

Private transaction costs are likely to be more closely tied than federal enforcement costs to the numbers of PRPs involved in the liability system. Exempting certain parties from liability implies not only that those parties save on disputes with their insurers, EPA, and other PRPs, but also that the remaining parties have fewer sparring partners in their PRP negotiations. Nevertheless, CBO expects that the savings would be less than proportional because costs that PRPs share for negotiating with EPA as a group would remain (albeit shared among fewer parties). With a 1981 cutoff, another reason for less-than-proportional savings would be that some PRP-insurer disputes covering multiple sites would continue. By contrast, a 1987 cutoff would eliminate essentially all Superfund transaction costs related to insurance coverage, thanks to changes in policy language in the mid-1980s.

The Gap in Cleanup Funding

The reductions in PRP liabilities discussed above represent a shift in cleanup responsibility to the federal Superfund. EPA would have to replace dollars not spent by the PRPs with some combination of cost savings and increased public spending if it was to maintain the current pace of site cleanups. Taking into account the 13 percent advantage in efficiency assumed for the PRPs and the above savings in federal enforcement costs, CBO estimates that the remaining funding gap in the four scenarios would be as low as \$1.1 billion to \$1.35 billion (in the case with a 1981

cutoff and illegal activity at 35 percent of sites) or as high as \$1.6 billion (with the 1987 cutoff and illegal activity at 10 percent of sites).

Some analysts have noted that the unobligated balance in the Superfund trust fund has grown in recent years and suggest that spending on the program could be increased without raising the Superfund taxes. The balance has indeed grown--from \$0.9 billion at the beginning of fiscal year 1993 (after subtracting \$734 million from a repayable advance owed back to the general fund) to \$2 billion at the start of 1995. Under the current budget rules, however, the constraint on spending for discretionary programs such as Superfund is not the availability of tax revenues, dedicated or general, but the annual budget caps. The Congress can choose to spend more on Superfund, but it will have less to spend on other discretionary programs if it does so.

Cost-saving changes in Superfund's cleanup methods, support activities, and administration could significantly contribute to closing the funding gap, without running afoul of the budget caps. Of course, the value of particular items in the Superfund budget and the merits of changing the liability system are separate questions. Programmatic and budgetary changes that the Congress deems worthwhile could be enacted under the present liability system, with the savings used instead to speed the pace of cleanup, increase federal spending on other programs, or reduce the

deficit.⁷ In some ways, establishing a 1981 or 1987 liability cutoff might make cost-cutting more difficult: some categories of support activities might require increased funding to accommodate the estimated three- or fourfold increase in the number of fund-lead cleanups.

REIMBURSEMENT OPTIONS AND ISSUES

The federal costs of establishing a cutoff date for Superfund liability would also depend on the choice of a policy on reimbursement for past or ongoing cleanup costs spent by PRPs under EPA supervision. Full reimbursement could conceivably cost an additional \$13.5 billion with a 1987 cutoff, relative to no reimbursement, or \$9.9 billion with a 1981 cutoff. Actual costs, however, would depend on the level of documentation that PRPs must submit with their reimbursement claims. More restrictive reimbursement policies would lower the costs to the federal government but raise issues of fairness and future incentives.

7. In principle, such savings could also be used to buy down the Superfund taxes. Under current budgeting rules, however, the savings would be counted under the discretionary spending caps and would not directly provide the necessary offset on the pay-as-you-go scorecard for a reduction in taxes.

CBO estimated the potential costs of full reimbursement as follows. The dollar value of all PRP cleanup commitments through fiscal year 1994 is an estimated \$13.3 billion, which equals the official EPA figure of \$10.2 billion, scaled up by 50 percent (the average error in the ROD estimates of cleanup costs) and down by 13 percent (the assumed private-sector cost advantage).⁸ Another \$900 million in cost-recovery payments from PRPs to EPA brings the total to \$14.2 billion. Applying the above estimates of pre-1987 and pre-1981 liability shares (95 percent and 70 percent) yields \$13.5 billion and \$9.9 billion, respectively.

