

CURRENT ISSUES IN SUPERFUND AMENDMENT AND REAUTHORIZATION: How is the Clinton Administration Handling Hazardous Waste?

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Negotiations among lawmakers in the first session of the 105th Congress resulted in no legislation amending or reauthorizing the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).¹ CERCLA authorizes the federal government to respond to hazardous substance emergencies and to protect the public health and welfare and the environment.² But in recent years considerable criticism has been levied against CERCLA. Various industry groups, lenders, environmental groups, and legislators have expressed dissatisfaction with how the current law addresses a number of controversial issues.³ The main point of contention has been the reliance on the “polluter pays” principle in CERCLA,⁴ which assigns liability to actual polluters in cleaning up

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1. See 42 U.S.C. §§ 9601-9675 (1994).

2. See CERCLA § 104, 42 U.S.C. § 9604 (1994). The response must be consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (codified at 40 C.F.R. § 300.1-1105 (1997)). *Id.* § 9604(a). Additionally, section 105(a) of CERCLA called for the revision and republication of the NCP. CERCLA § 105(a), 42 U.S.C. § 9605(a) (1994). As a necessary measure to protect the public health or welfare or the environment, section 104(a)(1)(B) of CERCLA requires the President “to remove or arrange for the removal of, and provide for remedial action relating to such hazardous substance, pollutant, or contaminant at any time (including its removal from any contaminated natural resource), or take any other response measure consistent with the national contingency plan.” CERCLA 104(a)(1)(B), 42 U.S.C. § 9604(a)(1)(B) (1994).

3. See KATHERINE N. PROBST ET AL., FOOTING THE BILL FOR SUPERFUND CLEANUPS: WHO PAYS AND HOW? 1 (1995)

4. See Richard L. Stroup, *Superfund: The Shortcut that Failed*, in BREAKING THE ENVIRONMENTAL POLICY GRIDLOCK 115, 121 (Terry L. Anderson ed., 1997); See also PROBST ET AL., *supra* note 3, at 65.

the nation's hazardous waste sites⁵ while partly funding cleanups with a hazardous waste trust fund. Specifically, the liability approach found in the current CERCLA program has caused delays in cleanup and has generated excessive transaction costs.⁶ Criticism has also focused on the possibility that the Superfund program provides incentives to private parties "to spend more money litigating than cleaning up waste sites."⁷ The authority to appropriate money from the Hazardous Substance Superfund (also referred to as the Superfund) expired on September 30, 1994⁸ and taxing authority expired on December 31, 1995,⁹ prompting the current push for reauthorization.

This paper examines CERCLA's legislative background and the Clinton Administration's principles for Superfund legislative reform introduced in the first session of the 105th Congress, and provides an economic analysis of those proposed reform principles generating the most criticism and attention, namely the assignment of liability shares, transaction and cleanup costs, natural resource damages (NRD), and brownfield redevelopment. Finally, this paper comments on whether the reform principles espoused by the Clinton Administration will likely lead to an improved Superfund system. Legislative reforms that will, among other things, lower transaction costs, discourage excessive NRD claims, and seek cost-effective remedial actions will make Superfund a more effective program. Effective reform principles must give more attention to the likely behavioral response of affected parties to prevent unintended consequences of well-intended policies.

I. BACKGROUND

A. *Purpose*

The primary purpose of CERCLA is to authorize the U.S. Environmental Protection Agency (EPA) to respond to hazardous substance emergencies and to protect public health, welfare and the en-

5. See CERCLA § 107, 42 U.S.C. § 9607 (1994).

6. See LLOYD S. DIXON, RAND INSTITUTE, *FIXING SUPERFUND: THE EFFECT OF THE PROPOSED SUPERFUND REFORM ACT OF 1994 ON TRANSACTION COSTS* 1 (1994).

7. JAN PAUL ACTON & LLOYD S. DIXON, RAND INSTITUTE, *SUPERFUND AND TRANSACTION COSTS: THE EXPERIENCES OF INSURERS AND VERY LARGE INDUSTRIAL FIRMS* 1 (1992).

8. See CERCLA § 111 (a), 42 U.S.C. § 9611(a) (1994).

9. See 26 U.S.C. § 4611(e)(2) (1994).

vironment by cleaning up the country's worst hazardous waste sites.¹⁰ Two financial mechanisms drive hazardous waste site cleanups. First, liability incentives, through a broad category of responsible parties, take advantage of the "polluter pays" principle.¹¹ In this manner, the law seeks to make those responsible for the improper disposal of hazardous waste bear the costs and accept responsibility for their actions. Second, a trust fund (Hazardous Substance Superfund or the Superfund)¹² financed through excise taxes on chemicals,¹³ petroleum,¹⁴ and corporate environmental income taxes¹⁵ helps achieve the goal of expeditious site cleanups.

The Superfund can be used to fund cleanup at sites that require immediate remedial attention before the U.S. Department of Justice has an opportunity to seek reimbursement from responsible parties.¹⁶ The law was designed in this fashion so cleanup could be implemented quickly and litigation over the extent of responsibility would only take place after remedial action.¹⁷

10. The President, by Executive Order, delegated EPA with the responsibility of amending the NCP. Exec. Order No. 12777, 56 Fed. Reg. 54757 (1991).

11. Section 107(a) of CERCLA holds liable the following parties:

(1) the owner and operator of a vessel or a facility,

(2) any person who at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of,

(3) any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person, by any other party or entity, at any facility or incineration vessel owned or operated by another party or entity and containing such hazardous substances, and

(4) any person who accepts or accepted any hazardous substances for transport to disposal or treatment facilities, incineration vessels or sites selected by such person, from which there is a release, or a threatened release which causes the incurrence of response costs, of a hazardous substance.

42 U.S.C. § 9607(a) (1994).

12. See 26 U.S.C. § 9507 (1994) (creating the Hazardous Substance Superfund).

13. See *id.* § 4661.

14. See *id.* § 4611.

15. See *id.* § 59A.

16. See CERCLA § 111(a)(3), 42 U.S.C. § 9611(a)(3) (1994). The Attorney General may commence an action on behalf of the Fund to recover any compensation paid by the Fund to any claimant. CERCLA § 112(c)(3), 42 U.S.C. § 9612(c)(3) (1994).

17. For the definition of "remedial action" see CERCLA § 101(24), 42 U.S.C. § 9601(24) (1994).

B. *Legislative History*

Driven largely in response to the Love Canal incident, CERCLA was enacted in 1980 during the final month of the Carter administration, and was designed to result in the decontamination and remediation of hazardous waste sites within the United States. Love Canal began in the late 1970's when it was discovered that homes in Niagara Falls, New York had become contaminated due to Hooker Chemical's dumping of over 21,000 tons of chemicals, including dioxin, into an excavated canal three decades earlier.¹⁸ Public outrage from the Love Canal incident eventually led to the passage of CERCLA and creation of the Superfund.¹⁹

CERCLA was to be a short-lived program intended to clean up the nation's most dangerous waste sites, such as Love Canal. The program was to cost less than \$2 billion and was to be paid for by those parties mainly responsible for the pollution. The program was designed primarily to identify and cleanup hazardous waste sites throughout the United States, and assign the costs of cleanup directly to those parties responsible for the contamination at the site.²⁰

CERCLA was reauthorized and amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA).²¹ SARA made significant changes to the size of the Hazardous Substances Superfund and the sources of the revenues that replenish it, as well as to the statutory criteria for selecting remedies at sites.²² SARA also codified the use of EPA-developed tools designed to provide incentives for responsible parties to reach settlement agreements with the government regarding the conduct of cleanups and contributions to the cost of cleanups.²³ The main goal of these changes is to speed settlements and reduce transaction costs.

