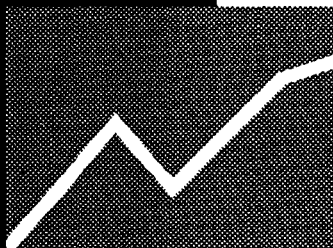




Superfund:

Reporting on Cleanup Activities Through Environmental Indicators

FY 1991 Update





HIGHLIGHTS

Superfund is the Nation's program to clean up uncontrolled hazardous waste sites. Since 1980 when the program began, Superfund has taken thousands of actions to protect both people and the environment from the dangers posed by these sites. Some of the sites have required responses to emergencies such as hazardous waste spills, while others have needed long-term actions to clean up contamination that may have been accumulating for decades. The sites include those on the National Priorities List (NPL), as well as non-NPL sites where EPA takes emergency action to reduce hazards. The sites are located in every State and potentially affect millions of people. There are over 41 million people who live within four miles of sites included on the NPL.

This is the second Superfund Environmental Indicators report to summarize the results of Superfund cleanup activities through environmental progress indicators that are derived from the program's mandate to protect people and the environment from uncontrolled hazardous waste sites. The first report documented progress from the program's inception in 1980 through 1989. The second report captures the additional environmental progress that occurred during 1990.

The report summarizes Superfund's cleanup activities in terms of three environmental indicators. The three indicators, accompanied by highlights from the report, are:

1. Reducing Immediate Threats: Controlling Threats to People and the Environment

- Superfund has taken action to reduce or eliminate immediate threats to people and the environment at 1,760 NPL and non-NPL sites.
- 507 NPL sites have had actions to reduce or eliminate immediate threats, an increase of 85 sites from October 1989. As a result of these actions, the potential risks posed by exposure to hazardous waste have been reduced for 23.5 million people who live within 4 miles of these sites, including more than 950,000 people who had been at risk to threats posed by direct contact with hazardous waste.

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Environmental Indicators

2. Progress toward Permanent Cleanup Goals

- Progress toward permanent cleanup (e.g., achievement of long-term health and environmental goals) has occurred at 373 of the 507 NPL sites that have had actions to reduce immediate threats, an increase of 55 sites from the last report.
- Of the 373 sites with progress toward permanent cleanup goals, cleanup activity has been undertaken with respect to land contamination at 333 sites, surface water at 64 sites, and groundwater at 97 sites.
- The threat of direct contact with hazardous waste has been eliminated at 196 (59%) of the 333 sites where long-term cleanup of land contamination has begun.

3. Bringing Technology to Bear: Removing Contamination from the Environment

- Over 54% of NPL sites with Progress toward Permanent Cleanup Goals have used treatment technologies to remedy past contamination.
- Superfund is increasing its use of treatment technologies — in 1990, 79% of the sites where remedies were selected to control the source of contamination specified treatment-based remedies.
- Superfund has handled large quantities of hazardous waste in its cleanup activities. Wastes handled to date include:
 - Nearly 13 million cubic yards of contaminated soils and other solid wastes, a volume which would cover a football field more than a mile high;
 - Over 6 billion gallons of groundwater, enough to provide the population of New York City their drinking water for nearly 5 years;
 - Over 1 billion gallons of liquid wastes, or 4 gallons for every person in the United States; and
 - Over 300 million gallons of surface water, or 1 gallon for every person in the United States.



Introduction. Superfund is the federal program for protecting human health and the environment from abandoned or uncontrolled hazardous waste sites throughout the United States. Superfund involves federal, state, and local government agencies in applying health and environmental standards to develop appropriate site-specific plans for cleanup efforts.

Since its creation in 1980, Superfund has taken many actions to address acute threats and achieve health and environmental cleanup goals at hazardous waste sites. The purpose of this report is to summarize the results of Superfund cleanup work throughout the Nation since the beginning of the program and specifically for the period from September 1989 through December 1990. (This is the period from the end of the first collection of Superfund environmental indicator data to the end of the second collection.) The report summarizes the results in terms of environmental indicators reflecting the three management tenets of the Superfund program: reduce immediate threats, make sites clean, and bring the best available technology to bear to achieve these ends.