How much of those eligible costs would actually be reimbursed would depend on the ability of PRPs to document their expenditures. The documentation problem could be compounded if the burden of proof was on PRPs to show that the original actions that made them liable for cleanup costs were legal at the time. Of course, the trade-off involved in setting documentation requirements is that more stringent requirements prevent some legitimate PRPs from getting reimbursed and lead to higher administrative costs for both PRPs and the government, whereas more lenient requirements may lead to payment of fraudulent claims.

As an alternative to full reimbursement or no reimbursement, the Congress could choose to authorize payment only for new expenses incurred under existing PRP work

8. EPA's estimate of \$10.2 billion is in nominal dollars, unadjusted for inflation. For simplicity, CBO assumes that the reimbursement scheme would exclude compensation for inflation or interest.

commitments. Such a "forward-reimbursement" policy would avoid the issue of documenting past expenditures and would reduce federal costs. Estimates of the PRP spending yet to occur on existing cleanup projects can be calculated using spendout rates, which describe the pattern of expenditures over time. A recent study by Resources for the Future and the Brookings Institution used a pattern in which PRPs spend 2.5 percent of total costs in each of the first two fiscal years following a cleanup commitment and 23.75 percent in each of the next four years.⁹ Applying those spendout rates, CBO estimates that potential federal costs under forward reimbursement would be \$7.5 billion with a 1987 cutoff and \$5.5 billion with a 1981 cutoff. For either cutoff date, the costs are 56 percent of those possible under a policy of full reimbursement. The remaining 44 percent--\$6 billion with a 1987 cutoff and \$4.4 billion with a 1981 cutoff--represent the potential one-time costs of reimbursement for past PRP cleanup costs.

Note that the costs of the forward-reimbursement policy represent the cumulative value of a grace period that EPA gets under the no-reimbursement policy. With no reimbursement, the annual funding gap discussed previously builds up over a transition period of several years, as PRPs continue to pay for cleanup under existing commitments. Forward reimbursement eliminates the transition period, since EPA starts assuming the costs for ongoing PRP cleanups right away.

9. Katherine N. Probst and others, *Footing the Bill for Superfund Cleanups: Who Pays and How?* (Washington, D.C.: Brookings Institution and Resources for the Future, 1995), p. 137. This spendout pattern is somewhat slower than one previously used by CBO but is more in keeping with reports from industry sources.

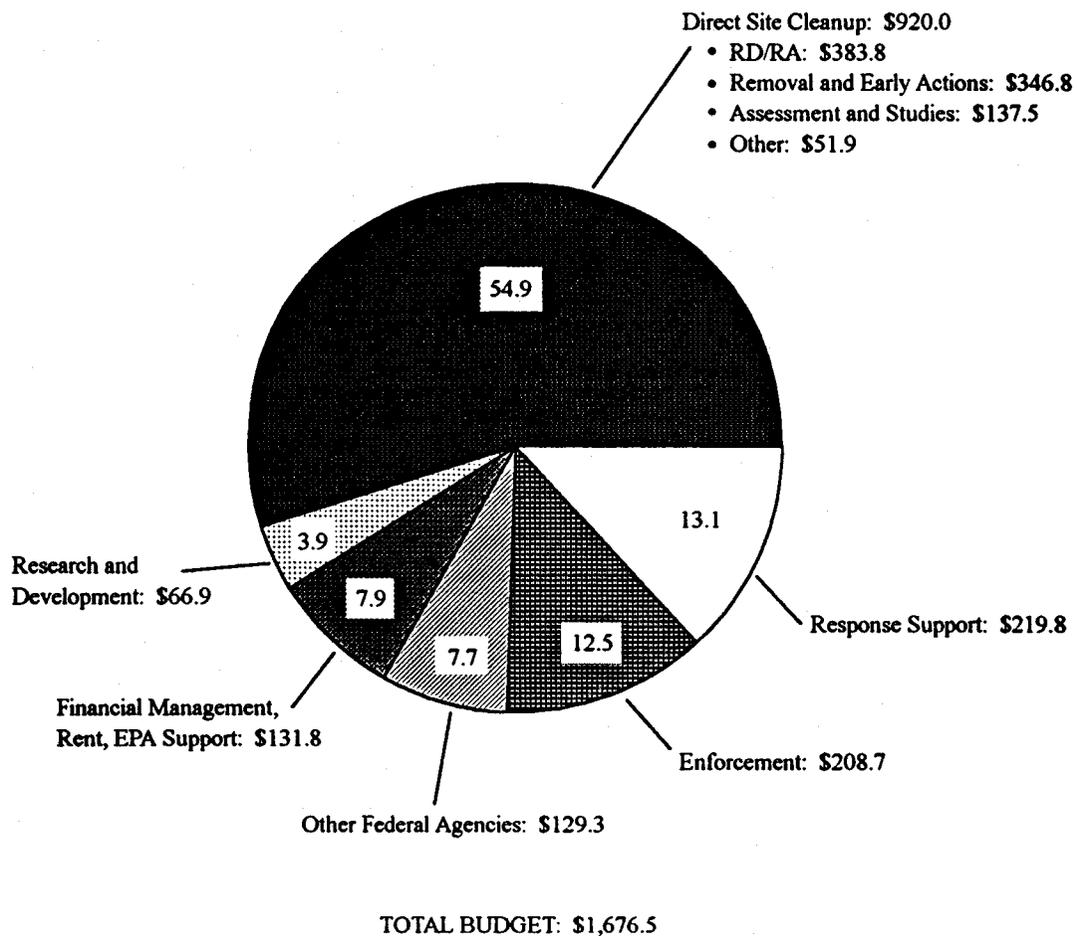
Although full reimbursement is the most costly option for the federal government and may be difficult to administer, policies that limit reimbursement--whether formally or through stringent documentation requirements--have potential drawbacks of their own. Without full reimbursement, some PRPs may feel that they have been unfairly treated compared with others whose sites were discovered later or who chose to "lie in the weeds" rather than cooperate with EPA. Quite apart from the views of current PRPs, the possibility also exists that individuals or firms subject to controversial future regulations will be more reluctant to comply, if only out of fear that competitors who delay compliance will gain an advantage by waiting out a change in policy.

