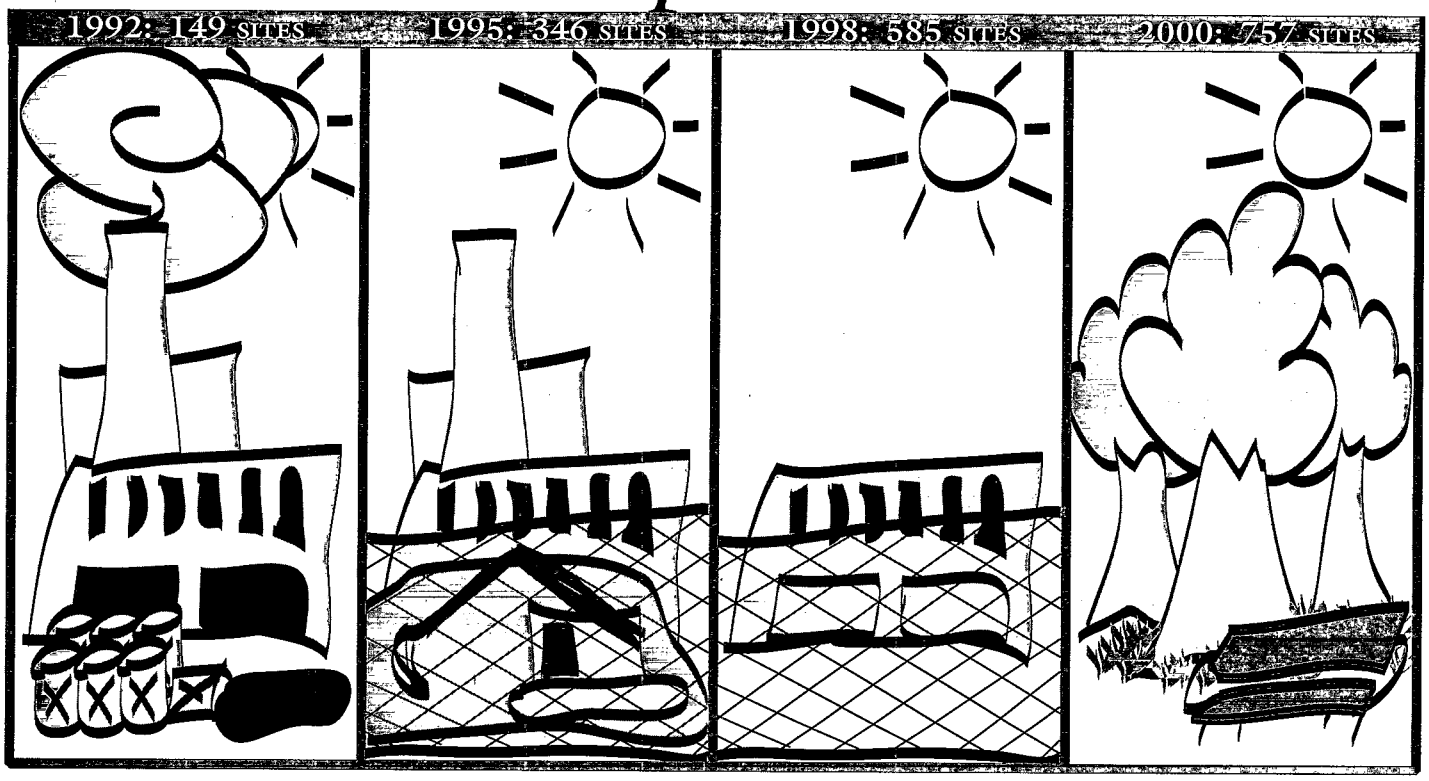
EPA Achieves 757th Construction Completion

Superfund is getting the job done. As of September 30, 2000, 757 Superfund sites had reached construction completion. This is double the total of construction completions only five years ago. Over half of the 1450 sites on the National Priorities List have now reached this stage of the cleanup process.

EPA is committed to continued progress in cleaning up hazardous waste sites. More than ever, the Superfund program is working with communities to do this in ways that will enhance future beneficial uses of the site. The result is communities that are not only safer, but which have better residential, recreational and commercial opportunities.