Sites Targeted for Cleanup. Whether the goal is to reduce immediate threats or permanently clean up a site, Superfund targets the worst kinds of sites, and works to address the worst problems first at those sites. Both NPL and non-NPL sites are targeted. NPL sites require long-term cleanup and monitoring to achieve and maintain site-specific health and environmental goals. Non-NPL sites include sites that present immediate threats to safety and health. Emergency intervention is required to eliminate threats at these sites.

Reducing Immediate Threats. When an uncontrolled hazardous waste site is identified, Superfund's first responsibility is to respond to immediate threats to human health and the environment. Such activities include treating, removing or containing wastes; installing site security; providing alternative water supplies; or relocating populations. In reporting progress toward the goal of reducing immediate threats, Superfund counts those sites where acute threats have been addressed (includes both NPL and non-NPL sites) and where progress toward the achievement of long-term health and environmental goals has been made (NPL sites only). These are the sites where progress is measured by the indicator "Reducing Immediate Threats: Controlling Threats to People and the Environment."



Environmental Indicators

Since 1980, Superfund activities have resulted in making 1,760 sites safer throughout the Nation by reducing acute threats (see Figure 1). At the majority of these sites (88%), wastes have been removed, treated, or contained. Of the 1,760 sites, 507 are NPL sites, and another 1,253 are non-NPL sites.