SARA amendments authorize EPA to release *de minimis* parties from liability.²⁴ *De minimis* parties are parties found to be responsible for only a small percentage of the volume and toxicity of

18. See STROUP, *supra* note 4, at 115-20.

19. See *id.*

20. See PROBST ET AL., *supra* note 3, at 12.

21. Pub. L. No. 99-499, 100 Stat. 1613 (1986) (codified as amended at 42 U.S.C. §§ 9601-9675 (1994)).

22. See PROBST ET AL., *supra* note 3, at 14. From 1981-1993, cumulative trust fund revenues were provided by the following sources: petroleum tax, 28%; environmental tax, 22%; chemical tax, 19%; general revenues, 13%; interest, 8%; advances, 5%; and cost recoveries, 5%. See *id.* at 15.

23. See SARA § 122, 100 Stat. 1613, 1678-88 (1986) (codified at 42 U.S.C. § 9622 (1994)).

24. See *id.* § 122(g)(1), 100 Stat. at 1685 (codified at 42 U.S.C. § 9622(g)(1) (1994)).

the hazardous substances at a hazardous waste site. SARA also permits the government to “mix fund” at certain sites. Mixed funding allows the government to assume some portion of the cleanup expenses, with responsible parties assuming the remainder of the costs.²⁵ Finally, SARA establishes time schedules for EPA to start site studies and cleanup activities in an attempt to accelerate the pace of cleanups.²⁶

Due to legislators’ fears that any CERCLA reauthorization process would be contentious and lengthy,²⁷ CERCLA was extended in 1990 as part of the Omnibus Budget Reconciliation Act.²⁸ The 1990 changes extended the taxing and funding authority of CERCLA for three years (1991-1994).²⁹ Under most environmental statutes, a lapsed authorization does not impact the government’s ability to implement programs.³⁰ For the case of CERCLA, however, the EPA has to take steps to shut down the Superfund program if the financial resources are unavailable.³¹ This feature of the Superfund program gives the reauthorization and amendment process an enhanced sense of urgency.

C. *Why does the current law need reform?*

Due to the high costs³² and long time horizons involved in cleaning up hazardous waste sites³³ and with litigation plaguing the program, observers note that reform is needed in the Superfund program.³⁴ In response to these concerns, EPA has adopted many ad-

25. See *id.* § 122(b)(1), 100 Stat. at 1679 (codified at 42 U.S.C. § 9622(b)(1)) (providing for the reimbursement of responsible parties from the Fund “for certain costs of actions that the parties have agreed to perform but which the President has agreed to finance”).

26. See *id.* § 116, 100 Stat. at 1653-54 (codified at 42 U.S.C. § 9616 (1994)).

27. See PROBST ET AL., *supra* note 3, at 13;

28. See Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101-508, § 6301, 104 Stat. 1388, 1388-319 (1990).

29. See *id.* at 1388-319

30. See PROBST ET AL., *supra* note 3, at 13.

31. See *id.*

32. See, e.g., U.S. GEN. ACCT. OFF., RCED 96-125, BARRIERS TO BROWNFIELD REDEVELOPMENT 3 (1996) (stating that EPA and GAO estimate total cleanup costs of about \$26 million per site); PROBST ET AL., *supra* note 3, at 20 (estimating total cleanup costs at \$29.1 million).

33. See U.S. GEN. ACCT. OFF., RCED 97-20, SUPERFUND: TIMES TO COMPLETE THE ASSESSMENT AND CLEANUP OF HAZARDOUS WASTE SITES 8 (1997). Additionally, the average time that lapsed between a site’s placement on the NPL and completion of cleanup increased from 2.4 years in 1986 to 10.6 years in 1996. See *id.* at 5.

34. See, e.g., Richard L. Revesz & R. B. Stewart, *The Superfund Debate*, in ANALYZING SUPERFUND: ECONOMICS, SCIENCE, AND LAW 3, 13-14 (Richard L. Revesz & R.B. Stewart

ministrative reforms in the Superfund program over the past several years. EPA's current administrative reforms include setting priorities for cleanups, clarifying the role of cost in the remedy selection process, encouraging brownfields redevelopment, and using more reasonable assumptions about current and future land use.³⁵ The Superfund program can benefit from increased efficiency when EPA devises effective administrative reforms, but if poorly designed, these reforms can have deleterious effects on the efficiency of the overall Superfund program. EPA's administrative reforms have been in place for a short time, and, as such, adequate data does not exist to demonstrate any degree of effectiveness. Legislative amendments are expected to clarify and formalize the role of these administrative reforms by devising a more efficient liability allocation and settlement process, while holding EPA more accountable for the efficiency of the Superfund program. In addition, legislative amendments should include other mechanisms to make remedies more appropriate and cost effective at each Superfund site.

II. CLINTON ADMINISTRATION PRINCIPLES

In May 1997, the Clinton Administration introduced a set of principles to help guide reauthorization negotiations with the 105th Congress.³⁶ These principles were intended to increase the pace of cleanups, improve program efficiency, decrease litigation, and reduce transaction costs, while providing adequate protection of human health and the environment. The following discussion provides the text of those Administration principles generating the most controversy, along with a background of each principle in relation to current proposed legislation, and a brief economic analysis of each.

A. *Liability and Enforcement*

Maintain the principle that those who are responsible for the contamination must pay for the cleanup.

There should be clearly defined exemptions or limitations on liability, reflecting EPA's experience with administrative

eds., 1995) [hereinafter ANALYZING SUPERFUND]; PROBST ET AL., *supra* note 3, at 1-2; DIXON, *supra* note 6, at 1.

35. See U.S. EPA, *Superfund Administrative Reforms: Annual Report Fiscal Year 1996* (last modified Dec. 20, 1996) <<http://www.epa.gov/superfund/oerr/admin/execsum.htm>>.

36. *Clinton Administration's Superfund Legislative Reform Principles* (updated Dec. 1997) <<http://www.epa.gov/superfund/oerr/whatsnew/principle.htm>> [hereinafter *Administration Principles*].

reforms, for very small volume contributors, generators and transporters of municipal solid waste, and bona fide prospective purchasers.

Legislation should establish “orphan share” funding from a separate account consistent with the President’s Fiscal Year 1998 budget request. Orphan share compensation, defined as a contribution for responsibility attributable to insolvent or defunct parties, must not compete against cleanup dollars or reduce the funding available for response actions.

Legislation should reduce transaction costs by promoting settlements and encouraging contribution allocation of costs among settling parties through a flexible, nonprescriptive process that makes effective use of available “orphan share” funding.

The Administration strongly opposes, among other proposals: “site liability carve-outs” (i.e., elimination of liability for persons based upon type of site); limits on the President’s CERCLA section 106 authority; pre-enforcement judicial review of remedy decisions; repeal of all or part of the current strict, retroactive, joint and several liability standards; pre-emption of state liability laws; and changes to the liability system that slow cleanups, reduce program efficiency or increase litigation and transaction costs, or that reduce the possibility of settlements.