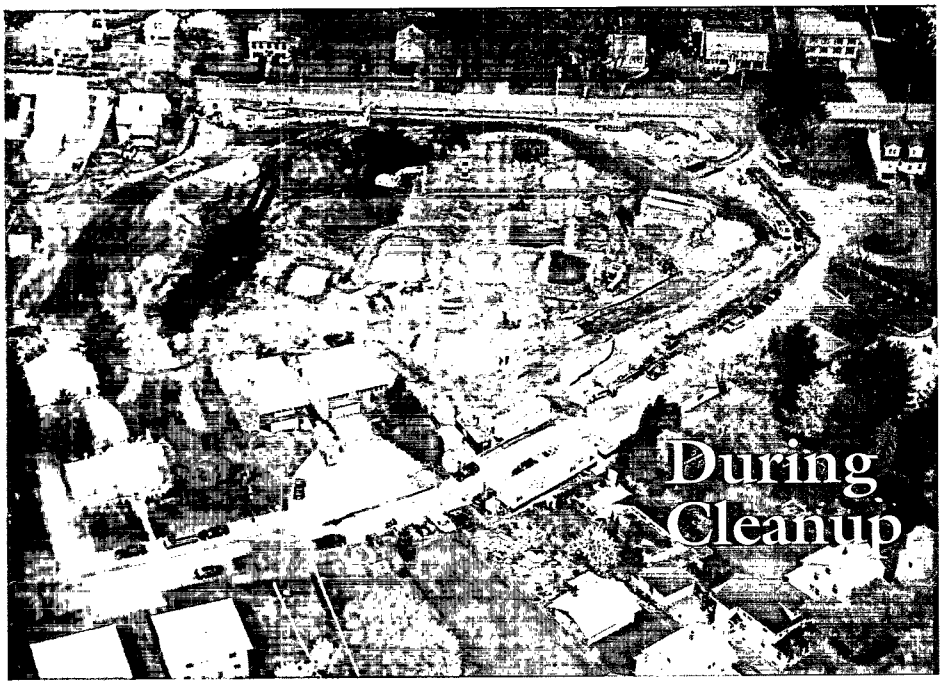
> *"Working together with communities . . . we have made Superfund work fairer, faster and more cost-effectively to protect the public health of the one in every four Americans who lives within three miles of a toxic waste site, including ten million children."*
>
> Carol Browner
> Administrator, U.S. EPA
> Speaking at the Pepe Field Superfund site in Boonton, NJ
> November 28, 2000

MOVING MORE SITES TO *Construction Completion*



Celebration of the Cleanup at *Pepe Field, NJ*

Pepe Field in Morris County, New Jersey was the 750th Superfund site to reach the construction completion milestone.



The Threat. Pepe Field is a three-acre recreational area in the middle of a residential neighborhood of Boonton. From the 1920s to 1950 the site had been used as an industrial landfill. In the early 1970s the town built a playground, tennis court and its only Little League field on the property. The site was closed in 1984 because of health threats posed by decay of waste material beneath the site.

The Cleanup. EPA coordinated closely with the State of New Jersey and town officials in planning and conducting the cleanup. The specifications for the work incorporated the nearby neighbors' conceptual plan for the restoration of the recreational facilities. The cleanup effort stabilized or excavated 85,000 tons of material and relocated two families whose houses were built on top of contaminated waste. Special precautions had to be taken to minimize odors, dust, noise and traffic problems which arose during the two years of active work at the site. The total cost of the cleanup was $16 million.

The Result. For the first time in a generation, Little League will be played in Boonton. As a result of the collaboration between EPA and the community during the cleanup, residents now have a clean and safe recreational space of their own design that they will put to good use.

What Is *Construction Completion?*

At sites where construction is completed, there is no longer a threat to the health and well-being of the surrounding community. EPA has designed and built a remedy which prevents contaminants from spreading through the soil, surface water, or ground water. The site may very well be ready for some new beneficial use.

A construction completion occurs when three conditions have been met:

1. No further on-site construction is necessary.
2. All immediate threats have been eliminated.
3. All long-term threats are under control.

