

CHAPTER III

THE MOUNTING COSTS OF CLEANUP

Since 1984, the Department of Defense has spent about \$11 billion on the Defense Environmental Restoration Program and on cleaning up bases scheduled to be closed. Spending on the cleanup program has risen dramatically during the past decade. In 1984, DoD spent only \$200 million; by 1991, annual spending had increased to about \$1.5 billion. This year, the Congress authorized DoD to spend about \$2.5 billion for environmental restoration including funding for cleaning up bases scheduled to be closed.

Funding for environmental cleanup is one of the few areas in which defense spending has increased in recent years. On average, spending for environmental cleanup has risen about 23 percent a year since 1984. In comparison, defense spending on procurement and on research and development during the same period has decreased by an average of about 7 percent each year.

Most environmental spending to date has been allocated for identifying and studying potentially contaminated sites rather than for permanent cleanup. According to the General Accounting Office, DoD allocated about \$2.7 billion (1991 dollars) to the Defense Environmental Restoration Account between 1984 and 1990; almost \$2.3 billion of that amount was spent on environmental cleanup activities. Only about 20 percent (\$465 million) was spent for cleaning up contaminated sites; the remainder, presumably, was spent for studies.¹ Moreover, most of the spending for cleanup actions has probably financed interim remedial measures rather than permanent cleanup, since so few permanent cleanup actions have occurred.

As more studies are completed and remedial actions are undertaken, spending for environmental cleanup will shift from financing studies to conducting cleanup. Fiscal year 1994 marked the first time that DoD spent more for cleanup than for studies; over 52 percent of spending for DERA was allocated to cleanup activities. Based on DoD's budget request for 1995, the portion of spending for cleanup will increase to about 63 percent.² Figure 3

1. General Accounting Office, *Hazardous Waste: DoD Estimates for Cleaning Up Contaminated Sites Improved but Still Constrained*, GAO/NSIAD-92-37 (October 1991), p. 17.

2. Statement of Sherri W. Goodman, Deputy Under Secretary of Defense for Environmental Security, before the Subcommittee on Military Readiness and Defense Infrastructure of the Senate Committee on Armed Services, May 4, 1994.

highlights DoD's changing priorities for its cleanup budget for 1992 through 1995.

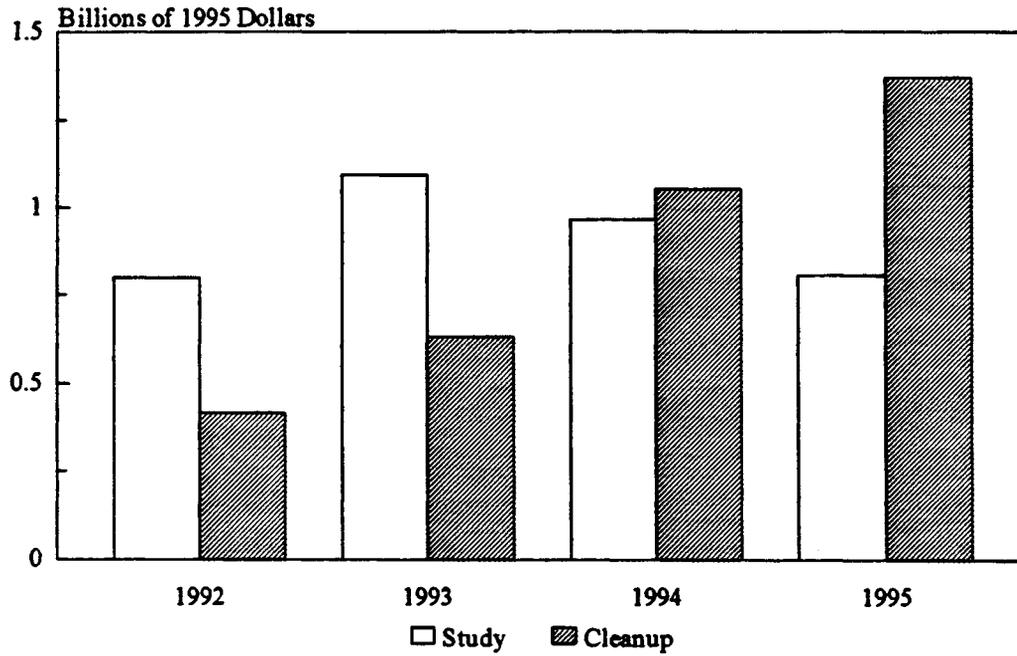
Since precise knowledge of the size and scope of remaining cleanup tasks is far from complete, estimating the total cost of cleaning up DoD's thousands of hazardous waste sites is difficult and subject to considerable uncertainty. The trend in DoD's cost estimates for the cleanup program, however, is quite clear: they have been rising steadily during the past decade. In 1985, the department estimated that it would cost between \$6.9 billion and \$13.7 billion to clean up the 400 to 800 sites that DoD had identified as requiring remediation. Several years later, the range of estimates for completing the cleanup program--then including some 12,342 potentially contaminated sites--had increased to between \$11 billion and \$16 billion. In November 1989, the Deputy Assistant Secretary of Defense for the Environment estimated that completing the cleanup of some 15,257 sites, including the Rocky Mountain Arsenal, would cost between \$14.3 billion and \$19.5 billion. In 1991, DoD's estimate increased to \$27.3 billion to study and remediate, as necessary, some 24,500 potentially contaminated sites.³ In May 1994, the Deputy Under Secretary of Defense for Environmental Security indicated that the department was preparing a new, comprehensive program estimate and suggested that the program could cost \$30 billion (see Figure 4).