SPENDING IN THE FEDERAL SUPERFUND BUDGET

Let me turn now to the question of how EPA currently spends its Superfund budget. This overview is necessarily brief and relies on the agency's own classification of spending.

EPA identifies about half of the Superfund budget as going to "direct site cleanup." Such spending accounts for \$920 million of the \$1.68 billion total spending in 1994, or 55 percent (see Figure 1). Within that category, spending on remedial designs and

FIGURE 1. SUPERFUND BUDGET, Fiscal Year 1994 (By percent and in millions of dollars)



SOURCE: Congressional Budget Office based on data from the Environmental Protection Agency.

NOTE: RD/RA = Remedial design/remedial action; EPA = Environmental Protection Agency.

remedial actions represents roughly \$380 million, including both fund-lead projects and oversight of PRP-lead projects. Removal and early actions account for almost as much as RDs and RAs, thanks to EPA's expanded interpretation of its "removal" authorities to undertake early actions to reduce risks at NPL sites. Site assessments and remedial investigations represent \$140 million, and other costs (laboratory analysis, aerial surveys, and so forth) constitute the remaining \$50 million.

The "response support" category--the second largest share of the 1994 budget, at \$220 million or 13 percent--encompasses a wide variety of expenses. Those expenses include the salaries of EPA's nonenforcement Superfund personnel (\$88 million), overhead of cleanup contractors (\$40 million), state programs (\$13 million), laboratory quality assurance (\$12 million), and many smaller items.

The "enforcement" category accounts for roughly \$210 million in 1994. That figure includes \$32 million for the Superfund work of the Department of Justice.

The next largest two categories represent about \$130 million each in 1994. The category CBO chooses to call "financial management, rent, and EPA support" is dominated by payments to EPA's Office of Administration and Resource Management. Those funds in turn go primarily for financial and contract management services, rent, and utilities. Smaller amounts are transferred to the Offices of Policy, Planning, and Evaluation; the Inspector General; the Administrator; Air and

Radiation; and Water. The category for "other federal agencies" excludes the Department of Justice; almost all of that funding goes to the Agency for Toxic Substances and Disease Registry and the National Institute for Environmental Health Sciences.

