CBO TESTIMONY

Statement of
Jan Paul Acton
Assistant Director
Natural Resources and Commerce Division
Congressional Budget Office

on the
Comprehensive Environmental Response,
Compensation, and Liability Act of 1980

before the
Subcommittee on Water Resources and
Environment
Committee on Transportation and Infrastructure
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NOTICE

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CONGRESSIONAL BUDGET OFFICE
SECOND AND D STREETS, S.W.
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Mr. Chairman and Members of the Subcommittee, I am pleased on behalf of the Congressional Budget Office (CBO) to participate in your review of the Superfund program. As requested, my testimony today will focus on the likely effects of establishing a cutoff date for Superfund liability. I will also discuss the current distribution of spending within the federal Superfund budget and the consequences of not reauthorizing the program's dedicated taxes.

Liability under the Superfund law currently is retroactive; that is, "potentially responsible parties" (PRPs) are held liable for cleanup regardless of when sites were contaminated with hazardous substances. Some proposals would relieve parties of liability for actions occurring before December 1980, when the Congress enacted the original statute; other proposals call for a release from liability or pre-1987 actions. Proponents of a cutoff date for liability want to eliminate the perceived unfairness of retroactivity and to reduce or eliminate the "transaction costs" of funding cleanup through a liability-based system. Reducing transaction costs would increase efficiency for the nation as a whole. The main trade-off inherent in having a cutoff date for liability is that it shifts the responsibility for cleanup from the PRPs to the federal government. In so doing, it requires some mix of cost savings, increased federal spending, and reductions in the pace of cleanup.

The potential impacts are large. CBO estimates that repealing liability for pre-1987 actions, as proposed by groups such as Superfund Reform '95, could eliminate or shift $2.4 billion per year in private costs while adding $1.6 billion per year to the

federal government's burden for cleanup. The government faces an additional one-time cost of as much as $6 billion if the new policy allows PRPs to claim reimbursement for costs they have already incurred under the old system. Other combinations of policies reduce both the savings to the private sector and the increase in the federal cleanup burden.

All groups trying to analyze the likely effects of a cutoff date for liability, CBO included, must grapple with a shortage of data on the current level of PRP cleanup spending, transaction costs to PRPs and insurers, and the significance of illegal actions in causing the contamination problems at Superfund sites. Accordingly, CBO's analysis should be regarded as preliminary at this point. Our analysis assumes that final PRP cleanup spending will be 50 percent higher than reported in the Environmental Protection Agency's (EPA's) estimates. We made that assumption on the basis of information from EPA that its own cleanups end up costing an average of 50 percent more than originally estimated, in part because additional contamination is discovered as the cleanup proceeds.

Some people have challenged our analysis on the grounds that the assumed 50 percent growth in costs may not accurately reflect the experience of the PRPs or may already be captured in the available data on the dollar value of PRP settlements. The evidence we have obtained so far has not led us to modify our analysis, but we continue to gather information from EPA and other sources to assess its

appropriateness. Even if additional information does cause us to reduce our estimate of PRP spending on cleanup, our estimate of PRP and insurer transaction costs would almost certainly fall as well, leaving the proportions of benefits and costs from a liability cutoff largely unchanged.

The main conclusions of our analysis to date are as follows:

- Repealing liability for pre-1987 actions could save the nation as much as $1.1 billion annually in transaction costs if little investigation or litigation occurs over the legality of past actions. Most of those savings would accrue to the private sector, however, and the net increase in the federal cleanup burden would build up over a handful of years to the $1.6 billion per year already mentioned. Reimbursing PRPs for their ongoing expenses under existing cleanup commitments would create that increased burden of $1.6 billion per year right away; the loss of the "grace period" would add $7.5 billion to cumulative federal costs. Moreover, reimbursing PRPs for past costs as well could add a one-time cost of $6 billion.

