1986

Developments in Law - Toxic Waste Litigation

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DEVELOPMENTS IN THE LAW

TOXIC WASTE LITIGATION

They were careless people, . . . they smashed up things and creatures and then retreated back into their money or their vast carelessness, . . . and let other people clean up the mess they had made . . . .

F. SCOTT FITZGERALD
THE GREAT GATSBY (1925)

'If seven maids with seven mops
Swept it for half a year,
Do you suppose,' the Walrus said,
'That they could get it clear?'
'I doubt it,' said the Carpenter,
And shed a bitter tear.

LEWIS CARROLL
THROUGH THE LOOKING GLASS (1871)

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INTRODUCTION

For decades American industry has generated and discarded hazardous wastes,[1] including flammables, explosives, nuclear and petroleum fuel by-products, germ-laden refuse from hospitals and laboratories, toxic metals such as mercury or lead, and dozens of synthetic chemical compounds including DDT, PCBs, and dioxins. Forty-three million metric tons of such waste were produced in 1981 alone,[2] by every step of the production ladder, from mining to manufacturing. Most of this waste is not destroyed but stored[3] — sealed by commercial waste facilities in 55-gallon drums and deposited in clay-lined dumps, injected deep underground between layers of rock, or abandoned in vacant lots, lagoons, or landfills.[4] Over time, at varying rates, the storage methods fail: containers corrode, plants or animals pierce protective linings, rain and melting snow wash wastes from their storage sites. Sometimes these abandoned chemicals intermingle, synergistically enhancing either their migratory or toxic potential.[5] Eventually, hazardous wastes infuse lakes and streams, underground waters, soil, and air, and from there come into contact with unprotected victims.

Exposure to hazardous wastes can cause cancer, genetic mutation, birth defects, miscarriages, and damage to the lungs, liver, kidneys, or nervous system.[6] Even when leaking waste sites are detected before

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[1] This Note uses the terms "hazardous waste," "hazardous substance," and "toxic waste" interchangeably. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9607–9657 (1982), uses only the term "hazardous substance."

Four measurable characteristics are used to identify a waste material as hazardous — ignitability, corrosivity, reactivity, and toxicity. *See* COUNCIL ON ENVIRONMENTAL QUALITY, THIRTEENTH ANNUAL REPORT (1982), *reprinted in* F. GRAD, ENVIRONMENTAL LAW § 4.04, at 639–40 (3d ed. 1985).

[2] *See* COUNCIL ON ENVIRONMENTAL QUALITY, *supra* note 1, § 4.04, at 640. The volume of hazardous wastes has increased dramatically in the last decade. In 1970, industry produced only about 9 million metric tons. *See* EPA, OFFICE OF SOLID WASTE MANAGEMENT PROGRAMS, REPORT TO CONGRESS: DISPOSAL OF HAZARDOUS WASTES 4 (1974), *reprinted in* 2 THE POLLUTION CRISIS 321, 326 (E. Rabin & M. Schwartz eds. 1976) [hereinafter cited as DISPOSAL OF HAZARDOUS WASTES].

[3] Of the hazardous waste treatment, storage, and disposal facilities that had notified EPA of their activities by the end of 1981, only about 13% had some disposal capability. *See* COUNCIL ON ENVIRONMENTAL QUALITY, *supra* note 1, § 4.04, at 640–41.

[4] Of existing hazardous waste facilities, 74% use containers, 54% use tanks, 17% use surface impoundments, 6% incinerate wastes, and 5% use landfills. *See* COUNCIL ON ENVIRONMENTAL QUALITY, *supra* note 1, § 4.04, at 640. Because containers often leak, storing wastes in containers may be no different in effect from storing wastes in open landfills. Even the most secure storage system for chemical wastes probably cannot remain leak-proof forever. *See* Montague, *The Limitations of Landfilling*, in BEYOND DUMPING 3, 4–5 (B. Piasecki ed. 1984).

[5] For example, certain bacteria can convert inorganic mercury into more lethal methyl mercury. *See* DISPOSAL OF HAZARDOUS WASTES, *supra* note 2, *reprinted in* 2 THE POLLUTION CRISIS at 330.

[6] *See* Anderson, *Negotiation and Informal Agency Action: The Case of Superfund*, 1985 DUKE L.J. 261, 265.

a significant number of humans have been exposed, toxic wastes may already have contaminated water supplies.[7] Of the 546 waste sites considered most dangerous by the Environmental Protection Agency (EPA), 410 directly threaten drinking water supplies.[8] The EPA estimates that 90% of the 180,000 landfills, waste pits, and lagoons used to store waste liquids may threaten groundwater.[9]

Hazardous waste disposal does not pose the only — or even the greatest — threat to our environment,[10] but it does create a unique set of problems for the legal system. First, it is often difficult to link the harm caused by a hazardous waste release to the hazardous wastes. Years may pass before the wastes dumped at a storage site leak and before anyone is exposed; years more may pass before an injury manifests itself. Moreover, this entire course of events is often invisible: wastes may seep unseen into an underground water supply, and victims may then swallow tasteless and odorless microscopic particles of a toxin. Even when detected, the harm is often difficult to measure, because the damage caused by exposure to toxic wastes is hard to distinguish from the damage caused by ordinary background conditions. Indeed, some effects on health, such as increased risk of cancer or other disease, may be too subtle to quantify.[11] Determining the extent of damage to water supplies or other natural resources may be no easier.

Second, because responsibility for most hazardous waste is diffuse, deciding who ought to clean up the waste and to compensate the victims of a toxic release is a difficult task. A given dump site might contain several dozen kinds of hazardous waste, discarded over many years, from a hundred different generators. The site might have been under the control and management of several different owners or

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[7] *See* F. ANDERSON, D. MANDELKER, & A. TARLOCK, ENVIRONMENTAL PROTECTION: LAW AND POLICY 554–55 (1984); Anderson, *supra* note 6, at 265–66; Burmaster & Harris, *Groundwater Contamination: An Emerging Threat*, TECH. REV., July 1982, at 51.

[8] *See Supplemental Appropriation for Superfund Being Considered for Fiscal 1984, EPA Says*, ENV'T REP. (BNA) 1245 (1983). The average cost of partially cleaning up a contaminated groundwater site is estimated to be $5 to $10 million; total restoration of a badly contaminated aquifer could take decades and might cost $500 million to $1 billion. *See* Montague, *supra* note 4, at 10.

[9] *See* Brown, *Preventing Groundwater Contamination: The Role of State and Federal Programs*, in BEYOND DUMPING, *supra* note 4, at 85, 87 (citing EPA, SURFACE IMPOUNDMENT ASSESSMENT: NATIONAL REPORT (Dec. 29, 1982)).

[10] For example, air pollution continues to cause widespread health damage. One study estimates that a 50% reduction in air pollution in major urban areas would save over $4 billion annually — 4.5% of all economic costs associated with morbidity and mortality. *See* Lave & Seskin, *Air Pollution and Human Health*, 169 SCIENCE 723 (1970), *reprinted in* ECONOMICS OF THE ENVIRONMENT 356, 383 (R. Dorfman & N. Dorfman eds. 1972).

[11] *See Health Effects of Hazardous Waste Disposal Practices: Joint Hearings Before the Subcomm. on Health and Scientific Research of the Senate Comm. on Labor and Human Resources and the Senate Comm. on the Judiciary*, 96th Cong., 2d Sess. 44–46, 52–54 (1980).

operators, who used levels of care ranging from recklessness to application of the best technology available. Moreover, many of the business entities responsible might have changed ownership or gone out of business. Finally, if one does determine that certain parties ought to be responsible, they may have insufficient assets to meet their obligations. The difficulties associated with hazardous waste, therefore, extend to insurance and bankruptcy law as well.

Thus far the legal response to toxic waste has been varied. In 1976, Congress passed the Resource Conservation and Recovery Act (RCRA)[12] to regulate prospectively the transportation and disposal of hazardous wastes. In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)[13] to address the problem of waste already generated and stored. This act imposed cleanup liability on specified parties and instituted streamlined litigation procedures to be implemented primarily by the EPA. But Congress has not addressed the problem of compensating victims of hazardous waste releases. Similarly, common law courts have not yet resolved the special problems of proving injuries that result from toxic wastes. The difficulties of detecting, measuring, and assigning responsibility for the harms of hazardous waste suggest that litigation may be an expensive and ineffective response to the problem. Congress might therefore consider whether an administrative cleanup and compensation scheme might prove more effective and operate more equitably. Nevertheless, creating a slow, inefficient, bureaucratic government agency could make the problem worse rather than better.

This Note begins, in Part II, by describing the evolution of law governing hazardous waste. Part II also lays out an analytical framework for evaluating the success of hazardous waste regulation in leading to fair and efficient outcomes. The next five Parts of this Note analyze issues arising in CERCLA litigation. Part III covers a group of issues loosely labeled "procedural," including issues arising in suits brought by the government to compel private cleanup or to recover the costs of governmental cleanup. It also discusses procedural issues arising in lawsuits brought by private parties under CERCLA. Part IV critically analyzes the EPA's approach to settling lawsuits. Part V examines substantive liability issues under CERCLA, looking at the standard and scope of liability, the nature of the causation requirement, and retroactivity. Part VI discusses affirmative defenses to liability under CERCLA. These include causation-based defenses, purely procedural defenses, and the "cost-effectiveness" defense. Part VI also considers constitutional challenges to retroactive

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[12] 42 U.S.C. §§ 6901–6987 (1982).

[13] *Id.* §§ 9601–9657 (1982).

application of CERCLA. Part VII discusses CERCLA litigation arising from damage to natural resources. As this discussion of CERCLA was written, proposals for amending the statutory scheme were pending in Congress. Many Parts discuss and evaluate the pending reforms.

Part VIII investigates the relationship of hazardous waste cleanup and compensation claims to insurance and bankruptcy law. In particular, this Part analyzes methods for ensuring that future claimants are represented and are given high priority in bankruptcy proceedings. Part IX discusses common law personal injury actions and addresses problems relating to statutes of limitations and to existing doctrines of liability. Part IX further analyzes the central barrier to tort recovery — proof of causation — from both a medical and a legal perspective. Finally, Part X explores the possibility of implementing an administrative compensation system in order to avoid the difficulties of determining causation and damages and to ensure adequate funds to compensate victims.

II. Background and Theory of Hazardous Waste Control

In the winter of 1980, on the heels of the greatest conservative landslide in a generation,[1] Congress enacted perhaps the most radical environmental statute in American history. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)[2] created an innovative legal and financial apparatus[3] to attack the dangers posed by discharges of hazardous substances into the environment.[4] The courts have enhanced the statute's radicalism

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[1] Congress enacted CERCLA on December 11, 1980, just over one month after Ronald Reagan defeated incumbent President Jimmy Carter in the presidential election. Noting that Congress passed the statute during a "lame duck" administration, former EPA Administrator Douglas M. Costle termed CERCLA's enactment "an extraordinary action." 16 [Current Developments] Env't Rep. (BNA) 7, May 3, 1985.

[2] Pub. L. No. 96-510, 94 Stat. 2767 (1980) (codified at I.R.C. §§ 4611, 4612, 4661, 4662, 4681, 4682; 33 U.S.C. § 1364; 42 U.S.C. §§ 6911, 6911(a), 9601–15, 9631–33, 9641, 9651, 9657; 49 U.S.C. § 11901(h) (1982)).

[3] CERCLA's most notable administrative feature is the "Superfund," a pool of money amassed through legislative appropriations and a variety of taxes on the petroleum, chemical, and waste disposal industries. *See infra* note 35. CERCLA permits the Environmental Protection Agency (EPA) to finance cleanup of hazardous waste sites through the Superfund and to recover the costs of such cleanups in subsequent suits under § 107. To facilitate recovery, CERCLA specifies the parties that may be held liable for cleanup costs and removes some of the common law obstacles to establishment of liability for harm arising from improper disposal of hazardous wastes. *See infra* pp. 1472–73 & nn.38–41.

[4] *See generally* Note, *Personal Injury Hazardous Waste Litigation: A Proposal for Tort Reform*, 10 B.C. Envt'l Aff. L. Rev. 797, 798 & nn.5–8 (1983) (discussing the health implications of the hazardous waste problem). Data on the actual or potential human health costs of improper hazardous waste disposal are scarce. Estimates of the cost of abating the dangers

in subsequent interpretation, finding in its language and legislative history a congressional intent to adopt unusually broad and highly controversial standards of liability.[5]

Despite considerable rhetoric suggesting that a crisis situation exists, the urgency of the hazardous waste problem remains unclear.[6] Moreover, Congress's choice of means to address the problem invites serious scrutiny. The conventional wisdom holds that CERCLA's intent and effect were to make generators, transporters, and disposers of hazardous wastes bear the full social costs of their activities.[7] Yet, whatever the intent of the statute, significant theoretical and practical obstacles stand in the way of achieving this goal. Parties whose activities concededly impose substantial costs on society may nevertheless escape the regulatory net through a number of holes.[8] The effort to impose the costs of hazardous wastes on the parties responsible for creating the hazard is not itself without cost to society: assignment of liability under CERCLA requires enormous enforcement, negotiation, and litigation expenses.[9] This Note addresses the legal issues surrounding the effort to redress the hazardous waste problem, examines their theoretical and practical origins, and suggests possible avenues for reform.

Section A begins this Part with an outline of the historical development of federal hazardous waste law. Section B first presents an evaluative framework for hazardous waste law, introducing the norms of fairness and efficiency. After developing an economic model of the hazardous waste problem, Section B uses it to discuss some of the requirements for an effective governmental response.

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are more common, but they vary widely. The 1980 Act provided for a Superfund of approximately $1.6 billion to clean up approximately 400 sites, anticipating that cleanup efforts be completed within a few years. Proposals for CERCLA's reauthorization have sought funding in the range of $5.5 to $10 billion to clean up as many as 10,000 sites over a far longer period. *See, e.g.*, H.R. REP. NO. 653, 99th Cong., 1st Sess. 54–55 (1985). As Congress has pondered reauthorization, federal agencies have presented new estimates of total direct cleanup costs ranging from $7.6 billion to over $100 billion. *See* W. FRANK & T. ATKESON, SUPERFUND: LITIGATION AND CLEANUP 5 (BNA 1985).

[5] *See, e.g.*, United States v. Reilly Tar & Chem. Corp., 17 Env't Rep. Cas. (BNA) 2110, 2119 (D. Minn. 1980) (stating that "Congress intended that the federal government be immediately given the tools necessary for a prompt and effective response to problems of national magnitude resulting from hazardous waste disposal"). The courts have generally construed the text and legislative history of CERCLA to impose strict, joint, and several liability for dangerous "releases" of hazardous wastes, both prospectively and retroactively. *See generally infra* Part V (presenting and analyzing liability features of CERCLA).

[6] *See supra* p. 1463 & n.10 (discussing comparative magnitude of hazardous waste and other pollution problems.)

[7] *See infra* note 65.

[8] *See, e.g., infra* p. 1483 (discussing opportunities to evade liability through illegal dumping); pp. 1592–94 (discussing opportunities to evade liability through bankruptcy).

[9] *See infra* p. 1479 & n.73.

A. A Brief History of Hazardous Waste Law

Although industries may dispose of the hazardous by-products of their manufacturing processes in a variety of ways, federal and state hazardous waste legislation has focused on disposal of such wastes in storage facilities, in open dumps, or underground.[10] The principal risk presented by land disposal of hazardous wastes is groundwater contamination: significant health hazards arise when dumped or buried wastes seep into groundwater and spread to sources of drinking water or areas of human habitation. Similar hazards arise when leakage from defective landfills or storage facilities contaminates air or surface water and comes directly into contact with individuals. The hazardous waste "problem" discussed here is thus largely, though not entirely, a problem of groundwater contamination.

1. Initial Efforts to Control Groundwater Pollution

The history of legal efforts to control groundwater pollution is short. Before the advent of federal pollution control legislation, the primary vehicle for addressing the problem of groundwater contamination was the common law. The common law treated the problem principally as a potentially tortious invasion of private property rights. Plaintiffs sought compensation from polluters through the common law actions of trespass, nuisance, and negligence. Litigation of such claims continues today. For a variety of reasons, however, common law actions have proven inadequate to compensate hazardous waste victims and to promote responsible hazardous waste management.[11]

The need for collective action by pollution victims is a major obstacle to controlling pollution through the common law. In the typical case, the harms inflicted by the polluter affect large numbers of residents in a localized area. Because each victim's share of the aggregate harm is small relative to the costs of litigation, no single victim finds pursuit of either damages or injunctive relief a worthwhile investment. Although society as a whole might benefit from abatement of the pollution or compensation of its victims, only collective action by those harmed will bring this benefit to pass. Collective

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[10] Disposal of hazardous wastes into air or navigable ("surface") water generally falls under the aegis of other federal pollution control legislation. For instance, hazardous air pollutants are regulated under a provision of the Clean Air Act, 42 U.S.C. § 7412 (1982). Similarly, the Federal Water Pollution Control Act, 33 U.S.C. §§ 1251–1376 (1982), regulates the discharge of toxic pollutants into water. *See* 33 U.S.C. § 1317(d). In addition, a variety of federal statutes authorize criminal sanctions for the discharge of hazardous wastes into improper media or at improper locations. *See generally* Riesel, *Criminal Prosecution and Defense of Environmental Wrongs*, 15 ENVT'L. L. REP. (ENVT'L. L. INST.) 10,065, 10,069–10,071 (Mar. 1985) (describing the criminal sanctions available under various federal pollution control statutes).

[11] *See infra* Part IX (discussing inadequacy of common law tort actions to redress injuries of hazardous waste victims).

action, however, is unlikely to occur. Under current law, courts are often reluctant to certify class actions by plaintiff classes whose members vary significantly with respect to the types and magnitudes of harms they have suffered.[12] Such variation is common where improper disposal of hazardous substances has inflicted harm upon numerous residents of the surrounding area. Attorneys consequently have little incentive to organize groups of pollution victims to pursue class actions. Even when class certification is likely, attorneys have little incentive to organize and bring class actions if the claim is for injunctive relief alone. First, courts are reluctant to award fees when there is no damage award.[13] Second, because individual victims realize that they will benefit from class actions even if they do not help to pay for them, they tend not to join groups formed to finance actions for injunctive relief.[14] Thus, reliance on common law actions results in overpollution: pollution victims fail to pursue collective redress for their harms and, consequently, polluters do not bear the costs that their pollution imposes on society.[15]

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[12] *See* Note, *The Manville Bankruptcy: Treating Mass Tort Claims in Chapter 11 Proceedings* 96 HARV. L. REV. 1121, 1134–1136 (1983); *infra* p. 1623 & nn.114–16 (discussing obstacles to successful class action litigation of hazardous waste claims).

[13] *See Developments in the Law — Class Actions*, 89 HARV. L. REV. 1318, 1606–07 & nn.127, 128 (1976). In Alyeska Pipeline Serv. v. Wilderness Soc'y, 421 U.S. 240 (1975), the Supreme Court held that, absent congressional authorization, federal courts may not require unsuccessful defendants to pay the attorneys' fees of parties performing the services of a "private attorney general." Although the Court acknowledged the possibility that it might assess attorneys' fees against members of the victorious plaintiff class under a "common fund" principle, it noted that such assessments are appropriate only when the benefits of the litigation can be "traced with some accuracy, and there [is] reason for confidence that the costs could indeed be shifted with some exactitude to those benefiting." *Id.* at 264 n.40. These conditions often will not obtain in litigation for injunctive relief by hazardous waste victims, because hazardous waste sites frequently pose indeterminate risks to indefinite numbers of victims.

[14] For a concise explanation of such "free rider" problems see E. STOKEY & R. ZECKHAUSER, A PRIMER FOR POLICY ANALYSIS 315 (1978). This free rider problem arises only when the relief sought through litigation has the character of a public good — that is, when the litigant cannot exclude other pollution victims from sharing in the benefits of the remedy. Thus, plaintiffs in individual damage actions are not afflicted with the free rider problem. Because victims will not expect others to litigate for damages on their behalf, they will sue for damages only when they expect to recover more than the cost of litigation. But plaintiffs in actions for injunctive relief will encounter free rider problems. Indeed, pollution victims will tend not to litigate for injunctive relief even when investment in litigation would yield a net benefit to the litigant, reasoning that a higher net benefit could be obtained by waiting for some other victim to assume the cost of litigating.

[15] Below, this Part discusses certain federal statutes creating regulatory schemes that have largely supplanted traditional common law actions. In principle, procedural reforms removing legal obstacles that currently hinder collective legal action by pollution victims might achieve many of the results sought by these statutes. For instance, more lenient class certification rules would provide individual attorneys with greater financial incentives to sue on behalf of large classes of victims. *See, e.g.*, Rosenberg, *The Causal Connection in Mass Exposure Cases: A 'Public Law' Vision of the Tort System*, 97 HARV. L. REV. 849, 908–916 (1984).

The shortcomings of the common law as a pollution control system attracted little attention through the first half of the twentieth century. But the postwar explosion of American industry brought increased use of the environment as a dumping ground for industrial by-products. As public disgust with brown skies and befouled waters mounted in the 1950s and 1960s, legal commentators increasingly criticized the common law remedies for pollution.[16] A trickle of federal air and water pollution control statutes in the 1950s swelled to a torrent in the 1960s.[17] These statutes used a variety of regulatory methods to alleviate the aesthetic and public health costs of pollution.

Throughout this initial flood of environmental legislation, the problems posed by improper disposal of hazardous wastes remained something of a backwater.[18] Several factors may have accounted for this legislative inactivity. First, although the naked eye can often detect air and surface water pollution, detection of groundwater contamination requires sophisticated monitoring and water quality analysis. Much of the technology required to detect minute amounts of chemical contaminants in groundwater has developed only recently.[19] Second, the epidemiological data needed to establish causal relationships between exposure to such contaminants and impairment of human health has accumulated slowly; indeed, it continues to accumulate slowly

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[16] Early commentators seem to have focused primarily on the common law's failure to control water pollution. *See, e.g.*, Note, *Rights and Remedies in the Law of Stream Pollution*, 35 VA. L. REV. 774 (1949); Note, *Stream Pollution–Recovery of Damages*, 50 IOWA L. REV. 141 (1964); Note, *A Survey of Common Law Remedies for Stream Pollution in New York*, 10 BUFFALO L. REV. 484 (1961).

[17] The most notable of the federal pollution control statutes passed in the 1950s was the Clean Air Act of 1955, ch. 360, 69 Stat. 322 (1955) (codified as amended at 42 U.S.C. §§ 7401–7642 (1982)). During the 1960s, this statute was amended by the Clean Air Act 1963, Pub. L. No. 88-206, 77 Stat. 392; the National Emissions Standards Act of 1965, Pub. L. No. 89-272, 79 Stat. 992; the Clean Air Act Amendments of 1966, Pub. L. No. 98-675, 80 Stat. 954; and the Air Quality Act of 1967, Pub. L. No. 90-148, 81 Stat. 485. Federal water pollution statutes of the 1960s included the Federal Water Pollution Control (Clean Water) Act Amendments of 1960, Pub. L. No. 86-624, 74 Stat. 411; 1961, Pub. L. No. 87-88, 75 Stat. 204; 1965, Pub. L. No. 89-234, 79 Stat. 903; and 1966, Pub. L. No. 89-753, 80 Stat. 1246. These statutes were superseded by the Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816 (codified as amended at 33 U.S.C. §§ 1251–1376 (1982)).

[18] Concurrent with its enactment of various air and water pollution control statutes, Congress also adopted statutes addressed to land disposal of solid wastes. *See* Resource Recovery Act of 1970, Pub. L. No. 91-512, 84 Stat. 1227 (codified as amended at 42 U.S.C. §§ 6901–6987 (1982)); Solid Waste Disposal Act, Pub. L. No. 89-272, tit. II, 79 Stat. 992 (1965) (codified as amended at 42 U.S.C. §§ 6901–6987 (1982)). These statutes sought primarily to restrict unsightly and unsanitary refuse dumping and to promote recycling of waste materials. They neither recognized nor addressed problems caused by improper hazardous waste disposal.

[19] *See* 1 OFFICE OF TECHNOLOGY ASSESSMENT, PROTECTING THE NATION'S GROUNDWATER FROM CONTAMINATION 127 (OTA-0-233, 1984) (asserting that the past decade has seen significant technological advances in detection of groundwater contaminants at progressively smaller concentrations).

today, even though its value is now clearly recognized.[20] Finally, because groundwater contamination is largely invisible, appreciation of its costs requires some measure of education. The public's failure to appreciate the gravity of the situation surely slowed development of a political constituency for groundwater pollution control legislation.

As evidence of the risks attending improper disposal of hazardous wastes accumulated throughout the 1960s and 1970s, the pressure for legislative action grew. Congress first addressed the problem in enacting the Safe Drinking Water Act of 1974,[21] which authorized the Environmental Protection Agency (EPA) to develop drinking water standards to guard against consumption of contaminated groundwater. The Act also established a regulatory system to ensure compliance with the EPA standards and to promote safer siting and construction of water storage and delivery systems. Finally, the Act instructed the EPA to develop guidelines for state regulation of underground injection of hazardous wastes.[22] But these measures quickly proved inadequate to resolve the hazardous waste problem. In focusing on improvement of the water coming out of public drinking water supply systems, the Act did little to protect the public against harm from contaminated groundwater caused by means other than ingestion. Moreover, the Act failed to address unsafe means of hazardous waste disposal other than underground injection. These and other shortcomings were taken up by Congress when it considered both the Resource Conservation and Recovery Act of 1976 (RCRA)[23] and CERCLA.

2. Hazardous Waste Control Under RCRA and CERCLA

In 1976, Congress finally addressed the hazardous waste problem squarely by enacting RCRA. Although RCRA instituted "cradle-to-

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[20] *See infra* Subsection 1 of Section C of Part IX. (discussing uses of epidemiological data to establish causation). To help in the task of cumulating data on the health effects of hazardous wastes, Congress provided in CERCLA for establishment within the Public Health Service of an Agency for Toxic Substances and Disease Registry. *See* CERCLA § 104(i), 42 U.S.C. § 9604(i) (1982). The statutory functions of the Agency include establishment and maintenance of an "inventory of literature, research, and studies on the health effects of toxic substances," CERCLA § 104(i)(2), 42 U.S.C. § 9604(i)(2), and performance of "survey and screening programs to determine relationships between exposure to toxic substances and illness." CERCLA § 104(i)(5), 42 U.S.C. § 9604(i)(5). The Reagan administration provoked litigation when it declined to put this provision of CERCLA into effect. Implementation is now proceeding under terms of a consent decree. *See* Envt'l Def. Fund, Inc. v. Heckler, 13 ENVT'L. L. REP. (ENVT'L. L. INST.) 20,630 (D.D.C. 1983).

[21] Pub. L. No. 93-523, 88 Stat. 1660 (codified at 42 U.S.C. §§ 300f–300j (1982)).

[22] *See* H.R. REP. NO. 1185, 93d Cong., 2d Sess. 2, *reprinted in* 1974 U.S. CODE CONG. & AD. NEWS 6454, 6454–55.

[23] Pub. L. No. 94-580, 90 Stat. 2795 (codified at 42 U.S.C. §§ 6901–6907, 6911–6916, 6921–6931, 6941–6949, 6951–6954, 6961–6964, 6971–6979, 6981–6986) (1982)).

grave" tracking of hazardous wastes through the production cycle from creation to disposal, it failed to address problems created by improper disposal of hazardous wastes prior to enactment of the statute. In the late 1970s, however, eruption of the Love Canal incident in the public media[24] forced Congress to address these gaps in the regulatory scheme. Congress responded by enacting CERCLA, thus completing the current statutory framework of federal hazardous waste law.