There are several ways a site may reach construction completion. The three most common approaches are:

Containment. EPA covers the site or somehow confines the hazardous material. Drains and gas collection systems may be installed to capture anything that leaks from the site.

Removal. EPA digs up and removes all toxic materials and soils and disposes of them at a licensed hazardous waste landfill.

Treatment. EPA uses an on-site technology, such as soil washing, air stripping or incineration, to destroy any hazardous materials or render them harmless.

A site may reach construction completion without all cleanup work being finished. There still may be some ongoing operation, such as pumping and treating ground water. However, EPA will not count a site as a construction completion if there is still a risk posed to public health or the environment. Once a site has reached construction completion, it may be ready for some recreational, economic or environmental use. Turn to Page 7 to learn more about how a former Superfund site may become a business area, a park, or some other community asset.

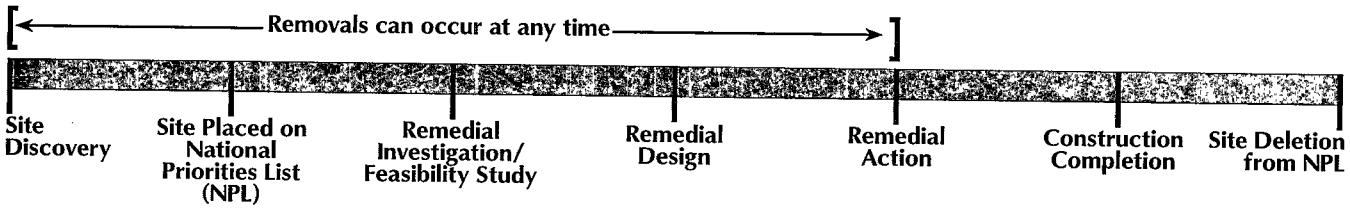
Construction Completion Information

Contact the Superfund Docket to obtain these publications:

- *Common Cleanup Methods at Superfund Sites.* 1994. U.S. EPA, Office of Solid Waste and Emergency Response. EPA-540-R-94-043.
- *Superfund Post Remediation Accomplishments: Uses of the Land and Environmental Achievements, Volume 1.* 1996. U.S. EPA, Office of Solid Waste and Emergency Response. EPA-540-R-94-007.
- *Close Out Procedures for NPL Sites.* 2000. U.S. EPA, Office of Solid Waste and Emergency Response. EPA-540-R-98-016.

Superfund Docket: (703) 603-9232 or *superfund.docket@epa.gov*

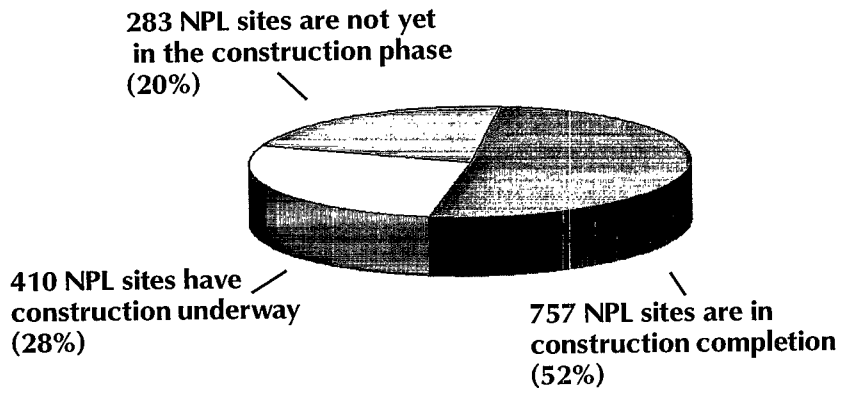
Where does Construction Completion Fit in the Superfund Pipeline?

