
Fourth Key Issue:

Does the Extent of Superfund's Dependence On Contracting Reduce Environmental Effectiveness?

Quality in the Superfund program is--or should be--measured by the environmental effectiveness of cleanup decisions and field actions. Reliance on contractors to perform the bulk of Superfund work exerts a number of forces on the program that sometimes jeopardizes the quality of that work. Among those forces are:

- the lack of development of internal EPA expertise, which results in poor contract management and oversight;
- more interest in controlling contractor costs than concern about the environmental performance of contractors;
- a mobile workforce whose perspective on quality, needs, and accountability can shift as it moves from the government--a purchaser of services--to and among contractors--a seller of services; and
- conflicts of interest that arise because working for the government may affect future work in the private sector.

Technical Problems

OTA has illustrated quality problems, such as technical mistakes, use of inaccurate data, and poor quality control in its June 1988 report *Are We Cleaning Up?- 10 Superfund Case Studies*. GAO also noted problems with contractor performance in 51 percent of the cases they examined.²⁷ The OTA finding that there were substantial problems in the key RODS for sites (which

are based in large measure on contractor studies and which are frequently drafted by contractors) was also found in another recent study, which said "... some RODS are simply deficient, lacking clarity, pertinent text, or substantive information."²⁸ Problems with RODS are also a reflection of high workloads and inexperience of EPA staff, particularly RPMs.

A recent survey of EPA's SITE cleanup technology demonstration program found that:

Nearly one-third of the interviewed company officials [28 technology developers] claimed that the contractors hired by EPA to sample, test, and analyze data were unsatisfactory. . . . Some industry representatives felt the contractors were slow, inexperienced, and generated irrelevant data. . . . One official commented that contractors continue to analyze and re-analyze the same data, making more money for themselves and taking away dollars from both industry and EPA.²⁹

Of the five technology companies that had completed their demonstrations, four had problems with EPA's contractors that prompted the study to note, "future demonstrations may be hindered unless the contracting system is improved in the future." Out of seven impediments to program performance and progress, contractors were the third most important to industry people in the program. But, "not one EPA official cited problems with the contractors." The

²⁷ U.S. Congress, General Accounting Office, Superfund Contracts - EPA Needs to Control Contractor Costs, RCED-88-182, (Gaithersburg, MD: General Accounting Office, July 1988).

²⁸ C.F. Baies III and G. Marland, "Evaluation of Cleanup Levels for Remedial Action at CERCLA Sites Based on a Review of EPA Records of Decision," Oak Ridge National Lab., January 1989.

²⁹ J. Calarese, et al., "An Evaluation of the EPA Site Demonstration Program," Worcester Polytechnic Institute, Washington, DC Project Center, December 1988.

technology developers also expressed some views on contractors implementing Superfund's remedial program; one said "contractors tend to overcharge the EPA because [in his view] they have the power to do so." Another said that "tax payers are wasting their money in supplying money for consultants who are inept and take too long."

The Hazardous Waste Treatment Council has said of Superfund:

For the first four or five years, it accomplished absolutely nothing except creating a huge new industry of environmental consultants who put that \$1.5 billion into their pockets by studying sites, taking literally years to figure out what the site is like and what kind of remedies might be used. . . . It is time to actually put remedies into place--to do the clean-ups.³⁰

A member of the Remedial Contractors Council, a trade association formed in 1987, in explaining the group's purpose, said "We wanted to clean up the industry. There are dirt contractors out there who see good money in remedial work but don't perform properly with the proper safety.³¹ That gives the whole industry a black eye."

An experienced PRP has written to OTA about a case in which a contractor that had only worked for EPA was hired to perform the RIFS for a groups of PRPs:

The draft reports we received from the contractor were unacceptable by any engineering standards. [The contractor] assured us that these documents were identical to drafts acceptable to the EPA at other sites.

OTA has examined a number of very lengthy critiques of EPA studies by PRPs or their contractors; these are as critical of the poor technical work being done for the government as was OTA's June 1988 study and a study by several environmental groups

and a trade association.³² For work done on the Pristine Superfund site in Ohio for responsible parties independently confirmed problems in the FS study identified by OTA.