Current estimates for annual cleanup costs are also dramatically higher than DoD estimated they would be just a few years ago. In 1989, for example, the department estimated that in 1994 it would need between \$900 million and \$1.2 billion to fund requirements under DERP; last year the Congress appropriated more than twice the higher estimate. DoD's current budget estimates for the 1990-1999 period, on average, are about twice what the department had projected it would need in 1989. If the current program experiences the same degree of budgetary growth over the next five years, cleanup costs could exceed \$20 billion during that period.

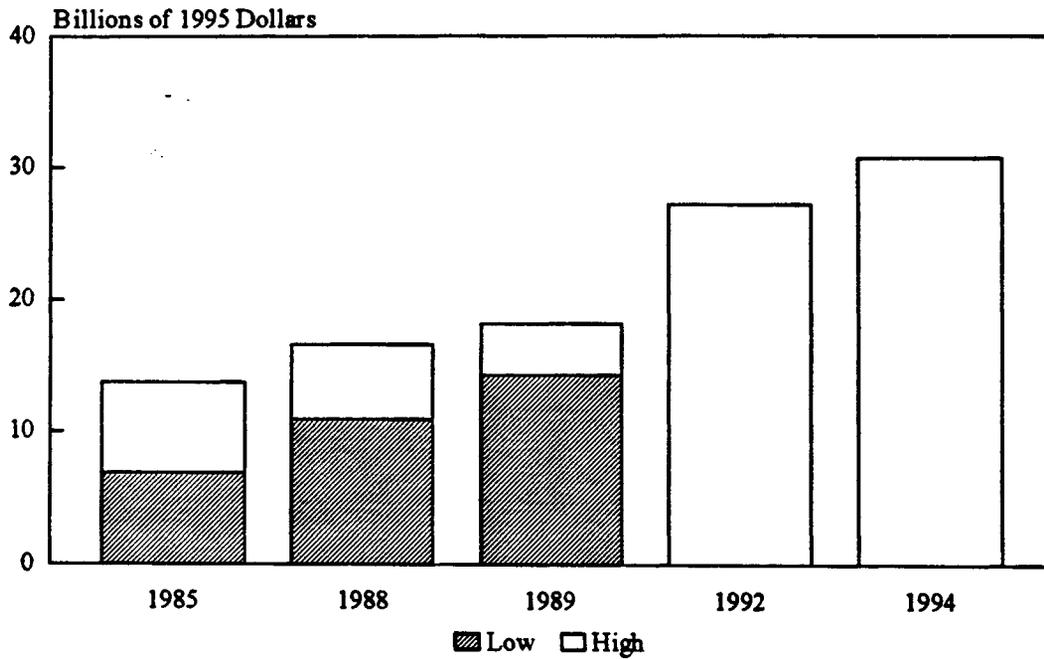
Current estimates, however, are likely to be moderately more reliable than those made during the initial stages of the Defense Environmental Restoration Program or even as recently as 1989. DoD's initial estimates were based on very limited information about the size and scope of the cleanup problem. The department has now completed nearly all of its preliminary assessments for the sites it has identified (though it continues to identify new sites each year) and has made considerable progress in the

3. General Accounting Office, *Hazardous Waste*, pp. 14-16.

FIGURE 3. DoD's SPENDING FOR STUDIES AND CLEANUP, 1992-1995



SOURCE: Congressional Budget Office based on the testimony of Sherri Goodman, Deputy Under Secretary of Defense for Environmental Security, before the Subcommittee on Military Readiness and Defense Infrastructure of the Senate Committee on Armed Services, May 4, 1994.