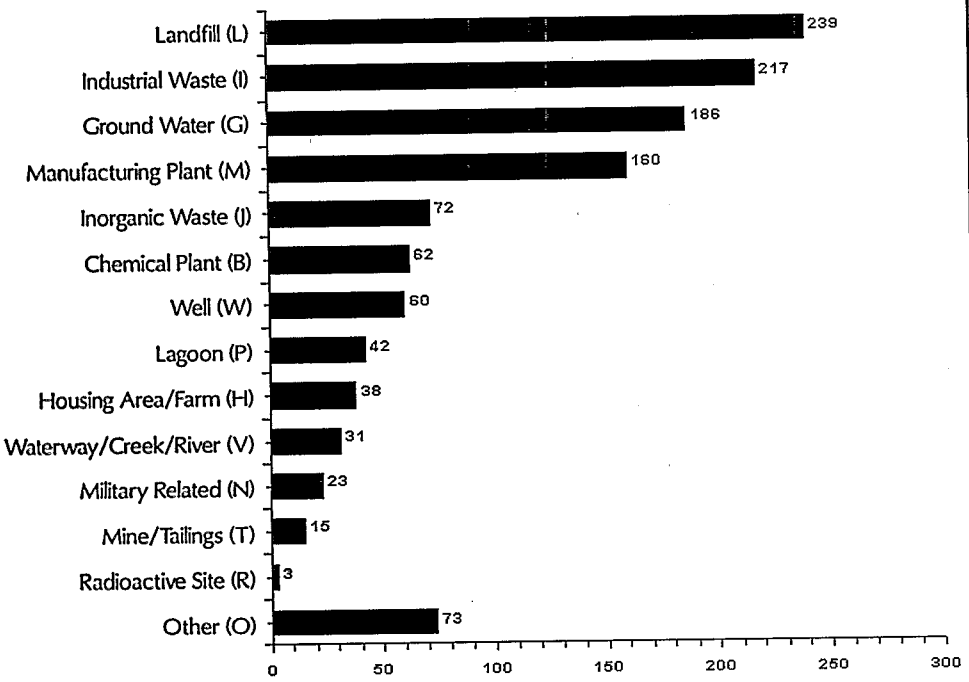


Construction Completion Statistics
Number and Types of NPL Sites

Construction Completion Progress

As of September 30, 2000, over 50% of the 1,450 final or deleted NPL sites were in construction completion.

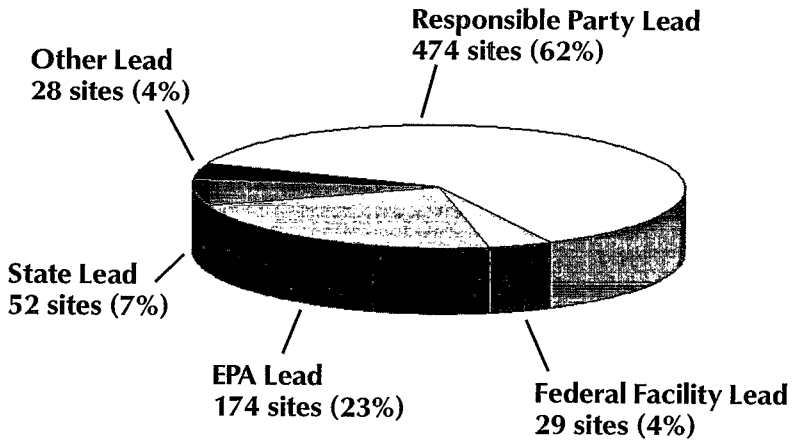




Types of Construction Completion Sites

Each of the 757 construction completion sites is characterized and placed into site-type categories. Some sites fall into multiple categories due to site-specific complexities.

Construction Completion Statistics
Site Leads and Technologies Used



Who Managed the Construction Completion?

Various parties direct activities at Superfund sites. This pie chart portrays the party in charge of the site when construction completion occurred.

Cleanup Technologies Used at Superfund's 757 Construction Completion Sites

The cleanup technologies listed here are those used at the current total of 757 construction completion sites. Many sites need more than one type of technology.