(a) Key Features of the Federal Regulatory Regime. — RCRA and CERCLA together provide extensive regulation of the generation, transportation, storage, disposal, and cleanup of hazardous wastes. RCRA requires the EPA to identify and maintain a list of hazardous wastes.[25] Wastes so identified may be stored or disposed of only at sites whose operators have satisfied relevant EPA regulations[26] and obtained special operating permits.[27] Generators of listed wastes must keep records "that accurately identify the quantities of . . . hazardous waste,"[28] and they must store, transport, or dispose of such wastes only in appropriate, carefully labeled containers.[29] RCRA further requires generators to inform transporters, storers, and disposers of the hazardous character of their wastes.[30] The Act imposes similar obligations on hazardous waste transporters, who must ship only properly labeled wastes[31] and must record both the source and delivery points of the wastes they transport.[32] Finally, RCRA requires both generators and transporters to report to federal or state authorities the types and quantities of wastes they generate, transport, and dispose.[33] In theory, this reporting system ("the manifest system") provides regulatory authorities with the ability to track hazardous wastes through all phases of the production cycle. For failure to comply with these requirements, RCRA authorizes both civil and criminal penalties.[34]

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[24] National media coverage of the problems at Love Canal began on August 2, 1978, with reports on *CBS News* and in the *New York Times*. *See* N.Y. Times, Aug. 2, 1978, at A1, col. 1.

[25] *See* RCRA § 3001, 42 U.S.C. § 6921 (1982).

[26] *See id.* § 3004, 42 U.S.C. § 6924 (1982).

[27] *See id.* § 3005, 42 U.S.C. § 6925 (1982).

[28] *Id.* § 3002(1), 42 U.S.C. § 6922(1) (1982).

[29] *See id.* § 3002(2)–(3), 42 U.S.C. § 6922(2)–(3) (1982).

[30] *See id.* § 3002(4), 42 U.S.C. § 6922(4) (1982).

[31] *See id.* § 3003(a)(2), 42 U.S.C. § 6923(a)(2) (1982).

[32] *See id.* § 3003(a)(1), 42 U.S.C. § 6923(a)(1) (1982).

[33] *See id.* §§ 3002(6), 3003(a)(3), 42 U.S.C. §§ 6922(6), 6923(a)(3) (1982).

[34] Section 3008(a) of RCRA, 42 U.S.C. § 6928(a) (1982), authorizes the EPA Administrator to give notice to and order compliance by any person who violates the Act. If the violator fails to take corrective action within 30 days of receiving such notice, § 3008(a)(3) authorizes civil penalties of up to $25,000 for each day of noncompliance. Section 3008(d), 42 U.S.C. § 6928(d) (1982), authorizes criminal penalties, including both fines and imprisonment, for knowingly (1) transporting hazardous wastes to any facility which does not have a permit under § 3005; (2)

To redress the problems engendered by leaking waste sites, CERCLA established a fund (the "Superfund")[35] to pay for cleaning up these sites. CERCLA requires the EPA, in cooperation with state government authorities, to develop means of discovering and cleaning up dangerous waste sites.[36] It requires further that the EPA compile a National Priority List (NPL) of hazardous waste sites in need of remedial action.[37] The EPA may prompt cleanup of these sites by ordering the parties responsible for the sites to undertake remedial measures.[38] Alternatively, the EPA may undertake remedial measures itself,[39] finance the cleanup through the Superfund, and later sue the

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disposing of wastes identified by the EPA as hazardous under § 3001 without having obtained an appropriate permit; or (3) making false statements in any applications or other documentation required by the statute.

[35] CERCLA actually establishes two funds. Section 232 of CERCLA, 42 U.S.C. § 9641 (1982), establishes a "Post-closure Liability Trust Fund," which finances cleanups at hazardous waste sites that have been closed pursuant to CERCLA regulations. *See* CERCLA §§ 107(k), 111(j), 42 U.S.C. §§ 9607(k), 9611(j) (1982). Monies for the Post-Closure Liability Trust Fund initially came from a tax on hazardous wastes received at qualified hazardous waste disposal facilities. *See id.* § 231, 26 U.S.C. § 4681 (1982). Section 221 of CERCLA, 42 U.S.C. § 9631 (1982), establishes the "Hazardous Substance Response Trust Fund," commonly known as the Superfund. This fund is used to finance all other remedial actions authorized by CERCLA. *See id.* § 111(a), 42 U.S.C. § 9611 (1982). Of initial Superfund monies, 87.5% came from special taxes on petroleum and certain chemicals, *see id.* § 211(a), 26 U.S.C. §§ 4611–12, 4661–62 (1982), and 12.5% came from general revenue appropriations, *see id.* § 221(b)(2), 42 U.S.C. § 9631(b)(2) (1982).

[36] *See id.* § 105(1)–(2), 42 U.S.C. 9605(1)–(2) (1982). In determining whether a site is dangerous, CERCLA instructs the EPA to consider whether there has been a "release" of a "hazardous substance," or whether such a release appears imminent. CERCLA defines a "release" generally as "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." *Id.* §101(22), 42 U.S.C. § 9601(22) (1982). The term "hazardous substance" is defined in § 101(14) of CERCLA, 42 U.S.C. § 9601(14) (1982), to include substances defined as hazardous by several earlier federal pollution control statutes as well as substances with respect to which the EPA Administrator has taken action pursuant to § 7 of the Toxic Substances Control Act, 15 U.S.C. § 2606 (1982). CERCLA thus applies to a somewhat larger set of hazards than does RCRA. *See* RCRA § 3001, 42 U.S.C. § 6921 (1982). In addition, CERCLA requires the EPA Administrator to designate any additional hazardous substances that "when released into the environment may present substantial danger to the public health or welfare or the environment." CERCLA § 102(a), 42 U.S.C. § 9602(a) (1982).

[37] *See* CERCLA § 105(8), 42 U.S.C. § 9605(8) (1982). The NPL is part of the National Contingency Plan (NCP) required by CERCLA § 105, 42 U.S.C. § 9605 (1982).

[38] CERCLA authorizes the President to require the Attorney General to secure relief necessary to abate "imminent and substantial" dangers "to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from a facility." CERCLA § 106, 42 U.S.C. § 9606 (1982). In addition, the statute authorizes the President to issue "such orders as may be necessary to protect public health and welfare and the environment," *id.*, and authorizes civil fines not to exceed $5,000 per day for failure to comply with such orders. *See id.*

[39] After a site is placed on the NPL, cleanup proceeds in four steps. First, the EPA develops a plan for collecting information on the type and extent of contamination at the site. Second, it collects the information. Third, it studies the feasibility and cost-effectiveness of alternative

responsible parties for reimbursement.[40] The Act sets forth four classes of "responsible parties," including past and present operators of hazardous waste disposal facilities, and generators and transporters of hazardous substances.[41]

(b) Implementation of RCRA and CERCLA. — RCRA and CERCLA fit squarely within the "agency-forcing" tradition that has characterized federal pollution control legislation since the late 1960s.[42] Air, surface water, and solid waste statutes have quite specifically spelled out for the implementing agencies not only the activities to be regulated, but also the mode of regulation and timetables for both agency performance and industry compliance.[43] Under these statutes, agencies typically retain primary responsibility only for setting standards and implementing enforcement strategies.[44] Both RCRA and CERCLA, as well as the RCRA Amendments of 1984,[45] spell out in definite terms Congress's mandate on the hazardous waste problem.[46]

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remedial measures. Finally, it implements the remedial measure chosen. *See* U.S. GEN. ACCOUNTING OFF., STATUS OF EPA'S REMEDIAL CLEANUP EFFORTS 3 (RCED-85-86) (Mar. 20, 1985).

[40] Section 111(a) of the Act allows the President to expend Superfund monies to undertake remedial action pursuant to CERCLA § 104(a)(1), 42 U.S.C. § 9604(a)(1). Section 104(b) authorizes the President to take legal action to recover the costs of such measures. *See id.* §§ 104(b), 111(a), 42 U.S.C. §§ 9604(b), 9611(a) (1982).

[41] Section 107(a) of CERCLA defines "responsible parties" to include present and past owners or operators of waste disposal facilities, generators of hazardous substances, and those who transport hazardous substances for disposal. *See* 42 U.S.C. § 9607(a) (1982); *infra* Section A of Part IV.

[42] Use of the term "agency-forcing" to describe statutes that give unusually strong guidance to implementing agencies apparently originated with Professor Ackerman, who employed it to describe the Clean Air Act Amendments of 1970. *See* B. ACKERMAN & W. HASSLER, CLEAN COAL/DIRTY AIR 3, 8–10 (1981).

[43] Commentators have made much of the extent to which the major federal pollution control statutes have departed in form from New Deal social legislation. *See, e.g., id.* at 1–12; R. MELNICK, REGULATION AND THE COURTS: THE CASE OF THE CLEAN AIR ACT 1–23 (1982). Traditional New Deal legislation typically suggested only the general outlines of federal policy, leaving to the implementing agencies the tasks of establishing detailed policies and regulations on their own timetables. By the 1960s, this approach had come under broad attack, especially for promoting "capture" of the regulating authorities by the industries regulated and thereby subverting Congress' regulatory motive. *Cf.* B. ACKERMAN & W. HASSLER, *supra* note 42, at 8 (discussing domination of state regulatory agencies by regulated industries). Perhaps in response to such criticism, Congress took a much more active role in formulating federal pollution control statutes.

[44] Congress has occasionally attempted to force progress on its regulatory agenda by establishing private rights of action to supplement agency enforcement. *See, e.g.*, Clean Air Act Amendments of 1970 § 12(a), 42 U.S.C. § 7604 (1982) (establishing a private right of action to enforce certain provisions of the Clean Air Act); Federal Water Pollution Control Act Amendments of 1972 § 2, 33 U.S.C. § 1365 (1982) (establishing private rights of action to enforce certain provisions of the Federal Water Pollution Control Act).

[45] Hazardous and Solid Waste Amendments of 1984, Pub. L. No. 98-616, 98 Stat. 3221 (codified at 42 U.S.C. §§ 6901–6991 (1985 Supp.)).

[46] Both RCRA and CERCLA provided specific timetables for EPA implementation of their

Despite Congress's directives, however, EPA implementation of the federal hazardous waste statutes has had a tortured history. Cleanup of hazardous waste sites has proceeded slowly.[47] The EPA has failed to meet its statutory deadlines,[48] and Congress has severely criticized EPA regulations and policy under both RCRA and CERCLA.[49] Several causes account for these problems, including the intrusion of partisan politics into Agency operations,[50] the inadequacy of Agency resources, and the magnitude of the Agency's task.[51] These recurring difficulties have raised doubts about the viability of agency-

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regulatory directives. For example, RCRA required the EPA to promulgate, within 18 months of RCRA's enactment, criteria for identifying hazardous waste and safety standards applicable to hazardous waste generators, transporters, and owners and operators of hazardous waste disposal facilities. *See* RCRA §§ 3001–3004, 42 U.S.C. §§ 6921–6924 (1982). Similarly, CERCLA mandated EPA preparation and publication of an NCP for oil and hazardous waste removal within 180 days of CERCLA's enactment. *See* CERCLA § 105, 42 U.S.C. § 9605 (1982). To ensure that its hazardous waste agenda would not founder on the shoals of agency inertia, Congress also provided in RCRA for citizen suits to supplement agency enforcement efforts. *See* RCRA § 7002, 42 U.S.C. § 6972 (1982).

[47] Of the 538 sites the EPA had placed on the NPL by the end of 1984, cleanup had been completed at only 10. Cleanup actions were either approved or underway at 104 sites (19%), while the EPA was studying alternatives for an additional 236 sites (44%). No action had been taken with respect to the remaining 194 sites (36%). *See* U.S. GEN. ACCOUNTING OFF., *supra* note 39, at 2–3. At the same time, the EPA had proposed to add 248 additional sites to the NPL. *See id.* The EPA's progress in placing sites on the NPL is itself a source of concern; according to some estimates, the number of sites requiring remedial action under CERCLA is an order of magnitude greater than the number on the list. *See supra* note 4.

[48] *See, e.g.*, Envt'l Defense Fund, Inc. v. Gorsuch, 17 Env't Rep. Cas. (BNA) 1099, 1102 (D.D.C. 1982) (requiring EPA promulgation of the NCP and publication of emergency guidelines under CERCLA §§ 105 and 106).

[49] *See* H.R. REP. NO. 198, pt. 1, 98th Cong., 2d Sess. 19–20, 34, *reprinted in* 1984 U.S. CODE CONG. & AD. NEWS 5576, 5578–79, 5593 (criticizing the EPA's slow progress in issuing waste facility permits under RCRA, terming the Agency's enforcement efforts "inadequate," and noting that the EPA "has not been able to comply with past statutory mandates and timetables, not just for RCRA, but for virtually all of its programs"); *Superfund Amendments of 1985: Separate & Dissenting Views*, H.R. REP. NO. 253, pt. 1, 99th Cong., 1st Sess. 257 (1985) (dissenting views) (terming cleanup efforts under CERCLA "tragically disappointing and ineffective" and placing responsibility, in part, upon the EPA's "propensity to let private parties escape their fair legal liability for the damages caused by Superfund sites").

[50] The EPA's implementation of CERCLA created a major political scandal during President Reagan's first term. This scandal lead to the firing of Rita Lavelle, the EPA's Associate Administrator for Hazardous Waste, and the resignation of EPA Administrator Anne Burford. *See* N.Y. Times, Mar. 10, 1983, at A1, col. 6. Ms. Lavelle was subsequently tried and convicted of both criminal perjury and impeding Congressional investigations of hazardous waste programs. *See* N.Y. Times, Dec. 2, 1983, at A1, col. 1.

[51] One committee report on the proposed CERCLA amendments recently passed by the House observed:

> The resources given to EPA were simply inadequate to fulfill the promises that were made to clean up abandoned hazardous wastes in this country. With political pressure on EPA to treat every site discovered as a high priority, EPA was virtually guaranteed to fail from the moment CERCLA passed in 1980.

H.R. REP. NO. 253, pt. 1, 99th Cong., 1st Sess. 55 (1985).

forcing as an approach to environmental legislation, leading some to call for increased administrative discretion.[52]

(c) State Programs in Aid of Federal Hazardous Waste Law. — Despite the difficulties that have plagued their implementation at the federal level, RCRA and CERCLA have spawned extensive state government efforts to regulate hazardous waste management and to clean up dangerous disposal sites. Both RCRA and CERCLA rely heavily upon the administrative and financial cooperation of state governments and provide strong incentives for states to develop complementary regulatory schemes for hazardous waste management and cleanup. RCRA specifically authorizes enforcement of its provisions by state or regional agencies.[53] It instructs the EPA to develop guidelines for state enforcement programs[54] and authorizes expenditure of federal monies in support of such programs.[55] CERCLA requires states to shoulder the burden of monitoring and maintaining sites following cleanup. It further requires them to pay 10% of the costs of remedial action at sites that were privately owned when wastes were deposited there and 50% of the costs at sites that were publicly owned.[56]

These features of the federal statutory scheme have evoked considerable response from the states. Many states have enacted hazardous waste management statutes with features similar to those of RCRA.[57] State authorities now have substantial responsibility for

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[52] One House committee report on CERCLA reauthorization noted:

> If the new law was overly detailed and restricted in its prescription of how the agency should operate Superfund, it would almost surely doom the program to future failures. . . .
>
> Unrealistic time schedules, standards impossible to enforce, and program requirements that exceed funding are all problems established by the investigation of the Oversight and Investigations Subcommittee as contributing to the appalling failures of EPA in the past.

Id. at 55–56. Such sentiments represent a substantial shift from those prevailing in Congress during consideration of the RCRA Amendments of 1984. Perhaps irritated by EPA mismanagement of the federal hazardous waste programs, Congress imposed harsh discipline on the Agency in enacting the RCRA amendments. Some of the amendments take the extreme agency-forcing posture of mandating a particular, severe result unless the EPA takes specific action before a particular date. *See, e.g.*, Hazardous and Solid Waste Amendments of 1984, § 201(a) (codified at 42 U.S.C.A. § 6924(d)(1) (Supp. 1985)) (prohibiting all underground injection of hazardous wastes unless the EPA Administrator determines within 32 months that prohibition of one or more methods of injection is not required to protect human health or the environment).

[53] *See* RCRA §§ 1005(a), 3006(b), 42 U.S.C. §§ 6904(a), 6926(b) (1982).

[54] *See id.* § 3006(a), 42 U.S.C. § 6926 (1982).

[55] *See id.* § 3011(a), 42 U.S.C. § 6931(a) (1982 & Supp. 1985).

[56] *See* CERCLA § 104(c)(3), 42 U.S.C. § 9604(c)(3) (1982).

[57] *See, e.g.*, ALA. CODE §§ 22-30-1 to -30-24 (Michie 1984 & Supp. 1985); ARIZ. REV. STAT. ANN. §§ 36-2801 to 36-2827 (West 1974 & 1985 Supp.); IDAHO CODE §§ 39-4401 to -4432 (Michie 1985); IOWA CODE §§ 455B.411 to .455 (West 1971 & Supp. 1985); KAN. STAT. ANN. §§ 65-3430 to -3472 (1985).

enforcement of federal hazardous waste regulations.[58] Additionally, either as part of their waste management statutes or separately, many states have passed legislation that resembles CERCLA. These statutes vary considerably in form, content, and detail, but typically establish special funds to finance cleanup of hazardous waste sites and authorize state-initiated litigation to recover monies expended by the funds.[59] Like their federal counterparts, however, many of the state programs have encountered difficulties in implementation and enforcement.[60]

Unlike RCRA, however, CERCLA contains no provision for delegation of enforcement or regulatory authority to the states. Indeed, the Supreme Court has recently ruled that CERCLA is at least partially preemptive of state legislation. In *Exxon Corp. v. Hunt*,[61] the Court struck down a New Jersey statute requiring petroleum and chemical facilities to contribute to a "Spill Fund" intended in part to finance cleanup of releases of hazardous substances. The Court held that the Spill Fund was preempted by CERCLA § 114(c), which prohibits states from requiring contributions to any fund intended "to pay compensation for claims for any costs of response or damages or claims which may be compensated under [CERCLA]."[62] The Court indicated, however, that it found no obstacle to state legislation establishing similar funds to finance the state contributions to federal response costs required by CERCLA section 104(c)(3).[63] As a result of this decision, many of the state statutes that parallel CERCLA will require revision.[64]

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[58] RCRA § 3006 provides that the EPA may authorize state authorities to operate their own enforcement programs, supplanting federal enforcement. *See* 42 U.S.C. § 6926 (1982). As of August, 1985, the EPA had granted final authorization to the enforcement programs of 25 states and the District of Columbia. *See List of States with Final Authorization for Hazardous Waste Management Programs*, [State Solid Waste — Land Use Laws] ENV'T REP. (BNA) 1001:0061 (1985).

[59] *See, e.g.*, COLO. REV. STAT. §§ 25-16-101 to -201 (Bradford Pub. Co. 1982 & Supp. 1986); IDAHO CODE §§ 39-4417, -4417B (Michie 1985); IOWA CODE ANN. §§ 455B.381–.399, 455B.423–.432 (West 1971 & Supp. 1985); KAN. STAT. ANN. § 65-3431 (1985).

[60] Much of the problem may lie in inadequate staffing and funding. A survey of 23 states by the Maryland Department of Health & Mental Hygiene found that "current staff size is still only 62% of estimated needs to implement the *current* 1980 federal program. This does not take into account staffing needs brought about by statutory changes to CERCLA." W. Eichbaum, *CERCLA Implementation — General State Perspective*, in ALI, HAZARDOUS WASTES, SUPERFUND, AND TOXIC SUBSTANCES 3, 4 (1985) (emphasis in original). *See also infra* p. 1483 (noting that state authorities find vigorous enforcement efforts impractical). Given the current budget difficulties of both state and federal governments, it is difficult to imagine that substantial funding increases will occur any time in the near future.

[61] 106 S. Ct. 1103 (1986).

[62] CERCLA § 114(c), 42 U.S.C. § 9614(c) (1982).

[63] *See Exxon*, 106 S. Ct. at 1116. The state contributions required by CERCLA are described *supra* p. 1475.

[64] The extent of the revision required will vary from state to state, depending on each state's legislation and state law with respect to severability. In *Exxon*, the Court remanded to the

B. An Evaluative Framework for Federal Hazardous Waste Legislation

Criticism of Congress's response to the hazardous waste problem has come from many quarters and in various forms. By far the most influential criticism has come from environmental economists and policy analysts. These commentators have roundly criticized federal pollution control schemes as administratively burdensome, economically inefficient, and grossly inequitable. This Section presents a simple outline of the evaluative framework from which such criticisms proceed.

1. The Concepts of Fairness and Efficiency

Two concepts of critical importance to an analysis of federal hazardous waste statutes and regulations are the norms of fairness and efficiency. The following analysis employs the term "fairness" to mean corrective justice. Thus, one would say it is "unfair" for A to benefit at B's expense, even though A means no harm. The law can restore fairness by forcing A to compensate B for his losses. Although other principles of fairness abound and may even explain certain features of federal hazardous waste law, courts and commentators appear unanimous in reading CERCLA's conception of fairness as rooted in the principle of corrective justice. This notion is frequently capsulized in the maxim "make the polluter pay," which requires the parties responsible for hazardous waste pollution to compensate the innocent victims of such pollution for their injuries.[65]

The concept of economic efficiency is used in this Note to identify opportunities to improve society's aggregate welfare either by reallocating resources directly or by reordering incentives to achieve reallocation.[66] The norm of efficiency dictates that the primary goal of hazardous waste law should be to minimize the total costs that haz-

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New Jersey Supreme Court the question "whether, or to what extent, the nonpre-empted provisions of the statute are severable from the pre-empted provisions." 106 S. Ct. at 1116.

[65] *See, e.g.*, United States v. Reilly Tar & Chem. Corp., 546 F. Supp. 1100, 1112 (D. Minn. 1982) ("Congress intended that those responsible for problems caused by the disposal of chemical poisons bear the costs and responsibility for remedying the harmful conditions they created."); City of Philadelphia v. Stepan Chem. Co., 544 F. Supp. 1135, 1142–43 (E.D. Pa. 1982) (CERCLA was designed to "plac[e] the ultimate financial burden [of cleanup] upon those responsible for the danger"). Indeed, a goal of corrective justice is arguably implicit in CERCLA's occasional use of the term "responsible" to designate the parties whom CERCLA makes liable for hazardous waste releases. For examples of this terminology, see CERCLA §§ 107(c)(1)–(2), 42 U.S.C. §§ 9607(c)(1)–(2) (1982).

[66] In comparing existing resource allocations with hypothetical reallocations, this analysis uses the so-called "Kaldor-Hicks criterion," which states that reallocation is the desirable alternative if those who benefit from it could in principle use their gains to fully compensate those who lose. For a concise explanation and discussion of the Kaldor-Hicks criterion, see E. STOKEY & R. ZECKHAUSER, note 14 above, at 279–80.

ardous wastes impose on society, thus freeing societal resources for additional consumption or production. To accomplish this goal, the law should provide incentives for generators and transporters of hazardous waste, as well as for waste site operators and members of the public, to behave in a manner that minimizes the long-term costs of managing generated wastes. The law may effect this policy by rewarding those who act correctly, by penalizing those who act incorrectly, or by some combination of rewards and penalties.[67]

The use of fairness and efficiency as evaluative criteria is appropriate for two reasons. First, the concepts are fundamental to the economic theory of social choice among policy alternatives.[68] Consequently, they pervade the literature of environmental policy in general and hazardous waste policy in particular. More importantly, the legislative histories of both RCRA and CERCLA suggest the relevance of these concepts. In enacting these statutes, Congress evinced clear interests both in minimizing the costs that hazardous wastes impose on society (an efficiency goal)[69] and in reallocating those costs toward the parties responsible for them and away from innocent victims (a fairness goal).[70]

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[67] Of course, the effectiveness of any system of rewards and penalties depends upon the assumption that economic actors behave rationally with respect to probabilities of future harm or liability. Efficient behavior demands that members of society invest in risk-reduction measures up to the point at which the cost of reducing risk by an additional unit exceeds the present cost of the additional unit of risk it would eliminate. This result can occur only if members of society have complete information and use it to calculate accurately their expected harms or liabilities. If society's members either exaggerate or underestimate the magnitude or probability of eventual harm from or liability for improper waste management, the social costs of waste management rise.

[68] For a nontechnical introduction to use of the efficiency and fairness concepts in choosing among alternative public policies, see A. OKUN, EQUALITY AND EFFICIENCY: THE BIG TRADEOFF (1975). *See also* C. SCHULTZE, THE PUBLIC USE OF PRIVATE INTEREST 67–76 (1977) (discussing the interplay of equity and efficiency in public policy-making). For a more technical, less extensive introduction, see W. NICHOLSON, MICROECONOMIC THEORY: BASIC PRINCIPLES AND EXTENSIONS 727–34 (1985).

[69] Statements in the legislative history of CERCLA suggest congressional interest in minimizing the societal costs of hazardous wastes. *See, e.g.*, H.R. REP. NO. 1016, pt. I, 96th Cong., 2d. Sess. 20, *reprinted in* 1980 U.S. CODE. CONG. & AD. NEWS 6119, 6123 (stating that "[t]he failure to properly dispose of hazardous waste is costing the public millions and the cost of cleanup is far more expensive than proper disposal in the first place"). Although it lacks explicit comparisons of the respective costs of improper waste disposal and regulation, RCRA's legislative history contains many suggestions of congressional concern with the excessive health and environmental costs of improper waste disposal. *See, e.g.*, H.R. REP. NO. 1491, pt. I, 94th Cong., 2d Sess. 11, *reprinted in* 1976 U.S. CODE. CONG. & AD. NEWS. 6238, 6249 (describing the potential harms to groundwater supplies, agriculture, and the environment that can result from improper disposal).

[70] The manifest injustice of injuries suffered by residents of the Love Canal area provided the final impetus for congressional enactment of CERCLA in 1986. *See supra* note 24; *cf.* H.R. REP. NO. 1491, pt. I, *supra* note 69, at 17–24, *reprinted in* 1976 U.S. CODE CONG. & AD. NEWS 6254–6261 (illustrating the dangers of improper disposal by listing examples of damage it has caused).

Although fairness and efficiency are distinct and potentially contradictory concepts, in application they often point to the same result — especially when the standard of fairness is corrective justice.[71] Thus, at least in the general case, both norms support legal efforts to allocate the social costs of hazardous wastes to responsible parties. From an efficiency standpoint, such allocation forces responsible parties to internalize the social costs of their activities and thereby subjects hazardous waste production and dispersion to market constraints. At the same time, it seems fair to saddle with liability those who benefit from activities that impose costs on the rest of society.

On the other hand, fairness and efficiency are not wholly compatible ends. Efforts to allocate the social costs of hazardous wastes to the parties who in fairness deserve to bear them may frustrate the efficiency goal of holding aggregate social costs to a minimum. The problem of retroactive liability under CERCLA provides a revealing illustration of this dilemma.[72] Although it seems fair to impose the costs of present and future abatement efforts on those whose past activities give rise to them, this course of action is not necessarily efficient. Allocation of these costs requires expensive negotiation and litigation, which increase the aggregate costs that hazardous wastes impose on society.[73] Moreover, such allocation cannot reduce the costs of abatement and compensation resulting from any particular release.[74] To be sure, retroactive liability may function as a general deterrent, promoting cost-minimizing behavior in the present and future and thereby reducing the aggregate social costs of hazardous wastes.[75] Yet the marginal savings to society from this additional

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[71] *Cf.* Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509, 576–81 (1986) (discussing the relationships among goals of efficiency, distributional equality, and horizontal equity).

[72] For an extensive discussion of the constitutional issues surrounding retroactive liability under CERCLA, see *infra* Section B of Part VI.