- An alternative cutoff date of December 31, 1980, would be somewhat less costly in terms of the increase in demands on federal cleanup resources, but it would also be less effective in reducing transaction

costs. Again assuming that illegal activity was a relatively minor cause of the contamination at Superfund sites, the shift in the responsibility for cleanup would mount up to $1.3 billion per year, and transaction costs would fall by $500 million to $600 million per year. Cumulative federal costs for reimbursing PRPs could total $5.5 billion for ongoing cleanup work and $4.4 billion for past work.

- EPA data suggest that illegal activities may have played some role at one-third to one-half of nonfederal Superfund sites. If PRPs remain significantly exposed to liability at a considerable fraction of sites because their behavior is thought to have been illegal, the savings in transaction costs could be greatly reduced or even eliminated.

THE PRESENT LIABILITY SYSTEM

In enacting the Superfund law, formally the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Congress took a two-pronged approach to the problem of who should pay for cleaning up sites contaminated with hazardous wastes or other substances. The law imposed cleanup liability on a site's present owners and operators, its previous owners and operators from periods during which it received hazardous substances, the generators of such substances, and any

waste transporters responsible for choosing the site. It also established the Superfund trust fund to finance responses at sites for which the liable parties lack sufficient resources or cannot be found.

Liability under CERCLA is strict, meaning that care or negligence is not at issue. In particular, a party cannot escape Superfund liability by showing that its waste disposal practices obeyed all laws and regulations that were in force at the time. Liability is also joint and several, which means that any party can be assessed the total costs for a contaminated site (unless the party can show that its contribution produced a separate, divisible result). Finally, Superfund liability is retroactive, applying to actions that occurred before CERCLA was enacted in December 1980.

In administering the Superfund program, EPA can enforce the liability of PRPs in either of two ways. It can have them perform the necessary cleanup directly, under government supervision, or it can conduct the cleanup through its own contractors and then negotiate or sue to recover its costs after the fact. Projects conducted by the liable parties are called "PRP-lead" or "enforcement-lead"; those initially financed by the government are called "fund-lead." In either case, parties that EPA chooses to pursue may initiate "contribution suits" for reimbursement from their fellow PRPs.

PRP-Lead Cleanups Under EPA's "Enforcement-First" Strategy

Under EPA's "enforcement-first" strategy, adopted in 1989, liable parties have undertaken the large majority of major cleanups at Superfund sites. In each of the past three years, PRPs have conducted 72 percent to 74 percent of the detailed engineering studies ("remedial designs," or RDs) and actual cleanup projects ("remedial actions," or RAs). Over that period, PRPs have also conducted roughly one-half of the site studies called remedial investigations and feasibility studies (RI/FSs) and one-quarter to one-third of the "removal" actions (simpler, less costly cleanup efforts).

CBO calculates that PRP-lead studies and cleanups have supplied the equivalent of $2 billion per year in additional government spending over the past five years. EPA estimates that the value of PRP work commitments has been close to $1.4 billion in four of the past five years, with a dip down to $900 million in 1993. However, the agency's data on fund-lead cleanups indicate that final costs are actually 50 percent higher, using a dollar-weighted average, than its original estimates in the "records of decision" (RODs), which document its choices of cleanup remedies. Actual costs to the PRPs might be somewhat less than $2 billion. The best available evidence indicates that the private sector may be able to accomplish cleanup work at a 13 percent lower cost than the government, which implies that annual PRP costs

would be $1.7 billion. In any case, the $2 billion figure represents the amount of EPA spending avoided.