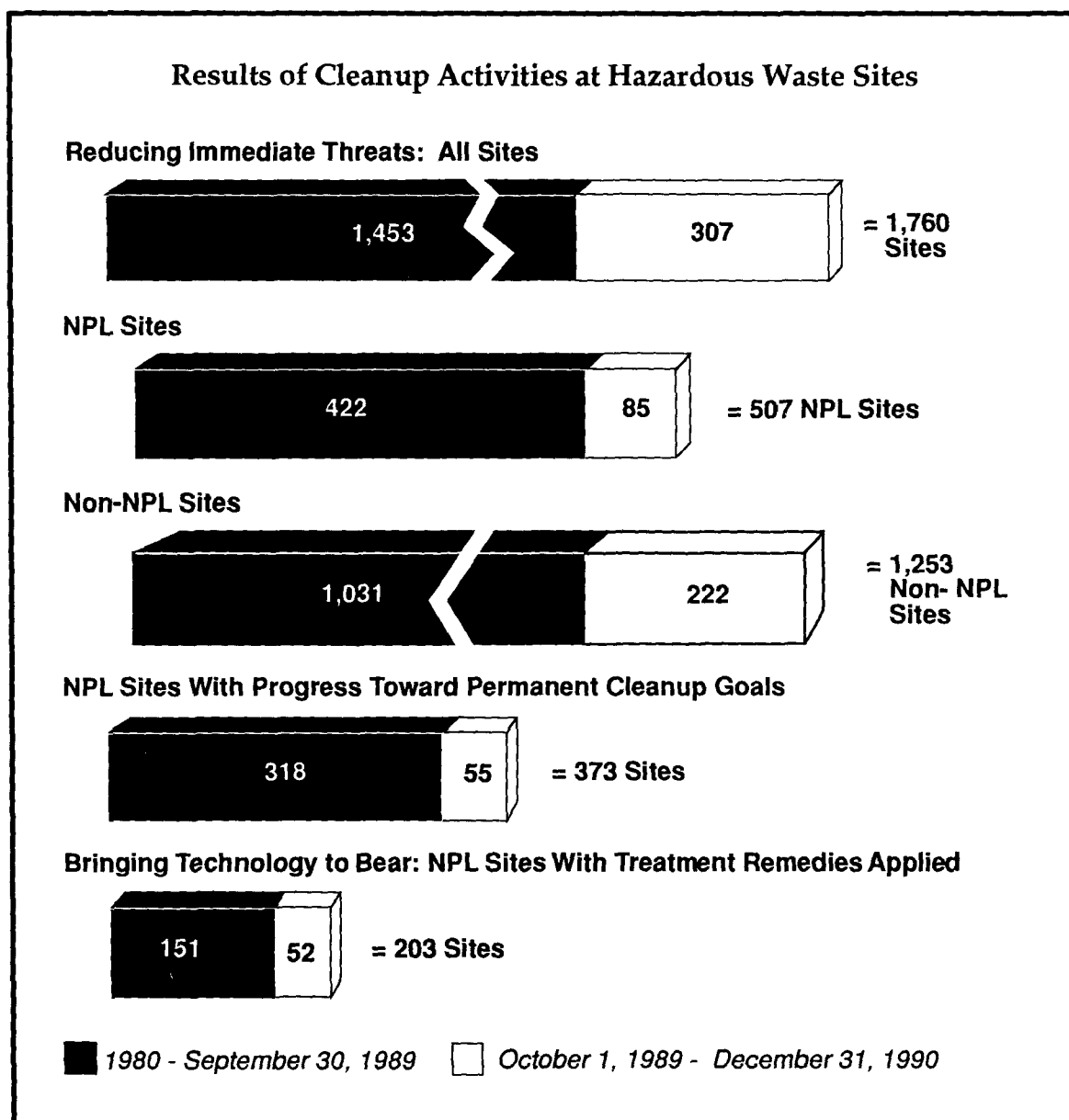


FIGURE 1



Activities at 507 NPL sites where work has been performed to make them safer by reducing immediate threats are shown in Figure 2. These NPL sites include sites where acute threats have been addressed or where progress toward the achievement of long-term cleanup goals has been accomplished. Of the 507