The remaining portion of the 1994 budget, \$67 million or 4 percent of the total, was allocated to EPA's Office of Research and Development.

WHAT HAPPENS IF THE TAXES ARE NOT EXTENDED THIS YEAR?

A Congressional decision not to extend the Superfund taxes this year would not, in itself, force EPA to shut down the program, nor would it be directly scored on the budget scorecards. Continued Superfund spending without the taxes would, however, increase the federal deficit. Expiration of the taxes might also add to the program's costs and delays if it made subsequent funding levels harder for EPA to predict.

The Superfund trust fund gets revenues from three dedicated taxes: an excise tax on petroleum, excise taxes on certain chemical substances, and a corporate environmental income tax (EIT). All three taxes are scheduled to expire on December 31, 1995. By law, however, the CBO baseline assumes that the excise taxes--but not the EIT--continue indefinitely.

Superfund spending could continue without the taxes as long as the Congress chooses to appropriate money for that purpose, whether from available balances in the trust fund or from general revenues. The trust fund had an unobligated balance of \$2.7 billion at the end of fiscal year 1994, and the President's budget request for 1996 estimated that the balance would increase to \$3.4 billion by the end of fiscal year 1995. Current law requires that the trust fund repay an advance of \$734 million to the general fund by December 31, 1995, leaving an estimated \$2.7 billion available to be appropriated. That amount would be enough to sustain the program for two years at present levels, given that the 1995 level of appropriation was \$1.2 billion from the trust fund and \$250 million from general revenues. Even without a balance in the trust fund, the Congress could appropriate money from the general fund.

The expiration of Superfund's taxes would not have any direct scoring consequences under current budget procedures. Superfund spending is counted on the discretionary spending scorecard, which would remain unaffected by changes in the taxes. Nor would pay-as-you-go procedures apply, since no scorable event would occur. PAYGO procedures apply to proposed or enacted legislation that makes changes in revenues or mandatory spending, not to the absence of legislation. Given that the Superfund taxes will expire without any change in current law, no point of order would lie against any bill simply because it failed to extend them. Conversely, legislation passed this year to extend the taxes would be scored with a PAYGO credit

for the corporate EIT but not for the excise taxes (which are already assumed in the baseline).

Even though it would face no hurdles in the Congressional budget process, expiration of the taxes would certainly have consequences for the budget deficit. All other things being equal, each dollar of Superfund tax revenues forgone adds a dollar to the deficit and the accumulated debt, and consequently increases the interest costs to the federal government in future years.

EPA's ability to manage the program efficiently might also be affected, particularly if the Congress let the program authorization as well as the taxes expire. The Congress could continue to appropriate money indefinitely without reauthorizing the program. However, EPA might incur additional costs and delays in moving sites through the cleanup pipeline if it anticipated less stability in year-to-year funding levels. For example, some studies might be needlessly deferred because of incorrect expectations that funding for the subsequent cleanup work would not be immediately available, or quality and cost control might suffer during years in which the agency received an unexpected increase in funding.

CONCLUSION

In summary, repealing Superfund liability for actions before a certain date involves a trade-off between the potential reductions in transaction costs and gains in fairness on the one hand and the difficulty of replacing the current PRP cleanup spending on the other hand. Three factors that would affect the size of the various effects and hence the desirability of the trade-off are the current levels of cleanup spending by the PRPs, the ratio of private transaction costs to PRP cleanup spending, and the significance of illegal actions by Superfund PRPs.

The size of the effects would also be sensitive to Congressional policy choices regarding the cutoff date and reimbursement. The later the cutoff date, the greater are both the savings in transaction costs and the gap in cleanup funding. The more generous the reimbursement policy, arguably the more fair are the results but the higher the costs to the federal government.

Roughly half of the federal Superfund budget goes to site-specific studies and cleanup, not counting the salaries and office costs of the EPA personnel who oversee the cleanups. Enforcement represents one-eighth of the budget, and various kinds of research and development, support, and management account for the rest.

The Congress would face no hurdles in the budget process if it wanted to continue funding the Superfund program without extending the taxes. One important adverse consequence, however, would be an increase in the federal deficit.