Containment:

Excavation and Removal	352
Surface Capping/Soil Cover	348
Surface Drainage Control	107
Backfilling	116
Solidification/Stabilization & Immobilization	68

Treatment:

Ground Water Pump & Treat	284
Air Stripping	106
Incineration	
– On Site	36
– Off Site	42
Innovative Technologies	
– Soil Vapor Extraction	86
– Bioremediation	36
– Thermal Desorption	11
– Dechlorination	6
– In-Situ Flushing	15
– Soil Washing	9

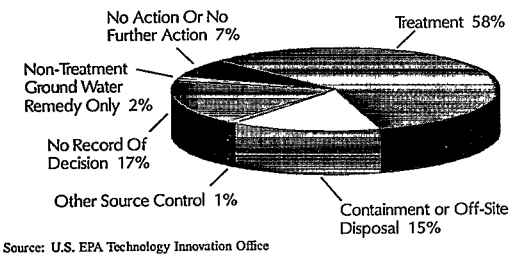
Other Actions:

Ground Water Monitoring/Wells	590
Institutional Controls	368
Alternate Water Supplies	99

Technology Advances in Cleanup

The maturity of the Superfund program is reflected in the suite of technologies now being used to remediate sites on the NPL. Many of these technologies were not available in the early 1980s. Remedies at Superfund sites vary depending on the severity of the contamination, the nature of the contaminant, and the risk presented to human health and the environment. Treatment of contaminated media is the most aggressive remedial option, and is part of the remedy at 58% of NPL sites through 1999 (Figure 1). Fifteen percent of the sites use containment and/or off-site disposal as the most aggressive source control remedy, while seven percent of the sites were found to require no further action. (The balance of sites receive a variety of protective measures such as alternative drinking water supplies, decontamination of buildings, or fish advisories.)

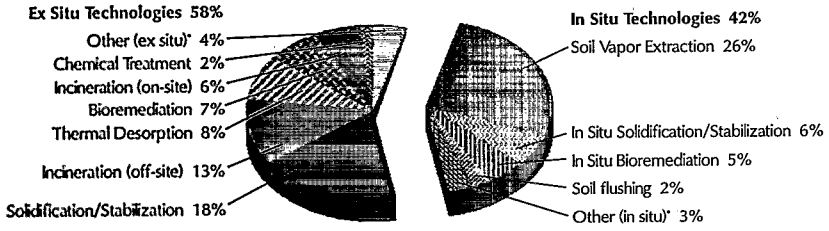
Figure 1:
Types of Cleanup at NPL Sites (FY 1982–FY 1999)



Source: U.S. EPA Technology Innovation Office

Since Superfund's inception many technological advances have been made in treatment technologies permitting EPA and regulated parties to tackle problems that previously would have been prohibitively costly or technically infeasible. Many of these advances have come by means of "in situ" treatment technologies, those in which the contaminated medium is treated in place, without the need for excavating soils or pumping of ground water. A good example is soil vapor extraction (SVE). There are currently 190 planned, operational, or completed SVE projects at Superfund sites. In situ technology applications currently account for 42% of all source control remediation decisions made for Superfund sites (Figure 2). The remediation of contaminated ground water is also experiencing advances, offering Project Managers more options in dealing with complex problems. One of the notable advances in ground water remediation comes from Permeable Reactive Barriers, a cost effective technology using the natural flow of ground water to pass it through a "filter" trenched across its path.

Figure 2:
Applications of Source Control Treatment Technologies (FY 1982–FY 1999)



Source: U.S. EPA Technology Innovation Office

Spotlight on Technology

- The Big Three Treatment Technologies (# of Projects)
  - Soil Vapor Extraction 201
  - Solidification/ Stabilization 183
  - Incineration 136
- The Rising Stars (# of Projects)
  - Bioremediation 84
  - Air Sparging 48
  - Phytoremediation 9

See *Treatment Technologies for Site Cleanup; Annual Status Report (10th Edition)* (EPA 542-R-01-004).

Superfund has also embraced recent field-based measurement and monitoring technology advances. These technologies reduce the time needed to determine the nature and extent of contamination, track progress of an active remedy, and offer reliable cost-effective options for monitoring longer term remedies such as pump and treat systems.

For more information on innovative technologies for the remediation or characterization of hazardous waste visit the Technology Innovations Office Website at www.epa.gov/tio.

Ready for *Productive Reuse*

Contrary to the image of Superfund sites as toxic and barren eyesores, after construction completion sites may be used for office parks, recreation, industrial centers, shopping malls, residences and wetlands. Sites that were once abandoned or underused have now become valuable community resources. Locations that once pulled the local economy down are now generating new tax revenue and serving as catalysts for broader revitalization. There have already been more than 170 reuse success stories at Superfund sites all over the country.