CBO's calculation assumes that EPA's estimates of PRP work commitments are based on ROD cost estimates and that the tendency of RODs to understate the eventual scope of required cleanup applies to PRP-lead as well as fund-lead projects.[1] As noted above, we continue to check the soundness of those assumptions. In the meantime, many PRP-lead cleanups are preceded by RI/FSs conducted by EPA, and there is no reason to believe that those RI/FSs are any more accurate than the ones that are followed by fund-lead cleanups. Moreover, what limited information is publicly available does not suggest that PRPs are any more successful in estimating the required scope of cleanup work when they conduct RI/FSs themselves. An analysis of 83 public and private cleanups completed by 1989 found that "cleanup mis-estimation is a problem affecting both the private sector and the government equally," holding constant such other factors as the type of contamination and cleanup method.[2]

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1. The estimates in the RODs for the costs of RD/RA work represent nearly 80 percent of the dollar value of work commitments by PRPs; most of the rest goes to RI/FSs, which have exhibited similar rates of cost growth subsequent to the initial estimates.

2. B.R. Schroeder and J.B. Hartung, *The HAZRISK Cleanup Report* (draft, Independent Project Analysis, Reston, Va., February 1991), p. 47.

Transaction Costs

In the context of Superfund, transaction costs refer to those costs incurred in assigning, allocating, and disputing responsibility for cleanup rather than in contributing to cleanup itself. Such costs are important because proponents of a liability cutoff date hope to eliminate or greatly reduce them.

Federal transaction costs for Superfund enforcement represent perhaps $250 million to $300 million in annual spending--or 15 percent to 18 percent of the 1994 Superfund budget. Estimates of nonfederal transaction costs are highly uncertain. The best available data, however, suggest to CBO that PRPs and insurers may now spend on the order of $900 million annually, which would represent 32 percent of their total spending. Combined, those figures yield an estimate of 27 percent for the share of total transaction costs in overall Superfund spending.

Federal Costs. Most Superfund transaction costs incurred by the government are easy to identify. The Superfund enforcement budget, roughly $210 million in 1994, includes the costs of EPA and the Department of Justice for identifying and locating PRPs; recovering the costs of fund-lead projects; negotiating, litigating, and issuing administrative orders for PRP-lead projects; and overseeing PRP-lead RI/FSs. Spending on oversight of PRP-lead RDs and RAs is tracked separately and adds roughly $40 million in additional costs. The incremental costs that EPA incurs in the

site investigations in order to collect data suitable for litigation also count as transaction costs but are harder to quantify.

Private Costs. Much more uncertainty surrounds the transaction costs that PRPs and insurers incur in such activities as disputing liability, negotiating settlements with EPA, litigating the applicability of insurance policies, and conducting unofficial RI/FSs as a check on EPA's own work. On the basis of the available data, CBO estimates that private transaction costs are currently on the order of $900 million per year. We derived that figure by assuming that both PRP and insurer costs are a fixed percentage markup on PRP outlays for cleanups, studies, and reimbursements to EPA, and that the markup rates are 20 percent to 25 percent for PRPs (or equivalently, that PRPs spend 17 percent to 20 percent of their total outlays on transaction costs) and 24 percent for insurers. Those markup rates imply that the share of transaction costs in total private-sector spending is 31 percent to 33 percent.

That range of 31 percent to 33 percent is close to the 36 percent cited last year by Lloyd Dixon of RAND on the basis of data from two earlier studies.[3] Relative to Dixon's analysis, CBO assumes higher insurer costs, because of differences in the methods used to extrapolate 1989 data, but lower PRP costs.

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3. Lloyd S. Dixon, *Fixing Superfund: The Effect of the Proposed Superfund Reform Act of 1994 on Transaction Costs* (Santa Monica, Calif.: RAND, 1994), p. xvi.

Estimates of private transaction costs in the Superfund program must be interpreted with caution. Some high estimates of "average transaction-cost shares" are based on simple firm-by-firm or site-by-site averages that do not take into account the dollars spent in each case. Other estimates are median values rather than true averages. Moreover, because the data are so costly to collect, some of the available studies have used samples that probably do not represent the national whole. Another weakness of many estimates, including CBO's, is their reliance on data from sites that have not completed cleanup. Those data are likely to overstate the ultimate share of transaction costs because many categories of such costs are front-loaded--that is, occurring relatively early in the cleanup process.