1. Transaction costs associated with assigning liability

BACKGROUND

The “polluter pays” principle in CERCLA allows EPA to force those parties responsible for contributing to the contamination of a hazardous waste site to accept financial responsibility and clean up the site.³⁷ While this notion has been effective in keeping the federal cost to the Superfund down by minimizing direct government implementation of cleanups,³⁸ the principle has generated excessive levels of litigation over the assignment of liability.³⁹ Further, the liability scheme in CERCLA has shifted transaction costs of allocating

37. See STROUP, *supra* note 4, at 121-22.

38. See PROBST ET AL., *supra* note 3, at 17.

39. See LLOYD S. DIXON ET AL., PRIVATE-SECTOR CLEANUP EXPENDITURES AND TRANSACTION COSTS AT 18 SUPERFUND SITES 4 (1993).

cleanup shares to private parties and away from the federal government.⁴⁰ As a result, the private sector bears the burden of the increasingly substantial transaction costs. Movement away from the status quo of the current system will impose additional up-front costs on EPA, which provides little incentive for the agency to eliminate the principle from the current Superfund law.⁴¹

The legal history of the current liability system provides insight into why critics of the current law continue to push for an overhaul of how liability is resolved. The courts have held that under CERCLA liability is retroactive, strict, and joint and several.⁴² Joint and several liability has created the climate that generates costly levels of litigation among private parties trying to determine allocation of contribution shares.⁴³ Often, the EPA can determine that a few parties are responsible for contamination of a particular site and can then force them to pay for the entire cost of cleanup. As a consequence, these parties seek compensation from other responsible parties through contribution litigation.⁴⁴ This often causes a firm, forced to pay for cleanup costs under a theory of joint and several liability, to pursue contribution from firms that may have played only a minimal role in

40. *See id.* at 4-7. The authors note that potentially responsible parties (PRPs) typically face five main sources of transaction costs: (1) searches for other PRPs, (2) negotiations and litigation with other PRPs over apportioning costs, (3) defense against cost recovery by EPA and cost recovery litigation between PRPs, (4) negotiations and litigation with EPA over remedy selection and cleanup implementation, and (5) negotiations and litigation with insurers for reimbursement of costs. *See id.*

41. *See* Lloyd S. Dixon, *The Transaction Costs Generated by Superfund's Liability Approach*, in *ANALYZING SUPERFUND*, *supra* note 33, at 179. EPA expenditures on cleanup and transaction costs amounted to about \$9.1 billion through 1991 while private expenditures through 1991 were about \$11 billion. *See id.*

42. *See, e.g.*, *United States v. Monsanto Co.*, 858 F.2d 160, 173-74 (4th Cir. 1988). Retroactive liability applies since the law addresses contamination that was caused by activities taking place before CERCLA was enacted in 1980. *See id.* Liability is strict because a responsible party can be found liable even if it was not negligent. *See id.* When the damage at a hazardous waste site is not divisible, liability is joint and several. *See id.* Under joint and several liability, the government can hold one or more parties liable for the full costs of the site cleanup, even if other parties at the site are liable. *See id.*

43. *See* ACTION & DIXON, *supra* note 7, at 24-25. Evidence suggests that a substantial level of transaction costs comes from coverage disputes, or disputes between insurers and those they insure over who should pay for site cleanups. *See id.*

44. One can imagine a large responsible party weighing its litigation costs (often paid by insurers) associated with nominating additional PRPs against its expected benefit due to decreased contribution to cleanup costs as the fixed cleanup costs are allocated among more responsible parties. In a worst case scenario, the large responsible party will bear additional legal fees and delay payment of cleanup costs if no other responsible parties are found. Note that it is entirely feasible that this strategy could result in a net benefit for the large responsible party if its discount rate is high enough.

the contamination of a particular site. Many times, a responsible party lists a large number of businesses in the local phonebook as additional potentially responsible parties (PRP's). These "phonebook nominations" can cause excessive litigation as the private parties use the courts to settle the liability issue.

Experts agree that the average level of transaction costs per Superfund site is too great.⁴⁵ A 1993 RAND study examines PRP transaction costs for 108 private-sector firms with annual revenues less than \$20 billion.⁴⁶ At 18 Superfund sites from 1981 to 1991, RAND estimated transaction costs made up 32 percent of total cleanup costs, averaging \$32 million per site (see Table 1).⁴⁷ For over 50 percent of those firms with total expenditures greater than \$1,000, transaction costs accounted for more than 60 percent of cleanup costs.⁴⁸ A 1992 RAND study estimated that for five large industrial firms with average annual revenues of \$70 billion in 1989, transaction costs averaged 21 percent of total cleanup costs.⁴⁹ (see Table 1). In addition, the study examined the total expenditures on hazardous-wastes claims of four large insurers from 1986 to 1989, and found that an average of 88 percent of expenditures were transactional in nature.⁵⁰ Finally, a 1994 RAND report uses the results from their previous two studies and estimates transaction costs to be 36 percent of total private-sector cleanup expenditures through 1991.⁵¹ Using EPA's cost estimate of \$26 million per site,⁵² and a private-sector transaction cost share of 36 percent,⁵³ private party transaction costs total over \$9 million at each Superfund site. The total transaction costs generated by the Superfund program would presumably reach even higher with the inclusion of local, state, and federal government transaction costs.

45. See generally DIXON, *supra* note 6.

46. See DIXON ET AL., *supra* note 39, at 54.

47. See DIXON, *supra* note 6, at 5. A 90% confidence interval around the \$10 million estimate of transaction costs ranges from \$8 million to \$14 million per site. See *id.*

48. See *id.*, at 54.

49. See ACTON & DIXON, *supra* note 7, at 35-39.

50. See *id.* at 23-24.

51. See DIXON, *supra* note 6, at 5.

52. See U.S. GEN. ACCT. OFF., *supra* note 32, at 3; see also PROBST ET AL., *supra* note 3, at 15 (estimating the cost of cleanup per site at almost \$30 million).

53. See DIXON, *supra* note 6, at 5.

*Table 1: Private Party Transaction Costs by Firm Size*⁵⁴

| 1991 annual revenues | 1992 Study (percent, 1984-1989) | 1993 Study (percent, 1981-1991) |
|------------------------|------------------------------------|------------------------------------|
| >\$20 billion | 19 | - |
| \$1 to 20 billion | - | 19 |
| \$100 to 1,000 million | - | 15 |
| \$15 to 100 million | - | 60 |
| <\$15 million | - | 60 |

ANALYSIS

The Administration wants to maintain the “polluter pays” principle, which reduces a firm’s incentive to pollute by forcing firms to be financially accountable for any pollution they create. This liability structure further shifts cleanup and transaction costs away from the federal government.⁵⁵ The administration’s persistent support of the “polluter pays” principle, however, is a burden on the Superfund system and on the private sector because of the excessive litigation generated among private parties.

Superfund pits one firm against another. This creates an environmental conflict in which several players invest effort to win a fixed reward—the avoided clean-up costs. The rules of the conflict set the underlying incentives that can either increase or decrease the transaction costs. An economics literature has emerged to better understand what rules make people fight harder, and thus increase the level of transaction costs in Superfund. A few key insights are worth keeping in mind as one considers changes in rules to reduce the level of transaction costs in Superfund. First, conflicts often involve fights between unevenly matched firms—a favorite and an underdog. The literature has shown that if the underdog commits to its effort first, transaction costs are less than if the favorite moves first.⁵⁶ The reason is that both players find it profitable when the underdog moves first because he reveals his relative lack of strength, thereby, allowing the

54. *See id.* at 4.