APPENDIX: ESTIMATES OF PRIVATE TRANSACTION COSTS IN THE SUPERFUND PROGRAM

Superfund's transaction costs have been controversial for years and have received increasing attention from researchers and policy analysts. Two studies from RAND and a recent study from the General Accounting Office (GAO) provide valuable information on transaction costs in the private sector. Nonetheless, the available data are far from comprehensive, and the resulting analyses must be interpreted with caution. Three particular factors that can lead to misinterpretations are confusion between simple averages or medians and true dollar-weighted averages; the limitations of existing data in terms of comprehensiveness and accuracy; and the likelihood that transaction costs are front-loaded in the cleanup process.

Main Findings of the Leading Studies

The first RAND study (henceforth, "RAND I"), of which I was a coauthor, examined the Superfund experience through 1989 of five large industrial firms and four national insurers. The data showed transaction-cost shares of 17 percent for the industrial PRPs (excluding the costs at sites where a firm had spent less than \$100,000 to date) and 88 percent for the insurers.¹⁰

10. Jan Paul Acton and Lloyd S. Dixon, *Superfund and Transaction Costs* (Santa Monica, Calif.: RAND, 1992). The five PRP firms had spent \$100,000 or more at 73 different sites, of which 49 were on Superfund's National Priorities List and 24 were non-NPL sites being cleaned up under Superfund's removal authorities, state cleanup programs,

The second RAND study, or "RAND II," surveyed 108 small and medium-sized firms named as PRPs at 18 Superfund sites. It estimated that transaction costs represented 32 percent of spending by all PRPs (surveyed and non-surveyed) at those sites through 1991.¹¹

The GAO study, with data on the Superfund experiences of 367 large-firm PRPs, has the broadest coverage of the three. It concluded that the median (not average) firm spent approximately one-third of total costs on legal expenses.¹²

Interpretation Problem #1: Simple Averages and Medians

A simple firm-by-firm or site-by-site average of Superfund transaction costs can be much larger than a dollar-weighted average--the correct measure for describing the distribution of total spending--because firms with minor liabilities and those involved at sites in the early stages of the cleanup process may have low total costs but proportionately high transaction costs. The RAND II data, for instance, show that looking separately at each of the 112 surveyed PRP-site pairs yields an average

or voluntarily. The average transaction-cost share for the NPL sites alone was 19 percent; the share for all sites, including those at which a firm had spent less than \$100,000, was 21 percent.

11. Lloyd S. Dixon, Deborah S. Drezner, and James K. Hammitt, *Private-Sector Cleanup Expenditures and Transaction Costs at 18 Superfund Sites* (Santa Monica, Calif.: RAND, 1993).
12. General Accounting Office, *Superfund: Legal Expenses for Cleanup-Related Activities of Major U.S. Corporations* (December 1994).

transaction-cost share of 62 percent, although the dollar-weighted average--the share of such costs in total spending--is only 21 percent.¹³

A report from the National Paint and Coatings Association (NPCA) falls prey to the confusion between simple and dollar-weighted averages. The report on the NPCA members' experiences with transaction costs says, "Overall, the respondents estimated that 71 percent *of their money spent* on Superfund so far has gone to transaction costs" (emphasis added), but the figure is in fact a simple average of the percentages reported by the responding firms. The only dollar-weighted average derivable from the data is restricted to settled claims; that figure is 35 percent.¹⁴

The GAO study illustrates similar problems arising from the use of medians rather than averages. The median cost for legal expenses among responding firms in the study was roughly \$500,000--meaning that half of the firms spent less than \$500,000 and half spent more--and the median amount that firms spent on cleanup was approximately \$1.2 million. Sums or ratios of those figures are not meaningful, however, partly because they do not reflect how much more or less than the medians that firms on either side spent. For example, the median responses to the questions on legal and cleanup costs sum to \$1.67 million, 12 percent less than the \$1.9 million

13. Dixon, Drezner, and Hammitt, *Private-Sector Cleanup Expenditures*, p. 29.

14. National Paint and Coatings Association, *NPCA Superfund Survey* (Washington, D.C.: NPCA, 1992). Because of a transcription error, the figure for settled claims is given as 38 percent in the report.

median response to the question about total spending (legal and cleanup costs together).¹⁵