An appendix to this testimony discusses the leading studies of private transaction costs in the Superfund program and illustrates the various problems encountered in interpreting the available data.

Fairness Issues

Superfund's liability system has been criticized not only on the grounds that its transaction costs are unacceptably high but also that it is fundamentally unfair. Supporters of the current system argue that fairness is served by making people who contributed to the creation of a contamination problem pay for cleaning it up.

Opponents respond that if the goal is to collect from those who benefited previously, then the turnover of shareholders and employees as well as the wide diffusion by market forces of the original cost savings from looser disposal practices requires a broader financing scheme.

Critics also argue that the retroactive "polluter pays" approach is particularly unfair to the insurance industry, which did not foresee Superfund liabilities when it priced coverage sold in the 1960s and 1970s. They further argue that joint-and-several liability adds uncertainty that is particularly harmful to small businesses and that it encourages major PRPs to engage in unjustified contribution actions against small, innocent parties who lack the resources to defend themselves.

THE EFFECTS OF REPEALING LIABILITY THROUGH 1980 OR 1986

The effects of repealing Superfund liability for legal actions that occurred before a cutoff date would depend on the date chosen and on the incidence and significance of illegal disposal activities at sites on the National Priorities List (NPL). If illegal activity played a minor role, a 1987 cutoff would eliminate nearly all PRP liability and the vast majority of federal and private transaction costs. Indeed, it would turn Superfund almost totally into a public works program. The trade-off would be a loss in cleanup spending that exceeds the program's current EPA budget. The effects of

a 1981 cutoff would be less sweeping, particularly for transaction costs, but they would still be significant. With either cutoff date, higher levels of illegal activities at NPL sites would cut into the reduction in PRP liabilities and significantly reduce--or conceivably reverse--the savings in transaction costs.

Data on the Time Pattern and Legality of PRP Activities

Data from an August 1993 survey by EPA of all of its remedial project managers (RPMs), the regional employees who oversee site cleanup efforts, show that 72 percent of nonfederal sites listed on the NPL have received no wastes since 1986. In addition, the RPMs reported that 14 percent of the sites include post-1986 wastes; they were uncertain about the remaining 14 percent. The survey also asked about the presence of post-1979 (rather than post-1980) wastes. The RPMs reported that 43 percent of nonfederal sites do not include post-1979 wastes, 48 percent do, and 9 percent may or may not.[4]

The survey did not explore the time distribution of wastes at the sites whose dates of operation straddle either of the cutoff dates. EPA is collecting that information from its regional offices; at present, however, the agency has analyzed

4. In calculating percentages from the survey data, CBO excluded not only the federally owned sites but also 84 so-called orphan sites. Those sites have no PRPs that are financially viable and therefore must rely on the trust fund to pay for cleanup.

data from only 15 such sites. In that limited sample, 59 percent of the waste volume dates from 1981 or later and just 1 percent from 1987 or later.

Even if those data are reasonably accurate for existing NPL sites, one might wonder about their applicability to future sites. CBO believes that sites added to the NPL in the rest of the decade will be similar to current sites in the time profile of their wastes and therefore would be similarly affected by the liability cutoff dates. All or nearly all of those sites will be drawn from the set of contamination problems already being investigated by EPA, most of which were created some years ago. Beyond this decade, compliance with regulations of the Resource Conservation and Recovery Act and increased vigilance prompted by CERCLA are likely to keep the number of newly created Superfund sites relatively small, although such sites may increase as a percentage of new NPL additions.

Less information is available on the contribution of illegal activities--for example, permit violations or midnight dumping--to Superfund contamination problems. The existing data shed light on the percentage of sites where illegal activities are a factor but not on the average share of the illegal contributions at those sites. Moreover, the available site-level estimates vary widely--from 10 percent to 35 percent or even 53 percent--perhaps in part because of differences in definitions.