55. *See* DIXON ET AL, *supra* note 39.

56. *See* Kyung Hwan Baik & Jason F. Shogren, *Environmental Conflicts with Reimbursement for Citizen Suits*, 27 J. ENVTL. ECON. & MGMT. 1, 11 (1994). Formally, the favorite is the player whose odds of winning exceed 50 percent in the Nash equilibrium of the conflict; the underdog has odds less than 50 percent. *See id.* at 9. A Nash equilibrium exists when neither player has a unilateral incentive to change its action. *See id.* at 4-5.

favorite to respond efficiently. Since the underdog expects the favorite to react in proportion to his effort, he also reduces his effort. Consequently, overall transaction costs are lower, and both players and society gain from having the underdog move first. For Superfund, this implies that rules that allow smaller firms to move first may result in less transaction costs.

Second, the question of the potential for reimbursement of legal fees in Superfund conflicts may be an issue. Currently, most major federal environmental laws allow for some reimbursement of private enforcement if the enforcer wins its case.⁵⁷ The evidence suggests that private enforcement will increase in importance, and, thus, it is important to understand the efficiency impacts of reimbursement. Citizen suits, for example, have increased to 266 in 1986 -- from fewer than 25 between 1970 and 1978 and only 41 in 1982.⁵⁸ Private enforcement actions have a very high probability of success if they reach the settlement stage,⁵⁹ and success virtually guarantees recovery of attorney's fees.⁶⁰ Transaction costs will be influenced by how the reimbursement rules are defined in a Superfund conflict. If reimbursement is symmetric as in the British rule system (loser pays system), then either both parties will generate high transaction costs trying to win the case, or neither party will enter into the conflict for fear of spending more fighting than the prize is worth.⁶¹ If reimbursement is asymmetric, however, and limited to only the private enforcer or to smaller firms who have been sued as part of a "phonebook" strategy, transaction costs will be less.⁶²

Reforming the current liability system is needed because of the perverse incentives and high transaction costs created by the "polluter pays" principle. The administration, by strongly favoring the principle does not advocate alternative tax or liability structures that could address the incentive and cost problems. One feasible reform is a two-step approach—(1) develop a tax-based system to fund cleanup of existing waste sites, and (2) implement a separate liability-based system to address current and future pollution concerns. A

57. See, e.g., Clean Air Act § 304(d), U.S.C. § 7604(d) (1994); Clean Water Act § 505(d), U.S.C. § 1365(d) (1994).

58. See W. Naysnerski & T. Tietenberg, *Private Enforcement of Federal Environmental Law*, 68 LAND ECON. 28, 35 (1992).

59. See *id.* at 38.

60. See *id.* at 32.

61. See Baik & Shogren, *supra* note 56, at 2-6.

62. See *id.* at 6-11. This is the reimbursement system currently used for private enforcement under U.S. environmental laws. See *id.* at 2.

targeted emissions tax⁶³ would allow existing hazardous waste sites to be cleaned up using revenues generated through a corporate environmental tax, while ignoring the issue of liability altogether. This would eliminate the excessive transaction costs associated with apportioning cleanup costs. Concurrently, a liability based system would address current and future pollution, providing the incentive to reduce the benefits to private parties from releasing hazardous waste.⁶⁴ But this approach lacks the moral and popular appeal of the “polluter pays” system because those private parties who created the hazardous waste sites share financial responsibility for cleaning up a Superfund site with other firms holding no responsibility for the contamination of a particular site. Also, any movement away from the current tax and liability structure may create increased administrative costs for EPA. The EPA would now bear the costs of accurately determining all of the responsible parties at current and future hazardous waste sites. However, finding legislators willing to support a proposal that puts additional burden on the federal budget may be a challenge.

2. Allocation of Liability

BACKGROUND

During the 103rd Congress, a liability allocation process was proposed in the Superfund Reform Act of 1994 (SRA).⁶⁵ While SRA was never passed, the proposed allocation process became the model for EPA’s ongoing “allocation pilot” program present in the administrative reform package. Under what can effectively be characterized as an alternative dispute resolution technique based on an arbitration-like process, an “allocator” conducts a non-binding out-of-court allocation process and assigns shares of liability to responsible parties based on equitable factors. Parties may resort to this type of allocation process only after a negotiation phase fails to produce results. After receiving a report describing the allocation of liability shares, EPA then offers to settle with parties for their allocated share and, also, offers to pay 100 percent of the orphan share.

63. See NICK HANLEY ET AL., ENVIRONMENTAL ECONOMICS IN THEORY AND PRACTICE, 106-29 (1997).

64. Alternatively, a system generating revenues solely through a corporate environmental tax will result in the lowest level of transaction costs. However, this approach decreases private incentives to prevent pollution.

65. H.R. 4916, 103d Cong. §§ 401-414 (1994).

ANALYSIS

A push towards legislation that would reduce some of the private party litigation through *de micromis*⁶⁶ and *de minimis*⁶⁷ liability relief is expected to provide greater efficiency in allocating responsibility under CERCLA. Eliminating those parties that have contributed very small amounts of pollution and/or are very small themselves would likely reduce the pool of PRP's that could potentially be pulled into litigation. This should have the desired effect of reducing overall transaction costs associated with litigation, which should boost efficiency. The allocation process offered in SRA will likely lead to lower transaction costs due to more efficient allocation of contribution shares, but is just one of many potential allocation processes that would be likely to generate lower transaction costs.

All of these potential allocation processes should include key protocol from a core group of elements capable of impacting the transaction costs of allocating contribution shares. Included in this broad set of elements would be factors such as the inclusion of a neutral, third-party allocator, mandated time frames, and permissibility of nomination of PRP's by other responsible parties. One allocation process exists that can generate the lowest level of transaction costs among the entire set of allocation processes. This allocation process is economically most desirable and should be considered in the CERCLA reauthorization and amendment process. There is no empirical evidence to suggest that EPA's current allocation pilot program is the most efficient allocation process available. However, the program is being scrutinized closely in the current reauthorization and amendment debates.

The allocation pilot has some distinct advantages, most notably that settlements avoid litigation and are expected to occur in a relatively short period of time and at a lower cost (through reduced transaction costs) than those settlements achieved under the current law. A settlement process that allows an arbitration-like allocation procedure to act as a backstop to traditional negotiations would produce more efficient settlements. The allocation procedure would be binding on both the responsible parties and EPA and would act as a mechanism to prevent the settlement process from reaching a litiga-

66. *De micromis* parties are "truly small contributors to a site." Katherine N. Probst, *Evaluating the Impact of Alternative Superfund Financing Schemes*, in *ANALYZING SUPERFUND*, *supra* note 34, at 145, 151.

67. *De minimis* parties are small contributors at waste sites. *See id.* at 151-52; *see* 42 U.S.C. § 9622(g)(1) (1994).

tion phase. The expected result would be significantly lower transaction costs and increased allocation efficiency.

The reauthorization and amendment process is not moving towards a two-way binding process, but is expected to move towards the less restrictive one-way binding process (binding only on EPA). This is because an allocation system that binds a responsible party to a liability share raises constitutional due process issues. Such an allocation scheme would not adequately provide an appeals process for those responsible parties forced by an allocator to pay some fraction of cleanup costs. Further, it is unlikely that firms would agree to a double binding process since these firms would be providing a “blank check” for the government to clean up hazardous waste sites.⁶⁸

B. *Remedy*

Remedies must protect human health and the environment over the long term.