[73] One authority recently gave as his "best guess" at total CERCLA litigation costs an estimate of $5 billion, or 34% of direct cleanup costs. *See Insurance Issues and Superfund: Hearing Before the Senate Committee on Environment and Public Works*, 99th Cong., 1st Sess. 134 (1985) (report of Mr. John C. Butler III, director, Putnam, Hayes & Bartlett, on behalf of the American Insurance Association). This estimate assumes that the EPA will eventually place 1800 sites on the NPL, that direct cleanup costs will continue to average approximately $8.1 million per site, and that litigation will decline somewhat from present levels. *See id.* If litigation continues at present levels, total litigation costs could reach $8 billion, or 55% of total direct cleanup costs (estimated at $14.6 billion). *See id.* For comparative purposes, it may be helpful to note Mr. Butler's observation that "Superfund litigation costs are at least as large and possibly more than twice as large as asbestos litigation costs of $2.9 billion." *Id.* at 135.

[74] Once a release of hazardous material has occurred, society faces a choice between incurring abatement costs in the present or incurring injury and compensation costs in the future when the health problems engendered by the release become manifest. Although the norm of efficiency requires that society choose the cheaper of the two alternatives, society cannot further reduce the costs of a specific discharge by assigning liability to any particular party.

[75] *See* Kaplow, *supra* note 71, at 551–52 (1984).

general deterrent force may be small in a regulatory regime that already provides strong incentives to behave efficiently in the present.[76]

2. *The Market Failure Model of Groundwater Pollution*

According to microeconomic theory, the surest path to an efficient allocation of resources is, in general, an unregulated free market. Government must intervene in a particular policy area only when fairness requires reallocation of resources — for example, to help the poor — or when, absent regulation, some market defect produces conspicuous inefficiencies.[77] The absence of serious debate over the need for government intervention to alleviate groundwater and other types of pollution reflects a remarkable consensus among economists and policy analysts that unregulated markets for industrial products have failed to yield efficient levels of pollution.

The explanation of pollution as an instance of market failure is best illustrated through a simple model. Suppose production requires manufacturers to use both labor and raw materials and that groundwater is a raw material that producers "use" by discharging their wastes into it. If groundwater is free, two things will happen. First, producers will use groundwater instead of labor or other raw materials whenever possible. Indeed, they will have every incentive to make the most extensive possible use of groundwater[78] without regard to the costs that its consumption imposes on others. Second, producers will not need to recover the value of the groundwater they consume when they sell their products. Consequently, their prices will be lower and demand for their products higher than if they had been forced to pay for the groundwater they had used. This result is unobjectionable if groundwater really costs society nothing — as it might if there were an infinite supply — but such is not the case. On the contrary, individual consumers also require groundwater for a variety of purposes. Consequently, they suffer when they cannot obtain the groundwater they need or when the groundwater they do obtain is contaminated.

This model shows that an unregulated market for groundwater produces an allocation that is both inefficient and unfair. Inefficiency

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[76] CERCLA and RCRA contain quite credible threats of liability for undesirable present and future behavior apart from any threat of liability for past actions. These threats include not only strict joint and several liability for cleanup of hazardous substance releases but also criminal sanctions for illegal disposal. *See generally* Riesel, *supra* note 10.

[77] *See* E. STOKEY & R. ZECKHAUSER, *supra* note 14, at 291–293, 308–19.

[78] More precisely, producers have an incentive to use as much groundwater as they profitably can. Even when groundwater is free, producers will not consume it in infinite amounts, because the assumption of declining marginal productivity suggests that there will always come a point at which producers will find they can make no profitable use of another unit of groundwater.

results because society's collective welfare would be greater under a system that allocated groundwater in accordance with its utility to both producers and consumers. The unregulated regime allows producers to exploit groundwater supplies from which others would actually derive greater benefit. Unfairness, in turn, comes about in two ways in the unregulated market. First, producers get something for nothing — something for which others have an equally legitimate need. Second, consumers suffer harm if producers leave them with less groundwater than they would be willing to purchase in a competitive market. Similarly, consumers suffer harm if they incur health care costs as a result of ingestion or exposure to "used" groundwater.

One may see the imperfection of the situation by imagining how it would improve if the allocation of groundwater were determined not by this imperfect market but by an omniscient resource manager, attempting to maximize the collective happiness of all concerned.[79] Seeking the optimal allocation of groundwater, the manager would redistribute units of groundwater from producers to consumers until redistributing an additional unit would hurt the producers more than it would help the consumers. By definition, the resulting allocation would be socially optimal.[80] Although in principle the same allocation would result if hazardous waste victims joined together to pay the responsible parties to generate less wastes or dispose of their wastes more safely, such a result would never come about in practice. First, transaction costs[81] and "free rider" problems[82] would inhibit hazardous waste victims from working together to achieve it. More fundamentally, long lapses of time between release and contamination, and between contamination and harm, would in many cases make such efforts at collectivization impractical.

The market failure model suggests that the existence of more than the socially optimal level of pollution reflects the market's failure properly to allocate the costs of environmental resources to those who

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[79] The concept of the "omniscient resource manager" employed here parallels the idea of the "basin-wide" firm in A. KNEESE & B. BOWER, MANAGING WATER QUALITY: ECONOMICS, TECHNOLOGY, INSTITUTIONS 89–94, 184–87 (1968).

[80] To see why this allocation would be optimal, consider the marginal effects of allocating additional units of groundwater to either producers or consumers. Another unit of groundwater consumption by producers would impose on consumers costs exceeding the value of the additional consumption to producers. Thus, society as a whole would be worse off at any higher level of use by producers. By contrast, consumers would gain less from increased use than producers would lose by giving up the groundwater necessary to make increased use by consumers possible. Therefore, society would be worse off at any lower level of groundwater use by producers. An important consequence of this analysis is that the socially optimal level of the producers' use of groundwater is probably not zero, because the costs to consumers of very small levels of groundwater use by producers are almost certainly less than the benefits producers would obtain from such use.

[81] *See supra* p. 1479 & n.73.

[82] *See supra* p. 1468 & n.14.

use them. To prevent emission of more than the socially optimal quantity of pollution, the government must intervene to repair or control the market. The market failure model of the groundwater pollution problem suggests certain fairness and efficiency goals for such intervention: to reduce the total costs that hazardous wastes impose on society, and to reallocate the remaining costs in order to force their internalization by those who generate them and to prevent their infliction upon those who have not bargained for them.

3. Fairness and Efficiency in the Market Failure Model

The norms of fairness and efficiency provide valuable standards by which to assess the performance of federal hazardous waste statutes. Before proceeding to discuss the role these concepts play in the market failure model, it is important to understand the nature of the various costs that hazardous wastes impose on society, for the norms of fairness and efficiency are principally concerned with the allocation and minimization of these costs. Hazardous wastes impose four kinds of costs on society. "Avoidance costs" include the costs of properly disposing of hazardous wastes in the first place, so as to minimize the likelihood that the wastes will create further costs in the future. "Abatement costs" include the costs of removal and cleanup following improper disposal. "Compensation costs" are the costs of making whole parties who suffer immediate or latent injuries from improperly disposed wastes. Finally, "transaction costs" include the costs both to the government and to private actors of controlling and allocating the other three categories of hazardous waste costs.[83]

The norms of efficiency and fairness suggest a number of useful approaches for managing these various costs. Efficiency demands that the federal statutes minimize the aggregate of these four types of costs by providing incentives for actors to incur avoidance costs when avoidance is cheaper than the sum of abatement and compensation costs. Fairness requires that the statutes allocate abatement and compensation costs to the parties responsible for the environmental hazard. In turn, efficiency requires that the process of allocating abatement and compensation costs create a minimum of transaction costs. To the extent that the statutes rely on threats of legal liability to produce correct behavior, they must also overcome the problems that make private litigation at common law inadequate as a means of pollution control.[84]

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[83] The typology of costs presented here follows that presented in Note, *Allocating the Costs of Hazardous Waste Disposal*, 94 HARV. L. REV. 584, 585 (1981).

[84] *See supra* p. 1468 (discussing legal and theoretical obstacles to common law action by victims of pollution).

Efficiency requires further that the government allocate enough resources to detection of illegal disposal practices, such as dumping along roadsides or into open drainage ditches, and to enforcement of statutory obligations to force actors to make the necessary tradeoffs between avoidance costs on the one hand and abatement and compensation costs on the other. The problem of illegal dumping of hazardous wastes presents a particularly pernicious example of how inadequate enforcement efforts can lead to inefficient outcomes. Because generators and transporters can dump hazardous substances virtually anywhere, only vigorous tracking of hazardous wastes through the production cycle can detect points at which they are leaving the regulated system illegally. Although RCRA's manifest system theoretically provides the capability for such tracking, regulatory authorities rarely attempt to verify the manifests they receive. On the contrary, when surveying enforcement efforts in four major industrial states, the General Accounting Office found that state regulatory authorities consider such verification impractical.[85] Generators and transporters wishing to escape regulation may do so simply by failing to identify themselves to regulatory authorities[86] or by falsifying the reports they submit to such authorities.[87] Consequently, nobody knows the extent to which illegal dumping occurs or the costs that it imposes on society.[88] Yet, despite this lack of information, efficiency demands that the state and federal governments commit resources to enforcement up to the point at which the last dollar invested in enforcement yields no more than a dollar's savings in abatement and compensation costs due to illegal dumping. Although it would be unrealistic to assume that the regulatory regime could be calibrated so finely as to yield this equilibrium, the potential for illegal dumping does suggest the need for strict attention to the adequacy of enforcement efforts.

The market failure model of pollution provides insight into why a hazardous waste problem exists and indicates broad goals for governmental efforts to resolve it. The norms of fairness and efficiency provide more flexible standards for evaluating the success of particular regulatory tactics. Although in narrow contexts these norms may

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[85] *See* U.S. GEN. ACCOUNTING OFF., ILLEGAL DISPOSAL OF HAZARDOUS WASTE: DIFFICULT TO DETECT OR DETER 28 (RCED-85-2) (1985).

[86] *See id.* at 16.

[87] *See id.* at iii–iv, 26–31.

[88] *See id.* at 13. *But see Hazardous and Solid Waste Amendments of 1984*, H.R. REP. No. 198, pt. 1, 98th Cong., 2d Sess. 19, *reprinted in* 1984 U.S. CODE CONG. & AD. NEWS 5576, 5578 ("[D]espite this progress [in implementing the hazardous waste provisions of RCRA], it is estimated that an amount of hazardous waste equal to that which is currently regulated under RCRA (40 million metric tons per year) is escaping control through various loopholes."). Inadequate staffing and funding of state enforcement authorities doubtless contribute to the problem. *See supra* note 60.

dictate inconsistent responses, awareness of the tension between them can help to ensure that efforts to resolve the hazardous waste problem neither squander society's resources nor perpetrate gross injustices on its members. Subsequent Parts of this Note will employ the analytic framework presented in this Part to scrutinize the difficult substantive and procedural questions that permeate hazardous waste law.

III. Procedural Issues Under CERCLA

In the five years since the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted, the Environmental Protection Agency (EPA) has completed only ten cleanups.[1] This lackluster record of enforcement has been variously blamed on inadequacy of the Fund,[2] managerial problems,[3] and the high cost of cleanup. Accumulating data on waste sites has created a growing consensus that the "EPA will never have adequate monies or manpower to address the problem itself."[4] This data makes increasingly

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[1] *See supra* p. 1474 & n.47 (citing U.S. Gen. Accounting Off., Status of EPA's Remedial Cleanup Efforts 2–3 (Mar. 20, 1985)); *see also* House Comm. on Energy and Commerce, Superfund Amendments of 1985, H.R. Rep. No. 253, 99th Cong., 1st Sess. 255 (1985) [hereinafter cited as House Report] (dissenting view of Rep. Scheuer) (claiming that only six cleanups have been completed); W. Drayton, America's Toxic Protection Gap: The Collapse of Compliance With the Nation's Toxics Laws 58 (1984) (same).

[2] In this Part, the term "Fund" will be used to indicate the fund created by § 111. This is distinct from the term "Superfund," used interchangeably with the more general and collective term "CERCLA."

Much of the inadequacy of Fund money resulted from a basic misunderstanding of the scope of the problem of abandoned hazardous waste sites. Congress originally believed that the hazardous waste problem was a limited one involving relatively inexpensive and simple cleanup procedures. As a result, the agency was originally given $1.6 billion to administer the cleanup of 400 sites. By 1985, however, Congress's understanding of the problem had changed considerably. The Office of Technology Assessment then estimated that there might be as many as 10,000 Superfund sites, cleanup of which would require decades of effort and might cost as much as $100 billion. *See* House Report, *supra* note 1, at 54–55. This problem has been exacerbated by shortfalls in planned Fund financing. Environmental Safety, an independent environmental group, reported in July 1984, that the Fund, financed primarily by a tax on certain petroleum and chemical products and originally expected to reach $1.6 billion, would actually amount to only $1.3 billion because of lower than expected taxable sales of such products. The EPA admits that even with full funding the money would be sufficient to clean up only 100 of the 546 sites on the National Priority List (NPL), *see* CERCLA § 105, 42 U.S.C. § 9605 (1982). Environmental Safety has estimated that it will take well into the next century to clean up just those sites currently on the NPL. *See* W. Drayton, *supra* note 1, at 57–58 (1984); *supra* p. 1465 & n.4.

[3] "Under the initial leadership of Assistant Administrator Lavelle, the program was victimized by gross mismanagement and policies which limited expenditures for site cleanups, in part in an effort to dissuade Congress from extending the funding for the program . . . ." House Report, *supra* note 1, at 55. Congressional investigations resulted in the firing or resignation of over twenty top-level employees, including the Administrator of the EPA. Lavelle received a jail sentence. *See id*; *supra* p. 1474 & n.50.

[4] House Report, *supra* note 1, at 55.

apparent the need both to seek recovery of costs from responsible parties and to encourage private cleanup.

The unclear drafting and contradictory judicial interpretations of CERCLA's procedural provisions have combined to frustrate this goal of shifting the financial burden of cleanup to private parties. Although the procedural framework of CERCLA is difficult to decipher,[5] it apparently sets out four basic routes to cleanup: (1) direct EPA cleanup under section 104 followed by potential recovery of costs from the responsible parties under section 107; (2) EPA-mandated cleanup by potentially responsible parties under section 106; (3) private party cleanup followed by recovery against the Fund under section 112; and (4) private party cleanup followed by recovery against the responsible parties under section 107. Congress attempted to provide alternative procedures in an effort to ensure that the most prompt and efficient cleanup method would be chosen for each site. Instead, it produced a statute that is at times vague and internally inconsistent. Many courts have compounded the problem by interpreting CERCLA's provisions in ways that may unnecessarily delay cleanups and deplete the Fund.

This Part first explores problems associated with government-initiated cleanups and advocates increased use of administrative orders to compel direct cleanup by potentially responsible parties. It then analyzes the effectiveness of private cleanups and concludes that the only way to realize CERCLA's goal of prompt and effective cleanup is to reduce the number of preconditions to compensable private response actions.

A. Government-Initiated Cleanups

The government has two options in responding to releases or threatened releases of hazardous wastes. First, CERCLA section 104 allows the EPA to take direct "response actions," which may be either short-term ("removal") actions designed to correct immediate damage, or long-term ("remedial") actions designed to be a permanent remedy for the site. Money for these cleanups — cleanups regulated by the

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[5] CERCLA has been roundly criticized as an example of inadequate drafting: "CERCLA is in fact a hastily drawn piece of compromise legislation, marred by vague terminology and deleted provisions. . . . The courts are once again placed in the undesirable and onerous position of construing inadequately drawn legislation." United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 838 n.15 (W.D. Mo. 1984); *see* Bulk Distrib. Centers, Inc. v. Monsanto Co., 589 F. Supp. 1437, 1441 & n.10 (S.D. Fla. 1984). For a more complete examination of the hasty enactment of CERCLA, see Dore, *The Standard of Civil Liability for Hazardous Waste Disposal Activity: Some Quirks of Superfund*, 57 NOTRE DAME LAW. 260 (1981).

National Contingency Plan (NCP)[6] — comes initially from the Fund.[7] The EPA may bring subsequent cost recovery actions under section 107 to replenish the Fund.[8] Second, the EPA can use section 106 to seek injunctions compelling potentially responsible parties to clean up sites that pose "imminent and substantial danger" to health and the environment. Section 106 further allows the EPA to issue such administrative orders as are necessary to protect public health and the environment.[9]

Section 104 actions may be initiated quickly, but they require a significant commitment of EPA personnel and deplete the Fund. Section 106 orders involve far less cost to the Fund but may be hampered by dilatory tactics by potentially responsible parties, such as demands for judicial review. Section 106 orders should be the primary tool for government enforcement of CERCLA. Inadequate statutory drafting and unfavorable court rulings, however, have forced the EPA to rely on the far more costly section 104/107 action.

1. Section 104/107 Actions

Sections 104 and 107 provide the EPA with the tools to make identifiable responsible parties pay the total cleanup cost incurred by the government at sites for which such parties are responsible.[10] Section 104 authorizes the EPA to clean up hazardous waste sites directly, and section 107 allows the agency to seek reimbursement from private parties. Congress has stated that the EPA "may *not* act [under section 104] where the party responsible for the release or threatened release . . . will take proper action."[11] When the responsible parties refuse to take proper action, however, the EPA may initiate a section 104 cleanup unhindered by immediate judicial review. Objections to EPA action under section 104 may not be raised in court until the EPA seeks to recover its costs in a suit brought under section 107. Nonetheless, various other procedural issues associated with EPA recovery

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[6] *See* CERCLA § 105, 42 U.S.C. § 9605 (1982). The NCP, promulgated by the EPA, specifies "procedures, techniques, materials, equipment, and methods to be employed in identifying, removing, or remedying releases of hazardous substances . . . ." *Id.*

[7] *See* CERCLA § 111, 42 U.S.C. § 9611 (1982).

[8] *See* CERCLA § 107(a)(4)(A)–(C), 42 U.S.C. § 9607(a)(4)(A)–(C) (1982).

[9] *See* § 106(a), 42 U.S.C. § 9606(a) (1982). The EPA also has a third option not expressly mentioned in CERCLA: it can negotiate with potentially responsible parties in the hope of securing "voluntary" agreements to clean up waste sites. *See* Reed, *CERCLA Litigation Update: The Emerging Law of Generator Liability*, 14 ENVTL. L. REP. (ENVTL. L. INST.) 10,224, 10,225 (1984); *infra* Part IV.

[10] *See* Reed, *supra* note 9, at 10,225.

[11] H.R. REP. NO. 1016, pt. 2, 96th Cong., 2d Sess. 28, *reprinted in* 1980 U.S. CODE CONG. & AD. NEWS 6119, 6131 (emphasis added); *see* CERCLA § 104(a)(1), 42 U.S.C. § 9604(a)(1) (1982).

under section 107 may increase the costs, reduce the recovery, and thereby limit the overall utility of section 104 actions.[12]

(a) Section 104 and Review of Agency Action. — Courts have assisted EPA response actions by broadly construing the EPA's power to gather information about hazardous waste sites when the agency is attempting to determine whether to enter and clean up a site under section 104.[13] When the request for information is rebuffed, the federal enforcement provision of the Solid Waste Disposal Act[14] authorizes the EPA to seek compliance through administrative orders, criminal prosecution, or civil action.[15] Except in criminal prosecutions, the Act requires no proof of intent not to comply. Courts have suggested that an administrative agency's requests for information will be enforced when: (1) the investigation is within the agency's authority, (2) the request is not too indefinite, and (3) the information requested is reasonably relevant to the agency's purposes.[16] This liberal approach toward enforcing agency requests for information led one court to enter partial summary judgment against a CERCLA defendant who failed for over fifteen months to produce information in response to an EPA request.[17]

To aid further the prompt and effective collection of information, courts have allowed the EPA to engage in on-site discovery. Section 104(b) and (e) grants the EPA access to any site suspected of containing hazardous wastes.[18] Courts have rejected challenges to such entry

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[12] Inadequate recovery of costs under § 107 may further be explained by the absence of aggressive EPA action:

> In light of the inadequacy of current Superfund resources, EPA should have had every incentive to recover monies from the parties responsible for hazardous waste pollution requiring clean-up. Indeed, EPA's 1985 budget assumes very substantial recoveries. However, EPA has made singularly little progress so far: it has recovered only $3.9 million, or *less than two percent* of the program's very limited outlays to date [July, 1984]. Until recently only one person had the entire responsibility for all the cost recovery actions. There are currently 66 backlogged cases, with 30 to 40 additional cases expected this year.

W. DRAYTON, *supra* note 1, at 58 (emphasis added).

[13] *See* CERCLA § 104(e)(1), 42 U.S.C. § 9604(e)(1) (1982) (providing that a potentially responsible party dealing with hazardous waste shall, upon request from the EPA, "furnish information relating to such substances and permit [the EPA] at all reasonable times to have access to, and to copy all records relating to such substances").

[14] 42 U.S.C. § 6928 (1982).

[15] For all such controversies arising under CERCLA, original jurisdiction is expressly granted to the federal district courts. *See* CERCLA § 113(b), 42 U.S.C. § 9613(b) (1982).

[16] *See* United States v. Liviola, 605 F. Supp. 96, 99 (N.D. Ohio 1985); *cf.* United States v. Powell, 379 U.S. 48, 57–58 (1964) (adopting the same three criteria with respect to administrative actions by the Internal Revenue Service); United States v. Morton Salt Co., 338 U.S. 632, 652–53 (1950) (adopting the same three criteria with respect to administrative actions by the Federal Trade Commission).

[17] *See Liviola*, 605 F. Supp. at 100.

[18] Section 104 authorizes the EPA to "undertake such investigations, monitoring, surveys, testing, and other information gathering as [it] may deem necessary or appropriate to identify

and have consistently allowed the EPA access in order to conduct a remedial investigation/feasibility study (RI/FS).[19] Nonetheless, courts often have mandated specific standards for EPA conduct once it has gained access for discovery purposes.[20] One court prohibited the EPA from entering a site and adjacent sites to engage in response activities beyond the precisely circumscribed scope of the court approved RI/FS.[21]

Although courts have engaged in narrowly limited review of EPA entry for RI/FS purposes, once the EPA decides to clean up a site, there can be no further judicial review until the EPA seeks compensation under section 107. Despite the section 113(b) grant of exclusive federal jurisdiction over CERCLA claims, most federal courts have held that they lack jurisdiction to conduct preenforcement substantive review of EPA section 104 cleanups.[22] Such time-consuming judicial

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the existence and extent of the release or threat thereof, the source and nature of the hazardous substances, pollutants or contaminants involved, and the extent of the danger to the public health or welfare or to the environment." CERCLA §104(b), 42 U.S.C. § 9604(b) (1982). More specifically, § 104 authorizes the EPA to enter a hazardous waste site "at reasonable times," CERCLA § 104(e)(1)(A), 42 U.S.C. § 9604(e)(1)(A), and "to inspect and obtain samples" of the potentially hazardous substance, CERCLA § 104(e)(1)(B), 42 U.S.C. § 9604(e)(1)(B).

[19] *See* United States v. United Nuclear Corp., 610 F. Supp. 527 (D.N.M. 1985); United States v. Standard Equip., Inc., 19 Env't Rep. Cas. (BNA) 2102 (W.D. Wash. 1983). Most courts faced with a challenge to an RI/FS have simply held for the EPA on the merits. One court, declaring that an RI/FS does not fulfill the requirement of final agency action prior to direct judicial review, has gone further and refused to engage in *any* review of an RI/FS prior to an EPA recovery action. *See United Nuclear*, 610 F. Supp. at 528–29 (interpreting the finality requirement of the Administrative Procedure Act, 5 U.S.C. § 704 (1982)).

[20] *See, e.g.*, *United Nuclear*, 22 Env't Rep. Cas. (BNA) 1791, app. 1794 (D.N.M. 1985) (setting forth text of court order limiting permissible EPA conduct to specific acts such as hydrogeological study, aquifer testing, and groundwater sampling); *cf. Standard Equipment*, 19 Env't Rep. Cas. (BNA) at 2102–03 (W.D. Wash. 1983) (requiring the EPA to report to the owner within 60 days any damage to the property resulting from the agency's activities on the site and on adjacent lands if such a report would be "reasonably practicable"). No court has directly addressed whether, once the EPA has gained entry, the owner retains a fifth amendment right of action for just compensation for any potential taking.

[21] *See* Outboard Marine Corp. v. Thomas, 773 F.2d 883 (7th Cir. 1985). In *Outboard*, the EPA sought to enter an uncontaminated adjacent site and to engage in construction/response activities that were not included within the statutory right to survey and inspect. The court held that "[t]he power to enter at reasonable times is not given to begin any response construction, or even for design or surveying purposes. . . . The authority to enter to inspect and obtain samples, gather information, and inspect records is limited to the hazardous substance itself. . . ." *Id.* at 889. The court went on to note that "what the EPA actually seeks is . . . a temporary easement to enter and cross over private ground" not itself alleged to be part of the hazard and that, therefore, to gain entry the EPA must have the land condemned and pay its appraised value prior to entry. *See id.* at 890.

[22] *See, e.g.*, Lone Pine Steering Comm. v. EPA, 777 F.2d 882 (3d Cir. 1985), *petition for cert. filed*, 54 U.S.L.W. 3584 (U.S. Feb. 20, 1986) (No. 85-1389); J.V. Peters & Co. v. Ruckelshaus, 767 F.2d 263 (6th Cir. 1985); Wagner Elec. Corp. v. Thomas, 612 F. Supp. 736 (D.

review and subsequent appeal would indeed frustrate the central goal of section 104[23] by eliminating the ability of the EPA to respond quickly to environmental hazards requiring immediate cleanup action.[24] Although courts have recognized that this lack of review raises due process concerns, they have concluded that potentially responsible parties are adequately protected by the opportunity under section 107 to raise all of their claims as defenses in the EPA's subsequent cost recovery action.[25] Beyond this procedural protection, the potentially responsible party is also accorded practical protection by the fact that the EPA has no incentive to undertake unjustified cleanup measures, because it may ultimately recover from potentially responsible parties only those costs "not inconsistent" with the NCP.[26]

The EPA's ability to investigate and to conduct unhindered response action has been strongly supported by the courts. Section 104 actions, however, rapidly deplete the Fund. When a responsible party can be identified, therefore, recovery of costs under section 107 is the next important step if the integrity of the Fund is to be maintained. Various procedural battles, however, may make such recovery complicated and costly.

(b) Section 107 Recovery of Costs. — Section 107(a)(4)(A) empowers the EPA to recover response costs from responsible parties. Section 107 enumerates four classes of defendants against whom claims may be brought:[27] (1) the current owner of the vessel or facility that produced the hazardous waste; (2) any person who owned or operated the property at the time the hazardous wastes were disposed on it; (3) any person who contracted or otherwise arranged for disposal of the hazardous substance;[28] and (4) any person who accepted the hazardous

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Kan. 1985); United States v. Reilly Tar & Chem. Corp., 606 F. Supp. 412 (D. Minn. 1985); Aminoil, Inc. v. EPA, 599 F. Supp. 69 (C.D. Cal. 1984).

One court has rejected the distinction between immediate ("removal") and long-term ("remedial") actions for purposes of preenforcement review. *See, e.g., Lone Pine*, 777 F.2d at 887–88 (rejecting the plaintiff's contention that remedial actions should be appealable even if removal actions are not).

[23] As a recent Senate Report declared: "[P]re-enforcement review would be a significant obstacle to the implementation of response actions . . . . Pre-enforcement review would lead to considerable delay in providing cleanups, would increase response costs, and would discourage settlements and voluntary cleanups." S. REP. NO. 11, 99th Cong., 1st Sess. 58 (1985) [hereinafter cited as SENATE REPORT].

[24] *See* S. REP. NO. 848, 96th Cong., 2d Sess. 10–12 (1980).