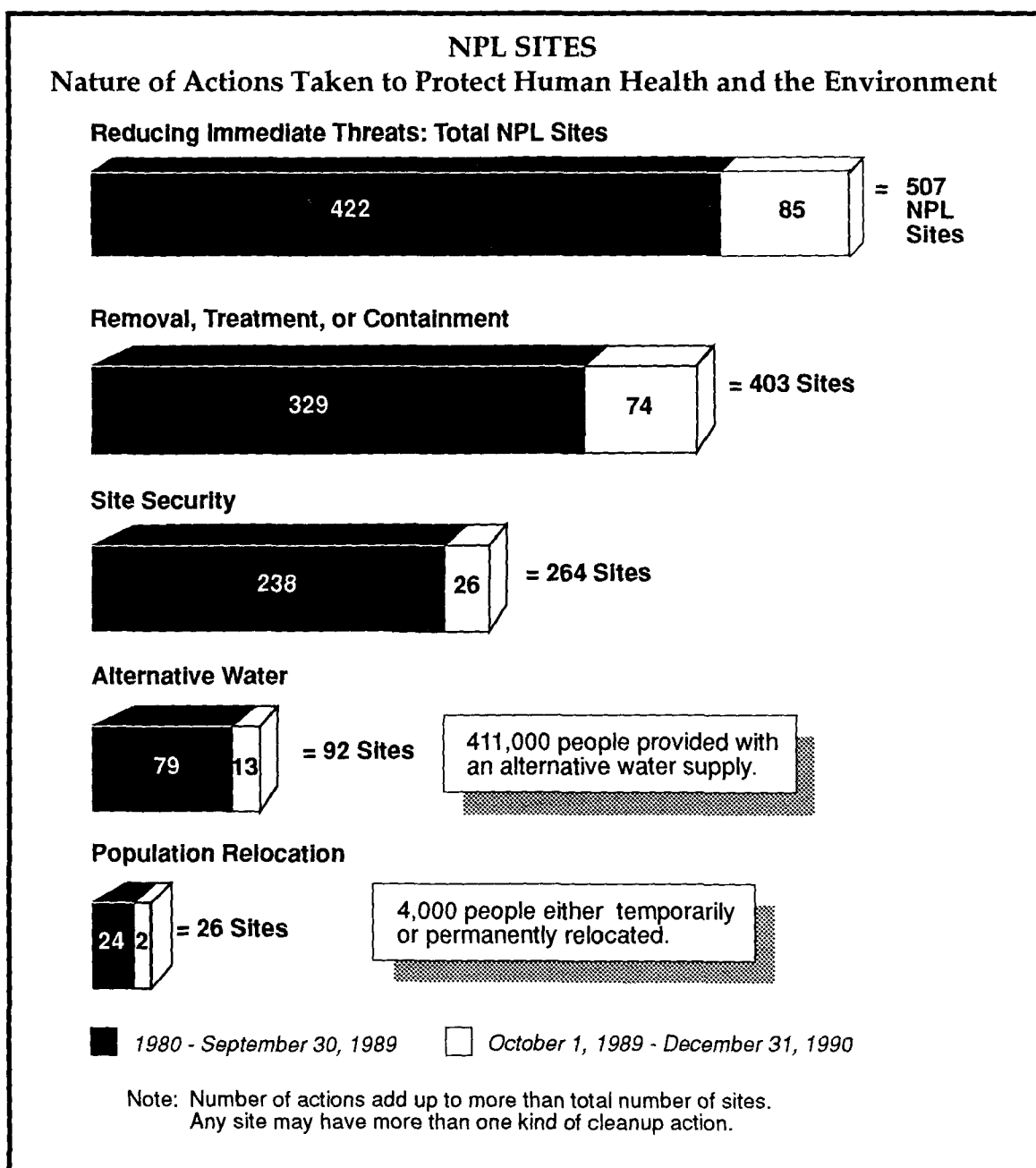


FIGURE 2



Environmental Indicators

sites, 85 have been made safer in the period between October 1989 and December 1990. Since 1980, alternative water supplies have been supplied to 411,000 people at 92 sites, and 4,000 people have been temporarily or permanently relocated away from 26 sites.

The net result of Superfund cleanup work at NPL sites has been to reduce the potential risks from exposure to hazardous waste for more than 23.5 million people who live within four miles of these sites. This work includes the elimination of threats posed by direct contact with hazardous waste to more than 950,000 people, 580,000 of whom were threatened by contact with land contamination and 411,000 of whom have had alternative water supplied.

Activities at 1,253 non-NPL sites to reduce immediate threats are shown in Figure 3. These activities include work that can best be characterized as emergency, short-term cleanup work. Although activities dealing with wastes may decontaminate non-NPL sites, Superfund does not report this decontamination as progress toward health or environmental goals. Nonetheless, at the overwhelming majority of these sites, the actions taken either treated, contained, or removed the hazardous wastes. Of the 1,253 non-NPL sites currently being addressed, 222 have been made clean in the period between October 1989 and December 1990.

Progress toward Permanent Cleanup Goals. When an uncontrolled hazardous waste site is identified as posing a severe and persistent threat to human health and the environment, Superfund places the site on the NPL. Then it studies the site, and in coordination with other governmental agencies, sets long-term goals for site cleanup. These goals are defined in terms of the contaminant levels necessary to be protective of human health and the environment in each of the environmental media. This report details the results of cleanup activities in three media: land, surface water, and groundwater – and measures that progress according to the indicator "Progress toward Permanent Cleanup Goals."

Since 1980, Superfund has made progress toward achieving permanent cleanup goals at 373 NPL sites. This is an increase of 55 sites from the progress last reported through September 1989. At 97 of the 373 sites, Superfund has fully achieved the goals for cleaning one or more of the affected media; at the other 276 sites, it has made measurable progress toward cleanup goals. Cleanup activities have reduced or eliminated land contamination at 333 sites, surface water