The lower estimate of 10 percent comes from researchers at Resources for the Future, who reviewed the descriptions of nonfederal NPL sites in EPA's "state books" and found that illegal activity "was the cause of contamination" at 10 percent of the sites.[5] The 35 percent and 53 percent figures come from EPA's 1993 survey, which asked RPMs, "In your opinion, were site activities that caused the contamination illegal at the time?" The RPMs responded "definitely yes" for 16 percent of the nonfederal sites and "probably yes" for 19 percent, making a total of 35 percent. The RPMs were "uncertain" about another 18 percent of the sites, and further investigation might show that many of those sites also involved illegal activity.

The explanation for the wide range of the estimates may be that 10 percent is a better estimate of the fraction of sites for which illegal activity was the sole or dominant cause of contamination, whereas 35 percent to 53 percent is a better range for the fraction of sites with illegal contributions to the contamination problem. That hypothesis cannot be confirmed at present.

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5. Katherine N. Probst and Paul R. Portney, *Assigning Liability for Superfund Cleanups: An Analysis of Policy Options* (Washington, D.C.: Resources for the Future, 1992), p. 53. The estimate of 7 percent used in a more recent study by Probst, Portney, and two coauthors differs because it excludes sites with only a single PRP (personal communication by Katherine N. Probst, April 11, 1995).

Implications of the Data for PRP Liabilities

Given the uncertainty surrounding how much Superfund contamination arises from illegal activity, CBO analyzed scenarios in which such activity was a factor at 10 percent and 35 percent of nonfederal NPL sites, although the actual percentage could lie above or below that range. Exempting legal activities through 1986 would reduce PRP cleanup liabilities by an estimated 95 percent if illegal contributions occurred at 10 percent of the sites. Using CBO's estimate for current PRP cleanup spending of roughly $1.7 billion per year, that 95 percent reduction translates to a dollar figure of about $1.6 billion annually (see Table 1). With the same cutoff date but illegal activity at 35 percent of sites, the estimated reduction in cleanup liability is 80 percent to 90 percent, or $1.4 billion to $1.5 billion. A 1981 liability cutoff yields estimated reductions of 70 percent ($1.2 billion) if illegal actions were a factor at 10 percent of sites, and 60 percent to 70 percent ($1.0 billion to $1.2 billion) if they occurred at 35 percent of sites.

Those figures derive in part from CBO estimates that roughly 95 percent of all waste volume at nonfederal NPL sites predates 1987 and 70 percent predates 1981. The 1987 estimate is based on the 72 percent of sites that entirely stopped their waste operations before 1987 (as shown in the RPM data) and an assumed 80 percent share of pre-1987 wastes at sites that straddle the cutoff (less than the 99 percent seen in EPA's limited sample of 15 sites). The 70 percent figure for 1981 is based on linear

extrapolation between the RPM survey data for 1980 and 1987 (which suggests that 48 percent of sites have only pre-1981 wastes) and on a 41 percent share of such wastes at the other 52 percent of sites, as observed in the 15 straddle sites analyzed by EPA.

TABLE 1. ESTIMATED ANNUAL EFFECTS OF SUPERFUND LIABILITY CUTOFFS

	1987 Cutoff				1981 Cutoff			
	Illegal Activities at 10 Percent of Sites		Illegal Activities at 35 Percent of Sites		Illegal Activities at 10 Percent of Sites		Illegal Activities at 35 Percent of Sites	
	In Percent	In Millions of Dollars	In Percent	In Millions of Dollars	In Percent	In Millions of Dollars	In Percent	In Millions of Dollars
Reduction in PRP Liability[a]	95	1,600	80 to 90	1,400 to 1,500	70	1,200	60 to 70	1,000 to 1,200
Reduction in Federal Enforcement Costs	90	250	45 to 55	125 to 150	25 to 35	70 to 100	10 to 25	30 to 70
Reduction in Private Transaction Costs	90	800	60 to 70	550 to 625	45 to 55	400 to 500	20 to 40	200 to 350
Funding Gap[b]	n.a.	1,600	n.a.	1,450 to 1,600	n.a.	1,300	n.a.	1,100 to 1,300

SOURCE: Congressional Budget Office.