[25] *See Lone Pine*, 777 F.2d at 887; United States v. United Nuclear Corp., 610 F. Supp. 527, 529 (D.N.M. 1985).

[26] *See* CERCLA § 107(a)(4)(A), 42 U.S.C. § 9607(a)(4)(A) (1982); *see also* Industrial Park Dev. Co. v. EPA, 604 F. Supp. 1136, 1144 (E.D. Pa. 1985).

[27] *See* CERCLA § 107(a)(1)–(4), 42 U.S.C. § 9607(a)(1)–(4) (1982).

[28] *See* New York v. General Elec. Co., 592 F. Supp. 291, 297 (N.D.N.Y. 1984) (holding that when a company contracts with others to dispose or transport hazardous wastes, it does

waste for transportation or disposal. Despite this broad range of potential defendants, however, section 107 actions often encounter expensive and time-consuming procedural obstacles.

(i) Personal Jurisdiction. — Section 113(b) provides federal district courts with subject matter jurisdiction and venue over CERCLA claims, but is silent with respect to the requirements for personal jurisdiction.[29] Because the statute does not provide for nationwide service of process, it is unclear whether potential defendants must have the normally requisite "minimum contacts" with the forum state before being subject to suit under CERCLA. At least one court has concluded that minimum contacts are required and that a defendant's ability to foresee that its hazardous waste might end up in the forum state is insufficient contact to confer jurisdiction.[30] Because such holdings inhibit an individual court's ability to exercise jurisdiction over all the potentially responsible parties with "deep pockets," they hinder the government's ability to recover the costs of cleanup under section 107. Amendments recently proposed in Congress would explicitly provide for nationwide service of process in CERCLA cases.[31] Until such amendments become law, however, excess delays and increased costs in government recovery actions are inevitable as the government is forced to break up large actions and to sue defendants individually in those states that do have jurisdiction over them.

(ii) Recoverable Costs. — A recurring question in cost recovery litigation has been what kinds of costs are recoverable under section 107, particularly because that section does not define "recoverable costs."[32] The EPA has had to address several different proposals to limit cost recovery. For example, one court has suggested that removal and remedial costs should be treated differently for cost recovery purposes.[33] The court reasoned that because remedial measures were long-term and involved the use of new or experimental techniques, the costs thus expended should be subject to heightened scrutiny.[34] But because section 107 allows recovery for "necessary costs of response"[35] and response is defined in CERCLA as "removal . . .

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not contract away its statutory responsibility); *see also infra* Subsection 1 of Section A of Part VI.

[29] *See* CERCLA § 113(b), 42 U.S.C. § 9613(b) (1982).

[30] *See* Roberts v. Picillo, CA 83-0787P (D.R.I. Feb. 12, 1985).

[31] *See* HOUSE REPORT, *supra* note 1, at 13 (setting forth proposed § 113(f)); SENATE REPORT, *supra* note 23, at 116 (setting forth proposed § 113(h)).

[32] Courts have also had to contend with the basic question of whether costs incurred prior to the enactment of CERCLA are recoverable. *See infra* Section E of Part V.

[33] *See* Artesian Water Co. v. New Castle County, 605 F. Supp. 1348, 1359–61 (D. Del. 1985). *But see* Thomas, *Municipal and Private Party Claims Under Superfund*, 13 ENVTL. L. REP. (ENVTL. L. INST.) 10,272, 10,272 (1983) (rejecting the relevance of the removal/remedial distinction for the purpose of defining recoverable costs).

[34] *See Artesian Water*, 605 F. Supp. at 1359–61.

[35] CERCLA § 107(a)(4)(B), 42 U.S.C. § 9607(a)(4)(B) (1982).

and remedial action,"[36] this distinction is untenable.[37] Despite this and similar attempts by defendants or courts to define cleanup costs narrowly, one commentator has suggested that the range of properly recoverable costs is quite wide.[38] Because the range of recoverable costs remains an unsettled question, however, extensive litigation could ensue each time a particular cost is challenged. This inherently piecemeal approach could be partially remedied by a congressional declaration that certain costs are categorically recoverable as "cleanup costs" and that only those falling outside this category would be subject to case-by-case analysis.

(iii) Statute of Limitations. — At least one court has expressly held that the three-year statute of limitations in section 112(d)[39] does not apply to section 107 actions and that such actions may be brought at any time.[40] In *United States v. Mottolo*, a district court found that declining to apply the three-year limit is consistent with the remedial intent underlying section 104 because it ensures "that the Government is free to undertake thorough and cautious action in potentially protracted hazardous waste clean-up operations."[41] The court decided that the statute of limitations in section 112(d) should apply only to claims of recovery against the Fund[42] and not to section 107 actions against potentially responsible parties.[43]

The *Mottolo* court's reading is consistent with the express language of the statute. As more time passes, however, courts may balk at an

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[36] CERCLA § 101(25), 42 U.S.C. § 9601(25) (1982).

[37] Some courts have also viewed the requirements of §§ 104 and 105 as limiting the range of recoverable costs. For a discussion of these limitations, see Part VI.A.2.

[38] Specific expenses that are potentially recoverable include the costs of:

> 1) identifying the source of contamination; 2) identifying the physical characteristics of the harmful substance; 3) securing the site; 4) protecting the property or water supply source through removal or containment of the hazardous substance; 5) temporarily evacuating and housing persons at risk or [*sic*] exposure; 6) temporarily replacing a contaminated water source; 7) developing a permanent replacement source of water supply . . . ; 8) operating and maintaining containment structures and treatment facilities.

Thomas, *supra* note 33, at 10,273.

[39] 42 U.S.C. § 9612(d) (1982). The statute provides that:

> No claim may be presented, nor may an action be commenced for damages under this subchapter, unless that claim is presented or action commenced within three years from the date of the discovery of the loss . . . : *Provided, however,* That the time limitations contained herein shall not begin to run against a minor until he reaches eighteen years of age or a legal representative is duly appointed for him, nor against an incompetent person until his incompetency ends or a legal representative is duly appointed for him.

Id. (emphasis in original).

[40] *See* United States v. Mottolo, 605 F. Supp. 898 (D.N.H. 1985).

[41] *Id.* at 903.

[42] For a fuller discussion of claims for recovery against the Fund, see below pp. 1496–1500.

[43] *See Mottollo*, 605 F. Supp. at 904–5. *Mottolo* can be read, however, as removing the statute of limitations only for governmental and not for private party claims brought under § 107. The *Mottolo* case was brought by governmental plaintiffs; the court's reasoning relied in part on its assertion that any rule barring the rights of a government must be narrowly interpreted. *See* 605 F. Supp. at 902.

interpretation that gives the government a right to bring a recovery claim at any time, no matter how old the claim. Fearing prosecution on stale claims, federal courts might turn to analogous state statutes in order to imply some kind of statute of limitations in reimbursement claims.[44] This solution, of course, would pose its own problems because it would inject nonuniformity into the application of CERCLA. The proposed House amendments would solve this problem by establishing a six-year statute of limitations for all recovery claims.[45]

(iv) Right to a Jury Trial. — Although virtually all courts addressing the issue have determined that the defendant has no right to a jury trial in cost recovery actions,[46] the EPA must still occasionally expend resources and time contesting demands for trial by jury. These claims are largely frivolous because CERCLA cost recovery claims are equitable in nature.[47] In light of accumulated precedent confirming this view, courts should completely avoid unnecessary delays by

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[44] When interpreting a federal statute without its own statute of limitations, federal courts may turn to an analogous state law and apply that law's statute of limitations to the federal statute. *See, e.g.*, Brown v. Producers Livestock Loan Co., 469 F. Supp. 27, 33 (1978) (turning to analogous state law to determine the relevant statute of limitations for the Investment Advisers Act of 1940, 15 U.S.C. § 80b-1 to 80b-21, a federal statute lacking its own statute of limitations). Unlike the Investment Advisers Act, however, CERCLA does contain a statute of limitations; it seems clearly limited, however, to recoveries against the Fund. *See* CERCLA § 112(d), 42 U.S.C. § 9612(d) (1982). In addressing recoveries against potentially responsible parties, courts should be free to look to state law for guidance just as though CERCLA contained no statute of limitations.

[45] *See* HOUSE REPORT, *supra* note 1, at 13. Section 112(d)(1) would erect a six-year statute of limitations for all claims against the Fund. This limitation period would start to run on the date of completion of all response actions. Section 113(h)(2) would do the same for cost recovery actions against potentially responsible parties. *See id.*

[46] In a relatively early CERCLA case in which the government sought reimbursement for cleanup costs expended, a district court declared that "[i]t is indeed a close question whether the government seeks equitable relief by being restored to the position it formerly occupied or as a legal remedy similar to a money judgment on a debt for services rendered." United States v. Northeastern Pharm. & Chem Co. (NEPACCO), 13 ENVTL. L. REP. (ENVTL. L. INST.) 20,992, 20,993 (W.D. Mo. 1983) (avoiding the difficulty by suggesting use of an advisory jury under Fed. R. Civ. Pro. 39(c)). Since that time, however, courts have not allowed jury trials in CERCLA cost recovery actions. *See, e.g.*, United States v. Mottolo, 605 F. Supp. 898 (D.N.H. 1985); Wehner v. Syntex Corp., 15 ENVTL. L. REP (ENVTL. L. INST.) 20,210 (E.D. Mo. Dec. 26, 1984); United States v. Ohio *ex rel.* Georgeoff, 22 Env't Rep. Cas. (BNA) 1601 (N.D. Ohio 1984).

[47] Any request for a jury by a defendant in a § 107(a) action must now be viewed as a purely dilatory tactic. Claims for restitution have been recognized as equitable in nature, *see* Porter v. Warner Holding Co., 328 U.S. 395, 400–02 (1946), and the seventh amendment right to trial by jury does not extend to purely equitable claims, *see* Ross v. Bernhard, 396 U.S. 531 (1970); Beacon Theaters, Inc. v. Westover, 359 U.S. 500 (1959). Furthermore, claims for natural resource damage under § 107(a)(4)(C) are equitable to the extent that the government seeks *only* to recover expended funds. *See* United States v. Wade, 20 Env't Rep. Cas. (BNA) 1853, 1855 (E.D. Pa. 1984).

summarily striking demands for jury trials sua sponte in section 107(a) actions.[48]

(c) Conclusion. — As interpreted by courts and implemented by the EPA, section 104 has been highly effective in achieving quick, effective cleanup at the most dangerous dumpsites. This success comes at a high cost, however, in terms of both financial drain on the Fund and personnel hours spent implementing section 104 plans. This cost also derives in large part from lengthy and expensive section 107 actions against identifiable defendants. Although section 104/107 actions certainly have a role to play in the present CERCLA system — section 104 actions to remedy the most imminent hazards quickly and efficiently, section 107 actions to recover those costs expended and to set favorable legal precedents — they fail to achieve the most cleanup per Fund dollar spent. A system in which the EPA could directly order potentially responsible parties to clean up the sites themselves would be more effective, because Fund expenditures would be necessary only for monitoring the cleanups. CERCLA currently permits such directives through the provisions of section 106. Those provisions are ideally suited for most nonemergency, government-initiated cleanups when a potentially responsible party has been identified. Section 106, however, is used far less frequently than the more costly section 104/107 action. This disuse has resulted from needlessly narrow judicial interpretations of CERCLA.

2. Section 106 Actions

When the EPA has identified one or more potentially responsible parties, and the danger at the site is not so grave as to require immediate action, the most appropriate action by the EPA is to use the enforcement mechanisms of section 106(a).[49] Under section 106(a) the EPA has two options. Whenever it determines that there may be an "imminent and substantial endangerment" to public health or the environment, it may ask the Attorney General to seek injunctive relief in federal court. Alternatively, it can issue an administrative order

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[48] A jury should not necessarily be denied, however, in *non*equitable claims brought under other sections of CERCLA. For instance, a jury might very well be appropriate in a punitive § 107(c)(3) action for treble damages.

[49] *See* Reed, *supra* note 9, at 10,226. This is true despite the "imminent and substantial endangerment" language of § 106 because, as discussed further at pp. 1494–96 below, the allowance of preenforcement judicial review of § 106 administrative orders has effectively eviscerated that section's immediacy. Of course, other considerations, such as the possibility of obtaining a favorable legal precedent, may tip the scales of an individual case toward enforcement under §§ 104 and 107 even in the absence of an immediate danger. Moreover, when no potentially responsible parties can be found, the EPA may clean up the site itself under § 104. *See id.*

directly if it determines that such an order is "necessary to protect public health and welfare and the environment."[50] The injunctive order is immediately enforceable, but the procedures for obtaining it are slow and costly. Conversely, although administrative orders are easily and quickly issued, they are not immediately enforceable. Because the circumstances under which the EPA can issue an administrative order usually include the far narrower situations in which an injunction would be authorized, the injunctive relief provision of section 106(a) is rarely used.[51]

Administrative orders, however, are not self-enforcing. The EPA has two options when it encounters noncompliance with an order. First, it can seek to enforce the order in federal district court under section 106(b). If the EPA obtains the enforcement order, the potentially responsible party may be retroactively charged as much as $5000 a day for each day of noncompliance with the original administrative order. Nothing prevents the EPA from waiting an extended period of time to bring its enforcement action and thereby increasing the pressure on potentially responsible parties to comply without judicial review.[52] Alternatively, the EPA may clean up the site itself and then sue for treble damages under section 107(c)(3), provided it can show that the defendant lacked "sufficient cause" for noncompliance. The sufficient cause defense has been interpreted narrowly; thus, only rarely has a defendant invoked it with success.[53] It may be inferred from the punitive nature of these two enforcement mechanisms that Congress intended even bare administrative orders to have an *in terrorem* effect on potentially responsible parties.

Although this effect could render section 106 orders an invaluable enforcement tool, the EPA has been reluctant to use then due to contradictory holdings with respect to their reviewablity.[54] One view is exemplified by *Earthline Co. v. Kin-Buc, Inc.*,[55] in which the court found that the EPA's issuance of an order pursuant to section 106 did

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[50] CERCLA § 106(a), 42 U.S.C. § 9606(a) (1982).

[51] Compare the first sentence of § 106(a) which authorizes injunctive relief only when there is "an imminent and substantial endangerment to the public health or welfare" with the second sentence of the same section, which authorizes any other action, including administrative orders, "as may be necessary to protect public health and welfare." *See* 42 U.S.C. § 9606(a) (1982).

[52] *See* Aminoil, Inc. v. EPA, 599 F. Supp. 69, 73 (C.D. Cal. 1984).

[53] *See id.* at 72–73.

[54] Another factor limiting the utility of § 106 is judicial indecision as to whether that section applies retroactively to allow recovery of damages against past, nonnegligent, off-site generators. One court relied heavily on the use of the present tense in § 106 to support its view that that section authorizes only injunctive action to stop current dumping activity. *See* United States v. Wade, 546 F. Supp. 785, 792–94 (E.D. Pa. 1982). *But see* United States v. Price 577 F. Supp. 1103, 1111–13 (D.N.J. 1983) (noting that, given the congressional purpose of eliminating dangerous hazardous waste sites, it is highly unlikely that Congress intended § 106 to apply only prospectively).

[55] 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,315 (D.N.J. 1984).

not constitute a final agency action and therefore was not subject to judicial review.[56] The court held that such review would be premature because the order serves merely as a prerequisite to a subsequent agency enforcement action and that no concrete dispute exists without an enforcement proceeding.[57] Under this view, judicial review would be unavailable even when the party challenging the agency — like the defendant in *Kin-Buc* — is subject to penalties for noncompliance, because rights and liabilities become fixed only after an enforcement proceeding has commenced. The parties retain their rights, however, to assert any objection to the order if the EPA seeks enforcement.[58]

The alternative view of reviewability is exemplified by *Aminoil, Inc. v. EPA*.[59] In *Aminoil*, the potentially responsible party sought a preliminary injunction against the imposition of penalties for its noncompliance *prior* to any EPA attempt to seek an enforcement order. The court agreed that, given the emergency public health and environmental protection purposes of section 106(a), Congress had intended to preclude preenforcement review of abatement orders.[60] The court proceeded, however, effectively to allow preenforcement review by granting the plaintiff potentially responsible party's request and preliminarily enjoining the EPA from seeking an enforcement order or imposing penalties for noncompliance. The court found that because Aminoil (1) was likely to prevail on the merits of the CERCLA claim; (2) ran a serious risk of being erroneously deprived of due process because the penalties for noncompliance were sufficiently great to persuade it to obey without challenge; and (3) faced serious possibility of irreparable injury, it was appropriate to grant Aminoil a preliminary injunction barring the EPA from seeking either a $5000-a-day penalty under section 106(a) or treble damages under section 107(c)(3).[61] The *Aminoil* court admitted that its preliminary injunction contravened congressional intent, but the court allowed preenforcement judicial review to avoid a feared unconstitutional deprivation of due process.

The *Aminoil* court probably could have addressed its due process concerns in a less intrusive way. The Senate has passed an amendment to section 106 that would address the due process concerns raised in *Aminoil* without burdening section 106 actions with a lengthy process of pre-cleanup litigation. The amendment would allow potentially responsible parties subject to section 106(a) abatement orders to

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[56] *See* SENATE REPORT, *supra* note 23, at 58 (indicating congressional intent to preclude preenforcement review of § 106 administrative orders).

[57] *See Kin-Buc*, 15 ENVTL. L. REP. (ENVTL. L. INST.), at 20,316.

[58] *See id.*

[59] 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,801 (C.D. Cal. Sept. 28, 1984).

[60] *See id.* at 20,801.

[61] *See id.* at 20,802–04.

recover expended cleanup costs from the Fund.[62] Such potentially responsible parties would be able to recover their costs, plus interest, if they could prove either that they were not liable for the hazardous waste damage or that the response action had been ordered in an arbitrary or capricious manner.[63] Although the proposed amendment would make explicit the right of a potentially responsible party who complies with an administrative order to challenge its validity later, courts could probably create such a right under CERCLA as the statute is presently constituted.[64]

By allowing the potentially responsible party the option of complying with the administrative order and later seeking reimbursement, Congress would take a large step toward addressing the due process concerns expressed by the *Aminoil* court. Courts have traditionally observed a number of exceptions to the general rule requiring a hearing prior to a government deprivation when a prior hearing and its inherent delays would be inconsistent with an important governmental interest.[65] These exceptions have been allowed on the theory that, because the government would be required to pay compensation if the subsequent hearing indicates mistaken action, denial of the prior hearing does not severely burden those subject to the summary action.[66] Moreover, by expressly giving potentially responsible parties only post-cleanup hearings, Congress and the courts for the first time would realize the original goal of section 106 to permit quick and effective response to dangerous hazardous waste sites.[67]

B. Private Party Cleanups

CERCLA establishes a private cause of action for recovery of response costs[68] in order to encourage cleanup by private parties while

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[62] *See* SENATE REPORT, *supra* note 23, at 58.

[63] *See id.*

[64] Although nothing in CERCLA expressly compels the reimbursement of those wrongfully forced to clean up a site under § 106, nothing in the statute forbids such reimbursement. For instance, parties erroneously ordered to bear the full cost of a cleanup could sue other potentially responsible parties for contribution.

[65] *See* Boddie v. Connecticut, 401 U.S. 371, 377 (1971); J. NOWAK, R. ROTUNDA & J. YOUNG, CONSTITUTIONAL LAW 578–79 (1983); L. TRIBE, AMERICAN CONSTITUTIONAL LAW § 10-14, at 545 (1978).

[66] *See* L. TRIBE, *supra* note 65, § 10-14, at 545.

[67] Strict EPA monitoring of these cleanups would be required to avoid any unnecessary delays or cutting of corners. Even the most rigorous monitoring, however, would require far less expenditure of both Fund money and personnel than a § 104 cleanup.

[68] Although it seems obvious that CERCLA was intended to create a private right of action for cleanup costs, defendants in some early CERCLA cases argued that only the government could sue for reimbursement. *See, e.g.*, Bulk Distrib. Centers, Inc. v. Monsanto Co., 589 F. Supp. 1437, 1444 (S.D. Fla. 1984).

reducing the drain on federal resources.[69] A private party[70] may bring either a section 112 claim against the Fund or a section 107 action directly against the responsible parties.[71] Such a private party, however, is faced with cumbersome procedural standards for section 112 claims and vague pre-cleanup conditions for section 107 actions.[72] The EPA's attempt to remedy these difficulties in its revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP)[73] is inadequate for two reasons: first, not all of the revisions are binding on courts;[74] second, even if courts defer to the revised NCP, the numerous preconditions to recovery will likely deter private cleanups.[75]

1. Common Requirements for Section 112 Recovery Against the Fund and Section 107 Actions Against Responsible Parties

Both section 112 "claims" (against the Superfund) and section 107(a)(4)(B) "actions" (against the potentially responsible parties) share certain basic procedural requirements. A valid recovery claim or

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[69] When responsibility for a cleanup is assumed by nongovernmental entities, savings are realized primarily through the reduction in administrative costs and the increased time value of Fund money.

[70] The term "private party," as used here, comprehends local governments as well as nongovernmental entities.

[71] *See* CERCLA §§ 112(a), 107(a)(4)(B), 42 U.S.C. §§ 9612(a), 9607(a)(4)(B) (1982). "Claim" is used throughout CERCLA to mean a demand for compensation against the Fund; "action" is consistently used to mean judicial action. *See* United States v. Mottolo, 605 F. Supp 898, 903–04 (D.N.H. 1985).

There remains an unexplored third option for private action that is not included in CERCLA: under the present language of the statute, a CERCLA plaintiff may not seek private affirmative injunctive relief against the government as a remedy either under § 106 or elsewhere. *See* Luckie v. Gorsuch, 13 ENVTL. L. REP. (ENVTL. L. INST.) 20,400, 20,405 (D. Ariz. Feb. 25, 1983); McCastle v. Rollins Envtl. Serv., 514 F. Supp. 936, 940 (M.D. La. 1981). The proposed House amendments to CERCLA would grant injured citizens the right to sue the EPA or any other governmental body for failure to perform a nondiscretionary act or duty under CERCLA. *See* HOUSE REPORT, *supra* note 1, at 38, 61. This proposal would not establish a private right under § 106, however, because the language of that section is discretionary. *See Luckie*, 13 ENVTL. L. REP. (ENVTL. L. INST.), at 20,405.

[72] "With Congress's attention focused on government involvement in waste site clean up, it comes as no surprise that those portions of CERCLA's text and legislative history discussing a private party's rights against *other private parties* vis-a-vis the Fund are ill-defined." Bulk Distrib. Centers, Inc. v. Monsanto Co., 589 F. Supp. 1437, 1443 (S.D. Fla. 1984) (emphasis in original).

[73] *See* 50 Fed. Reg. 47,912 (1985) (to be codified at 40 C.F.R. § 300). The revised NCP became effective on February 18, 1986. *See id.*

[74] The EPA recognizes this problem but avers that courts will generally defer to the NCP. *See* 50 Fed. Reg. 47,912, 47,934 (1985).

[75] The EPA historically has failed to encourage significant private cleanup. *See* W. DRAYTON, *supra* note 1, at 58; *supra* pp. 1493–96 (discussing § 106 actions).

action presupposes that the private plaintiff has actually begun the cleanup of a site contaminated with hazardous substances.[76] This requirement promotes CERCLA's goal of cleanup by ensuring that the claimant or plaintiff has undertaken more than mere studies and preparations — preparation by itself is not CERCLA's aim.[77] Because this requirement may serve as a practical obstacle if a private party's resources are particularly limited, however, many courts may issue a declaratory judgment regarding future liability provided that the plaintiff has incurred at least some response costs.[78] This judgment allows a plaintiff who has begun cleanup to recover both past and future costs of preparing and implementing the cleanup plan.

Before an action or claim for recovery can be initiated, CERCLA further requires that a demand for restitution be submitted directly to any identifiable potentially responsible party.[79] Using EPA procedures for government cost recovery actions as a model, one court has indicated that the demand letter should contain the following elements: (1) a discussion of the spill site, including its location; (2) a description of the nature of the spill; (3) a description of the cleanup efforts already undertaken; and (4) a clear statement of the past and future costs of response activity broken down into general categories.[80] The claim letter should also refer specifically to CERCLA in order to ensure the adequacy of the notice.[81] Failure to include in the letter "a demand in writing for a sum certain" may lead to entry of summary judgment against the claimant or plaintiff.[82] After submission of the demand letter, the plaintiff must give the potentially responsible parties sixty days in which to satisfy the claim. If the claim remains unsatisfied after sixty days, the plaintiff may either present the claim to the Fund for payment or commence action in court against the potentially responsible parties.[83]

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[76] *See* CERCLA §§ 107(a)(4)(B), 111(a); 42 U.S.C. §§ 9607(a)(4)(B), 9611(a) (1982). For the definition of "hazardous substance," see CERCLA § 101(14), 42 U.S.C. § 9601(14) (1982). A valid recovery claim also presupposes that the private plaintiff is not attempting to recover for damage to state or federally managed natural resources, *see* CERCLA §§ 107(f), 111(b); 42 U.S.C. §§ 9607(f), 9611(b) (1982); *see also infra* Part VII.A.2; or for response costs that were incurred before the enactment of CERCLA, *see* CERCLA § 111(d)(1), 42 U.S.C. § 9611(d)(1) (1982). Note, however, that § 107 can be applied retroactively to waste dumped prior to 1980 as long as the response costs were incurred after 1980. *See* United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 841–43 (W.D. Mo. 1984).

[77] *See* Bulk Distrib. Centers, Inc. v. Monsanto Co., 589 F. Supp. 1437, 1451–52 (S.D. Fla. 1984).

[78] *See, e.g.*, Jones v. Inmont Corp., 584 F. Supp. 1425, 1430 (S.D. Ohio 1984).

[79] *See* CERCLA § 112(a), 42 U.S.C. § 9612(a) (1982).

[80] *See Bulk Distribution*, 589 F. Supp. at 1449 & n.25.

[81] *See* Thomas, *supra* note 33, at 10,273.

[82] *See* CERCLA § 101(4), 42 U.S.C. § 9601(4) (1982).

[83] *See* CERCLA § 112(a), 42 U.S.C. § 9612(a) (1982).

2. Recovery Against the Fund Under Section 112

Any person who has incurred cleanup costs may recover against the Fund, provided that the costs were preauthorized by having them (1) approved under the technical requirements of the NCP, and (2) certified by the responsible federal official.[84] After a claim for reimbursement has been filed against the Fund, the government has forty-five days in which to arrange a settlement between the claimant and the potentially responsible parties.[85] Any successful settlement is final and binding, and the parties waive all recourse against the Fund.[86] If the parties fail to settle, either the President or the EPA[87] may calculate and pay an award out of the Fund.[88] CERCLA provides no standards for calculating the award,[89] but a dissatisfied claimant may appeal the decision to the Board of Arbitrators appointed by the President.[90] If still dissatisfied, the claimant may in turn appeal the arbitrator's decision to the federal district court for the district in which the arbitral hearing took place.[91] If the section 112 claimant is ultimately successful in recovering against the Fund, the federal government acquires by subrogation the right of the claimant to recover removal and damage costs from the responsible parties in order to reimburse the Fund.[92]

Obtaining reimbursement from the Fund is likely to be far more difficult than the statute's language indicates.[93] As noted earlier, the EPA has required that in order to acquire a valid recovery claim, a private party must obtain EPA preauthorization before initiating a cleanup.[94] For short-term removal actions, approval will probably be

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[84] *See* CERCLA § 111(a)(2), 42 U.S.C. § 9611(a)(2) (1982); *see also* Proposed Revision of the NCP, 50 Fed. Reg. 5862, 5870 (1985) (describing the standards for preauthorization under the then-proposed C.F.R. § 300.25(d)).

[85] *See* CERCLA § 112(b)(2)(A), (b)(3), 42 U.S.C. § 9612(b)(2)(A), (b)(3) (1982).