Critical studies and protests have not, however, resulted in EPA publicly acknowledging poor contractor work. No information seems to be collected to discover the extent of poor quality work (e.g., studies and cleanups that have to be repeated), and there is no evidence that any Superfund contractor has suffered significantly because of poor quality work. Again, rapidly rising demand by government and private parties relative to supply reduces the likelihood of firms being significantly harmed by poor quality work. This situation undermines the belief of some people that an effective incentive for improving contractor quality is a loss of reputation and business because of poor quality work. Conversely, a cut in Superfund spending on contractors, coupled with improved and expanded EPA staffing, could correct this market.

Examples of Contractor Issues

Following are several examples of contractor issues and problems in Superfund which affect environmental performance of the program.

The Hazard Ranking System

One firm--Mitre--has always held the contract covering the Hazard Ranking System (HRS). Mitre developed the original HRS early in the program, has always run the quality assurance (QA) program for all HRS scores that determines whether sites qualify for remedial cleanups in the Federal Superfund program, and since its reauthorization

³⁰ David Case, cited *Breaking the Environmental Gridlock*, Eagleton Institute of Politics, Rutgers, 1988.

Contractors Unite in *RCC, "Waste Age"*, October 1988.

³² Environmental Defense Fund, *Right Train, Wrong Track: Failed Leadership in the Superfund Cleanup Program*, June 20, 1988.

(1985 through 1989). Yet last March the EPA IG's office commented on this central, nationwide quality assurance program:

We recommended that the Headquarters HRS scoring quality assurance process needed to be improved, because of the inconsistent application of the HRS process noted in our audits. The Agency's response did not address the concern, but merely reemphasized its existing quality assurance process, which in our opinion, has not adequately ensured the consistency and accuracy of the HRS scoring packages.

OTA received from EPA the database for all HRS scores. OTA has examined the fundamental technical aspects of the HRS approach, and we are also interested in how it is being implemented. When we examined the data for 2,026 sites, we found some surprising and serious errors. For example, we found 12 sites with scores listed as less than 28.50 that our arithmetic check showed to actually be above this cutoff score, which would put them on the National Priorities List (NPL). When we asked EPA about this we were told that many of the data we had been given were for sites that had not completed the QA process and checking for arithmetic errors is done last. This seems a weakness in the QA process because sites with scores less than 25.0 (for whatever reason) do not move to the QA stage, a precursor step to placement on the NPL. Because of our inquiry, a computer search for arithmetic errors was done for all the sites in the database and many errors, including the ones we had found, were discovered by EPA. In fact, the scores of 17 percent of the sites, which had not previously been checked for accuracy, were wrong. To reiterate, the point is that many sites and their scores may never reach this stage because their calculated scores are too low and EPA regional offices drop them from further consideration.

The 17 percent figure for errors shows that the original quality control processes carried out by contractors and regional staff appear ineffective in eliminating simple arithmetic errors. **It is possible that hundreds of sites, which have never entered the HRS database and quality assurance system and which may actually require cleanup, have been dropped from the Superfund system because of undetected mistakes in scoring them.** This is aside from much more complicated technical problems in applying the HRS. At present, there is not much of a safety net in catching such *false negative* sites, because only a few States have enough resources to systematically check out sites dropped from EPA's system.

The Iron Mountain Mines Site

At the Iron Mountain Mines Superfund site in California, the responsible party has written EPA about actions by contractor personnel (under the direction of CH2M Hill, the REM contractor) *during cleanup* which are resulting in extensive migration of hazardous substances offsite. The problems are said to result from the contractors "not understanding the heavy rainfall conditions at this site" and from "EPA's neglect and poor supervision of its contractors at this site." It is also alleged that the contractors "are being allowed to make unjustified profits at taxpayers and [responsible party's] expense."³³

The Old Springfield Landfill

The June 1988 Feasibility Study (FS) for the Old Springfield Landfill site in Vermont was done by ICF Inc. for Ebasco Services Inc., the prime REM III contractor. The estimated cost for the onsite, mobile incineration option covered several scenarios based on achieving different risk levels by excavating different volumes of hazardous waste. However, the contractor used the same unit

³³ Iron Mountain Mines, Inc., letter to U.S. Environmental Protection Agency, Region 9, Nov. 28, 1988.

cost of \$600 per cubic yard for mobile incineration over the range of 5,300 to 142,000 cubic yards. First, the FS ignored the fundamental engineering principle of economy of scale, which would have reduced unit cost as the volume increased, something commonly done by Superfund contractors. It is like estimating the **cost** of aircraft without taking into account how many planes would be manufactured and using the **cost** of making a few planes when, in fact, hundreds would be made.