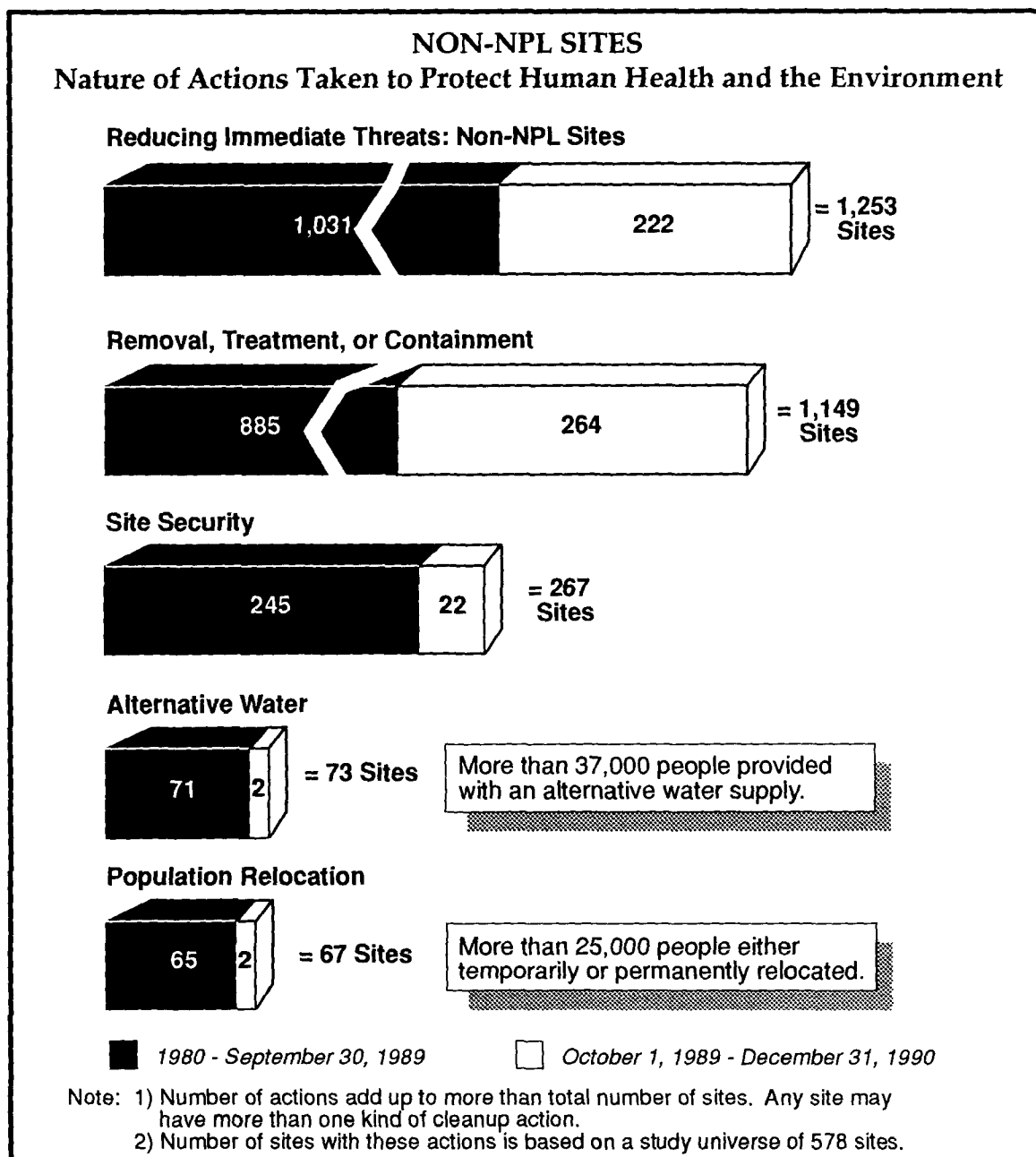


FIGURE 3

contamination at 64 sites, and groundwater contamination at 97 sites. This represents increases of 59 sites with progress in the cleanup of land contamination, 21 sites with surface water contamination, and 5 sites with groundwater contamination. (See Figure 4.)