[86] *See* CERCLA § 112(b)(2)(A), 42 U.S.C. § 9612(b)(2)(A) (1982).

[87] The President delegated responsibility for managing the Fund processing claims to the EPA on August 14, 1981, pursuant to Exec. Order No. 12,316. *See* 46 Fed. Reg. 42,237 (1981).

[88] *See* CERCLA § 112(b)(3), (b)(4)(A), 42 U.S.C. § 9612(b)(3), (b)(4)(A) (1982).

[89] *See* CERCLA § 112(b), 42 U.S.C. § 9612(b) (1982); Comment, *Hazardous Waste Clean Up in Wyoming: Legal Tools Available to the Private Citizen*, 19 LAND & WATER L. REV. 395, 403 (1984).

[90] *See* CERCLA § 112(b)(4)(A), 42 U.S.C. § 9612(b)(4)(A) (1982).

[91] *See* CERCLA § 112(b)(4)(G), 42 U.S.C. § 9612(b)(4)(G) (1982). This appeal is allowed because a Board decision is a final administrative action. *See* Thomas, *supra* note 33, at 10,276. A Board decision will be overturned, however, only for an "arbitrary or capricious abuse of the member's discretion." CERCLA § 112(b)(4)(G), 42 U.S.C. § 9612(b)(4)(G) (1982).

[92] *See* CERCLA §§ 112(c)(1) and (3), 114(b), 42 U.S.C. §§ 9612(c)(1) and (3), 9614(b) (1982).

[93] *See* Thomas, *supra* note 33, at 10,275. The "difficulty in obtaining a Fund award does not arise from the claims procedure established by the statute but rather from EPA's restrictive interpretation of the types of claims a private party may present." *Id.* at 10,276.

[94] *See id.* at 10,276. Response costs are reimbursable from the Fund only if incurred "as a

forthcoming if the party is willing to follow the technical rules of the NCP.[95] Recovery for these removal actions is limited to costs incurred during six months of response action or $1 million, whichever is less.[96] For remedial actions, however, the NCP requirements formulated by the EPA virtually preclude private parties from obtaining preauthorization entitling them to reimbursement.[97] First, the NCP restricts remedial action to those sites on the National Priority List (NPL).[98] Second, the EPA has taken the position that Fund assistance for remedial action is available only when the requirements of section 104(c)(3) are met — that is, when the state in which the site is located has agreed to pay at least 10 percent of the costs and to ensure proper operation and maintenance of the site.[99] A private party or a municipality[100] will probably be unable to convince a state to accept such responsibilities on its behalf. As a result of these preauthorization requirements, private remedial claims against the Fund are virtually precluded.

In crafting the claims procedure for the Fund, Congress intended to create a streamlined system that would process claims quickly.[101] Congressional intent, however, has been frustrated by the EPA's restrictive regulation of claims against the Fund. As one author concludes:

> While EPA approval of privately sponsored remedial actions is certainly justifiable in order to assure proper and cost-effective responses to pollution incidents, both the language and legislative history of CERCLA's claims provision suggest that Congress did not intend to preclude private party claims on the Fund . . . . The authority for EPA's [excessive] regulation in this regard is thus questionable.[102]

Although restrictions on Fund spending are important in order to maintain its integrity, unnecessary barriers to recovery only discourage private cleanups — especially of those sites for which potentially responsible parties cannot be definitely identified.

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result of carrying out the national contingency plan." CERCLA § 111(a)(2), 42 U.S.C. § 9611(a)(2) (1982). To obtain Fund recovery, the NCP requires that the private individual's plan be approved by the EPA Director prior to cleanup. *See* 50 Fed. Reg. 47,912, 47,958 (1985) (NCP § 300.25(d)).

[95] *See* 50 Fed. Reg. 47,912, 47,969–78 (1985) (NCP, Subpart F—Hazardous Substances Response).

[96] *See id.* at 47,971 (NCP § 300.65(b)(3)).

[97] *See* Thomas, *supra* note 33, at 10,276.

[98] *See* 50 Fed. Reg. 47,912, 47,973 (1985) (NCP § 300.68(a)). Unless the site is already on the list, or the private party assumes the burden of having it put on the list, there can be no recovery.

[99] *See* CERCLA § 104(c)(3), 42 U.S.C. § 9604(c)(3) (1982).

[100] *See supra* note 70.

[101] *See* S. REP. No. 848, 96th Cong., 2d Sess. 80 (1980).

[102] Thomas, *supra* note 33, at 10,277 n.50.

3. Section 107 Recovery Against Responsible Parties

Under section 112 the claimant may forego recovery against the Fund and bring a recovery action directly against the potentially responsible parties. The machinery for such an action is established in section 107(a)(4)(B).[103] Section 107 sets up a two-pronged test that the plaintiff must meet in order to recover: first, the damages must be "necessary costs of response"; second, they must be incurred "consistent with the national contingency plan."[104] When interpreting the requirement that costs of response be "necessary," courts must define what expenses qualify as legitimate response costs. The term "response costs" is not defined in the Act, and "response" is defined only as "remove, removal, remedy, and remedial action."[105] The doctrinal issues that arise in attempting to define response costs are conceptually analogous to those issues that arise in trying to define recoverable costs under section 112.[106]

By far the more difficult question for courts addressing private recovery under section 107 has been the second prong of section 107(a)(4)(B) requiring that response costs incurred be "consistent" with the NCP. A major policy dispute has arisen in the federal courts with respect to whether this standard has independent meaning or whether it implicitly incorporates the strict preauthorization requirements of section 112 recovery against the Fund. Two basic views on the question have arisen in the cases litigated to date. One court has expressed concern that if the governmental approval required by section 112 is not read into section 107, plaintiffs will be set loose to "dig up everything."[107] This court failed to discuss, however, the enormous economic disincentive involved in expending cleanup costs that would be unrecoverable under the detailed requirements of the NCP: no plaintiff would dig up *anything* unless it were relatively sure that the expenses incurred in such an enterprise would lead to a viable cost recovery action. These courts also argue that refusal to incorporate the section 112 preauthorization requirements into section 107 encourages unilateral action when a concerted action including the potentially responsible parties might be less costly.[108]

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[103] Courts have found that the language of § 112 creates no private right of action independent from § 107. *See, e.g.*, Walls v. Waste Resource Corp., 761 F.2d 311, 318–19 (6th Cir. 1985); Jones v. Inmont Corp., 584 F. Supp. 1425, 1428 (S.D. Ohio 1984).

[104] CERCLA § 107(a)(4)(B), 42 U.S.C. § 9607(a)(4)(B) (1982). By comparison, the EPA may recover under § 107 merely by showing that its expenditures were "not inconsistent" with the NCP. *See* CERCLA § 107(a)(4)(A), 42 U.S.C. § 9607(a)(4)(A) (1982).

[105] CERCLA § 101(25), 42 U.S.C. § 9601(25) (1982).

[106] For a discussion of recoverable costs, see pp. 1490–91 above.

[107] Bulk Distrib. Centers, Inc. v. Monsanto Co., 589 F. Supp. 1437, 1444 (S.D. Fla. 1984) (attributing the phrase to a member of Congress and recognizing the concern as "valid").

[108] *See, e.g.*, *Bulk Distribution*, 589 F. Supp. at 1449.

Most courts, however, have held that the introductory phrase of section 107 — "Notwithstanding any other provision or rule of law"[109] — indicates that the requirement of section 107(a)(4)(B) is to be defined independently of section 112.[110] Among the courts adhering to this general trend away from judicial preconditions, however, a severe split still exists on the subsidiary question of whether *any* governmental action is required to make a private cleanup "consistent" with the NCP. Of these courts, at least one has required that before a private party may commence a recovery action, the site must be on the NPL.[111] This court reasoned that by failing to require listing of the site on the NPL, it would eviscerate the requirement that the action be "consistent" with the NCP, undermining the congressional intent to provide a systematic unified response to hazardous waste problems.[112] The court explained away the fact that inclusion in the NPL is clearly not required in state recovery of cleanup costs[113] by arguing that governments do not need the additional restraints on unbridled cleanups that individuals require.[114]

Most courts that reject incorporation of the requirements of section 112 into section 107, however, have adopted the less restrictive view that neither adherence to the preauthorization requirements of section 112 nor listing on the NPL is a prerequisite to recovery of cleanup costs under section 107. Some of them have stated that a lesser form of government action or authorization is required.[115] Others, seeking to further the statutory aim of cleanup, have imposed still fewer prerequisites on private recovery plaintiffs,[116] believing that sufficient safeguards are imposed by the statute's stricter requirement that the private plaintiff prove that its actions were "consistent" with the NCP, whereas the government has only to prove that its actions were "not inconsistent" with the NCP.[117]

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[109] CERCLA § 107(a), 42 U.S.C. § 9607(a) (1982).

[110] *See, e.g.*, United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 850 (W.D. Mo. 1984); United States v. Wade, 577 F. Supp. 1326, 1336 (E.D. Pa. 1983).

[111] *See* Cadillac Fairview/California, Inc. v. Dow Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,376, 20,379 (C.D. Cal. March 5, 1984)

[112] *See id.*

[113] *See* New York v. Shore Realty Corp., 759 F.2d 1032, 1047–48 (2d. Cir. 1985).

[114] *See* Cadillac Fairview/California, Inc. v. Dow Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,716, 20,717 (C.D. Cal. 1984). By its own terms this argument is over-inclusive, however, because many "private" plaintiffs under § 107 are themselves local governmental entities. *See supra*, note 70.

[115] *See, e.g.*, Bulk Distrib. Centers, Inc. v. Monsanto Co. 589 F. Supp. 1437, 1444–45 & n.18 (S.D. Fla. 1984) (requiring prior government approval of cleanup).

[116] *See, e.g.*, Pinole Point Properties, Inc. v. Bethlehem Steel Corp., 596 F. Supp. 283, 287–90 (N.D. Cal. 1984).

[117] *See* United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 850 (W.D. Mo. 1984).

This least restrictive approach is most consistent with the EPA's recently revised NCP.[118] The NCP attempts to clarify what is meant by "consistent with the NCP" and "makes it absolutely clear that no Federal approval of any kind is a prerequisite to cost recovery under section 107."[119] The revisions are undoubtedly designed to encourage more private sector cleanups — cleanups that have been discouraged by courts' restrictive reading of the "consistent" requirement of section 107(a)(4)(B). The regulations miss their goal, however, because they impose other burdensome prerequisites for private cost recovery.[120] By including such requirements as providing "an opportunity for appropriate public comment concerning the selection of a remedial action,"[121] the NCP prevents the streamlined response that should be the primary advantage of private party cleanups. The EPA should simply establish that third parties may recover only an amount equal to what would have been reasonably thought to be the cost-effective response.[122] Further prerequisites to recovery would be unnecessary because third parties would have the proper incentives to take efficient cleanup measures. Any further regulation leads only to the possibility of delay and the continued existence of dangerous and uncleaned waste sites.

C. Conclusion

The amount of federal money available for cleanup of the thousands of hazardous waste sites in the United States is ultimately inadequate. CERCLA's problems, however, would not be solved by simply increasing the amount of money available to the Fund.[123] The EPA is probably not properly equipped to handle effectively a massive influx of money into the CERCLA Fund.[124] Furthermore, the money would be better spent on the prospective and preventive goals of the

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[118] *See* 50 Fed. Reg. 47,912 (1985).

[119] 50 Fed. Reg. 47,912, 47,934 (1985) (to be codified at C.F.R. § 300.71). As noted earlier, however, preauthorization is a requirement for recovery against the Fund. Perhaps this distinction grows out of a realization that the spending restrictions of §§ 104 and 112 were implemented to preserve finite Fund monies. No such considerations need come into play under § 107 where costs are recovered not from the Fund but from the responsible parties.

[120] *See* 50 Fed. Reg. 47,912, 47,977 (1985) (NCP § 300.71(a)(2)(i)–(ii)).

[121] *Id.* (NCP § 300.71(a)(2)(ii)(D)).

[122] Moreover, recovery for an ineffective response should be absolutely barred.

[123] The House has proposed increasing CERCLA funding for 1985–1990 to $2 billion per year, *see* HOUSE REPORT, *supra* note 1, at 54, an increase of 625% over the previous average annual authorization of $.32 billion, *see* W. DRAYTON, *supra* note 1, at 57. The Senate has proposed an increase to $1.5 billion per year, a 469% increase. *See* SENATE REPORT, *supra* note 23, at 68.

[124] *See* N.Y. Times, Feb. 11, 1986, at A30, col. 1.

Resource Conservation and Recovery Act (RCRA).[125] The proper solution is to spend more effectively the Fund monies currently available by encouraging more aggressive recovery under section 107,[126] and more private cleanups to be followed by recovery of costs under sections 106 and 107.[127] The procedural ambiguities created by Congress and perpetuated by the courts and the EPA continue to frustrate these reforms. As a result, the EPA engages in a limited number of capital-intensive cleanups while thousands of potentially dangerous sites go unaddressed. The hastily adopted procedures that Congress intended would facilitate needed cleanups have unfortunately, in several instances, led to a series of complexities that tend to frustrate that goal. Procedure has been allowed to hamper rather than facilitate the substantive performance of CERCLA.

IV. Settlements Under CERCLA

A policy of pursuing settlements under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is encouraged both by statutory provisions and by a number of practical considerations. CERCLA section 104(a) provides that the EPA may take appropriate response action — such as direct cleanup under section 104[1] or the issuance of administrative orders under section 106[2] — to clean up a hazardous waste site if it first determines that no responsible party will do so.[3] If a responsible party fails to take removal or remedial action, it may be required to pay punitive damages.[4] Moreover, numerous practical advantages exist both for the government and for potentially responsible parties in the settlement of CERCLA claims. The government gains because settlements lodge

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[125] This redirection of EPA money would be particularly appropriate because a GAO study suggests that compliance with RCRA is running at less than 23%. *See* W. Drayton, *supra* note 1, at 49–50. For a discussion of RCRA, see Subsection 2 of Section A of Part II.

[126] As of July 1984, recovery was running at less than 2%, *see* W. Drayton, *supra* note 1, at 58, although the EPA based its most recent budget request on predictions of 50% cost recovery, *see* Environmental Safety's Senate Testimony on Federal Year 1986 RCRA Budget Proposal (February, 1985) (on file at Harvard Law School Library).

[127] Part of the answer would be to encourage more settlements. This option is discussed more thoroughly, below in Part IV.

[1] 42 U.S.C. § 9604 (1982).

[2] *Id.* § 9606(a).

[3] *See* CERCLA § 104(a), 42 U.S.C. § 9604(a) (1982). Settlement is further encouraged by other provisions, including the informal notice to potentially responsible parties of having a site listed on the National Priority List, *see* Rikleen, *Negotiating Superfund Settlement Agreements*, 10 B.C. Envtl. Aff. L. Rev. 697, 702–03 (1983), and formal notice letters generally sent by the EPA to potentially responsible parties, *see id.* These notice provisions ensure that defendants are aware of the legal consequences of their dumping.

[4] *See* CERCLA § 107(c)(3), 42 U.S.C. § 9607(c)(3) (1982). The punitive damages provisions may discourage defendants from attempting to delay rather than to settle.

cleanup responsibility directly with those who will ultimately bear the cleanup costs, obviating the need for governmental cleanup followed by protracted court battles. Settlements may thus result in more expeditious resolution of pressing environmental problems with concomitant reductions both in the EPA's aggregate costs of litigation and in the need to finance cleanups through the Fund. Likewise, a potentially responsible party who settles gains in a number of ways: it can have greater control in defining its responsibility and the mode of cleanup; it can avoid the enormous cost that trying a hazardous waste case entails; and it can reap the potential public relations advantage involved in appearing to be the "good corporate citizen."[5] Despite these incentives for both the government and for potentially responsible parties, negotiated settlements under CERCLA have failed to realize their initial promise as a suitable alternative to litigation.

A. The EPA's Settlement Policy Prior to 1985

The EPA's approach to negotiating settlements under CERCLA has gone through three distinct phases. In the first five years after the statute was passed, the EPA analyzed settlement proposals without publishing its criteria. This approach not only frustrated legitimate settlement offers by obscuring the applicable settlement standards,[6] but also lent itself to abuse by the EPA. During its first phase, from 1980 to 1983, the mismanaged, pro-industry EPA executed a series of "sweetheart deals" with the waste-generating industry. In 1983, new leadership took the EPA into a second phase attempting to salvage the agency's tarnished image by aggressively pursuing litigation and avoiding the now-controversial route of settlement. In 1985, publishing an interim settlement policy and returning to settlement as a legitimate enforcement tool, the EPA entered yet a third phase less extreme than those of the previous five years.

Prior to mid-1983, the EPA's policy of analyzing settlement offers in the absence of published standards drew severe criticism, including accusations that the EPA was participating in "sweetheart deals" with the regulated industry.[7] This evaluation policy thus contributed to

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[5] *See* Rikleen, *supra* note 3, at 704–05.

[6] *See* Dinkins, *Shall We Fight or Will We Finish: Environmental Dispute Resolution in a Litigious Society*, 14 ENVTL. L. REP. (ENVTL. L. INST.) 10,398, 10,400 (1984) (noting that in some instances "settlement policies were vague, inconsistent, or not widely publicized, thus giving the regulated community no guidance on how and when the government would settle cases").

[7] *See* Miller, *EPA Superfund Enforcement: The Question Isn't When to Negotiate and When to Litigate, But How to Do Either and How Often*, 13 ENVTL. L. REP. (ENVTL. L. INST.) 10,062, 10,063 (1983). *But see* Bernstein, *The* Enviro-Chem *Settlement: Superfund Problem Solving*, 13 ENVTL. L. REP. (ENVTL. L. INST.) 10,402, 10,403 n.7 (1983) (arguing that at least one purported "sweetheart deal" was in fact legitimate).

the EPA's inability to maintain a credible enforcement presence.[8] Many settlements negotiated during this time were highly unfavorable to the government. For instance, in *United States v. Seymour Recycling Corp.*,[9] the EPA allowed the twenty-four largest generators to escape suit and to obtain releases shielding them from any additional liability by promising only partial cleanup.[10] Exposure of these practices led to the resignation or firing of over twenty top-level EPA officials.[11]

After 1983, new EPA leadership aggressively pursued CERCLA litigation and direct federal cleanup, thus downplaying the role of settlement and voluntary cleanup.[12] Although purporting to make settlement decisions on the basis of individual circumstances, the EPA analyzed settlement offers using rigid, unpublished criteria. For instance, the EPA consistently refused to begin negotiations unless the opening offer by the potentially responsible parties would cover at least eighty percent of the cleanup costs. Moreover, the EPA would rarely settle for less than 100 percent of total costs. The Administrative Conference of the United States[13] sharply criticized the EPA's inflexible approach.[14] The EPA, it argued, "'put[ ] too little stress on negotiations and ha[d] adopted a series of procedural and substantive requirements that unnecessarily constrict[ed]' the number of negotiated settlements possible."[15] In 1984, the Administrative Conference recommended a number of steps designed to promote settlements, including increased use of mediators, adoption of more flexible standards by the EPA, and public participation in negotiations.[16] The Conference most prominently recommended abolition of the rigid eighty

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[8] *See* Miller, *supra* note 7, at 10,063.

[9] 554 F. Supp. 1334 (S.D. Ind. 1982).

[10] *See Largest Voluntary Cleanup Settlement Announced for Seymour Site Under Superfund*, 13 [Current Developments] Env't Rep. (BNA) 877, 878 (1982).

[11] *See* H.R. REP. No. 253, pt. 1, 99th Cong., 1st Sess. 55 (1985).

[12] *See* Alvin Alm, EPA Deputy Administrator, EPA Memorandum and List of Candidate Priorities for Agency Activities in Fiscal 1985 (Sept. 26, 1983), *reprinted* in 14 [Current Developments] Env't Rep. (BNA) 942, 942–43 (1983) (ranking removal and remedial actions first and second among the agency's priorities and ranking negotiation with potentially responsible parties thirty-third).

[13] The Administrative Conference is an independent federal agency that recommends ways to increase the effectiveness of various legal processes. The Conference lacks enforcement authority.

[14] Other sources also criticized the EPA for its rigid settlement policies. *See* Dinkins, *supra* note 6, at 10,400.

[15] *U.S. Administrative Conference Urges Greater Use of Negotiations Under CERCLA*, 15 [Current Developments] Env't Rep. (BNA) 392, 393 (1985) [hereinafter cited as *Administrative Conference*] (quoting recommendations adopted by the U.S. Administrative Conference).

[16] In at least one early CERCLA case, the Department of Justice published a proposed consent decree in the Federal Register and solicited public comment. *See* United States v. Seymour Recycling Corp., 554 F. Supp. 1334, 1336 (S.D. Ind. 1982).

percent rule.[17] Although the EPA's strategy of focusing on litigation of Fund-financed cleanups avoided controversial settlements, it also increased the drain on the Fund and discouraged the voluntary efforts essential to a successful cleanup of the nation's hazardous waste sites.[18]

The EPA entered its third phase in February 1985, when it attempted to remedy these problems by publishing an interim CERCLA settlement policy setting forth standards to guide settlement negotiations.[19] These guidelines serve the important function of reducing uncertainty among potentially responsible parties with respect to the kind of offer necessary to reach settlement with the EPA. More important, publication of the interim policy expressly indicated the EPA's cautious reacceptance of the value of settlements[20] and a more balanced pursuit of both litigation and settlement. The interim policy, however, contains several flaws which may hinder its effectiveness at encouraging settlements.

B. The Interim Policy Statement: The EPA's Current Approach to Settlements Under CERCLA

By simultaneously increasing the EPA's flexibility and reducing the regulated industry's uncertainty, the interim statement increases the likelihood of productive negotiations in CERCLA cases. Although complete cleanup of each hazardous waste site remains the general objective of the interim settlement policy,[21] the EPA is now more willing to consider settlement offers covering less than the total costs of cleanup. Most important, the interim statement abandons the eighty percent requirement in favor of a more flexible evaluation scheme that relies on ten published criteria.[22] Settlements are further

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[17] *See Administrative Conference*, *supra* note 15, at 393.

[18] *See* Bernstein, *supra* note 7, at 10,402–05; Dinkins, *supra* note 6, at 10,399.

[19] *See* 50 Fed. Reg. 5034 (1985). The interim statement sets forth the approach that the EPA will use in evaluating private party settlement proposals until public comments are received and incorporated into a final settlement policy. Although published over a year ago, the interim policy will probably not be final until after reauthorization of CERCLA because amendments to CERCLA could limit the provisions of the EPA settlement policy. Telephone interview with Debbie Wood, EPA, Office of Waste Programs Enforcement (Jan. 16, 1986).

[20] *See* 50 Fed. Reg. 5034 (1985).

[21] *See id.* at 5035.

[22] The ten criteria are: (1) the volume of wastes contributed to the site by each potentially responsible party; (2) the nature of the wastes contributed (the more toxic the waste, the less likely it is that the EPA will consider granting releases from future liability); (3) the strength of the evidence tracing wastes at the site to the settling parties (the weaker the evidence, the more likely it is that the EPA will accept terms favorable to the potentially responsible parties); (4) the ability of the settling parties to pay (the ability of a potentially responsible party to pay the settlement offer coupled with its probable inability to pay potential litigation costs and damage awards will encourage the EPA to accept the settlement offer); (5) the litigative risks associated with proceeding to trial (the strength of the government's evidence and the number of defenses

aided by the articulation of even relatively inflexible rules that were previously unpublished. For example, the interim policy expressly states that negotiations may last up to a maximum of sixty days and will not be authorized until completion of the remedial investigation/feasibility study (RI/FS).[23] This requirement reflects the EPA's belief that meaningful negotiations cannot occur until the agency has determined the nature and extent of the damage.[24] Thus, although the published criteria reflect a move toward both increased flexibility and predictability, the EPA has made it clear that, unlike the years prior to 1983, it now has strong precedent on its side and will settle for less than total cleanup as rarely as possible.

The interim policy statement also sets forth the EPA's position regarding two important problems potentially faced by settling parties. The first problem concerns the settling party's likely future exposure to suits by nonsettling private parties seeking contribution. The doctrine of contribution allows a jointly and severally liable party who has paid all or a portion of a judgment to seek reimbursement from other jointly and severally liable parties. Because CERCLA defendants are jointly and severally liable,[25] those who settle with the EPA theoretically remain exposed to the contribution suits of nonsettlers from whom the EPA subsequently recovers.[26] Although the industry has urged the EPA to grant settling parties express protection from such contribution suits, the EPA believes that settling parties are protected by law from liability for contribution[27] and, pending a court

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available to the potentially responsible parties); (6) "public interest" considerations (such as the availability of Fund and state monies); (7) precedential value (strong evidence favorable to the EPA will encourage it to proceed to trial; likewise, if the potentially responsible parties offer terms favorable to the EPA, the agency may accept the settlement in order to encourage future potentially responsible parties to settle on similar terms); (8) the value of obtaining a present sum certain (in the presence of high interest rates, protracted litigation for relatively small increases in the damages received from potentially responsible parties may not be cost-effective); (9) inequities and aggravating factors (such as whether a proposed settlement unfairly burdens one party); (10) the nature of the case that remains after settlement (whether there are any financially viable parties against whom to proceed for the balance of the cleanup costs and whether the settlement itself harms future recovery from non-settling parties). *See id.* at 5037–38. Many of these criteria are typically used to assess offers of settlement in other kinds of litigation. *See id.* at 5043.

[23] *See id.* at 5041. Extensions of the sixty-day time period will be considered when there is "no threat of seriously delaying cleanup action." *Id.*

[24] Prelitigation negotiations must await not only the completion of the RI/FS but also the preparation of the Negotiations Decisions Document that follows the RI/FS and makes a preliminary identification of the most appropriate remedy for the site. *Id.*

[25] *See infra* Section D of Part VI.

[26] *See* 50 Fed. Reg. at 5038.

[27] The Uniform Contribution Among Tortfeasors Act provides that when settlements are entered into in "good faith," settlers are discharged from "all liability for contribution to any other joint tortfeasors." UNIFORM CONTRIBUTION AMONG TORTFEASORS ACT § 4(b), 12 U.L.A. 98 (1955). The Uniform Act is not directly applicable to federal statutes, but many federal courts

ruling on the issue, the interim policy makes clear that the EPA will be highly reluctant to grant settling parties a specific contribution protection clause.[28] In order to provide settling parties the finality they desire, the EPA may agree in rare instances "to reduce its judgment against the non-settling parties[ ] to the extent necessary to extinguish the settling party's liability to the nonsettling [sic] third party."[29]

The EPA's refusal to provide settling parties with protection from subsequent contribution suits is problematic.[30] This refusal is particularly untenable in light of the EPA's position that good faith settlers are probably entitled to contribution protection as a matter of law.[31] In order to further encourage settlements with minimal costs to the Fund, the EPA should grant contribution protection to settling parties unless there is a significant likelihood that in subsequent litigation involving nonsettling parties, liability will be apportioned in a way that is contradictory to the terms of the settlement.

The second important issue illuminated by the interim statement concerns the potential exposure of settling parties to future claims by the government itself. This exposure arises because of the EPA's unwillingness to grant to settling parties an absolute release from liability.[32] Although many settling parties would obviously prefer that the EPA grant them an absolute release, scientific uncertainty about both the effect of hazardous substances and the effectiveness of cleanup have made the EPA extremely reluctant to grant such releases.[33] Remedial measures that presently seem adequate to clean up a site effectively may in the future prove insufficient. As a result, the EPA has adopted a sliding scale: releases will be relatively broad or narrow depending on the degree of confidence the EPA has in the proposed remedy. Regardless of what scale is used, a release from liability ordinarily will not become effective until the cleanup is completed; moreover, the settlement policy requires that the EPA be given the right to reopen the case if previously unknown conditions arise at the site or if the EPA receives other information unavailable at the time of the settlement.[34]

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have cited it as persuasive authority in contribution suits against settling parties. *See In re* Waverly Accident of Feb. 22–24, 502 F. Supp. 1 (M.D. Tenn. 1979).