Second, *actual* prices now being paid by EPA for mobile incineration are much lower than \$600. For example, for the Prentiss Creosote site in Mississippi, EPA contracted for a cleanup of about 8,500 cubic yards at an average **cost** of about \$340 per cubic yard. For 142,000 cubic yards the unit **cost** might be as low as \$150 per cubic yard. If it were, then the **cost** of the cleanup alternative offering maximum environmental protection would be \$78 million instead of the \$199 million figure obtained by the contractor.³⁴

Moreover, in the same FS **costs** for the other major treatment alternative, in situ vitrification (ISV), were probably over estimated, although **costs** for this technology are more uncertain than for incineration. Two recent FSs (Pristine and Goodrich/Airco sites) used unit **costs** of \$290 per cubic yard and \$275 per cubic yard; a recent technical paper cited \$243 per cubic yard.³⁵ The Old Springfield FS used values ranging from \$447 to \$526 per cubic yard but not with a systematic dependence on volume to be treated. If a **value** of \$243 per cubic yard is used, which seems reasonable for the high volume scenario, then the estimated

cost of ISV is \$72 million instead of the \$128 million obtained by the contractor and used by EPA. This situation also illustrates the need for EPA to keep a central data file and to disseminate it to the contractor community. For ISV there is, in fact, only one company and one source of information on the technology and its cost.

In this example, the **costs** of waste treatment technologies were systematically over estimated relative to the chosen land disposal option which was estimated to cost \$13 million. The point here is **not that a treat-**

ment approach in the range of **\$72 million to \$78 million** is necessarily the best way to go, but to point out that better site study work **might** have affected the cleanup decisions. Where **was** the quality control in ICF, in Ebasco, and in EPA? Even a cursory reading of the FS by an engineer could detect the lack of using economy of scale costing for the incineration option. Would the local community have found it useful to have seen more accurate cost estimates of the treatment alternatives during the public comment period?

This site and many others (possibly hundreds) illustrate a larger problem: was such a complex and costly FS really necessary at all? This site appears to fit a category of large, closed, and older landfills containing mostly nonhazardous waste for which the capping cleanup approach is **routinely** selected by EPA. If so, then why spend a lot of money on contractors studying alternatives? In most of these cases hardly anyone would find spending the very large amounts of money for excavation and treatment warranted environmentally or cost effective.

³⁴The point here is not the precision of the estimate of \$78 million but that there is a **very large overestimate** given by the \$199 million figure and that this latter figure is inconsistent with many data available to contractor and EPA personnel. EPA used \$199 million in the analysis that rejected incineration in favor of traditional consolidation, **landfilling**, and capping of the waste at \$13 million.

N. **Pollution Engineering**, August 1988.

³⁵Hazardous Waste Treatment Council, proceedings of **RCRA/SARA 1988 conference**, Washington, DC, October 1988. The **Hazardous Waste Treatment Council** has said, "The cost of technology-based remedies is often cited, but **HWTC** has found that costs are often wildly over-estimated in **RI/FSs**..."

But should capping be considered the permanent solution or an interim control approach? Should there be more explicit commitment to testing for hot spots of contamination and finding lower **cost** treatment technologies which detoxify the buried hazardous materials?

Supply and Demand

Capping the administrative expenses of the Superfund program has prevented the growth of a huge government bureaucracy. In 1986 EPA had 2,156 technical employees working full or part time on Superfund (in government parlance, 1,116 full time equivalents, or FTEs). The ratio of FTEs to the program's administrative budget has remained fairly constant since 1982, while the ratio of FTEs to the full budget has declined. This has two effects on the program: 1) there are fewer **EPA** staff to manage more contract work, and 2) the growth of a large internal bureaucracy has been prevented.

The shortage of trained EPA personnel for remedial cleanup has been the subject of many congressional hearings and several GAO studies. GAO reported in 1986, that Superfund staff believed that about 600 new employees were required to meet program needs, estimating the program to be 36 percent understaffed at that time.³⁷ The high turnover of personnel, one of the causes of understaffing, robs the program of an ability to develop a sufficient, experienced core technical staff. **The lack of a stable core of expertise prevents the program from attaining a high level of efficiency and from**

routinely making sound, consistent environmental decisions.