Two results of the study led GAO to estimate that legal costs for the median responding firm were about one-third of total Superfund spending, but neither is fully adequate as a substitute for a dollar-weighted average. One result was that median legal and cleanup costs were roughly \$500,000 and \$1 million, respectively. More precise figures of \$484,000 and \$1.19 million yield a total of \$1.67 million and a legal-cost share of 29 percent (alternatively, using the \$1.9 million median for total costs yields a share of 25 percent). Again, however, the more important problem with this finding is that sums and ratios of medians are not themselves medians and lack any meaningful statistical properties. The other evidence came from a direct question on the share of legal expenses in total costs; the median response (estimated using linear interpolation) was 34 percent. That result does not take into account the dollar amounts spent by each respondent and is therefore more like a firm-weighted average than a dollar-weighted average.

The true dollar-weighted average share of legal costs in the GAO data can be approximated by assuming that costs are evenly distributed within each survey interval

15. These calculations are based on medians derived by linear interpolation within the cost intervals included in the survey; GAO uses the same method (*Superfund: Legal Expenses*, p. 23). Some of the 12 percent difference could conceivably arise from costs seen by respondents as belonging to neither the "legal" nor "cleanup" categories, as defined in the survey, although the language of the report suggests that GAO viewed the two categories as encompassing all Superfund costs.

and choosing an average cost for the "over \$100 million" range. If the average \$100 million-plus cost is assumed to be \$150 million, then the approximate dollar-weighted share is 25 percent using the data on legal costs and cleanup costs or 28 percent using the data on legal costs and total costs. Alternatively, if the \$100 million-plus average is \$200 million, then the comparable estimates are 23 percent and 26 percent.

Interpretation Problem #2: Limitations of the Data

The cost involved in collecting the widespread data on Superfund transaction costs has confronted researchers with a trade-off between comprehensiveness and accuracy. Whereas the GAO study has the most comprehensive data of the three leading studies, its offsetting disadvantage is that respondents reported their legal, cleanup, and total costs only in interval ranges and used "personal knowledge and experience," rather than actual figures from company accounting systems, as the primary source for 32 percent to 36 percent of the responses. Conversely, the RAND studies were conducted on a smaller scale, which allowed more detailed investigation of records but sacrificed breadth of coverage. The uncertain relevance of the RAND I study's data on large firms for smaller PRPs was a key motivation for the RAND II study. As noted above, RAND II surveyed more firms--108--but restricted its attention to just 18 sites.

CBO believes that the heavy overrepresentation of sites with more than 50 PRPs in the RAND II study (9 of the 18 sites in the sample, compared with the expected 2.6) adds a significant upward bias to its estimated shares of transaction costs. That the 108 sampled firms represent only 3 percent of the PRP-site pairs involved at the 18 sites further complicates the interpretation of the study's findings. The estimate of 32 percent as the share of transaction costs for all PRPs at the sites (compared with the observed share of 21 percent for the sampled firms) resulted from the use of statistical bootstrapping techniques. Those techniques cannot fully substitute for direct data on the nonsurveyed firms, however, and hence the 32 percent estimate is only the mean of a distribution of possible values of the true share of transaction costs. By calculating the "90 percent confidence interval," the RAND II authors concluded that the true share has a 90 percent probability of being between 20 percent and 44 percent.

Interpretation Problem #3: Front-Loading of Transaction Costs

Many transaction costs occur before the major cleanup work begins; in other words, transaction costs are more front-loaded than cleanup costs. Accordingly, estimates of the average share of transaction costs based partly or entirely on observations from sites that have not finished cleanup may overstate the ultimate share.

So far, RAND II is the only study to try to extrapolate from data on midstream costs to costs at completion of cleanup. Its analysis illustrates the front-loading problem. Three alternative sets of assumptions about costs remaining at the 18 sites yielded 27 percent, 25 percent, and 19 percent as the point estimates (with substantial confidence intervals around each) for the ultimate share of transaction costs at those sites, compared with the estimate of 32 percent for spending through 1991. CBO believes that the assumptions underlying the lower two estimates are more plausible and would therefore estimate a percentage in the low 20s for the ultimate share of transaction costs at the 18 sites in the study.