Ground water should be restored to beneficial uses, wherever practicable. Maximum Contaminant Levels⁶⁹ under the Safe Drinking Water Act or more stringent applicable State standards should be established as the cleanup standards for ground water whose beneficial use is or is anticipated to be as a drinking water source, unless technically impracticable.

Consideration of reasonably anticipated future land use should continue to be factored into the remedy selection process, based on consultation with the affected community.

Cleanups should be cost-effective and foster productive reuse of contaminated property to the degree practicable.

A preference for treatment of highly toxic, highly mobile waste should be retained. The mandate for permanence should be modified to emphasize long-term protection and reliability.

68. By moving directly to an arbitration-like process in a double binding setting, PRPs would no longer have the opportunity to negotiate contribution shares.

69. “Maximum contaminant level” is defined as the “maximum possible level of a contaminant in water which is delivered to any user of a public water system.” 42 U.S.C. § 300(f) (1994).

Cleanups should comply with the applicable substantive requirements of other Federal environmental laws and State environmental or facility siting laws applicable to remedial actions. The requirements to comply with relevant and appropriate requirements should be eliminated.

The dollar and time limits of Fund-financed removals should be increased.

The Administration strongly opposes, among other proposals, the following: prescriptive cost or risk assessment requirements, particularly those that would result in unprotective remedies; man-dated remedy updates (including any remedy reopener provisions); default approval of remedy decisions; provisions which would fail to discourage contamination of currently uncontaminated land, ground water, or natural resources; provisions which would inhibit coordination between cleanup and natural resource restoration; elimination of applicable requirements from Federal laws or State environmental or facility siting laws; pre-enforcement judicial review of remedy decisions; and any other changes that disrupt or slow cleanups or settlements or result in remedies that are inadequately protective of human health, welfare, environment and natural resources.

BACKGROUND

Currently, CERCLA has a preference for cleanups that treat and permanently remove contamination. This tends to result in expensive and sometimes unnecessary cleanup procedures, particularly if restricting certain land uses after cleanup is a viable alternative.⁷⁰ Historically, EPA has not accounted for the relative risk of sites in establishing priorities for work. EPA has consistently failed to allocate cleanup resources to reduce the most significant threats to human health and the environment and has, instead, tended to allocate valuable resources to cleanup sites posing small or insignificant risks. This inability to fund cleanup of high risk "hot spots" often results in performing many remediations that are not cost-effective.⁷¹

Representatives of industry, local governments, state regulatory agencies, and EPA argue that the appropriate level of cleanup at a typical Superfund site should be made early in the remedy selection

70. Natural attenuation and institutional controls can result in low cleanup costs at some hazardous waste sites.

71. Hotspots are defined as those sites that pose serious immediate threats to human health and the environment.

process and should be based on the most likely future land use of the site.⁷² Many of the problems EPA has experienced with costly remedies are attributable to the lack of an appropriately selected remedy that is consistent with current and reasonably anticipated future land uses.⁷³ The Superfund Cleanup Acceleration Act of 1997, S.8, was the most prominent bill intended to amend and reauthorize CERCLA introduced in the first session of the 105th Congress.⁷⁴ Among other things, S.8 offers liability relief for a broad group of PRP's,⁷⁵ provides limited funding for characterizing, assessing, and remediating brown-fields,⁷⁶ and clarifies cleanup standards.⁷⁷ S.8 includes provisions that would require EPA to account for actual, planned, or reasonably anticipated future use of the land and water resources.⁷⁸

ANALYSIS

One important revision that Congress can make through amending and reauthorizing CERCLA⁷⁹ is to set cleanup standards on the basis of an assessment of the activities and future land use likely to take place at a Superfund site.⁸⁰ The Idaho Pole site⁸¹ in Bozeman, Montana illustrates what can happen when future land use is not appropriately considered when selecting a remedial action. To

72. See KRIS WERNSTEDT ET AL., RESOURCES FOR THE FUTURE, DISC. PAPER NO. 98-03, BASING SUPERFUND CLEANUPS ON FUTURE LAND USES: PROMISING REMEDY OR DUBIOUS NOSTRUM? (1997).

73. See James T. Hamilton & W. Kip Viscusi, *The Magnitude and Policy Implications of Health Risks from Hazardous Waste Sites*, in ANALYZING SUPERFUND, *supra* note 34, at 55, 78. An examination of risk pathways determined that existing risks are less salient than future risk scenarios in assessing human health risks at hazardous waste sites. See *id.*

74. Other bills introduced in the 1st session of the 105th Congress include the Common Sense Superfund Liability Act of 1997 (H.R. 2485), the Superfund Acceleration, Fairness, and Efficiency Act (H.R. 2727), and the Superfund Reform Act (H.R. 3000).

75. See S.8, 105th Cong. § 501 (1997).

76. See *id.* § 101.

77. See *id.* § 402.

78. See *id.* § 401.

79. All of the major reauthorization bills from the past few years included language that would require EPA to explicitly account for future land use at a Superfund site when selecting a remedy. See, e.g., H.R. 3800, 1st Sess., 103rd Cong. § 503 (1994); H.R. 2500, 2d Sess., 104th Cong. § 102 (1995); S. 1285, 2d Sess., 104th Cong. § 401 (1995).

80. The guidelines state that "[b]ecause residential land use is most often associated with the greatest exposures, it is generally the most conservative choice to make when deciding what type of alternative land use may occur in the future. Assume future residential land use if it seems possible based on the evaluation of the available information." See Hamilton & Viscusi, *supra* note 73, at 61.

81. The proposed final listing date for placing the Idaho Pole site on the National Priorities List was June 10, 1986. See 51 Fed. Reg. 21,054, 21,077 (1986) (to be codified at 400 C.F.R. pt. 300).

determine the possible exposure of future residents at this site, EPA assumed that the site would be used as a mobile home park, an act requiring the local government to change zoning of the site. EPA also assumed that hypothetical residents living in the mobile homes would not use the city water supply, which was already in place and currently served the site, but would, instead, drill private wells into contaminated water at the site. Finally, EPA assumed that hypothetical future residents at the site would consume 200 grams of contaminants every day throughout the year by eating homegrown produce, in spite of Montana's ninety-day growing season.⁸²

Legislation that mandates EPA to consider reasonably anticipated future land and resource use would lead to more appropriate remedies and go a long way toward decreasing cleanup costs.⁸³ Legislation for reauthorization and amendment should include provisions to consider future land use when selecting a remedy. Effectively, this would encourage EPA to reorganize the way the agency funds remediations, while providing incentives for the Administrator to conduct a cost-benefit analysis at each Superfund site. The goal of this approach is to force EPA to focus on a preference for hot spots and place containment and long-term reliability on par with treatment and permanence.

C. Natural Resource Damages

The Administration supports the legislative proposal on Natural Resources Damages (NRD) that it drafted and sent to the House and Senate in October, 1996. This legislative proposal would clarify that NRD claims would be focused on restoration costs rather than monetized values and would be presented in a more timely and orderly fashion, thereby discouraging premature litigation of NRD claims and enhancing coordination and integration of remedy and restoration.

The Administration strongly opposes, among other proposals: repeal of all or part of the current liability standards; proposed caps on recoverable damages; limitations on the natural resources that can be restored and the scope of trusteeship; inappropriate transition rules; or limitations on the type of values that may be considered in determining the scope or scale of restoration or damages.