One reason for the staff shortage is simple economics, the laws of supply and demand. There is evidence of a direct relationship between the initiation of Superfund contracts and EPA turnover. EPA Region 2 has told OTA that once new TES and ARCS contracts are signed they expect to lose 20 percent of their Superfund staff. Congress and EPA, by creating an ever growing marketplace for contractors, has also created a demand for personnel **outside** the government. And, outside demand increases as the Superfund contracting budget increases. Lee Thomas, EPA Administrator, said that the public would see continued growth of the contract industry as a result of the passage of SARA.³⁸

The growth of contractor work and the demand it creates drains EPA of its personnel just as they begin to develop some expertise. It turns EPA into a personnel training ground for contractors and forces EPA to compete with contractors in hiring replacement employees. Consequently, EPA has had to hire staff right out of universities for unusually responsible jobs, such as RPMs. Even at that level EPA faces strong competition from the contracting industry. Consulting companies may pay about twice as much as the government in recruiting engineers out of school at the bachelors level. Some RPMs have been hired without technical academic backgrounds.

A study for the Appropriations Committee of the House of Representatives said, "many of EPA's project managers were

U.S. General Accounting Office, **Superfund: Improvements Needed in Workforce Management**, GAO/RCED-88-1(Gaithersburg, MD: U.S. General Accounting Office, October 1987).

³ **Inside EPA**, Jan. 30, 1987.

recent college graduates and were lacking in any real project management experience.”³⁹

After an extensive U.S. tour, a West German analyst made some insightful remarks about the Superfund program and staffing problems:

I met the youngest people in the agencies . . . some of the technical and procedural problems the agencies had and still have in implementing the cleanup program are due to this staff-situation . . . Often it is their first environmental job . . . after a couple of years they are well-trained and capable of solving any other problem. You see a lot of them turning over [to] private industry.⁴⁰

As a training ground, EPA not only provides a person with some technical knowledge but, perhaps more importantly for contractors, also internal working knowledge of EPA procedures, the agency’s strengths and weaknesses. That knowledge can be invaluable to a contractor already working for EPA or trying to secure work with EPA or PRPs or to a PRP who is negotiating with EPA over site cleanup.

Many senior EPA officials go directly into senior management positions with contractor firms at higher salaries. Even at lower professional levels there is evidence of high rates of turnover of key EPA technical staff to jobs with contractors at higher salaries. GAO estimated that in 1986 Superfund employees leaving the program received an average salary increase of \$7,200 annually.

The money gap may be wider now. One EPA region has told OTA that in 1988 they lost 27 percent of their On Scene Coordinators in the removal program; all left for

higher salaries, with one receiving a \$20,000 pay increase and a company car. One contractor has told OTA that technical people, such as experienced RPMs, could get as much as \$70,000 in this firm.

Preliminary analysis of data being collected by OTA (see figure 2) shows that generally the majority of RPM positions--perhaps the most critical technical positions in Superfund with responsibility for multi-million dollar contracts at several sites--pay about \$30,000 to \$40,000 annually (somewhat more with overtime). And some RPM positions are staffed by relatively junior personnel at the \$15,000 to \$25,000 level. In some EPA regions, the fraction of these lower paid RPMs is substantial and sometimes results (e.g., Region 9) because of general limits on funds and positions for EPA staff, not a lack of desire to hire more senior people.

Comprehensive data on turnover rates for the whole Superfund program is sketchy. Part of the problem is that EPA does not keep employment statistics by job title but, rather, by professional discipline. And, although some regions may have worse problems in keeping staff than others, no one denies that the Superfund program has a problem in retaining staff. GAO stated that:

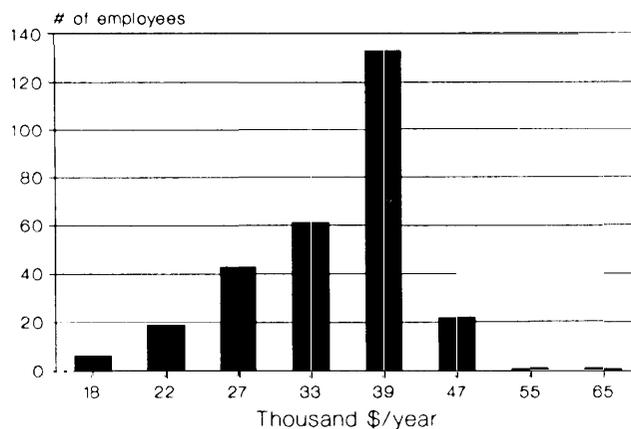
Several critical Superfund occupations had quit rates two to six times higher [in fiscal year 1986] than the average for similar federal jobs . . . Most EPA managers GAO interviewed expected the private sector to lure even more employees away from Superfund. GAO’s survey showed that over one-third of Superfund employees planned to look for other jobs in 1987.⁴¹