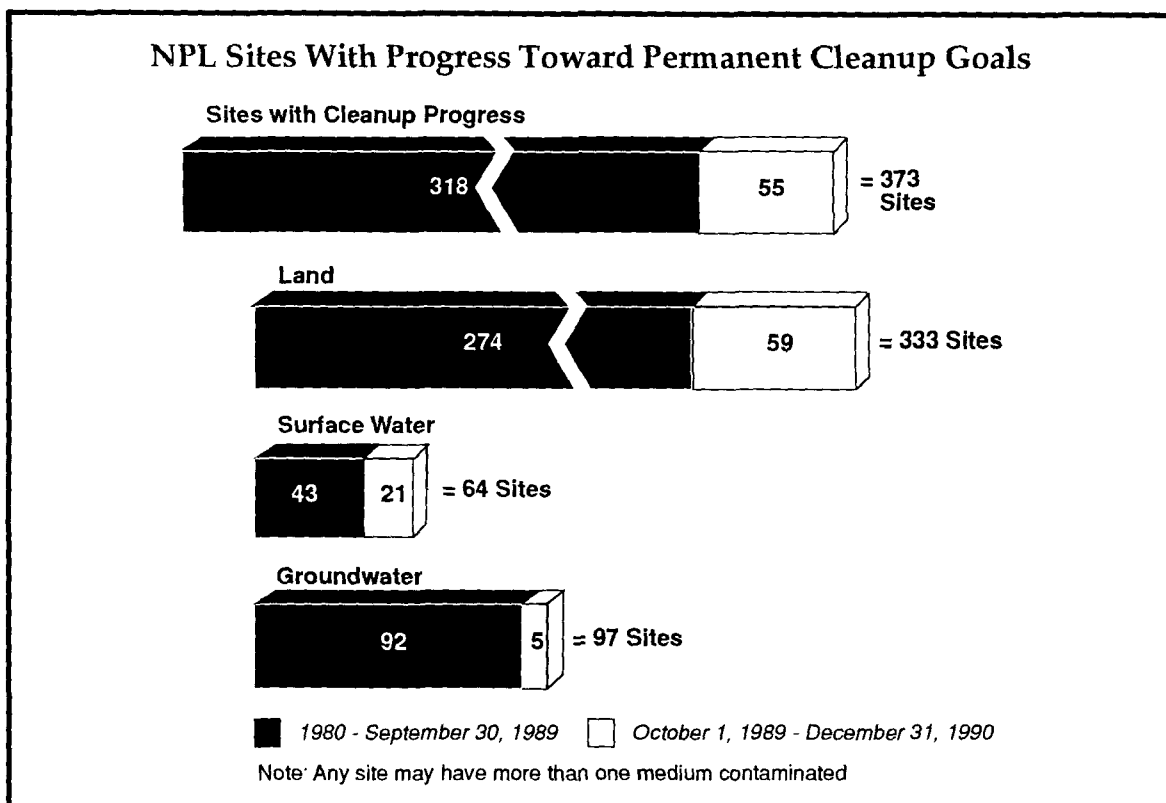


FIGURE 4

In addition, these activities have eliminated the threat of direct contact with hazardous waste at 196 of the 333 sites with land contamination, thereby protecting more than 580,000 people who live within a 1-mile radius of these sites. (See Figure 5.)

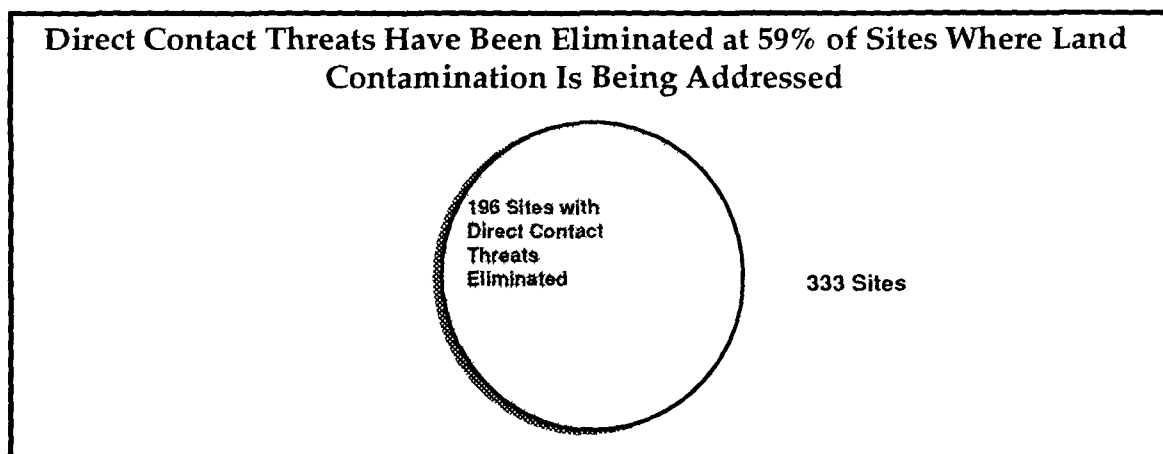


FIGURE 5



Bringing Technology to Bear. Superfund uses a variety of technologies to reduce immediate threats and achieve permanent cleanup goals. This variety reflects the diversity of contaminants that must be dealt with and the media in which they occur. Increasingly, Superfund relies on treatment technologies designed to reduce the volume and toxicity of the hazardous wastes. Treatment technologies were utilized at 203 of the 373 NPL sites where progress toward long-term cleanup goals is documented in this report. This represents an increase of 52 sites from the last report. Given the increase in treatment remedies that have been chosen in the past several years (see Figure 6), the trend toward increased use of treatment technologies will continue in the near future.