[28] *See* 50 Fed. Reg. 5034, 5039 (1985). It makes little sense for the EPA to deny parties explicit contribution protection if the EPA takes the position that settling parties are already protected by law — particularly when granting such an explicit provision could be used to extract concessions from the settling parties.

[29] *Id.* at 5039.

[30] *See* 50 Fed. Reg. at 5038–39. The EPA refuses to grant these releases despite its limited acknowledgement that contribution protection is critical to settling parties. *See id.*

[31] *See supra* pp. 1508–09 & n.27.

[32] *See* 50 Fed. Reg. at 5039.

[33] *See id.*

[34] *See id.* at 5040.

This position with respect to releases from liability is particularly problematic. The EPA's reservation of numerous rights to reopen litigation deprives most CERCLA settlement agreements of the finality that settling parties probably feel is the most important goal. Clearly, the EPA has legitimate reasons for refusing to grant an absolute release. Potentially responsible parties, however, will be unwilling to pay large sums of money in settlement without greater assurance of finality regarding future liability. Several alternatives exist to placing all of the risk of uncertainty on settling parties. The best approach would be to place a cash value on the risk that remedial measures will prove inadequate in the future and to accept a "premium" from the settling parties to cover that risk. If such a premium were calculated in light of the best current information, the EPA would be able to grant absolute releases without forcing the Fund to bear the entire risk of uncertainty about the effectiveness of cleanup. Additionally, the EPA could make certain that it had narrowed the risk of failed remedial measures to the maximum extent possible through careful testing and planning. The EPA might also consider transferring at least some of the risk to the cleanup contractor by obtaining firm fixed-price agreements, rather than time and materials agreements. These steps would allow the EPA to grant a greater number of absolute releases and to increase the number of negotiated settlements without unduly benefitting settling parties. It would thus avoid any impression of showing favoritism to settling parties.

C. Conclusion

The publication of the interim settlement policy represents a positive step by the EPA toward a more balanced enforcement strategy that deemphasizes the agency's recent over-reliance on litigation and administrative actions.[35] Those who criticize the EPA for attempting

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[35] For a discussion of EPA litigation and administrative orders, see *supra* Section A of Part III.

Courts have also sought to encourage this trend back toward settlement in CERCLA cases by employing the novel approach of bifurcating the trial and trying the remedy issue first — particularly in cases in which settlement already seems likely. Defendants are thought to be more likely to settle when when they know the extent of the contamination and when their potential liability after litigation is certain. *See* United States v. Seymour Recycling Corp., 21 Env't Rep. Cas. (BNA) 1999, 2001 (S.D. Ind. 1984). This procedure, however, is of limited utility. First, bifurcation forces the parties to move directly to the most costly, time-consuming, and complicated part of the litigation. The goal of litigating the remedy issue is primarily to produce information that will lead to the best remedial plan. Joinder of all potentially liable third parties possessing information thus becomes far more important in CERCLA cases than in most other litigation in which the defendants are joint and severally liable. *See, e.g.*, United States v. Price, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,501, 20,502 (D.N.J. 1984) (providing for a period of time during which third-party defendants could be added). By far the most limiting factor in the use of bifurcated CERCLA trials is that they are effective only when

any negotiation with potentially responsible parties prior to bringing judicial action are misguided.[36] Such negotiations are not necessarily the result of pro-industry sentiment within the EPA, nor do they necessarily delay effective cleanup. Because the EPA lacks the resources to locate and join every potentially responsible party, it must engage in the combination of litigation and negotiation that maximizes deterrence of would-be violators.[37] Indeed, the EPA should resort to the judicial enforcement process only in that fraction of disputes necessary to make its threats of litigation credible.[38] Aggressive enforcement of CERCLA has been myopically defined in terms of the number of cases actually brought to trial.[39]

Because legal precedents obtained in the last several years have confirmed the standards of strict, joint and several liability,[40] the EPA is in a much stronger bargaining position now than it was prior to mid-1983. The EPA should use this position of strength to move toward a greater reliance on negotiated settlements as an enforcement tool for CERCLA. The agency's present settlement policy still strikes the balance too much in favor of encouraging litigation when settlement would be more appropriate and more cost-effective. The EPA should not let the specter of past abuses, such as the pre-1983 "sweetheart" deals, deter it from fully integrating settlements into its overall CERCLA enforcement scheme. Only with a properly balanced approach can the EPA best fulfill the purpose that underlies CERCLA: complete cleanup of all hazardous waste sites as quickly and as cheaply as possible.

V. Liability Issues in CERCLA Cleanup Actions

The Environmental Protection Agency (EPA) has overcome a number of legal obstacles in its attempt to clean up hazardous waste sites

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liability is fairly certain and when action by the defendants is relatively coordinated. *See, e.g.*, *Price*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,502 (defendants had formed a Defendant's Study Group); *Seymour*, 21 Env't Rep. Cas. (BNA) at 2001 (defendants had cooperated and chosen, by majority vote, six lawyers to act as liaison counsel in the case). Because of such concerns, the Justice Department opposes bifurcation and trial of remedy first unless there exists a real possibility of settlement and the RI/FS is completed. *See EPA Response to OTA Report, Questions on Stringfellow Leakage Termed Inadequate*, [15 Current Developments] Env't Rep. (BNA) 765 (1984).

[36] *See* Miller, *supra* note 7, at 10,062 (criticizing commentators who question the EPA's propensity to negotiate settlements).

[37] *See* Dinkins, *supra* note 6, at 10,399.

[38] Clearly, litigation may have value independent from contributing to the EPA's enforcement presence. For instance, it serves as a vehicle for setting out the legal boundaries of novel CERCLA questions. But "[o]nce the legal ground rules are established, once the relative rights and responsibilities of the parties are precisely defined, litigation is not a satisfactory means to resolve disputes." *Id.*

[39] *See id.* at 10,401.

[40] *See infra* Sections B & D of Part V.

under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The statute provides little more than a sketch of its intended liability scheme. Section 107 states simply that enumerated parties "shall be liable" for cleanup costs, leaving the standard of liability undefined.[1] CERCLA's introductory section provides that the standard of liability shall be that imposed under the Federal Water Pollution Control Act (FWPCA),[2] but the language of the FWPCA is similarly vague.[3] CERCLA's legislative history is also unhelpful. In order to secure enough votes for passage, Congress deleted endorsements of strict liability and joint and several liability that were originally contained in the legislation.[4] Statements in the legislative history indicate that Congress intended courts to decide liability issues in accordance with general principles of tort common law and to seek guidance from cases decided under the FWPCA.[5]

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[1] Section 107(a) provides that:

> Notwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (b) of this section —
> (1) the owner and operator of a vessel (otherwise subject to the jurisdiction of the United States) 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 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 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, shall be liable for —
> (A) all costs of removal or remedial action incurred by the United States Government or a State not inconsistent with the national contingency plan;
> (B) any other necessary costs of response incurred by any other person consistent with the national contingency plan; and
> (C) damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release.

42 U.S.C. § 9607(a) (1982).

[2] 33 U.S.C. §§ 1251–1376 (1986). The CERCLA provision reads: "'[L]iability' under this subchapter shall be construed to be the standard of liability which obtains under section 1321 of Title 33." CERCLA § 101(32), 42 U.S.C. § 9601(32) (1982).

[3] Like CERCLA, the FWPCA provides simply that parties "shall be liable" for costs enumerated in the statute. FWPCA § 311(f)(1), 33 U.S.C. § 1321(f)(1) (1982).

[4] These references were deleted from the statute in response to opposition from a number of senators. *See, e.g.*, 126 CONG. REC. 30,932 (1980) (statement of Sen. Randolph).

[5] Senator Randolph, a CERCLA sponsor, explained the compromise bill as follows:

> Unless otherwise provided in this act, the standard of liability is intended to be the same as that provided in section 311 of the Federal Water Pollution Control Act (33 U.S.C. § 1321). I understand this to be a standard of strict liability.
>
> It is intended that issues of liability not resolved by this act, if any, shall be governed by traditional and evolving principles of common law. An example is joint and several liability. Any reference to these terms has been deleted, and the liability of joint tort feasors will be determined under common or previous statutory law.

126 CONG. REC. 30,932 (1980). One court suggested that CERCLA's reference to the FWPCA was inconclusive with respect to the issue of joint and several liability:

Although developing CERCLA case law has filled some of the gaps in the sparse statutory provisions, defendants continue to challenge government implementation efforts. Congress is currently debating a number of amendments to CERCLA that would codify prevailing judicial interpretation of its liability provisions.[6] The courts nevertheless retain significant discretion to shape the statute in accordance with evolving principles of common law.

This Part discusses problems courts have encountered in applying CERCLA's liability provisions. Controversial issues include determining who may be liable; whether liability is strict or based on a negligence standard; what the government must show in order to prove that a defendant contributed to a release of hazardous waste; whether liability may be joint and several or must be apportioned among defendants; whether defendants have a right to seek contribution from other potentially liable parties; and whether CERCLA applies retroactively. The discussion reveals that courts have interpreted CERCLA broadly in favor of the government. Indeed, the driving force behind CERCLA cleanup actions is the government's power to threaten an individual defendant with overwhelming liability for what other waste disposers have done. Although this liability scheme is potentially harsh, it is justified for several reasons. First, it shifts cleanup costs from the victims of hazardous waste to the parties responsible for creating the hazard. Second, it creates incentives for safer handling and disposal of wastes by ensuring that cleanup costs are internalized by the waste-generating industry. Third, it relieves the strain on the government's limited budget by encouraging defendants to locate and implead other responsible parties with whom they may share the burden of cleanup.

To the extent that the government carries out its threat — forcing selected defendants to bear a disproportionate share of cleanup costs — CERCLA's liability scheme could impose unfair burdens and frustrate a number of its own objectives.[7] Courts should guard against

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FWPCA says nothing specifically about joint and several liability, nevertheless, a number of courts have imposed joint and several liability by relying on common law rules of liability. . . . Therefore, it is reasonable to conclude that by incorporating the liability provisions of § 311 of FWPCA into CERCLA, Congress intended the courts to impose common law liability rules on generators and other entities liable under CERCLA.

United States v. A & F Materials Co., 578 F. Supp. 1249, 1254–55 (S.D. Ill. 1984).

[6] *See, e.g.*, H.R. 2005, 99th Cong., 1st Sess., 131 CONG. REC. S12,184–85 (daily ed. Sept. 26, 1985); S. 51, 99th Cong., 1st Sess., 131 CONG. REC. S142–47 (daily ed. Jan. 3, 1985).

[7] The Senate report on the original CERCLA bill reveals several objectives of the broad liability scheme: to ensure that those responsible for creating the hazardous waste problem bear the burden of remedying the problem; to ensure that the social cost of unsafe disposal practices is internalized by the industries that generate waste; to create incentives for safer behavior for those parties who possess the greatest knowledge about the risks associated with their wastes and who are in the best position to control disposal decisions; to spread cleanup costs among

this danger by imposing joint liability in suits for contribution, thereby requiring third-party defendants to share with original defendants the liability of parties who are absent or insolvent.[8] This change in the common law rule would encourage all CERCLA defendants — not just those originally sued by the EPA — to assume the burden of locating and impleading other responsible parties. Defendants would still face some inequity, because they would still have to pay for cleaning up the wastes of parties found to be judgment-proof. Under the new rule, however, defendants originally sued by the EPA would be able to spread the shares of these absent parties equitably among all those parties they could identify and bring into the action. Responsibility for these shares would no longer depend on the fortuity of whom the EPA decides to sue.

A. Who May Be Liable

CERCLA identifies four classes of potential defendants: current owners and operators of hazardous waste disposal facilities; past owners and operators; generators of hazardous waste; and those who accept waste for purposes of transporting it to disposal facilities.[9] Courts have not addressed in any detail the issue of who may be classified as a transporter; defendants so classified have thus far failed to contest the designation. But defendants have challenged the government's interpretations of "owner/operator" and "generator." These challenges have compelled courts to establish some limits on the kinds of activity that will expose parties to CERCLA liability and to consider the extent to which corporate officers, in any category, may be held liable for the acts of their corporations.

The statutory definitions of each category of liable actor are very broad.[10] Courts have generally resolved ambiguity with respect to whether a particular party falls within one of the statutory definitions by inquiring into the degree of the defendant's control over some essential link in the disposal decision. One may be an "owner," without possessing legal title to a site, if one had authority to determine how the land was to be used. A producer of hazardous wastes may be a "generator," without having arranged for actual disposal, if it could have foreseen that the wastes would be disposed of at a particular facility. A corporate officer may be individually liable for the acts of the corporation if he personally supervised the corporation's decisionmaking process with respect to the disposal of wastes. This

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as many parties as possible; and to promote efficient resource allocation among industries. *See* S. REP. NO. 848, 96th Cong., 2d Sess. 12–15, 31–34 (1980).

[8] *See infra* p. 1539.

[9] *See* CERCLA § 107(a)(1)–(4), 42 U.S.C. § 9607(a)(1)–(4) (1982), *quoted supra* note 1.

[10] *See id.*

approach accords with the statute's aim of implicating parties responsible for contributing to the environmental hazard.

1. Owners and Operators

Decisions defining "owner" under section 107(a)(1) suggest a strong trend toward expansive interpretations of CERCLA liability. It is apparent that one who owns land has control over how it will be used. A number of courts have held that a landowner may be liable for a release of hazardous wastes on his land even though the disposal facility is operated by a lessee.[11] Possession of legal title, however, may not be necessary to designation as an "owner." One court has held that a lessee of property was an "owner" within the meaning of the statute, because its sublessee operated a disposal facility on the property.[12] Courts have, however, placed some limits on liability for mere ownership. One court refused to impose liability on a party who had once owned a disposal site but had neither deposited nor allowed others to deposit hazardous wastes during the time the defendant owned the site.[13] The court based its decision on the wording of the statute, which imposes liability for past ownership of a waste site only if the defendant owned the site "'at the time of disposal.'"[14] The Second Circuit has asserted that although past owners may be liable only if waste disposal took place during their ownership, current owners become liable as soon as they take title to land on which a release has occurred.[15] This interpretation closes up a potential loophole in the statute whereby site owners could sell their land to new owners after the cessation of dumping and then become judgment-proof, leaving the government unable to recover from either the old or the new owner.[16]

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[11] *See* United States v. Argent Corp., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,616, 20,616 (D.N.M. May 4, 1984); United States v. South Carolina Recycling & Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,275 (D.S.C. Feb. 23, 1984); *see also* United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 845 n.26 (W.D. Mo. 1984) (stating that a landowner/lessor could have been a defendant if the parties had chosen to join him).

[12] *See* United States v. South Carolina Recycling & Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,895, 20,897 (D.S.C. Aug. 28, 1984).

[13] *See* Cadillac Fairview/California, Inc. v. Dow Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,376, 20,378 (C.D. Cal. Mar. 5, 1984).

[14] *See id.* (quoting CERCLA § 107(a)(2), 42 U.S.C. § 9607(a)(2) (1982)). *But see* United States v. Carolawn Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,698, 20,699 (D.S.C. June 15, 1984) (ruling that owner liability under CERCLA might possibly extend to a company that had held legal title to a disposal site for only one hour — when it was acting as a conduit in a sale of the property on which the disposal site was located — and remanding for determination of the extent of defendant's control over the land).

[15] *See* New York v. Shore Realty Corp., 759 F.2d 1032, 1044–45 (2d Cir. 1985).

[16] *See id.* at 1045.

2. Generators

CERCLA defines generators as persons who "arranged for" disposal or treatment of wastes that they "owned or possessed."[17] Because this language does not require the defendant to have "produced" the wastes, the provision extends to the operators of storage facilities and to those who inherit wastes from previous owners of their property.[18] Despite this broad definition, a number of defendants have challenged their classification as generators on the ground that they were too remote from the disposal decision to be held liable.

One may "arrange for disposal" by choosing a disposal facility, by choosing a transporter or, court decisions suggest, by making any more remote decision that can predictably lead to disposal at a particular facility. At least one court has stated that a generator may be liable for cleanup costs even though the disposal site was chosen not by the generator but by the transporter.[19] In another case, the defendant company had sold its wastes to the operator of a disposal facility not for the purpose of disposal but for use in the facility's oil reclamation process.[20] The court found that this transaction constituted an arrangement for disposal. The key factor in this decision was that the defendant had contracted directly with the facility and knew that the wastes would eventually be disposed of there.[21] The court noted, however, that "liability for releases under § 9607(a)(3) is not endless; it ends with that party who both owned the hazardous waste and made the crucial decision how it would be disposed of or treated, and by whom."[22] The court distinguished the case from a similar one in which a seller of hazardous wastes had escaped liability as a generator because the buyer of the wastes had *independently* arranged for their disposal.[23] The determining factor in each of these holdings was the defendant's control over some decision essential to the disposal process.

3. Corporate Officers

A number of courts have ruled that corporate officers may be held personally liable for the acts of their corporations. One court held

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[17] *See* CERCLA § 107(a)(3), 42 U.S.C. § 9607(a)(3) (1982), *quoted supra* note 1.

[18] *See* Reed, *CERCLA Litigation Update: The Emerging Law of Generator Liability*, 14 ENVTL. L. REP. (ENVTL. L. INST.) 10,224, 10,226–27 (1984).

[19] *See* United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,096, 20,098 n.3 (E.D. Pa. Dec. 22, 1983). Another court held that a generator could be held liable even though its wastes had been removed from the site to which the generator had sent them and had been taken to another facility where the release occurred. *See* Missouri v. Independent Petrochem. Corp., 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,161, 20,161 (E.D. Mo. Jan. 8, 1985).

[20] *See* United States v. A & F Materials Co., 582 F. Supp. 842 (S.D. Ill. 1984).

[21] *See id.* at 845.

[22] *Id.*

[23] *See* United States v. Westinghouse Elec. Corp., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,483, 20,484 (S.D. Ind. June 29, 1983).

that an officer of a transportation company would be liable "if he personally participate[d] in the wrongful, injury-producing act."[24] The court curiously went on to hold, however, that merely placing drums at the site and negotiating the transportation contract were not sufficient participation to meet this standard.[25] Another court gave content to the standard when it held that the vice-president of a waste generating company could be held liable based on his ownership interest in the corporation and his continuing position as a manager in its operations regarding the disposal site.[26] Thus, the liability of corporate officers, like the liability of the companies they manage, appears to rest on the degree of control that they exercise over the disposal decision itself.

Expansive interpretations of who may be liable under CERCLA promote the statute's objectives in a variety of ways. By assigning liability to parties who can influence disposal practices, courts increase the likelihood that CERCLA sanctions will lead to safer behavior in the handling and disposal of wastes. To the extent that courts impose liability on parties responsible for creating environmental hazards, they carry out Congress's intent to allocate the burden of cleanup in the fairest way possible and to make the waste disposal industry internalize its social costs. Because broad liability enables the government to reach a wide range of defendants, it promotes cost-spreading throughout the industry. Finally, by hastening replenishment of the Superfund, such liability facilitates the government's effort to clean up waste sites as quickly as possible.

B. The Standard of Liability

A basic question that courts have faced is whether CERCLA requires a showing of negligence. The statute's liability section contains no language requiring the EPA to show that a defendant acted negligently in disposing of its wastes.[27] The absence of such an explicit requirement has permitted speculation that the statute imposes

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[24] United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,096, 20,102 (E.D. Pa. Dec. 22, 1983) (citations omitted).

[25] *See id.*

[26] *See* United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 849 (W.D. Mo. 1984). The court stated:

> Defendant Lee had the capacity to control the disposal of hazardous waste at the NEPACCO plant; the power to direct the negotiations concerning the disposal of wastes at the Denney farm site; and the capacity to prevent and abate the damage caused by the disposal of hazardous wastes at the Denney farm site. Finally, Lee was a major stockholder in NEPACCO and actively participated in the management of NEPACCO in his capacity as vice-president. The Court finds that the evidence presented is sufficient to impose liability on Lee as an "owner and operator" pursuant to section 107(a)(1).

Id. Other courts have followed this holding. *See, e.g.*, New York v. Shore Realty Corp., 759 F.2d 1032, 1052 (2d Cir. 1985); United States v. Carolawn Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,699, 20,700 (D.S.C. June 15, 1984).

[27] *See* CERCLA § 107(a), 42 U.S.C. § 9607(a) (1982), *quoted supra* note 1.

liability without fault, which would allow the EPA to recover cleanup costs from any defendant shown to have the statutorily required connection with the waste site.

Defendants have argued that Congress intended to impose a negligence standard.[28] They point out that Congress specifically deleted references to strict liability before it enacted the statute.[29] Courts addressing the issue have concluded, however, that CERCLA does impose strict liability.[30] The statute explicitly states that responsible parties shall be liable "subject only" to the three defenses listed in section 107(b).[31] That section provides that due care may be raised as a defense when the defendant's liability is predicated upon the act or omission of a third party.[32] If the statute imposed a negligence standard, courts have concluded, the defense of due care with respect to possible intervention by third parties would be redundant, because due care is always a defense to negligence.[33] Indeed, to adopt a negligence standard would be to ignore Congress's deliberate exclusion of this due care defense when the third party is an employee, agent, or contractual partner of the defendant. Courts draw further support for a strict liability standard from statements in the legislative history and from cases holding that the FWPCA imposes strict liability.[34]

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[28] *See, e.g.*, *NEPACCO*, 579 F. Supp. at 843; United States v. Price, 577 F. Supp. 1103, 1113 (D.N.J. 1983).

[29] *See, e.g.*, *NEPACCO*, 579 F. Supp. at 843; *Price*, 577 F. Supp. at 1113–14.

[30] *See, e.g.*, United States v. Argent Corp., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,497, 20,497 (D.N.M. May 4, 1984); United States v. South Carolina Recycling & Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,274 (D.S.C. Feb. 23, 1984); United States v. Conservation Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,207, 20,208 (W.D. Mo. Feb. 3, 1984); *NEPACCO*, 579 F. Supp. at 844; *Price*, 577 F. Supp. at 1114.

[31] Section 107(b) states:

> There shall be no liability under subsection (a) of this section for a person otherwise liable who can establish by a preponderance of the evidence that the release or threat of release of a hazardous substance and the damages resulting therefrom were caused solely by —
>
> (1) an act of God;
>
> (2) an act of war;
>
> (3) an act or omission of a third party other than an employee or agent of the defendant, or than one whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly, with the defendant (except where the sole contractual arrangement arises from a published tariff and acceptance for carriage by a common carrier by rail), if the defendant establishes by a preponderance of the evidence that (a) he exercised due care with respect to the hazardous substance concerned, taking into consideration the characteristics of such hazardous substance, in light of all relevant facts and circumstances, and (b) he took precautions against foreseeable acts or omissions of any such third party and the consequences that could foreseeably result from such acts or omissions; or
>
> (4) any combination of the foregoing paragraphs.

42 U.S.C. § 9607(b) (1982).

[32] *See generally* pp. 1545–48.

[33] *See, e.g.*, *Price*, 577 F. Supp. at 1114; *see also* Comment, *Generator Liability Under Superfund for Clean-Up of Abandoned Hazardous Waste Dumpsites*, 130 U. PA. L. REV. 1229, 1260 (1982) (describing the operation of the third-party due care defense).

[34] *See, e.g.*, United States v. Argent Corp., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,497,

Because CERCLA defines its standard of liability as that obtaining under the FWPCA, courts have given these cases great weight. Finally, courts have reasoned that because strict liability is more likely to achieve the goals of rapid cleanup, cost-shifting to responsible parties, and cost-spreading throughout the industry and the population of consumers, it is probably the standard that Congress intended to impose.[35]

Strict liability is indeed preferable to negligence. Under a negligence standard, the government would be able to clean up fewer disposal sites. First, the government could not prove negligence at some sites. Second, the greater expense of litigating negligence would result in more rapid depletion of the Superfund. Moreover, imposing liability without fault ensures that cleanup costs will be borne by the companies that generate and dispose of the wastes rather than by the local residents or the taxpayers generally.

This result is both fair and efficient. If a site is not cleaned up, the social cost of the release is borne by residents of the surrounding area, who must either move from their homes or suffer the health hazards resulting from contaminated soil and groundwater. As between the innocent victims of hazardous waste and the companies who created the hazard, it is the latter who should pay for the costs of cleanup. The companies not only caused the "injury," they also reaped the financial benefits of cheaper waste disposal.

By forcing corporations involved in toxic waste disposal to internalize cleanup costs, strict liability serves as the most efficient means of encouraging the development of safer waste disposal techniques. If companies know in advance that they will be liable for any releases with which they are associated, they will continue to seek newer and

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20,497 (D.N.M. May 4, 1984); United States v. South Carolina Recycling & Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,274 (D.S.C. Feb. 23, 1984); United States v. Conservation Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,207, 20,208 (W.D. Mo. Feb. 3, 1984); United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 843 (W.D. Mo. 1984); United States v. Price, 577 F. Supp. 1103, 1113 (D.N.J. 1983).

Senator Randolph, a CERCLA sponsor, commented on the compromise bill as follows: "As under section 311, due care or the absence of negligence with respect to a release or threatened release of a hazardous substance does not constitute a defense under this act." 126 CONG. REC. 30,932 (1980). Representative Florio made a similar statement when explaining the final compromise bill to the House. *See* 126 CONG. REC. 31,965 (1980).

The FWPCA provides that defendants "shall be liable" subject to the same three defenses contained in CERCLA. *See* FWPCA § 311(f)(1), 33 U.S.C. § 1321(f)(1) (1986). Courts have consistently interpreted that provision to require strict liability. *See, e.g.*, United States v. LeBeouf Bros. Towing Co., 621 F.2d 787, 789 (5th Cir. 1980), *cert. denied*, 452 U.S. 906 (1981); Steuart Transp. Co. v. Allied Towing Corp., 596 F.2d 609, 613 (4th Cir. 1979); United States v. Tex-Tow, Inc., 589 F.2d 1310, 1313 (7th Cir. 1978); Burgess v. M/V Tamano, 564 F.2d 964, 981 (1st Cir. 1977).

[35] *Conservation Chemical*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,208; *Price*, 577 F. Supp. at 1114.

safer methods of waste disposal. These companies are generally in the best position to evaluate both the hazards created by their waste products and the means to alleviate those hazards.[36] Under strict liability, prevention costs will be internalized and will be reflected in the prices of products that create toxic waste.[37] Because consumers will then reduce their purchases of products that generate toxic waste, strict liability makes it more likely that the market will attain an efficient balance between chemical consumption and safe disposal.

C. The Standard of Causation

The version of CERCLA originally passed by the House stipulated that parties could be held liable only if they had "caused or contributed to" a release.[38] The final version of the bill eliminated this clause and thus eliminated from the statute any express requirement that the government prove causation as an element of its case in chief.[39] Instead, the statute simply lists potentially liable parties[40] and sets forth three narrowly circumscribed causation-based defenses. A party may escape liability by showing that the release was caused solely by an act of God, an act of war, or the act of a third party not in a contractual relationship with the defendant.[41] Courts have interpreted CERCLA to require only a very weak showing of causation. This broadening of the traditional standards of tort common law is justified, however, by the special difficulties of proof in hazardous waste cases.

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[36] For a discussion of the economic efficiency benefits of placing liability on the "cheapest cost avoider," see Calabresi & Hirschoff, *Toward a Test for Strict Liability in Torts*, 81 YALE L.J. 1055, 1060 (1972).

[37] The Seventh Circuit noted in an FWPCA case:

> [T]he party engaged in the potentially polluting enterprise is in the best position to estimate the risk of accidental pollution and plan accordingly, as by raising its prices or purchasing insurance. Economically, it makes sense to place the cost of pollution on the enterprise (here water transport of gasoline) which statistically will cause pollution and in fact does cause pollution.