82. See STROUP, *supra* note 4, at 126-27.

83. See U.S. GEN. ACCT. OFF., RCED 96-145, SUPERFUND: IMPLICATIONS OF KEY REAUTHORIZATION ISSUES 5 (1996) (attesting to EPA's recognition that not considering reasonable future land use will lead to more costly cleanups).

BACKGROUND

Under CERCLA, the parties responsible for the release of hazardous substances are liable for their cleanup as well as “damages for injury to, destruction of, or loss of natural resources.”⁸⁴ Natural resources are defined broadly to include land, fish, wildlife, biota, air, water, groundwater, drinking water, and other such resources belonging to, managed by, or otherwise controlled by federal or other governmental entities.⁸⁵ Only natural resource trustees can file natural resource claims under CERCLA against PRPs.⁸⁶ A natural resource damage claim has three standard components: 1) the cost of restoring, rehabilitating, replacing, or acquiring the equivalent of the damaged natural resources; 2) the diminution in value of those natural resources pending restoration; and 3) the reasonable cost of assessing those damages.⁸⁷

ANALYSIS

Passed in the wake of widespread public concern over the Exxon Valdez oil spill, the Oil Pollution Act of 1990 (OPA) made those parties responsible for discharging oil into the nation’s navigable waters and adjoining shorelines liable for removal costs and damages.⁸⁸ Consistent with how NRD claims are addressed in OPA and with the codification of the restoration planning phase for injured natural resources,⁸⁹ the Administration position for reauthorization and amendment uses two restoration-based concepts to assess NRD: primary restoration and compensatory restoration. Primary restoration is intended to return the natural resources and services at a site to the baseline (or natural) level of ecological service that would be present in the absence of the hazardous spill.⁹⁰ Compensatory restoration accounts for the lost use (and nonuse) of the natural resources during the interim period between the spill and the cleanup.⁹¹

The federal government has come to rely on the contingent valuation (CV) method to estimate these use and nonuse values for

84. § 107(a), 42 U.S.C. § 9607(a) (1994).

85. See CERCLA § 101(16), 42 U.S.C. § 9601(16) (1994).

86. See 40 C.F.R. § 300.600 (1997). Natural resources trustees include the Secretaries of Commerce, Interior, Agriculture, Defense, and Energy. See *id.*

87. See 33 U.S.C. § 2706(d)(1) (1994).

88. Oil Pollution Act of 1990, Pub. L. No. 101-380, 104 Stat. 484 (1990) (codified at 33 U.S.C. §§ 2701-2761 (1994)).

89. See 33 U.S.C. § 2706(d)(1) (1994).

90. See 15 C.F.R. § 990.30 (1997).

91. See *id.*

damaged natural resources. CV is a controversial tool that employs a survey to ask people what they would be willing to pay hypothetically to restore a resource to its pre-damage state or to prevent the damage of a resource.⁹² CV attempts to create a market where none existed previously. An isolated individual, in response to a request to do so, is presumed to be able to imagine this market, visualize the details of his and others' participation in it, and then to state his or her one-time value for a nonmarketed environmental commodity. The Administration's Superfund proposal continues to support the use of CV to measure damages in NRD cases, but is currently modeled after the OPA rule for restoration based natural resource damage assessments.⁹³

Unlike CERCLA, which relies on recovering the monetized value of lost services for the purpose of restoring, rehabilitating, replacing, or acquiring the equivalent of the injured natural resources,⁹⁴ OPA focuses on recovering those costs necessary to fund restoration projects. Lost use values and nonuse values determine the cost of a restoration project.⁹⁵ For economists, estimating the interim lost use value that should be included as the compensatory restoration component of a restoration project is a relatively straightforward task (e.g., out-of-pocket losses suffered by fisherman, recreationists, and resort owners directly and indirectly harmed by the spill). OPA regulations calculate an alternative welfare measure of resource compensation that follows from the restriction placed on the use of recoveries.⁹⁶ The real challenge remains in whether it is possible to

92. See Report of the National Oceanic and Atmospheric Administration Panel on Contingent Valuation, 58 Fed. Reg. 4601, 4603 (1993) [hereinafter NOAA Report].

93. See 15 C.F.R. § 990.10 (1997).

94. See CERCLA § 107(f)(1), 42 U.S.C. § 9607(f)(1) (1994).

95. See 15 C.F.R. § 990.53(a)(2) (1997) (stipulating that trustees must consider a reasonable range of restoration alternatives, with each alternative comprised of primary and/or compensatory restoration components).

96. See Carol A. Jones & Katherine A. Pease, *Restoration-Based Compensation Measures in Natural Resource Liability Statutes*, 15 CONTEMP. ECON. POL. 111, 112 (1997). The resource-to-resource or service-to-service scaling approach and the general valuation approach are outlined in OPA as the two major methods of scaling restoration projects. See *id.* at 117. Scaling a compensatory restoration project adjusts the size of the restoration project to equate the gains provided by the project with the interim loss incurred due to the incident. See *id.* It is expected that compensatory restoration projects providing in-kind compensation will expedite restoration and ensure that enough money is recovered to make the public whole. For situations where compensatory restoration projects are not feasible and valuation studies are conducted, the appropriate scale of a restoration project need only be accurate up to the relative value of the losses. See *id.* at 119-20.

measure accurately the lost nonuse values when scaling a compensatory restoration project.

While the OPA system does not rely as heavily on monetized damage assessments developed through CV techniques as that found in CERCLA, the possibility still remains for compensatory restoration projects to generate excessive costs.⁹⁷ For example, it is feasible for cost overruns to force the cost of a restoration project to increase beyond original plans due to contracting problems or other unforeseen difficulties during the course of project construction. While a compensatory restoration project may begin with the "right" price, without proper incentives to keep project costs low, compensatory restoration projects may be no better at preventing excessive compensatory damage payments than currently available CV techniques.

S.8 includes provisions limiting the use of CV to evaluate the extent of natural resource damages at hazardous waste sites. Specifically, S.8 proposes that there shall be no recovery for any impairment of nonuse values⁹⁸ implying that any CV assessment of natural resource damages must be limited to the measurement of lost use value. S.8 further stipulates that trustees could not include the costs of conducting any type of study relying on the use of CV methodology as an assessment cost.⁹⁹ While this is likely a response to the rising costs of CV studies, this leaves open the possibility that benefits transfer¹⁰⁰ could be permissible for determining total value for a natural resource.¹⁰¹

The contingent valuation method remains controversial because it places a person in a *hypothetical* market absent *arbitrage*. A person is supposed to be able to understand the good being valued, the market in which it could be exchanged, how other people might respond to the market, and have enough confidence to state his value of the good.¹⁰²

97. It is feasible for the cost of a restoration project to increase beyond original plans due to contracting problems or other unforeseen difficulties during the course of project construction. While a compensatory restoration project may start out at the "right" price, without proper incentives to keep project costs low, compensatory restoration projects may be no better at preventing excessive compensatory damage payments than currently available CV techniques.

98. See 1st Sess., 105th Cong. § 701(3)(B)(ii).

99. See *id.* § 702(a)(C)(iii)(II).

100. Benefits transfer allows non-market valuation of certain goods by using results from existing CV studies found in the available literature that may or may not be directly related to the good in question.