FIGURE 4. DoD's ESTIMATES OF TOTAL COSTS FOR THE INSTALLATION RESTORATION PROGRAM

SOURCE: Congressional Budget Office estimates using data from General Accounting Office, *Hazardous Waste: DoD Estimates for Cleaning Up Contaminated Sites Improved but Still Constrained*, GAO/NSIAD-92-37 (October 1991), p. 14.

remedial investigation/feasibility study phase of the cleanup process. In addition, DoD has completed more than 500 cleanup actions that provide useful empirical data on which to base estimates of future costs.

Further complicating the task of estimating costs is the uncertainty surrounding the time needed to complete the various stages of the cleanup process. Past estimates have been optimistic. In 1991, DoD believed that it would complete the preliminary assessment phase for all sites in the Installation Restoration Program by 1992, the remedial investigation/feasibility study phase by 1996, and the cleanup phase by about 2010. Current estimates for cleaning up sites on NPL facilities suggest that the initial phase is taking longer than DoD expected--about 18 months for simple soil contamination, 36 months for complex soil contamination, and six years for contamination of groundwater.

In contrast, the remedial investigation/feasibility study phase seems to be taking less time than DoD expected years ago. According to recent estimates for cleaning up sites on NPL facilities, RI/FS takes, on average, from six months to one year to complete--well within the four years DoD envisioned in 1991. Recent estimates for completing the cleanup phase, however, seem consistent with earlier estimates of 14 years. DoD currently estimates that the final phase may vary from six months for cleaning up simple soil contamination sites to 15 years for remediating contaminated groundwater.⁴

Some recent data from the Environmental Protection Agency also suggest that cleaning up the most contaminated nondefense sites--those on the National Priorities List--takes a long time and, in many cases, longer than expected.⁵ In total, the average time to complete cleanup of nondefense NPL sites measured from the proposed listing on the NPL could be between 13 years and 15 years. Moreover, data for individual projects, called operable units, that are located on NPL sites indicate that the typical time to complete cleanup has increased significantly. During the first half of 1993, the Environmental Protection Agency estimated that the remedial investiga-

4. Data from the Department of Defense's response to questions for the record of hearings before the Subcommittee on Defense of the House Committee on Appropriations on fiscal year 1995 DoD appropriations, March 23, 1994.

5. Congressional Budget Office, "Analyzing the Duration of Cleanup at Sites on Superfund's National Priorities List," CBO Memorandum (March 1994), pp. 2 and 9. Nondefense NPL sites may not differ significantly from those located on defense installations. Both types of sites are designated on the NPL because they had received high scores on a uniform scale--the Hazard Ranking System--that provides an overall measure of contamination.

tion/feasibility study and cleanup phases for an operable unit increased from about 9.4 years to almost 10.3 years.

Many of the bases that DoD is closing have also experienced unanticipated cost increases as a result of longer cleanup time, stricter cleanup standards, and poor initial estimates. The DoD Inspector General recently found that cost estimates for cleanup had exceeded baseline estimates at 34 of 49 bases being closed.⁶ The median cost of cleanup was about 50 percent higher for current estimates than for baseline estimates, and the average cost was about 60 percent higher. According to personnel assigned to those bases, the unanticipated increase in costs results primarily from the discovery of additional contaminated sites and hazardous wastes, cleanup standards that are stricter than initially planned, and higher construction costs.

Will cleanup costs continue to grow? The budget and cost data cited above suggest that unless steps are taken either to delay elements of the cleanup program or to introduce cheaper methods of remediation, funding requests will continue to increase if DoD is to meet the requirements. In addition, empirical data on characterization and cleanup work is limited, so confidence in current cost estimates remains low. For example, much of the RI/FS work (about 80 percent) and almost all of the permanent cleanup work (about 95 percent) remains to be done.

DoD must also continually expand its cost estimates to include newly discovered contamination problems. The department routinely discovers more extensive contamination than initial research indicated, additional types of contaminants on sites already located, as well as hundreds of new hazardous waste sites each year. A recent court ruling could contribute to higher costs by affirming legal requirements favoring stricter standards of cleanup when jurisdictions disagree. If such rulings affect numerous cleanup projects, total cleanup costs could increase significantly.

Finally, since DoD and the Congress have not decided which bases to close during next year's round of base closures, the department has made no estimate of any additional near-term budget needs for cleaning up those bases. If history is a guide, however, such cleanups will require funds beyond those currently in the Defense Environmental Restoration Account.

6. Department of Defense, Office of the Inspector General, *Environmental Problems Emerging During Base Realignment and Closure* (July 1993), p. 5.