NOTES: PRP = potentially responsible party; n.a. = not applicable.

Dollar estimates for reductions in PRP liability, federal enforcement costs, and private transaction costs are rounded, based on the estimated percentage reductions.

a. Assumes that PRP cleanups cost 13 percent less than those done by the Environmental Protection Agency and that EPA's records of decision underestimate actual cleanup requirements by an average of one-third.

b. Net of savings in federal enforcement costs.

The percentage of waste disposal before a cutoff date is not the end of the story, however, under proposals that retain liability for actions that were illegal at the time they occurred (hence the need for assumptions about the prevalence of illegal contributions at Superfund sites). In keeping with the general thrust of the reform proposals to reduce transaction costs and private-sector burdens perceived as unfair, the analysis assumes that PRPs held responsible for illegal actions would be subject to some kind of proportional liability based on their contributions to the contamination problems at their sites rather than to joint-and-several liability.[6]

In the case of a 1987 cutoff and relatively few sites with illegal activity, CBO assumes that EPA would choose to dismantle most of Superfund's enforcement program, leaving enough resources to identify and pursue only the most egregious illegal pre-cutoff polluters and any sufficiently major post-cutoff PRPs. Under that scenario, PRP liabilities would fall by essentially the same proportion as the percentage of wastes released before 1987--namely, 95 percent.

Because the other cases would leave many more parties subject to Superfund liability, CBO assumes that EPA would have to maintain a sizable enforcement program and would regularly attempt to enforce the liability of PRPs whose pre-cutoff activities were illegal. The impact of such enforcement efforts on PRP

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6. A proportional liability scheme that maintains the current classes of PRPs faces the question of the relative responsibility of site owners and operators compared with off-site waste generators and transporters. Specific legislative guidance on the allocation of responsibility between on- and off-site parties would help keep transaction costs down but might lead to unfair results in particular cases.

liabilities would depend on the average shares of the illegal waste contributions and on EPA's success rate in tracking down the illegal polluters and getting money or work commitments from them.

Lacking hard data on those factors, CBO used a range of reasonably low and high estimates. For the case with illegal activity at 10 percent of the sites, the analysis assumed a range of 60 percent to 80 percent as the illegal share on the theory that those sites represented the "hard core" in which illegal activity was the sole or dominant cause of contamination. For the cases in which illegal activity took place at 35 percent of sites, the assumed range for the average illegal share was 30 percent to 70 percent. In all cases, the success rate of EPA's enforcement efforts was assumed to lie between 25 percent and 75 percent. Combining those assumptions, plus data indicating that sites with illegal activity cost an average of 5 percent less to clean up, yielded the estimated reductions in PRP liability (see Table 1).

Effects on Transaction Costs

In the most favorable scenario--a 1987 cutoff and relatively little illegal activity--CBO estimates that federal enforcement costs would drop by 90 percent. Alternatively, given a 1981 cutoff and illegal activity at 35 percent of the sites, the estimated reduction in enforcement costs would be only 10 percent to 25 percent. Those

savings are less than proportional to the reductions in PRP liabilities in all cases and substantially less in three of the four. The range of savings in private transaction costs would run from 90 percent at the high end to 20 percent to 40 percent at the low end. Those costs would also fall less sharply than cleanup liabilities, although more than federal enforcement costs. All of those estimates represent judgments by CBO based on qualitative considerations. The precise numerical figures are necessarily somewhat speculative. Higher levels of illegal activity at NPL sites than those assumed here could cause federal and private transaction costs to rise rather than fall.