United States v. Tex-Tow, Inc., 589 F.2d 1310, 1314–15 (7th Cir. 1978) (footnotes omitted).

[38] H.R. 7020, 96th Cong., 2d Sess. § 3071(a)(1), 126 CONG. REC. 26,779 (1980). The committee report stated:

> The Committee intends that the usual common law principles of causation, including those of proximate causation, should govern the determination of whether a defendant 'caused or contributed' to a release or threatened release . . . . Thus, for instance, the mere act of generation or transportation of hazardous waste, or the mere existence of a generator's or transporter's waste in a site with respect to which cleanup costs are incurred would not, in and of itself, result in liability under section 3071.

H.R. REP. NO. 1016, pt. 1, 96th Cong., 2d Sess. 33, *reprinted in* 1980 U.S. CODE CONG. & AD. NEWS 6119, 6136.

[39] *See* 126 CONG. REC. 31,969 (1980).

[40] *See* CERCLA § 107(a), 42 U.S.C. § 9607(a) (1982), *quoted supra* note 1.

[41] *See id.* § 107(b), 42 U.S.C. § 9607(b) (1982), *quoted supra* note 31.

Most litigation of the causation issue has involved generators.[42] A number of courts addressing the issue have held that a producer of toxic waste may be held liable if (1) its wastes were delivered to the site; (2) wastes of that type were found at the site at the time the release occurred; and (3) there was a release or threatened release of any hazardous substance that (4) caused the government to incur recoverable response costs.[43] This test imposes liability without requiring proof that the defendant's own wastes or even wastes of the same type were part of a release. The wastes need only have been present at the site at the time the release occurred. Once the government has established the four elements of liability listed above, the defendant can invoke one of the affirmative defenses of section 107(b).[44] Although a defendant could theoretically rebut the presumption of causation by showing that all the chemicals in a release were produced by another generator sharing the disposal site — thus demonstrating that the release was caused solely by the act of a contractually unrelated third party — government experts have conceded that it is virtually impossible to prove such an assertion.[45]

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[42] Owners have litigated the causation issue, but not through the third-party defenses. Rather, defendants have argued unsuccessfully that Congress intended that liability require more than simple ownership of the land on which the site was located. *See* New York v. Shore Realty Corp., 759 F.2d 1032, 1043–44 (2d Cir. 1985) (stating that causation is not required to establish the liability of an owner/operator); United States v. Cauffman, 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,161, 20,162 (C.D. Cal. Oct. 23, 1984) (same). Generators and the transporters who carry their wastes could invoke the third-party defense by showing that those particular wastes were not contained in the release. Proving such an assertion, however, is almost impossible. *See infra* notes 46 & 47.

[43] *See, e.g.*, United States v. South Carolina Recycling & Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,274 (D.S.C. Feb. 23, 1984); United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,096, 20,098 (E.D. Pa. Dec. 22, 1983). A court might effectively collapse the first two parts of the test into one by manipulating evidentiary requirements and burdens of proof. *See* Reed, *supra* note 18, at 10,229. Noting the difficulty and expense of chemical analysis, one court has stated in dictum that circumstantial evidence is enough to prove both (1) delivery of a defendant's wastes to the site and (2) continued presence of similar waste at the time of the release:

> Less resource exhaustive means of showing that a generator's waste or similar wastes are at a site, such as by identification of a generator's drum at the site during cleanup or by way of documentary or circumstantial proof that the wastes were hauled to the site *absent proof that they were subsequently taken away*, should also be sufficient to satisfy [the second] element of proof.

South Carolina Recycling, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,275 n.6 (emphasis added). Under this view, satisfying part 1 creates a presumption that part 2 is also satisfied. Once the plaintiff has shown evidence of delivery, the burden shifts to the defendant to show that its wastes were *not* present at the site when the release occurred. The pending amendments provide no guidance concerning the evidence necessary to prove causation. The issue may therefore continue to generate litigation.

[44] *South Carolina Recycling*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,277 n.11. For a list of the affirmative defenses, see note 31 above.

[45] *See infra* note 47.

Courts adopting this weak causation standard stress that the commingling of wastes that often occurs at a disposal site makes it difficult and prohibitively expensive to identify every substance in a release.[46] Once the substances have been identified, it is even more difficult, if not impossible, to determine which generators produced each one and in what proportions.[47] Requiring the government to "fingerprint" each chemical, one court concluded, would place too great a burden on cost recovery actions, "eviscerating" the statute and defeating congressional intent.[48]

Generators argue that before they are held liable for cleanup costs, the government should be required to prove that a particular generator's wastes were actually found in a release.[49] Alternatively, they argue that the government should at least have to show that the release contained wastes of the same type that the defendant delivered to the site.[50] The government, however, would face the same difficult problems of proof as those faced by defendants. The standard of causation that generators propose would shield not only nonresponsible parties, but some responsible parties as well. By requiring the government to prove that a generator's wastes were delivered to a site and that wastes of the same type were present at the site when the release occurred, the courts have applied reasonable safeguards for the protection of nonresponsible defendants.

Weak causation standards are not unique to CERCLA litigation. Courts may find precedent for such standards in other legal contexts.[51]

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[46] *See, e.g.*, *South Carolina Recycling*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,275 n.6 ("[I]t would have cost in the range of $2.5 million to attempt through analytical means to identify all waste types in the conglomerate of materials stored at the Bluff Road site, approximately five times the cost of surface removal itself.").

[47] *See, e.g.*, United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,096, 20,098 (E.D. Pa. Dec. 22, 1983) ("The government's experts have admitted that scientific technique has not advanced to a point that the identity of the generator of a specific quantity of waste can be stated with certainty.").

[48] *See id.* at 20,098.

[49] *See, e.g.*, United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,096, 20,097 (E.D. Pa. Dec. 22, 1983).

[50] *See id.*

[51] In negligence cases, for example, courts may employ the doctrine of res ipsa loquitur to infer causation from circumstantial evidence. *See* W. KEETON, D. DOBBS, R. KEETON & D. OWEN, PROSSER AND KEETON ON THE LAW OF TORTS § 39 (5th ed. 1984) [hereinafter cited as PROSSER & KEETON]. This technique permits courts to impose liability on parties not proven to have caused harm. One justification for using res ipsa loquitur is that one among a number of parties clearly has been negligent, and threatening them all with liability will force those not responsible to come forward with evidence. The objective in CERCLA cases, however, is not to break a "conspiracy of silence," as it often is in traditional res ipsa loquitur cases. The defendants are not necessarily in any better position than the government to show whose wastes were contained in the release. Both sides agree that it is almost impossible to distinguish the

Market share liability, for example, requires no conclusive proof that the victim's injury was caused by a particular defendant's product.[52] It does not, however, impose joint and several liability; instead, it assigns to each defendant a percentage of the total liability that corresponds to the defendant's percentage market share of the harmful product.[53] Courts have generally felt comfortable applying market share liability only in cases in which all the defendants produced an identical product, and the plaintiff has joined enough defendants to represent a substantial share of the market.[54] These restrictions indicate that the courts attempt to reach a fair approximation of how much harm each defendant actually caused. By contrast, CERCLA has been interpreted to permit joint and several liability, and it contains no requirement that the EPA join a substantial share of parties responsible for a release.[55] Furthermore, the wastes released at a site are not identical; they differ in toxicity and in migratory potential. Under CERCLA, a defendant may be required to pay the cost of cleaning up not only its own wastes, but also wastes produced by other, perhaps more culpable, defendants.[56]

Although these differences suggest that market share liability is inappropriate, the alternative theory of enterprise liability offers a useful model for the toxic waste problem.[57] A waste site can be seen as an enterprise in which each defendant has produced a similar product, the harm from which is, practically speaking, indivisible. Joint and several liability would be applied because the defendants were jointly aware of the potential risk of their activities and could have taken joint action to reduce that risk. The major drawback to

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wastes of different generators in a release. *See supra* note 47. Threatening them each with liability thus will do little to affect the nature or extent of the available evidence.

Other doctrinal schemes impose liability without proof of causation when the defendant is found to be the "cheapest cost avoider." Such a rule encourages parties in the best position to take injury-avoidance measures to provide the economically efficient level of precaution. In these other schemes, however, the law attempts to mitigate the defendant's burden by limiting liability. Under workers' compensation, for example, the employer must accept liability for workplace accidents regardless of who was at fault and regardless of whether the employer caused the injury. *See* PROSSER AND KEETON, *supra*, § 80, at 573–74. At the same time, however, the employer receives the benefit of statutory limitations on the amount of damages an employee may recover. *See id.*

[52] *See* Sindell v. Abbott Labs, 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132 (1979), *cert. denied*, 449 U.S. 912 (1980). For a general discussion of market share liability, see PROSSER AND KEETON, *supra* note 51, § 103, at 714.

[53] *See* PROSSER & KEETON, *supra* note 51, § 103, at 714.

[54] *See id.* For this reason, it has been thought inappropriate to extend market share liability to cases involving asbestos products, because those products contain varying amounts of asbestos. *See id.*

[55] *See infra* Section D of this Part.

[56] *See infra* note 91.

[57] *See infra* pp. 1627–30.

the enterprise liability approach is that CERCLA contains no requirement that the EPA sue enough parties to represent a substantial share of the market. If courts can construct the liability rules in such a way as to ensure that a substantial number of defendants responsible for a release are included in a suit, the risk of unfairness to those defendants that are joined can be greatly reduced.

The courts seem to be satisfied that if a generator used a disposal site, there is a substantial likelihood that its wastes were part of the release.[58] This weak causation test greatly facilitates the government's efforts to achieve rapid cleanup. On the other hand, it creates a risk that courts may assign liability to generators who have little more than a remote relationship to the site and no responsibility whatsoever for the release. Given the special difficulties of proof in hazardous waste cases, courts must run the risk of sacrificing some fairness to waste generators in order to effect Congress's intent that the industry pay for cleanup. A weak causation standard is the best available compromise between the interest in accurately assigning liability and the interest in achieving rapid cleanup. Because courts have found it necessary to sacrifice certainty of causation, however, they should be especially vigilant in preventing inequitable apportionment of liability among defendants.

D. The Scope of Liability

CERCLA fails to address the question of how courts should apportion liability among defendants. Congress deleted language requiring joint and several liability from the statute in order to secure enough votes for passage.[59] Statements in the legislative history indicate that Congress intended the courts to make apportionment decisions on a case-by-case basis in accordance with traditional principles of common law.[60] The amendments currently pending in Congress explicitly confirm that the courts have discretion to apply joint and several liability in appropriate cases.[61] Courts considering the issue have concluded that the statutory language is ambiguous, permitting but not requiring the imposition of joint and several liability.[62]

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[58] "Generators are adequately protected by requiring a plaintiff to prove that a defendant's waste was disposed of at a site and that the substances that make the defendant's waste hazardous are also present at the site." United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,096, 20,098 (E.D. Pa. Dec. 22, 1983).

[59] *See supra* note 4. For a discussion of this change in the language of the statute, see Moore and Kowalski, *When Is One Generator Liable for Another's Waste?*, 33 CLEV. ST. L. REV. 93, 95–96 (1984–85).

[60] *See supra* note 5.

[61] *See* S. REP. NO. 253, 99th Cong., 1st Sess. 74 (1985) (explicitly endorsing the rule of joint and several liability adopted in United States v. Chem-Dyne Corp., 572 F. Supp. 802 (S.D. Ohio 1983)).

[62] *See, e.g.*, United States v. Stringfellow, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,385,

Having found a number of defendants liable under CERCLA, a court may choose either of two alternative methods of apportioning liability. The court may hold each defendant liable only for its own share of the damage, or the court may impose joint and several liability, making each defendant individually liable for the entire cost of cleanup. If liability is apportioned, and some parties are absent or insolvent, their shares go uncompensated. On the other hand, if liability is joint and several, the government may recover the entire judgment from any one defendant. Under joint and several liability, the EPA need sue only a few financially viable parties in order to ensure recovery of substantial cleanup costs. If all the responsible parties are available, and if the original defendants are able to implead them by means of suits for contribution, the lawsuit will result in an equitable apportionment of liability. To the extent that the original defendants are unable to implead the remaining responsible parties, however, joint and several liability forces the original defendants to pay for the unapportioned shares.

The threat of joint and several liability is an essential means of compelling defendants to shoulder the burden and expense of locating and impleading parties potentially liable for a release. Because this threat creates a possibility of misallocation of liability, however, courts should permit original defendants to threaten third-party defendants with joint liability for the shares of absent parties in suits for contribution.[63]

1. Applicable Law

CERCLA's legislative history urges the application of common law principles to questions not specifically answered in the statute. Courts have resolved most of the liability issues by straightforward statutory interpretation.[64] Congress has made clear, however, that the courts should decide issues regarding apportionment of liability among defendants in accordance with traditional and evolving principles of common law.[65]

20,386 (C.D. Cal. Apr. 5, 1984); United States v. South Carolina Recycling & Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,275 (D.S.C. Feb. 23, 1984); United States v. Conservation Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,207, 20,209 (W.D. Mo. Feb. 3, 1984); United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 844 (W.D. Mo. 1984); United States v. A & F Materials Co., 578 F. Supp. 1249, 1254–55 (S.D. Ill. 1984); United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,096, 20,099 (E.D. Pa. Dec. 22, 1983); United States v. Chem-Dyne Corp., 572 F. Supp. 802, 808 (S.D. Ohio 1983).

[63] *See infra* pp. 1535–39.

[64] *See supra* pp. 1514–20; *infra* pp. 1539–42.

[65] *See supra* note 5.

Initially, courts were uncertain whether they should look to federal or state common law.[66] Courts addressing the issue have determined that they have power to apply federal common law and have asserted a variety of sources for this power.[67] First, federal courts can create law for the purpose of filling gaps left by federal statutes.[68] Second, federal courts may create federal common law when it is "'necessary to protect uniquely federal interests.'"[69] The very existence of CERCLA and other pollution control statutes, enacted largely because state solutions to the hazardous waste problem were inadequate, indicates that hazardous waste involves "uniquely federal interests."[70] Third, some courts hold that because the United States derives its authority to sue for reimbursement from a federal law, its rights in obtaining that reimbursement should also be determined by federal law.[71] Finally, some courts hold that CERCLA's legislative history unambiguously confers on courts the power to create federal common law.[72]

Having determined that they have power to create federal common law, courts must next determine whether the law should be uniform or whether each may simply adopt as federal common law the law of the state in which it sits. The Supreme Court has stated that federal programs that "'by their nature are and must be uniform in character throughout the Nation'" require the development of distinctly federal common law.[73] Courts imposing joint and several liability for cleanup of toxic wastes have set forth two reasons why liability rules should

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[66] For a discussion of federal common lawmaking power under CERCLA, see Note, *Liability of Parent Corporations for Hazardous Waste Cleanup and Damages*, 99 HARV. L. REV. 986, 999–1001 (1986).

[67] *See, e.g.*, United States v. A & F Materials Co., 578 F. Supp. 1249, 1255 (S.D. Ill. 1984); United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,096, 20,100 (E.D. Pa. Dec. 22, 1983); United States v. Chem-Dyne Corp., 572 F. Supp. 802, 808 (S.D. Ohio 1983).

[68] *See Chem-Dyne*, 572 F. Supp. at 808 (citing United States v. Little Lake Misere Land Co., 412 U.S. 580, 593 (1973)).

[69] *See id.* at 808 (quoting Texas Indus. v. Radcliff Materials, Inc., 451 U.S. 630, 640 (1981)).

[70] *See id.*; *see also* Illinois v. City of Milwaukee, 406 U.S. 91, 101–02 (1972) (suggesting that the existence of a federal statute is itself evidence of strong federal interest). When federal statutes are designed to be "comprehensive," they may preempt federal common law in the area. *See* City of Milwaukee v. Illinois, 451 U.S. 304, 318–19 (1981). CERCLA, however, is not such a comprehensive statute. It establishes a liability rule, but leaves the courts free to fill in the details. *See* United States v. Stringfellow, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,385, 20,387 (C.D. Cal. Apr. 5, 1984); United States v. A & F Materials Co., 578 F. Supp. 1249, 1255 (S.D. Ill. 1984); Note, *Joint and Several Liability for Hazardous Waste Releases Under Superfund*, 68 VA. L. REV. 1157, 1179–80 (1982).

[71] *See* United States v. Chem-Dyne Corp., 572 F. Supp. 802, 809 (S.D. Ohio 1983) (citing United States v. Kimbell Foods, Inc., 440 U.S. 715, 726 (1979)).

[72] *See* Colorado v. ASARCO, 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,523, 20,526 (D. Colo. May 13, 1985); United States v. A & F Materials Co., 578 F. Supp. 1249, 1255 (S.D. Ill. 1984).

[73] United States v. Kimbell Foods, Inc., 440 U.S. 715, 728 (1979) (quoting United States v. Yazell, 382 U.S. 341, 354 (1966)).

be uniform in such cases. First, adopting different state laws would encourage excessive dumping in states with lenient liability standards.[74] Second, variation from state to state would subject replenishment of the Superfund to the "needless uncertainty and subsequent delay occasioned by diversified local disposition."[75] The idiosyncracies of state common law rules would complicate litigation and unnecessarily burden EPA resources.

Once a court has determined that it should apply a uniform federal rule, it must then consult a proper source for the content of the rule. CERCLA refers to the FWPCA,[76] which has been interpreted in a number of cases to impose joint and several liability.[77] Courts have held, however, that because Congress refused to mandate joint and several liability, a blanket rule of joint and several liability in all cases would be inappropriate.[78] They have examined traditional sources of common law, including not only cases decided under analogous federal statutes, but also state common law, treatises, and the second Restatement of Torts.[79] Thus far, courts addressing the issue have followed one of two alternative approaches. Some have followed the Restatement rule, which allows joint and several liability whenever the harm is "indivisible."[80] Others have followed the approach set forth in the Gore Amendment, a proposed CERCLA amendment that passed in the House but failed in the Senate.[81] This approach allows a court to impose either joint and several liability or apportionment according to a number of different factors.

2. The Restatement Approach

Most courts that have ruled on the issue of joint and several liability have adopted the Restatement formulation,[82] which provides

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[74] *See, e.g.*, *Chem-Dyne*, 572 F. Supp. at 809.

[75] *Id.*

[76] *See supra* p. 1512.

[77] *See, e.g.*, United States v. M/V Big Sam, 681 F.2d 432, 439 (5th Cir. 1982); *In re* Berkley Curtis Bay Co., 557 F. Supp. 335, 339 (S.D.N.Y. 1983); United States v. Hollywood Marine, Inc., 519 F. Supp. 688, 692 (S.D. Tex. 1981).

[78] *See, e.g.*, *Chem-Dyne*, 572 F. Supp. at 810.

[79] *See, e.g.*, *id.* at 809–10.

[80] *See infra* pp. 1528–29.

[81] *See* 126 CONG. REC. 26,781, 26,783–85 (1980).

[82] *See, e.g.*, United States v. Argent Corp., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,497, 20,497 (D.N.M. May 4, 1984); United States v. South Carolina Recycling & Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,275 (D.S.C. Feb. 23, 1984); United States v. Conservation Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,207, 20,209 (W.D. Mo. Feb. 3, 1984); United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,096, 20,100 (E.D. Pa. Dec. 22, 1983); United States v. Chem-Dyne Corp., 572 F. Supp. 802, 810–11 (S.D. Ohio 1983). *But see* United States v. Stringfellow, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,385, 20,387–88 (C.D. Cal. Apr. 5, 1984) (holding that although joint and several liability may apply in a § 107 reimbursement action, it is not applicable in a § 106 action to abate a hazard created by toxic waste).

that liability will be joint and several when the harm suffered is indivisible.[83] An injury is deemed indivisible when there is no "reasonable basis" for dividing the harm among the responsible parties.[84] If the government makes any showing of harm, the burden shifts to the defendant to prove that the harm was divisible.[85] At least one court finding harm produced by a release of toxic waste has held that the harm was indivisible.[86]

In discussing the issue of divisibility, some courts have rejected defendants' arguments that harm could be divided according to the relative volume of waste deposited by each defendant at the site. The courts have reasoned that wastes differ in toxicity and migratory potential and that they have typically commingled with one another at the site.[87] Hazardous substances may differ in their potential to cause harm. Substance *A* might account for ninety percent of a release; but if it were of low toxicity, cleanup might be inexpensive. Substance *B* might account for only ten percent of the release; but its high toxicity might require rigorous safety precautions, making cleanup very expensive. If the two substances escape independently, one polluting an acre and the other polluting nine acres, a court should

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[83] *See* RESTATEMENT (SECOND) OF TORTS § 433A (1965).

[84] An example of divisible harm would be:

> Through the negligence of A, B, and C, water escapes from irrigation ditches on their land, and floods a part of D's farm. There is evidence that 50 per cent of the water came from A's ditch, 30 per cent from B's ditch, and 20 per cent from C's. On the basis of this evidence, A may be held liable for 50 per cent of the damages to [D's] farm, B liable for 30 per cent, and C liable for 20 per cent.

Id. comment d, illustration 4 (1965). An example of indivisible harm would be:

> A Company and B Company each negligently discharge oil into a stream. The oil floats on the surface and is ignited by a spark from an unknown source. The fire spreads to C's barn, and burns it down. C may recover a judgment for the full amount of his damages against A Company, or B Company, or both of them.

Id. comment i, illustration 14.

[85] *See South Carolina Recycling*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,275; *Chem-Dyne*, 572 F. Supp. at 811; RESTATEMENT (SECOND) OF TORTS § 433B (1965).

[86] *See South Carolina Recycling*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,275. The court there noted that:

> Because of the deleterious condition of the site at the time of cleanup, it is impossible to divide the harm in any meaningful way. There were thousands of corroded, leaking drums at the site not segregated by source or waste type. Unknown, incompatible materials comingled to cause fires, fumes, and explosions. Because of the constant threat of further fires, explosions, and other reactions, all of the materials at the site were, if not actually oozing out, in danger of being released. Thus, while all of the substances at the site contributed synergistically to the threatening condition at the site, it is impossible to ascertain the degree of relative contribution of each substance. Clearly, the harm was indivisible, and defendants have failed to meet their burden of proving otherwise.

Id.

[87] *See, e.g.*, *id.* at 20,275 (noting that the harm might also be caused by the synergistic effects of commingling); United States v. Chem-Dyne Corp., 572 F. Supp. 802, 811 (S.D. Ohio 1983). The *South Carolina Recycling* court noted, however, that volume might appropriately be considered in an action by the defendant for contribution from other potentially liable parties. *See South Carolina Recycling*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,275–76.

hold the harm to be divisible, because each substance has produced a distinct harm. If the two mix together, however, and innocuous substance *A* spreads over a wide area, carrying with it the highly toxic substance *B*, expensive cleanup procedures will be required for the entire release. In that case, the harm is indivisible, much like the harm resulting from a fire started by two negligent actors.[88]

Despite the difficulties created by commingling of wastes, volume might under some circumstances provide a "reasonable basis" for dividing harm — particularly when the defendant can show that the various substances in the release require identical cleanup procedures. A defendant might also be able to prove divisibility if it could show that its waste had been segregated from other wastes at the site and that the cost of cleaning up its portion could be quantified. In practice, however, evidence of this kind is rarely present. Thus, even though courts are willing to receive evidence that the harm is divisible, defendants have little chance of proving a sufficiently precise apportionment of responsibility for cleanup costs. Courts that adopt the Restatement rule, therefore, will practically always impose joint and several liability. Congress refused to mandate joint and several liability for all CERCLA actions, because it intended to permit case-by-case adjudication of whether apportioned or joint and several liability is appropriate.[89] In hazardous waste cases, however, a rule based on divisibility proves to be a less than meaningful standard for determining whether joint and several liability or some form of apportioned liability is more appropriate.

When the EPA brings suit against only a subset of the responsible parties, the distribution of costs resulting from joint and several liability may often prove both unfair and inefficient, because it fails to ensure that all responsible parties bear the full cost of their activities.[90] The EPA, because it can rely on joint and several liability, has little incentive to sue everyone connected with a waste site but can afford to focus its resources on only the wealthy or highly visible defendants.[91] If certain kinds of waste are found at a disposal site after a

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[88] *See supra* note 84.

[89] *See supra* note 5.

[90] One of Congress's express goals in enacting CERCLA was to place liability on those responsible for creating the environmental hazard. *See supra* note 7.

[91] The government does not always sue all possible defendants. In one case the defendant pointed out that the EPA had failed to join some 200 to 500 persons with ownership interests in the land on which the release had occurred. Colorado v. ASARCO, 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,523, 20,524 (D. Colo. May 13, 1985). In another case the EPA sued the site owner and four generators, failing to join more than 200 generators whom the defendants claimed were potentially liable. Three of the four original generator defendants had produced, respectively, 1.9%, 1.3%, and 0.9% of the waste at the site. By contrast, certain third-party defendants had produced far greater percentages, some as high as 13.6%. *See* FMC Corporation's Supplemental Memorandum Concerning Bifurcation at 5–6, United States v. Conservation

release, the EPA may choose to sue a generator who disposed of a small quantity of the same type of waste years before CERCLA was enacted, and this defendant could be forced to pay the entire cleanup bill — even absent any proof that its wastes were part of the release — while other responsible parties escaped liability altogether. One might dismiss the specter of this extreme case on the ground that in most lawsuits, substantially all responsible parties will probably be solvent and available for suit. If that were true, however, the government would have had no need to provide for joint and several liability. Indeed, CERCLA's legislative history clearly shows that Congress wanted to provide a source of compensation when defendants were absent or insolvent. Moreover, even if all parties were certain to be available and solvent, the possibility of selective targeting would remain: the EPA has no incentive to sue all potential defendants if it can rely on joint and several liability to recover from a few wealthy defendants. Indeed, because multiparty litigation is complex and expensive, CERCLA creates a disincentive to sue all the responsible parties.

Joint and several liability may prove unfair when it forces certain parties to pay for cleaning up releases to which they did not contribute and from which they derived no past financial benefit. It may also prove inefficient when it fails to provide accurately placed incentives for safer treatment and disposal of wastes. The threat of joint and several liability should create very strong safety incentives for highly visible companies who can anticipate that they will be sued. On the other hand, the fact that one may be required to pay for the liability of others over whom one has no control vitiates the incentive to invest in safety precautions. The incomplete enforcement mechanism fostered by joint and several liability largely insulates small companies from liability and forces wealthy companies to overinternalize the costs of waste disposal. Companies that escape liability do not bear the costs of their unsafe disposal practices; hence their products are underpriced, encouraging them to produce too much. Companies held

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Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,207 (W.D. Mo. Feb. 3, 1984). David Stockman, a Congressman at the time of CERCLA's enactment and an opponent of the broad liability standard, stated in a House debate:

> I would like to suggest to the Members of this House that some day down the road about a year from now they are going to receive a letter from a company in their district that has just received a $5 or $10 million liability suit from EPA that was triggered by nothing more than a decision of a GS-14 that some landfill, some disposal site somewhere, needed to be cleaned up and, as a result of an investigation that his office did, he found out that that company in your district contributed a few hundred pounds of waste to that site 30 years ago.
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> . . . .
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> [And once the EPA has] found that deep pocket, they will immediately go to court and sue that deep pocket, and then all the onus of the law, all of the burden will be on him to prove that he was not responsible . . . .

126 CONG. REC. 26,786 (1980).

jointly and severally liable pay more than their share of cleanup costs; hence their products are overpriced, and they produce too little. The result is to shift production away from the only producers that might alter their behavior in response to the threat of CERCLA liability. Market share shifts toward the very companies that do not respond to CERCLA's safety incentives. They fail to respond, because they know that due to their low visibility they are unlikely to be sued. They know that if they are sued, the high-visibility defendants will also be available to share the liability. CERCLA thus encourages the proliferation of these small companies, who take the market share lost by the large companies that have been forced to overinternalize cleanup costs. Joint and several liability therefore leads to both overdeterrence and underdeterrence of unsafe waste disposal rather than to a uniform incentive for safer behavior.