101. See generally Glenn W. Harrison & James C. Lesley, *Must Contingent Valuation Surveys Cost So Much?*, 31 J. ENVTL. ECON. & MGMT. 79 (1996).

102. See W. Michael Hanemann, *Valuing the Environment Through Contingent Valuation*, 8

This raises two critical concerns. First, does the hypothetical nature of the good reduce the incentive to take care in assessing the value of some good, i.e., will people really do what they say they will? This potential bias in answering hypothetical questions has been and remains a central question in the continuing debate over the usefulness of CV to assess the value of nonmarket goods. Economic values elicited from hypothetical questions can provide useful information if the individuals being surveyed respond candidly. If they do not, results from CV research may be questionable. Existing research data suggest the latter scenario, i.e., hypothetical bids tend to overstate "real" values obtained in actual markets.¹⁰³ In an effort to compensate for this uncertainty the U.S. National Oceanic and Atmospheric Administration (NOAA) has recommended that CV surveys be designed to underestimate the willingness to pay to offset exaggerated responses.¹⁰⁴ The effectiveness of this conservative approach will then be evaluated by judges and juries on a case-by-case basis.¹⁰⁵

Recent survey-lab experiments have been designed to measure and correct for the differences that may exist between what people say they would do and how they actually behave. The results from two recent experiments suggest that the difference between intentions and actions is commodity-specific and context-specific. Fox *et al.*¹⁰⁶ observe that the average bids for those who initially favored the irradiation process needed to be multiplied by factors of 0.7 to 0.9, while the average bids for those with an initial "distaste" for irradiation needed to be multiplied by factors of 0.6 to 0.7. List and Shogren¹⁰⁷ also observe that behavioral differences exist in the structure of the calibration function due to substitution and intensity of experience. The average adjustment required in the 1-good auction

J. ECON. PERSP. 19, 26 (1994).

103. See Richard C. Bishop and Thomas A. Heberlein, *Measuring Values of Extramarket Goods: Are Indirect Measures Biased?*, 61 AM. J. AGRIC. ECON. 926 (1979); Peter Bohm, *Estimating Demand for Public Goods: An Experiment*, 3 EUR. ECON. REV. 111 (1972); Ronald Cummings et al., *Homegrown Values and Hypothetical Surveys: Is the Dichotomous Choice Approach Incentive Compatible?*, 85 AM. ECON. REV. 260 (1995); Mark Dickie et al., *Market Transactions and Hypothetical Demand Data: A Comparative Study*, 82 J. AM. STAT. ASS'N. 69 (1987); Helen R. Neill et al., *Hypothetical Surveys and Real Economic Commitments*, 70 LAND ECON. 145 (1994); Kalle Seip & Jon Strand, *Willingness to Pay for Environmental Goods in Norway: A Contingent Valuation Study with Real Payment*, 2 ENVTL. & RES. ECON. 91 (1992).

104. See NOAA Report, *supra* note 92, at 4608.

105. See *id.* at 4611.

106. See John Fox et al., *CVM-X: Calibrating Contingent Values with Experimental Auction Markets*, AM. J. AGRIC. ECON. (forthcoming) [on file with authors].

107. J. List & J. Shogren, *Calibrating Actual and Hypothetical Bids from a Field Experiment*, J. ECON. BEHAVIOR & ORG. (forthcoming) [on file with authors].

(0.4) was less severe than for the 10-good auction that contained substitutes (0.3).¹⁰⁸ Furthermore, weak evidence suggests that intensity of experience affects calibration as well, as the hypothetical bids of sportscard dealers had to be adjusted by 0.46, less stringent than non-dealers and not significantly different from NOAA's 50% default.¹⁰⁹ The results suggest that unconditional use of a uniform calibration factor is unjustified at this time, and that research needs to proceed on a case-by-case basis until there is enough evidence to reveal any systematic bias to accept or reject the notion of a general calibration function.

The second critical question asks: does the lack of arbitrage affect the values revealed by a person? The foundation of the economic theory of choice lies in the expression of values through repeated give and take with others in an exchange institution. The institution defines incentives and articulates knowledge and beliefs about relevant laws of nature and of humans. It relates a person's choice to the choices of others and to the consequences these aggregated choices produce. The exchange institution is therefore a collective habit. When it is absent a person must draw more intensely upon his or her personal resources. Arbitrage within a market is the give and take of exchange that provides the incentive to behave rationally. And though the verdict is still out, enough empirical evidence exists to fuel skeptics who wonder whether asking an isolated person to visualize hypothetical participation in a new market is sufficient to cause him to behave for one time in accordance with the standard assumptions underlying economic theory, i.e., the maximization of expected welfare. A researcher's polite request to imagine a nonexistent market does not obviously cause the rationality of the real market to rub off on a respondent.

Since exchange institutions usually do not exist for natural resource services, a person can act as if his stated values will go uncontested; he is asocial, unaccountable to others, and unless one is willing to presume a person is a complete image of a nonstrategic, anonymous, competitive market, the person may lack the incentives to act as if he is following any notion of economic theory of choice. Abundant economic and psychological evidence suggests that without arbitrage people often fall short of predictable behavior presumed in the standard economic theory of choice.¹¹⁰

108. *See id.*

109. *See id.*

110. *See generally* RICHARD THALER, *THE WINNER'S CURSE* (1992).

Because markets do not exist for most environmental assets, unpredictable behavior exercises great influence over the allocation of these assets and thus influences the values derived from their presence and use. Crocker *et al.*¹¹¹ posit that a Coasean corollary exists for non-market valuation. When information processing costs are zero, the researcher can provide enough information such that stated values would be identical to the market price, if it existed. But if information costs were non-existent, people would generate their own information that would match up with what a researcher could provide. Elaborate information packages in survey research would be redundant, as respondents would select the same information themselves. But since information costs are not zero, the fact that most researchers have not included arbitrage in a market will affect stated values. Therefore, it is important to use some notion of arbitrage in contingent valuation so that a person can consider the private consequences of his stated values.

The hypothetical nature and the absence of arbitrage causes us to argue that caution must be maintained with the trustee's use of CV to scale restoration projects for NRD claims. Because no effective theoretical bound exists on the limits of nonuse value, CV studies can be constructed that measure nonuse value at implausible high levels. No clear consensus exists in the academic literature about the correct answers to these two critical questions. And while the opposition of big industry and insurance companies toward CV and NRD has been submerged over the last few years as it has become clearer that few big-ticket judgments are being awarded, researchers still have to address whether hypothetical, non-arbitrated value estimates should be used on cost-benefit balance sheets.

D. *Brownfields and Voluntary Cleanup Programs*

Support expansion of the current Brownfields program, including funding for site identification and assessment, funding to capitalize revolving loan funds for brownfield site cleanups, technical support and funding for job training and workforce development, and provisions for bona fide prospective purchasers.

111. See T. Crocker et al., *Incomplete Beliefs and Nonmarket Valuation*, RES. & ENERGY ECON. (forthcoming) [on file with authors].

Support the development, enhancement and expansion of State voluntary cleanup programs that meet appropriate standards as stated above.

The Administration strongly opposes provisions, among other proposals, which limit current brownfields grant eligibility and flexibility. The Administration also strongly opposes provisions including the following: restrictions on federal ability to adequately protect human health, welfare and the environment, particularly at higher risk sites, under State voluntary cleanup programs, and other limitations such as any limits on the authority to act upon a determination of imminent and substantial endangerment to human health, welfare or the environment.