³⁹Surveys and Investigations Staff, A Report to the Committee on Appropriations, U.S. House of Representatives, on the Status of The Environmental Protection Agency’s Superfund Program, March 1988.

do Gunther Bachmann, “Soil Cleanup Policy in the USA,” July 1988, p. 31.

U.S. Congress, General Accounting Office Superfund Improvements Needed in Work Force Management, op. cit., p. 4.

Figure 2
RPM Salary Distribution



Source: OTA data from all EPA regions except Region 5.

Note: Salaries estimated at the mid-step of the corresponding federal grade level. Lower level salaries may be over estimated because professional employees at those levels are generally promoted to the next grade prior to reaching mid-step.

One of the first senior managers of Superfund, Ken Biglane, explained the movement of enthusiastic professionals out of the program to contractors: ‘They’re getting paid good salaries for a whole lot less grief.’ And he described the impact of the loss of people as “sapping the leadership in government in the environmental area.”⁴²

For the removal program, EPA’s IG found in one of its audits that there was “excessive turnover in Technical Assistance Team staff, resulting in high travel costs, and TAT assistance being provided by personnel inexperienced at the site.”⁴³

The problem is not just lower pay. The GAO report said that better advancement opportunities is the major reason that EPA personnel leave the Superfund program. Other reasons include “dissatisfaction with regional management, salaries, and use of employees’ technical skills and disillusion-

ment with clean-up progress.”⁴⁴ **RPMs also have high workloads, little support, and low morale because their initial high expectations to help solve a serious environmental problem cannot be met.** The large scale dependence on contractors in the Superfund program creates enormous opportunities for government workers to get a lot more money to use their *technical* skills because contractors face a supply problem for experienced technical workers.

When addressing the movement of people from EPA to Superfund contractors it is possible to come to an inaccurate view of the complex national system. Although significant numbers of EPA staff are moving to contractors and EPA does serve as a training ground for contractors, most of the large increases in contractor staff are coming from other sources. These include recent college graduates and people who have worked in other environmental or nonenvironmental

⁴²Judy Fahys, “Ken Biglane,” *Hazmat World*, August 1988,

U.S. Environment Protection Agency, Office of Inspector General, *Annual Superfund Report to the Congress for Fiscal 1987*, September 1988.

Ibid., p. 4.

fields. The large majority of people entering the rapidly growing contractor workforce do not have the kind of cleanup experience that can be obtained by some people at EPA, particularly RPMs. Moreover, growth of the contractor industry has not been stopped by the talent squeeze even though, **as one** analyst of the contractor industry said, ‘The greatest constraint to growth in the environmental consulting and engineering business is the very limited availability of experienced professionals.’⁴⁵

In assessing the possible impact of SARA at a National Association of Manufacturers meeting in 1986, one speaker claimed that “there just aren’t enough experienced people to do what EPA is being told to do” and that with experienced people in short supply industry will be able to pay higher salaries than government, keeping talented people out of government service.⁴⁶

And, prospects for the future are not good. GAO, in discussing EPA management challenges said recently:

EPA, like other agencies heavily involved in research, can expect difficulties in competing for top scientific talent against private sector organizations [emphasis added].⁴⁷

This supply-demand problem can be attacked on two fronts: 1) reduce demand by contractors for experienced and inexperienced people, and 2) improve the supply by expanding national education and training and by making working for EPA more attractive, fulfilling, and rewarding.⁴⁸

Schweich, a financial analyst, quoted in “Searching for the best and brightest,” *ENR*, Oct. 20, 1988.

4a “Producers wary of new Superfund provisions,” *Chemical & Engineering News*, November 3, 1986, p. 26.

U.S. Congress, General Accounting Office, *Environmental Protection Agency: Protecting Human Health and the Environment through Improved Management*, GAO/RCED-88-101 (Gaithersburg, MD: General Accounting Office, 1988), p. 234.