The estimates of savings on enforcement assume that federal costs fall as sites are removed entirely from the liability system but that the costs do not decline with reductions in the number of PRPs at the remaining sites, where EPA continues to enforce liability for cleanup. CBO also assumes that a significant enforcement program incurs some fixed costs annually, such as the costs of ensuring that all site sampling data are of litigation quality in case they are subsequently needed for enforcement purposes. Hence, for example, with an estimated 70 percent of waste volume dating before 1981 but just 48 percent of sites having only pre-1981 wastes, CBO expects that enforcement savings from a 1981 cutoff would not exceed 40 percent, even without questions about the legality of disposal activities. Finally, the estimates assume that illegality of PRP actions would be costly for the government to identify--partly because of the variation in state and local laws--and prove to the satisfaction of PRPs or the courts.

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.

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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.

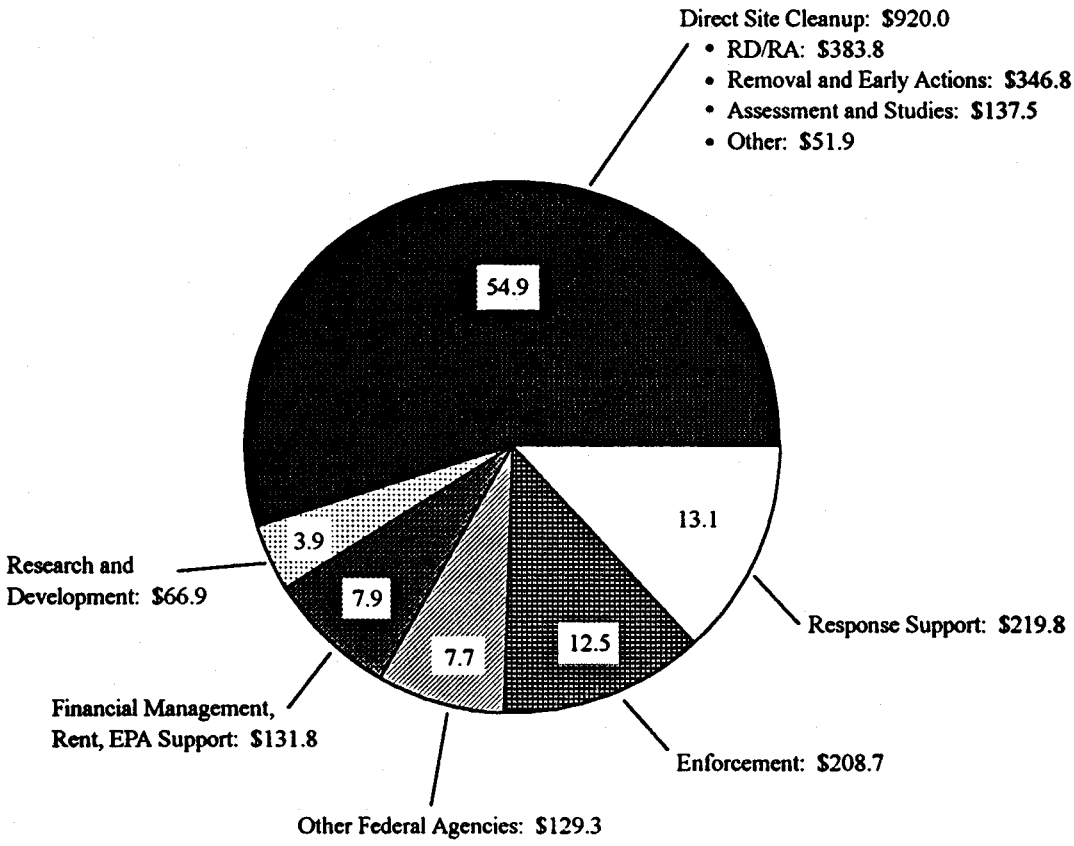
Although full reimbursement is the most costly option for the federal government and may be difficult to administer, policies that limit reimbursement--whether formally or through stringent documentation requirements--have potential drawbacks of their own. Without full reimbursement, some PRPs may feel 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)



TOTAL BUDGET: $1,676.5

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

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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

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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.