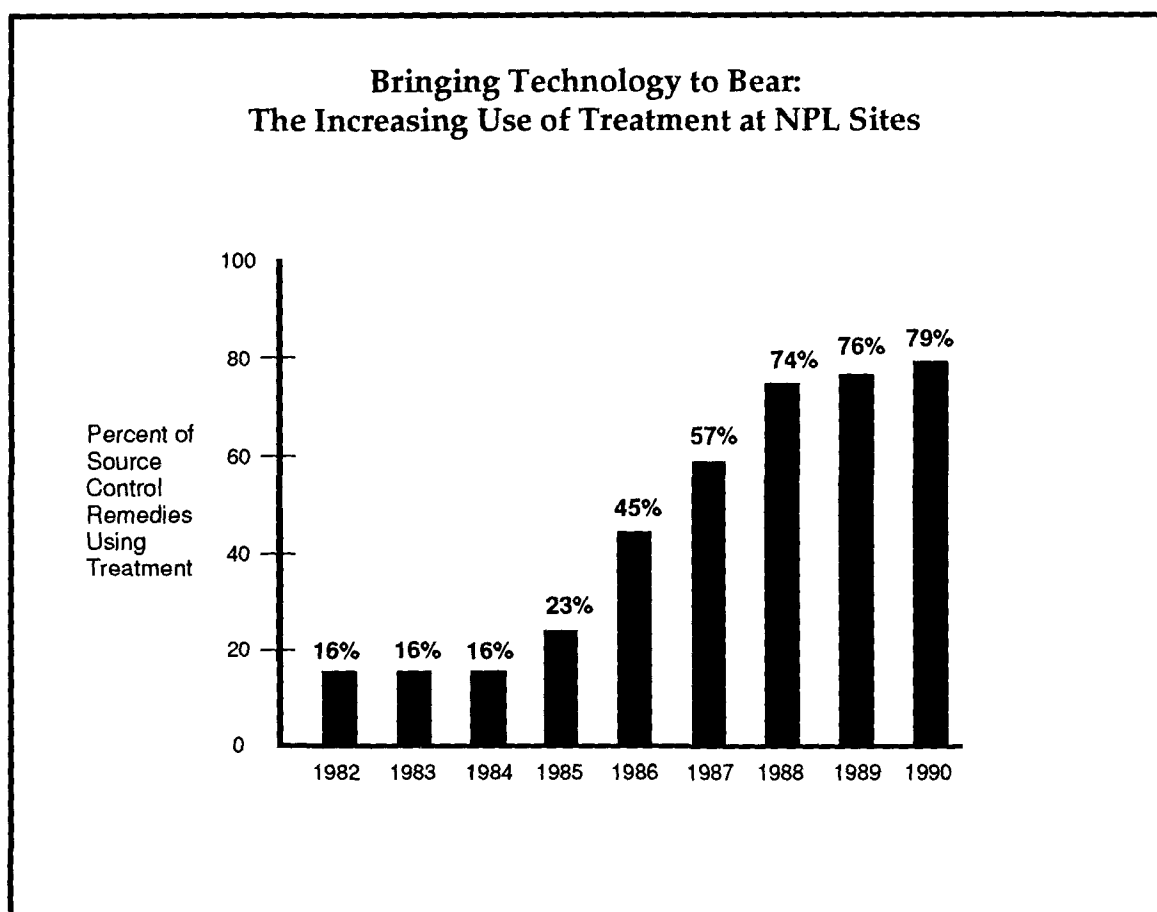


FIGURE 6



Environmental Indicators

The volumes of waste that Superfund has managed are another measure of the application of technologies and the achievement of human health and environment goals. (See Figure 7.) While the figures are rough estimates, they are nevertheless impressive.

Bringing Technology to Bear: Waste Volumes Managed	
PATHWAY	CUMULATIVE VOLUMES MANAGED
	Cumulative Volume 1980 - December 31, 1990
Land Surface:	
Soil	5,930,000 cubic yards
Solid Waste	7,000,000 cubic yards
Liquid Waste	1,055,000,000 gallons
Groundwater:	6,350,000,000 gallons
Surface Water:	316,000,000 gallons
Sediments	15,000 cubic yards

FIGURE 7

Future Reports on Environmental Indicators. This brief report summarizes information from a comprehensive data base against which to measure future progress. Superfund has completed historical research to establish the documentary basis for this data base and will publish annual reports based on environmental indicators that focus on activities during the previous year. In particular, these reports will summarize the number of sites where immediate threats to human health and the environment have been reduced and progress toward achieving permanent clean up goals have been made, the activities which have made them so, the technologies used, and the volumes of waste managed in these cleanup activities. Superfund will also continue to seek better ways to use environmental indicators to report cleanup progress. Studies now underway will likely enhance the current set of Superfund environmental indicators.

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