⁴⁸ A temporary decrease in contractor spending is not, necessarily, seen as unacceptable by Superfund contractors. For example, Gary A. Dunbar of CDM said, “if proper management by government and prudence of program pace mean less money for contractors then that is what should be done,” [Letter to OTA, Jan, 18, 1989.]

For example, significant portions of RIFSS are reproductions of data, procedures, statutory and regulatory requirements, and comments on generic cleanup technologies which appear, with minor variations, again and again. Also, see OTA’S *Are We Cleaning Up?*

Infrastructure Development

In the Superfund program solid technical expertise is developed by the people collecting the data for Remedial Investigations and analyzing data for Feasibility Studies and by those actually cleaning up sites. These jobs are done by contracting staff, not EPA personnel. Because of the pull of the contractors, instead of this expertise flowing into EPA, what expertise that does exist internally flows out. This leaves EPA personnel evaluating contractors who have at least some people with a better foundation in the basics and more experience.

The dependence on outside contractors also isolates the workforce and makes transfer of knowledge more difficult. This means that detailed understanding of successes and failures are slow to reach the decentralized workforce (see box A). The logistics of transferring knowledge among EPA staff in 10 regional offices is difficult enough but the difficult is compounded by a need to transfer knowledge among a multitude of contractor staff. (Knowledge transfer is also aggravated by EPA’s insistence that every site is different; the implication is that knowledge transfer is not critical. As each site starts through the system, the wheel gets reinvented.)⁴⁹

In essence, the Superfund program develops contract managers rather than technical project managers. This is evident in how Superfund employees view training and courses. GAO surveyed EPA Super-

fund personnel and asked what kind of training they needed. The three areas most often mentioned were cleanup design and action cost recovery, and legal case development.⁵⁰ Only the first has to do with the physical, technical, and environmental needs of the program. Cost recovery and legal case development deal ultimately with keeping the costs to the Fund down. It's a worthy goal but it simply shifts costs elsewhere. **Long-term development of technical expertise in EPA can ultimately drive the overall national costs down.**

One way suggested to overhaul Superfund is:

The civil service positions would be restructured so they attract--and retain--more career employees. A good first step would be to bring EPA salaries into line with those of the private sector--a move that the General Accounting Office says is permissible when discrepancies are large. Over the long run, this step would cost less than continuing to rely on a large number of high-priced contractors. It would also improve the quality of work.⁵¹

Conflict of Interest

Contracting by the Superfund program creates several areas of potential conflict of interest that can compromise environmental goals. They arise because there is one national pool of engineering and consulting firms that contracts its services to all branches of the Federal government, to State governments, and PRPs. Sometimes

they work as prime contractors, other times as subcontractors who are subject to less scrutiny.

There is now no legal requirement for EPA to tell those using its products and services whether a contractor has been the sole source of the work or a major contributor to it. This means that there is often no sign that a particular contractor--or any contractor at all--has participated in an effort; thus often one cannot tell if there is any potential conflict of interest.⁵² Greater public accountability and even motivation for higher quality work might result from more routine acknowledgement of contractor identity and contribution to Superfund activities.

EPA in advising States on Superfund contract requirements recognizes one category of contractor conflict of interest, but not as a given. The agency says:

In some instances, construction contractors, who are PRPs at a site may have conflicts of interest which would prevent them from serving the best interest of the State and/or the Federal government as a remedial action contractor [emphasis added].⁵³

The ultimate goal of EPA and State government programs, PRPs, and contractors is the same: to clean up sites effectively and at the lowest possible cost. But, they have different perspectives on what that means and how much it should cost. Local communities and PRPs are often at odds with one another over cleaning up sites.

⁵⁰ U.S. Congress, U.S. General Accounting Office, Superfund: Improvements Needed in Work Force Management, op. cit.

⁵¹ J. L. Edelson, "Superfund - Still in the Dumps," Technology Review, December 1988.

For example, EPA's draft "Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," potentially a very important document, has a contract number but no statement that it was prepared by a contractor. On a long list of people who assisted in preparing the document, all are from EPA except two from CH2M Hill and, in fact, the contractor was CH2M Hill, a long-time Superfund contractor under REM and now a major ARCS contractor. Moreover, this kind of activity would appear to offer a competitive advantage for a remedial contractor active in both the public and private cleanup markets. The document says that it is aimed at assisting, among others, contractors. Also, the important draft "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," only has a contract number; CH2M Hill was the contractor.