Reuse can create many benefits for communities, including new jobs, higher property values, recreational opportunities and environmental amenities. Planning for productive reuse must be a partnership effort. The best outcome is the result of active participation by representatives from all parts of the community (homeowners, local officials, businesses, civic groups, grassroots organizations, educators, etc). Community representatives should be engaged early in the site planning process to think creatively about reuse opportunities and to help make the decisions about what will be done.

Chisman Creek *Virginia*

For 17 years a local contractor used the abandoned sand and gravel pits to dump more than 500,000 tons of fly ash. EPA, York County and Virginia Power formed a partnership to coordinate the site cleanup and redevelopment. This partnership not only created two successful recreational facilities, but earned an Environmental Achievement Award from the National Environmental Awards Council.

Bangor Gas Works *Maine*

Vast quantities of coal tar were stored in large underground tanks and subsurface pools on this sites. After cleanup, a company bought the property and built a nicely landscaped, full-service supermarket that serves a predominantly low income neighborhood. The redevelopment of this site has spurred other projects nearby, including two restaurants, housing units for the elderly, and plans for three department stores.

Silver Mountain Mine *Washington*

When this mine closed, it left behind 7,000 tons of cyanide-laced mine tailings and a basin filled with 20,000 gallons of contaminated water. Thanks to a collaborative effort between EPA, the State, the community and a local rancher, the toxic materials have been contained so that portions of the site can once again be used for grazing cattle.

FOR MORE INFORMATION ABOUT CONSTRUCTION COMPLETION . . .

Superfund Home Page: *www.epa.gov/superfund*

EPA Home Page: *www.epa.gov*

EPA Superfund Hotline: (800) 424-9346 or TDD: (800) 553-7672 • *www.epa.gov/epaoswer/hotline/htm*

Superfund Docket: (703) 603-9232 • *superfund.docket@epa.gov*

EPA Technology Innovation Office CLU-IN Database (Cleanup Information): *www.clu-in.com*

EPA Headquarters Library: 401 M. Street SW, Washington, D.C. 20460 • (202) 260-5921

Focus on Construction Completion

Number of *Construction Completion Sites By State*

Alabama 4 SITES	*Idaho* 5 SITES	*Montana* 3 SITES	*Puerto Rico* 8 SITES
Alaska 3 SITES	*Illinois* 16 SITES	*Nebraska* 3 SITES	*Rhode Island* 4 SITES
American Somoa 1 SITE	*Indiana* 24 SITES	*Nevada* 0 SITES	*South Carolina* 19 SITES
Arizona 5 SITES	*Iowa* 16 SITES	*New Hampshire* 11 SITES	*South Dakota* 3 SITES
Arkansas 10 SITES	*Kansas* 6 SITES	*New Jersey* 45 SITES	*Tennessee* 12 SITES
California 39 SITES	*Kentucky* 17 SITES	*New Mexico* 9 SITES	*Texas* 18 SITES
Colorado 6 SITES	*Louisiana* 10 SITES	*New York* 44 SITES	*Trust Territories* 1 SITE
Connecticut 7 SITES	*Maine* 6 SITES	*North Carolina* 13 SITES	*Utah* 8 SITES
Delaware 13 SITES	*Maryland* 4 SITES	*North Dakota* 2 SITES	*Vermont* 6 SITES
District of Columbia 0 SITES	*Massachusetts* 12 SITES	*Northern Marianas* 1 SITE	*Virgin Islands* 0 SITES
Florida 39 SITES	*Michigan* 56 SITES	*Ohio* 25 SITES	*Virginia* 11 SITES
Georgia 9 SITES	*Minnesota* 35 SITES	*Oklahoma* 6 SITES	*Washington* 38 SITES
Guam 1 SITES	*Mississippi* 3 SITES	*Oregon* 5 SITES	*West Virginia* 1 SITE
Hawaii 1 SITE	*Missouri* 14 SITES	*Pennsylvania* 63 SITES	*Wisconsin* 35 SITES
			Wyoming 1 SITE

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