BACKGROUND

Current brownfield redevelopment principles are contributing to the call for CERCLA reform. Brownfields are typically urban properties located in industrial or commercial areas where redevelopment is hampered by real or perceived environmental pollution.¹¹² Because CERCLA's liability laws can include virtually any party associated with ownership or operation at a potentially contaminated site,¹¹³ many brownfield sites are not recycled and lay abandoned as firms locate and build in less risky suburban "greenfields."¹¹⁴ As a result, greenfield developments will both impose a significant burden on urban districts seeking renewal and contribute to exacerbating urban sprawl.

Most brownfields are not likely to be added to the NPL because they are not severely contaminated. The extent of the brownfields problem is still unknown, since there is no official count of brownfields in the United States.¹¹⁵ In the midst of this uncertainty, developers remain wary of the cleanup liability provisions of both federal and state legislation because they can apply to all sites, including brownfields. Former property owners may also be liable for cleanup costs if the contamination occurred while they owned the properties. Thus, even the suspicion of current or prior contamination may make

112. See U.S. GEN. ACCT. OFF., *supra* note 32, at 3.

113. See CERCLA § 107(a), 42 U.S.C. § 9607 (1994).

114. "Greenfields" are uncontaminated sites typically located outside city limits and have no hazardous waste liability risk associated with their development.

115. See U.S. GEN. ACCT. OFF., *supra* note 32, at 4. The Urban Land Institute estimated that about 150,000 acres of abandoned or underused industrial land exist in major U.S. cities. This estimate is believed to be at the lower end of a range of estimates. *Id.*

developers hesitant to purchase brownfield properties and owners reluctant to place their properties on the market.

Due to the costs associated with responsibility for cleaning up a brownfield site,¹¹⁶ developers and industries choose to avoid the potential liability problems associated with a contaminated site. To avoid these potential liability problems, industries will locate on uncontaminated sites rather than on brownfields. While these "greenfields" may require building additional infrastructure that brownfield sites would not need,¹¹⁷ developers may still view greenfields as a more cost-effective solution to growth than brownfield cleanup. With new housing developments and industrial centers reaching farther into environmentally sensitive lands and increasing the dependence on automobiles while isolating central cities and older communities, public costs associated with urban sprawl have become substantial.¹¹⁸ Serious environmental impacts and congestion are common by-products of urban sprawl as developers are forced to build adequate systems of roads and sewer, water, and electric lines to meet residential, commercial, and industrial development needs. As more greenfields are developed,¹¹⁹ city governments lose tax revenues as industry relocates to the suburbs and the problem of urban sprawl worsens.

ANALYSIS

Congress has considered actions to help address some of the problems associated with brownfields. The Asset Conservation, Lender Liability, and Deposit Insurance Protection Act of 1996,¹²⁰ provides liability relief for lenders that foreclose on contaminated properties. Just as S.8 was the most prominent of the Superfund amendment and reauthorization bills introduced in the first session of the 105th Congress, the Brownfields and Environmental Cleanup Act of 1997, S.18, was the preeminent brownfields bill introduced in 1997. S.18 offers to promote the economic redevelopment of brownfield sites and stimulate the assessment and cleanup of these sites. S.8 and S.18 address Superfund liability issues at brownfields by limiting the liability of prospective purchasers and clarifying circumstances under

116. These costs include litigation fees.

117. Infrastructure such as access roads and sewer systems are typically included in brownfield sites.

118. See COUNCIL ON ENVTL. QUALITY, ENVIRONMENTAL QUALITY: 25TH ANNIVERSARY REPORT, 173-74 (1995).

119. See *id.* at 171.

120. Pub. L. No. 104-208, 110 Stat. 3009 (1997).

which current landowners would not be liable for past contamination. Further, based on the number of brownfields bills introduced in the first session of the 105th Congress in both the House and the Senate,¹²¹ there seems to be bipartisan support for providing tax incentives for brownfield development.¹²²

Creating tax incentives and providing liability relief for brownfields development is a step towards generating increased efficiency in the Superfund program. These activities would likely provide developers with the proper incentives to increase redevelopment of brownfields, increase tax revenues for cities and slow urban sprawl by reducing the incentives to develop greenfields.

III. CONCLUSION

The objective of Superfund is laudable—cleaning up the most polluted inactive waste sites in the United States. But thus far Superfund in practice has created too many inefficiencies. Several reform deals were almost closed at several junctures during the first Clinton administration but ultimately fell through. Instead, the EPA set in motion a set of administrative reforms that attempt to address many of the issues of concern. And while the EPA's efforts should not be underestimated, there will always be question marks due to problems of measurability. Major legislative reform remains a worthwhile objective.

The Clinton administration's recent reform principles are supposed to move Superfund in a direction that is "faster, fairer, and more efficient." But these principles fall short and more fundamental changes are needed to achieve the administration's goal of "faster, fairer, and more efficient" cleanups. Changes to the underlying liability structure remain the most effective approach to removing the inefficiency. Major reform will require the codification of a method reducing the number of parties subject to joint and several liability since this rule currently creates excessive litigation among private parties. "Polluter pays" should be based on actions, not status. Further, retroactive liability should be eliminated in favor of a system that funds the cleanup of existing hazardous waste sites through a targeted corporate environmental tax. Although this scheme would

121. A partial list of the legislation introduced in the first session of the 105th Congress includes H.R.1049, S.18, H.R.1395, H.R.1120, and S.23.

122. See, e.g., *Brownfields Bipartisan Bill Would Give Tax Break for Parties Cleaning Up Brownfields*, HAZ. WASTE NEWS, Feb. 10, 1997, at 1; *Bipartisan Team Introduces a New House Superfund Reform Bill*, FED. & STATE INS. WEEK, Nov. 17, 1997, at 1.

be less harsh in punishing polluters of existing hazardous waste sites, efficiency gains can be achieved and transaction costs can be reduced.

One approach to reduce the number of firms subject to the liability rules is to preempt liability through alternative dispute resolution (ADR) techniques. ADR can play a more predominant role in settling Superfund disputes by getting firms out of the liability quagmire. Therefore, a priority should be to understand the workings of different ADR methods. If the efficiency gains generated by ADR at the local level are substantial, more and more firms will demand their use in Superfund disputes. Providing more attention to ADR techniques like the EPA's allocation pilot method and the allocation of orphan share funding by the federal government can go a long way toward decreasing transaction costs and generating efficient settlements in the Superfund program.

More emphasis also needs to be placed on the role of reasonably anticipated future land use in remedy selection. Mandating EPA to focus on hot spots and addressing containment and long-term reliability as equal with treatment and permanence can generate efficiency gains and lower cleanup costs significantly. The use of contingent valuation surveys to estimate the value of lost resources in compensatory restoration projects remains worrisome, despite less insurance company opposition to NRD in recent years. Until hypothetical surveys can be shown to be reliable on a consistent basis, the possibility remains for an implausibly high damage assessment to be levied in an NRD case.

The administration's reform principles represent motion towards a more efficient CERCLA program. But almost any movement away from the current system will generate efficiency gains. Instead, the administration should focus on achieving the most efficiency in the operation of the Superfund program while maintaining public safety. The principles are aimed at minor modification of the key issues of CERCLA that demand a major overhaul. Until these principles address the likely behavioral responses of affected parties, valuable resources will be wasted with no appreciable gain in environmental quality.