⁵³ U.S. Environmental Protection Agency, "Interim Guidance on State Participation in Pre-Remedial and Remedial Response." memorandum, July 21, 1987, p. 21.

PRPs and their contractors are naturally concerned about costs and profits and are more likely to emphasize reduced cost, tolerate more risk, and view certain cleanup technologies and approaches as more permanent than do the local communities.

A recent analysis of cleanup decisions concluded, "When the PRP is willing to play an active role, the EPA is willing to negotiate and accommodate."⁵⁴ Moreover, the study also concluded, "Ultimately cost is the primary factor in setting cleanup standards." How well government officials can sort through the interests of the PRPs and communities depends, in large measure, on whether the government workers can **independently** assess the technical merits and environmental performance of PRP positions and the contractor studies which support them (see box A). **Under present conditions, the drive for more settlements with PRPs and their control of site studies and cleanups does not assure protection of health and the environment. A much improved and expanded EPA staff is required.**

EPA does forbid a prime contractor to work simultaneously and within three years on the same site for both EPA and the PRPs. This is an admission of conflict between the interests of EPA and PRPs, but this attempt to avoid conflicts has problems. First, enforcement relies on self reporting. While a good many contractors may, not all will necessarily do so. Second, a contractor working for EPA becomes privy to inside information--not generally available--simply in order to complete its assigned tasks for EPA. That kind of information has value not only regarding that particular site but can be of benefit to the PRP, or another PRP, at another site for which the contractor may be concurrently working or subsequently work. The information can also benefit the negotiating position of a PRP v. EPA at any

other site in the Superfund program. Because the private cleanup market is also enormous, this factor is important in helping contractors with that side of their business.

Moreover, the three-year limit is low. It is not uncommon for sites to take 10 years to move through the remedial part of the Superfund program. It can take over three years just to complete an RIFS and ROD, the first phase. Thus, three years is not long enough to assure that a contractor responsible for the RIFS for EPA does not end up subsequently handling the design or implementation for the same site for the PRPs. Scrutiny by EPA could solve this potential problem.

Another, and perhaps growing, source of potential conflict is the tendency of vertical integration by contracting firms and PRPs. Conflict of interest may occur when contracting firms and PRPs develop financial interests in cleanup technology that may reduce the scope of remedial technologies examined and impair the ultimate decision. A number of contractors and PRPs own firms that develop or operate cleanup technology. For instance, Roy F. Weston, Inc., a major Superfund contractor owns a mobile incinerator and has also patented technology for low temperature thermal stripping of volatile organic chemicals from soils. Westinghouse plans to use its still unavailable incineration technology to cleanup some of its Superfund sites in Indiana.

Will contractors and PRPs be biased toward using technology in which they have financial interest? This bias would not necessarily create a problem except that the contractors and, increasingly, PRPs control the analysis phase (RIFSs) that often results in the selection of a specific technology. In the case of the Indiana sites, this became a highly charged issue and continues to be a

⁵⁴ C. F. Baies 111 and G. Marland, op. cit.

factor in the delayed cleanup implementation. The potential for bias and the control of the technology selection could be mitigated by strong EPA oversight and management of the process, particularly **after** a cleanup is selected in a ROD and legally embodied in a court's consent decree. But, that does not occur for the most part.⁵⁵

As an example, at the Brown Wood Preserving Superfund site in Florida, the PRPs' contractor for the FS recommended a remedy adopted by EPA in April 1988. Over 95 percent of the site's contaminants were sent to a commercial landfill in Emelle, Alabama, and the remainder kept onsite for

biological land treatment, a service provided by the FS contractor. The cost of this remedy (\$2.7 million) is one half the estimated cost of using available mobile incineration. The shipment to the landfill was meant to precede EPA's own land disposal bans; incineration was acknowledged to be faster and more effective in satisfying statutory mandates. Thus, EPA accepted a cleanup proposed by a PRP (for a less than optimum remedy) in which both the PRPs and the FS contractor benefit financially. The PRPs saved \$2.7 million and the study contractor got a cleanup job worth about \$500,000.

⁵⁵See OTA's report [Are We Cleaning Up? 10 Superfund Case Studies](#), June 1988.