These negative consequences of incomplete enforcement under joint and several liability can be avoided only when defendants originally sued by the EPA implead all remaining parties connected with the site in suits for contribution.[92] Then each responsible party must pay its respective share of the total cleanup bill. Fairness and incentive problems will take care of themselves. Faced with joint and several liability, the original defendants have an incentive to locate and join all parties connected with the site. Unfortunately, in most toxic waste cleanup cases, at least two obstacles stand in the way of effective contribution by all responsible parties.

First, although many of the smaller responsible parties may have prospered because they were spared direct suit by the EPA, some of them may nonetheless have become judgment-proof. A defendant cannot spread liability by impleading third parties who have become insolvent or have ceased to exist. One traditional argument purporting to answer this concern asserts that wealthy targets threatened with joint and several liability will arrange in advance to apportion liability by contract among their potential co-defendants and to ensure that money will be available to cover liability. A large generator, for example, could refuse to do business with a disposal facility unless the facility required all of its customers to carry liability insurance. If a customer eventually became insolvent, the insurance policy would still be available to cover that customer's share of liability. This argument fails to address two complexities of CERCLA liability. First, CERCLA applies retroactively.[93] Defendants cannot now remedy the fact that other responsible parties failed to obtain insurance in the past and failed to apportion liability among all the users of a particular waste site. Second, insurance companies are now refusing

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[92] *See infra* pp. 1535–39.

[93] *See infra* pp. 1539–42.

to write policies for potential CERCLA defendants.[94] No generator can force others to buy insurance if insurance is unavailable. Generators theoretically could band together and pool their resources in a self-insurance scheme; but the class of waste-producing firms is so large and so diffuse that such a project would be unmanageable. The fact that no industry-wide insurance scheme has appeared during six years of CERCLA litigation suggests that it is only a theoretical possibility.

The second obstacle to complete contribution is that even when all responsible parties are solvent and available for suit, the original defendants must bear the expense of bringing all these parties into the litigation. Unlike original defendants, impleaded parties are liable only for their apportioned share of the damages. Joint liability does not apply in suits for contribution.[95] Thus, even if the harm is held to be indivisible and the original defendants are liable to the government for the entire damage award, an impleaded party is liable to those defendants only for its individual portion of the release, calculated by whatever method of damage allocation the court chooses.[96] Liability for the shares of absent parties must be borne by the original defendants alone; impleaded parties are not forced to shoulder any of this burden. Because they do not fear being forced to bear potentially overwhelming liability for cleaning up their own and some portion of absent parties' wastes, impleaded parties can afford to sit back while the original defendants pay the costs of locating and joining the remaining parties, conducting the litigation, and performing the feasibility study for cleaning up the site. Even when the original defendants succeed in impleading other responsible parties, they are unlikely ever to recover these transaction costs, which may run into the millions of dollars. And even if the case never goes to trial, the cost of settlement negotiations may be quite high; impleaded defendants who are not subject to joint and several liability and are unlikely to be involved frequently in CERCLA suits tend to drag their feet and obstruct settlement efforts. Moreover, regardless of whether the case goes to trial or is settled, the original defendants still bear the costs of conducting the cleanup feasibility study and joining the other parties.

Highly visible defendants that are frequently involved in CERCLA litigation will be forced time and again to pay for these transaction costs and for the shares of absent parties. Over time, therefore, they will be forced to bear an increasingly disproportionate share of cleanup costs relative to low-visibility defendants. It is no doubt more appropriate to place these costs on defendants than to leave them on the

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[94] *See infra* pp. 1575–76.

[95] *See* RESTATEMENT (SECOND) OF TORTS § 886A(2) (1979).

[96] *See infra* pp. 1537–39.

EPA; nevertheless, there is no reason to place these costs on only those parties that the EPA initially chooses to sue. Courts should therefore alter the current rules to avoid inequitable distribution of liability among responsible parties.

3. The Gore Amendment Approach

A number of courts have held that CERCLA's legislative history permits them to depart from the Restatement rule by apportioning liability in certain cases, even when the harm has been found to be indivisible.[97] In support of this conclusion, they refer to the Gore Amendment,[98] which would have modified the Restatement rule by allowing courts to apportion liability not only according to divisibility but according to a variety of factors: (1) the ability of the parties to distinguish their relative contribution to a release; (2) the amount of waste involved; (3) the degree of toxicity of wastes involved; (4) the degree of involvement of the parties in disposal decisions; (5) the degree of care exercised by the parties; and (6) the degree to which the parties cooperated with the government in the prevention of harm.[99] This approach presents the same practical difficulties in dividing harm that one finds in the Restatement approach. Here, however, the court simply does its best to approximate the relative shares (as it would have to do in a suit for contribution, even under the Restatement rule) and limits each defendant's liability to its respective share. Courts following this approach have concluded that, by refusing to mandate a uniform rule of joint and several liability, Congress indicated its willingness to allow apportionment according to factors like those listed in the Gore Amendment.[100]

Apportioning liability according to the factors listed in the Gore Amendment would reduce the potential for unfair targeting of wealthy defendants. The Restatement itself suggests that an exception to its rule might be justified when a defendant has contributed only a small

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[97] *See* United States v. A & F Materials Co., 578 F. Supp. 1249, 1255–57 (S.D. Ill. 1984); United States v. Stringfellow, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,385, 20,387–88 (C.D. Cal. Apr. 5, 1984).

[98] *See A & F Materials*, 578 F. Supp. at 1256; *Stringfellow*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,387.

[99] *See* 126 CONG. REC. 26,781 (1980).

[100] *See, e.g.*, *A & F Materials*, 578 F. Supp. at 1256. The amendments recently passed in the House would permit the government to expend Superfund money to cover "orphan shares," those for which the responsible party is absent or insolvent. *See* H.R. 2005, 99th Cong., 1st Sess. § 130, 131 CONG. REC. S12,194 (daily ed. Sept. 26, 1985). The government clearly will continue to seek joint and several liability whenever possible, however, because it will not be reimbursed for these orphan shares, and the Superfund is not large enough to cover the cost. *Cf.* Eckhardt, *The Unfinished Business of Hazardous Waste Control*, 33 BAYLOR L. REV. 253, 253–54, 263 (1981) (asserting that CERCLA's financing is inadequate to accomplish its goals).

amount to the total harm.[101] The Gore Amendment approach is, at least in theory, both more equitable and more likely to create appropriate safety incentives than is a general rule of joint and several liability. It does not impose liability on some defendants for cleaning up the wastes of others. Thus, it does not compel overinternalization of cleanup costs. Moreover, because the factors listed in the Gore Amendment tie liability to a defendant's relative causal responsibility, apportionment according to these factors rewards attempts to find safer methods of waste disposal.

Unfortunately, the Gore Amendment approach is fatally flawed because of practical limitations on the EPA's enforcement capability. Apportionment of liability, whatever factors of apportionment are used, suffers from two disadvantages: first, when some of those responsible for a given site are unavailable or unable to pay, the government cannot recover the full cost of cleanup; second, when liability is no longer joint and several, defendants lose all incentive to locate and implead other potentially liable parties, shifting the costs of doing so to the government. Because of limited EPA funding, this shifting of costs to the government would require the EPA to abandon cleanup efforts at many sites. Joint and several liability is therefore desirable as a means to ensure that private parties pay for the bulk of CERCLA litigation costs.

Congress could perhaps resolve the first difficulty — absent and insolvent parties — by amending CERCLA to change the standard from joint and several to apportioned liability, while expanding the Superfund to cover any unapportioned shares of cleanup costs. This blend of tort liability and industry taxation would ensure fairness to responsible parties, because no generator would have to pay for cleaning up another's wastes; the expanded Superfund would cover that expense. The plan would also improve somewhat the accuracy of resource allocation and safety incentives within the industry, because highly visible producers would no longer be forced to overinternalize the costs of cleanup or to overinvest in safety precautions.

Although this congressional action would solve the problem created by absent or insolvent parties, it would fail to address the second drawback of apportioned liability — that defendants would have no incentive to locate and join other potentially liable parties and that the costs of doing so would shift back to the government. Because

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[101] In a comment to § 433B the Restatement suggests:

> [I]f a hundred factories each contribute a small, but still uncertain, amount of pollution to a stream, to hold each of them liable for the entire damage because he cannot show the amount of his contribution may perhaps be unjust. Such cases have not arisen, possibly because in such cases some evidence limiting the liability always has been in fact available.

RESTATEMENT (SECOND) OF TORTS § 433B, comment e (1965). CERCLA cases closely resemble this scenario, and there usually is no evidence available that would limit liability.

of the inadequacy of its own resources, the government would be likely to allow a substantial percentage of responsible parties to escape liability, leaving their shares to be covered by the Superfund. And, because fewer responsible parties would be targeted and forced to bear the costs of cleaning up their own wastes, this development would dilute CERCLA's potency as a means to encourage proper resource allocation and development of safer disposal procedures. Assuming that transaction costs are better placed on defendants than on the government, joint and several liability is essential to making CERCLA effective.

4. Suits Between Defendants and Third Parties

At the very least, courts should attempt to ensure equitable allocation of damages among defendants. Courts can further mitigate the harshness of joint and several liability, however, by fashioning rules that give leverage to defendants in impleading and obtaining contribution from other responsible parties. A relatively simple and potentially effective step would be to impose joint liability in suits for contribution. This approach would not resolve all the difficulties of CERCLA liability, because defendants would still bear the liability of absent parties. It would, however, enable named defendants to pass some transaction costs on to other responsible parties and would increase the likelihood that all parties would be joined, thus reducing the potential for unfair or inefficient distribution of liability.

Provisions establishing a right to contribution were deleted from CERCLA.[102] As enacted, the statute is ambiguous. It simply states: "Nothing in this subchapter . . . shall bar a cause of action that an owner or operator or any other person subject to liability under this section, or a guarantor, has or would have, by reason of subrogation or otherwise against any person."[103] The words "or otherwise" could refer to a defendant's right to sue other parties for contribution, and courts have generally held that defendants have such a right.

A number of courts examining CERCLA's language have held that, although it fails to establish an explicit right to contribution, it nevertheless preserves whatever contribution rights a defendant might have under the common law.[104] These courts cite statements in the

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[102] The Senate bill contained a detailed contribution provision: "In any action brought under this section . . . a person held jointly and severally liable with one or more other persons is entitled to seek contribution from such persons to the extent of the proportionate liability of such persons." S. 1480, 96th Cong., 2d Sess. § 4(f)(2), 126 CONG. REC. 30,900 (1980).

[103] CERCLA § 107(e)(2), 42 U.S.C. § 9607(e)(2) (1982).

[104] *See* Colorado v. ASARCO, 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,523, 20,526 (D. Colo. May 13, 1985); Wehner v. Syntex Agribusiness, 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,346, 20,346 (E.D. Mo. Apr. 1, 1985); United States v. Ward, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,804, 20,805–06 (E.D.N.C. May 14, 1984); *see also* New York v. Shore Realty

legislative history suggesting that Congress believed contribution was an appropriate adjunct to joint and several liability.[105] They treat contribution as one of the liability issues that Congress intended for them to determine on a case-by-case basis in accordance with the FWPCA[106] and evolving principles of common law.[107] The sources to which a court might look in creating federal common law — cases interpreting the FWPCA,[108] the Restatement,[109] the Uniform Contribution Among Tortfeasors Act (the Uniform Act),[110] treatises[111] and

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Corp., 759 F.2d 1032, 1042 n.13 (2d Cir. 1985) (citing commentators for the proposition that "joint and several liability is consistent with the contribution language of [CERCLA]"). The Supreme Court has held that a right of contribution can be found under a federal statute in either of two ways: (1) "through the affirmative creation of a right of action by Congress, either expressly or by clear implication"; or (2) "through the power of the federal courts to fashion a federal common law of contribution." Texas Indus. v. Radcliff Materials, Inc., 451 U.S. 630, 638 (1981).

[105] *See, e.g.*, *ASARCO*, 15 ENVTL. L. REP. (ENVTL. L. INST.) at 20,524–25. This court found a right to contribution, relying on the remarks of Representative Gore, who stated that a scheme of joint and several liability, combined with a right of contribution, would give named defendants the "incentive to locate all other responsible parties," 126 CONG. REC. 26,784 (1980). Any parties omitted from the suit "would be located by the named defendants and included by cross-claim." *Id.* Thus, if one defendant were held liable for all damages, that defendant "would then have the right to go against the other 'nonapportioned' defendants for contribution." *Id.*

When explaining the compromise bill to the House, Representative Florio inserted into the Record an opinion prepared by the Department of Justice. That opinion stated that § 9607(e)(2) as passed by the Senate "confirms that a defendant held liable for response costs has the right to seek contribution from any other person responsible for a release or threat of release of a hazardous substance." 126 CONG. REC. 31,966 (1980).

[106] The language of the FWPCA regarding contribution is no clearer than that of CERCLA. It reads: "The liabilities established by this section shall in no way affect any rights which (1) the owner or operator of a vessel or of an onshore facility or an offshore facility may have against any third party whose acts may in any way have caused or contributed to such discharge . . . ." FWPCA § 311(h), 33 U.S.C. § 1321(h) (1986).

[107] *See, e.g.*, *ASARCO*, 15 ENVTL. L. REP. (ENVTL. L. INST.) at 20,526; *Ward*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,805. *But see* United States v. Westinghouse Elec. Corp., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,483, 20,485 (S.D. Ind. June 29, 1983) (concluding that CERCLA preserves state contribution rights but creates no such right under federal common law).

[108] *See, e.g.*, *In re* Berkley Curtis Bay Co., 557 F. Supp. 335, 339 (S.D.N.Y. 1983); United States v. Bear Marine Servs., 509 F. Supp. 710, 716 (E.D. La. 1980), *vacated and remanded on other grounds*, 696 F.2d 1117 (5th Cir. 1983).

[109] *See* RESTATEMENT (SECOND) OF TORTS § 886A (1979) (providing for a right of contribution among defendants liable in tort to the same person for the same harm).

[110] 12 U.L.A. 63 (1975) (1955 version); *see* United States v. Ward, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,804, 20,805–06 (E.D.N.C. May 14, 1984) (citing the Uniform Act as support for a right to contribution). Eighteen states have adopted the contribution principles embodied in the Uniform Act. *See* Note, *The Right to Contribution for Response Costs Under CERCLA*, 60 NOTRE DAME L. REV. 345, 361 & n.122 (1985).

[111] *See* PROSSER & KEETON, *supra* note 51, § 50, at 337–38 (asserting that denial of the right to contribution would exhibit an "obvious lack of sense and justice"). A number of courts have cited such commentary as support for their decisions regarding contribution. *See* Colorado v. ASARCO, 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,523, 20,526 (D. Colo. May 13, 1985)

scholarly commentary, and laws existing in the various states[112] — support a right to contribution.

Traditionally, courts forbade contribution suits only in order to force intentional tortfeasors to bear the full costs of the unlawful acts they had committed.[113] CERCLA liability, however, is predicated on nonculpable conduct. The purpose of the statute is not to punish defendants but to ensure that waste sites are cleaned up. Thus, the historical argument for denying contribution has little force in the CERCLA debate. Because a right of contribution secures the benefits of a larger defendant pool, it serves CERCLA's goals of fairness and efficiency.[114] Moreover, it protects the Superfund from depletion by encouraging voluntary cleanup efforts. When potential defendants receive notice from the EPA that they may be liable for a release of hazardous wastes, they have an incentive to enter settlement negotiations and to try to establish as low a share of liability as they can. If the original defendants had no right of contribution, however, other responsible parties would have little incentive to enter such negotiations. Their better strategy would be simply to wait and hope that the EPA would never sue them directly.

Courts permitting suits for contribution must determine the proper method for allocating damages among defendants who are found liable. The statute gives no guidance regarding the proper method of allocation. Nor is there a uniform rule among the states.[115] Some states apportion damages by dividing them equally among defendants,[116] while others divide damages according to the comparative

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(citing PROSSER & KEETON); Wehner v. Syntex Agribusiness, 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,346, 20,346 (E.D. Mo. Apr. 1, 1985) (citing Note, *supra* note 110, at 361; Comment, *supra* note 33, at 1266 n.184); United States v. Ward, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,804, 20,805 (E.D.N.C. May 14, 1984) (same).

[112] *See ASARCO*, 15 ENVTL. L. REP. (ENVTL. L. INST.) at 20,526; *Ward*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,805 (citing acceptance in the states). A right to contribution is recognized in 44 states and the District of Columbia. *See* Note, *supra* note 110, at 356 n.92.

[113] *See* PROSSER & KEETON, *supra* note 51, § 50, at 336-37. At least one court has held that there is no right to contribution under CERCLA in cases of intentional misconduct. *See Ward*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,805 (denying contribution to defendant convicted of illegally spraying polychlorinated biphenyls on roadsides, while granting contribution as to liability for spraying on other roadsides, for which intent had not been proved).

[114] It has been argued, however, that a right to contribution would *reduce* the incentive effect, because the large waste generators would no longer fear crushing liability. Denying a right of contribution would thus create "an even stronger deterrent" than would granting a right of contribution, because "a single [defendant] could be held fully liable for the total amount of the judgment. In this view, each [potential defendant] would ponder long and hard before engaging in what may be called a game of 'Russian roulette.'" Texas Indus. v. Radcliff Materials, Inc., 451 U.S. 630, 636 (1981). This argument is powerful only if waste disposers believe there is a significant likelihood that they will be sued. Defendants who are not wealthy or highly visible are unlikely to see themselves as playing a game of "Russian roulette."

[115] *See* PROSSER & KEETON, *supra* note 51, § 50, at 338-39.

[116] *See, e.g.*, Early Settlers Ins. Co. v. Schweid, 221 A.2d 920, 923 (D.C. 1966). The EPA has argued for the adoption in CERCLA actions of the Uniform Act, which rejects comparative

fault of each defendant.[117] Alternatively, courts might choose a middle course, allocating damages neither equally nor according to comparative fault, but according to volume and toxicity, a sort of "comparative causation" approach.[118] Even courts adhering firmly to the Restatement rule would be unlikely to take the equal divisions approach.[119]

Allocating damages according to the factors listed in the Gore Amendment would mitigate somewhat the undesirable effects of joint and several liability, because it would tie the burden of cleanup more closely to responsibility for creating the hazard.[120] As long as liability is joint and several, however, the potential for unfairness and inaccurate internalization remains: if the entire damage award must be split among a pool of defendants representing only a small portion of the waste at a disposal site, then each defendant will be paying for a share of some absent party's cleanup bill. Because of the EPA's limited resources, it will likely opt to sue primarily the wealthy defendants. These defendants will face numerous difficulties in locating and recovering from less visible contributors to the site. A rule that allocates damages according to a finely tuned formula of relative responsibility can be effective in achieving CERCLA's goals only if all potentially liable parties are joined so that they all pay their apportioned shares. The rule of joint and several liability, even accompanied by equitable apportionment of damages among defendants,

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fault in favor of equal division of damages among tortfeasors. *See* UNIF. CONTRIBUTION AMONG TORTFEASORS ACT § 2, 12 U.L.A. 87 (1975) (1955 version).

[117] *See, e.g.*, Bielski v. Schulze, 16 Wis. 2d 1, 114 N.W.2d 105, 107 (1962). The comparative fault approach represents the general trend of contribution doctrine. *See* RESTATEMENT (SECOND) OF TORTS § 886A comment h (1979) (suggesting that the comparative fault approach, although more difficult to administer, is fairer than the equal division approach).

[118] Courts should adopt a uniform federal rule for allocation of damages rather than adopt the differing rules of the states in which they sit. The need for uniformity does not end with establishing joint and several liability and contribution. A defendant who knows it can be subjected to joint and several liability and suits for contribution will still be influenced by differing rules on allocation of damages. For example, generators would be encouraged to dispose of their wastes in states where damages are divided equally among defendants. The CERCLA amendments recently passed in the House would explicitly permit courts to divide damages according to "such equitable factors as the court determines are appropriate." H.R. 2005, 99th Cong., 1st Sess. § 135, 131 CONG. REC. S12,195 (daily ed. Sept. 26, 1985).

[119] One court has indicated that it would consider volume a relevant, though not the only factor in allocating damages. *See* United States v. South Carolina Recycling & Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,275–76 (D.S.C. Feb. 23, 1984).

[120] *See supra* pp. 1529–31. It is useful at this point to describe the distinction between allocation of damages and allocation of liability. Using the factors in the Gore Amendment to apportion liability would mean that the government could not recover any unapportioned shares. Imposing joint and several liability, however, and using the Gore Amendment to divide damages, would enable the government to obtain full recovery. The Gore Amendment factors would simply serve as a guide for equitable division of the damages among the defendants.

remains an imperfect mechanism both for internalizing costs and for ensuring fairness to the original defendants in a CERCLA suit.

A relatively simple adjustment to CERCLA liability rules — imposing joint liability in suits for contribution — would go far toward producing equity among defendants. Under present law, the EPA can shift transaction costs to the original defendants, because those defendants fear being held liable for cleaning up the entire site. Suppose, for example, that there are ten parties, each of whom is responsible for ten percent of the waste at a site. If the EPA sues only one of them, then that party must pay the entire judgment. That defendant is therefore willing to spend a great deal of money to bring in other parties. In a subsequent suit for contribution under present law, the original defendant could recover only ten percent of the full amount from each of the other nine parties. The original defendant would bear the liability of any absent or insolvent parties. In return for shouldering the burden of locating and impleading other parties, the original defendant should be empowered to threaten those parties with the possibility that they too will be forced to share the liability of absent or insolvent parties. Under current common law rules, impleaded defendants have no incentive to spend their own resources expanding the pool of defendants. The fact that impleaded defendants feel no threat of joint liability also leads them to be obstructive in settlement negotiations.

If courts imposed joint liability in suits for contribution, the original defendant in the above example could sue any one of the remaining nine parties and collect fifty percent of the damage award. That party could implead another, whereupon the damages would be split three ways, and so on. This threat would lead the impleaded parties to locate and implead other potential defendants. The addition of each successive impleaded party would lead to a reduction of the liability borne by each defendant. Even when the marginal reduction in liability became too small to motivate the original defendants to pursue still more potentially liable parties, the marginal reduction might prove sufficient to motivate the less wealthy impleaded defendants to pursue all remaining parties. This process would continue until the defendants had impleaded the smallest contributors worth pursuing. In this way the original defendants could spread transaction costs throughout the entire pool of responsible parties. They would not be forced to drive the process with their own funds.

E. Retroactivity

CERCLA contains no unequivocal statement that its liability provisions apply retroactively. Its legislative history suggests, however, that the statute was enacted as a means of compelling the waste

disposal industry to correct its past mistakes. CERCLA's sponsors introduced the legislation primarily to fill a gap left by the Resource Conservation and Recovery Act of 1972 (RCRA).[121] Although RCRA had created an elaborate "cradle-to-grave" regulatory structure to oversee waste disposal, it provided no solution to the dangers posed by inactive, abandoned waste sites.[122] In light of this legislative history, courts confronted with the retroactivity issue generally have concluded that CERCLA permits them to impose liability on parties who disposed of hazardous wastes before the statute was enacted.[123] A number of courts have limited the scope of retroactivity by holding that although liability extends to pre-CERCLA conduct, the government may recover only the response costs it has incurred since the effective date of the statute: December 11, 1980.[124] One court, however, recently held that the government may recover even for pre-enactment response costs.[125]

The courts are correct to interpret CERCLA as imposing retroactive liability. The statute was enacted to remedy an environmental hazard that had already occurred, and the only way to make it effective is to hold responsible parties liable for acts they committed before the statute was passed.[126] Congress nevertheless should rec-

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[121] 42 U.S.C. §§ 6901–6987 (1986).

[122] The House Report accompanying the original bill stated:

> (c) Deficiencies in RCRA have left important regulatory gaps.
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> (1) [RCRA] is prospective and applies to past sites only to the extent that they are posing an imminent hazard. Even there, the Act is no help if a financially responsible owner of the site cannot be located. . . . It is the intent of the Committee in [CERCLA] to initiate and establish a comprehensive response and financing mechanism to abate and control the vast problems associated with abandoned and inactive hazardous waste disposal sites.

H.R. REP. NO. 1016, pt. 1, 96th Cong., 2d Sess. 22, *reprinted in* 1980 U.S. CODE CONG. & AD. NEWS 6119, 6125.

[123] *See* United States v. Wade, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,437, 20,438 (E.D. Pa. Mar. 22, 1984); United States v. South Carolina Recycling & Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,277 (D.S.C. Feb. 23, 1984); United States v. Conservation Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,207, 20,208, 20,209 n.4 (W.D. Mo. Feb. 3, 1984); United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 839 (W.D. Mo. 1984); United States v. A & F Materials Co., 578 F. Supp. 1249, 1257 (S.D. Ill. 1984); United States v. Price, 577 F. Supp. 1103, 1112-13 (D.N.J. 1983); Ohio *ex rel.* Brown v. Georgeoff, 562 F. Supp. 1300, 1313-14 (N.D. Ohio, 1983); United States v. Reilly Tar & Chem. Corp. 546 F. Supp. 1100, 1113 (D. Minn. 1982). *But see* United States v. Wade, 546 F. Supp. 785, 794 (E.D. Pa. 1982) (holding that a § 106 action to abate can be brought only to halt current conduct). The reasoning in *Wade* was explicitly criticized in *Conservation Chemical*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,208; *NEPACCO*, 579 F. Supp. at 840; *Price*, 577 F. Supp. at 1111.

[124] *See, e.g.*, *Wade*, 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,438; *NEPACCO*, 579 F. Supp. at 843.

[125] United States v. Shell Oil Co., 15 ENVTL. L. REP. (ENVTL. L. INST.) 20,337, 20,343 (D. Colo. Mar. 26, 1985).

[126] For a discussion of why CERCLA retroactivity is not unconstitutional, see Section B of Part VI.

ognize the limits of what retroactivity can accomplish and its cost in terms of fairness to certain defendants. Retroactive liability cannot promote the goal of creating incentives for safe handling and disposal of wastes, because it is not possible to change behavior that has already occurred.[127] Proponents of retroactive liability thus cannot justify it on the basis of the need to create safety incentives. Retroactive application of CERCLA must be aimed largely at the goals of compensating the Superfund and spreading cleanup costs among the responsible parties. Retroactive liability, however, is the fairest and most effective among the available methods of accomplishing these goals.

Congress's clearest alternative to making liability retroactive would have been to finance cleanup through general taxes. CERCLA defendants opposing retroactive liability argue that they relied on the requirements of prior law and that they should not now be penalized for failing to go beyond those requirements.[128] If prior law was too lax, they argue, the taxpayers — not the regulated industry — should bear the burden of the shortfall.[129] In response to this argument, proponents of retroactivity contend that the existence of prior regulations should have placed companies on notice that they were conducting dangerous activities and that they should be seeking safer disposal methods. The parties with the information and ability to act — in other words, waste generators and disposers — should bear the burden of the injury. Moreover, it was the industry, not the taxpayer, that caused the harm. As between the industry and the general public, the industry, its shareholders, and its consumers should bear the cost.

CERCLA's supporters in Congress argued that placing retroactive liability on waste-generating companies was appropriate not only because the companies had caused the harm, but also because they had received the financial benefits of cheaper waste disposal under the pre-CERCLA regime.[130] Having received the benefits, CERCLA sponsors maintained, the companies should be compelled to make "restitution" for the costs incurred owing to their earlier windfall. This

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[127] One might argue, however, that it functions as a warning to the chemical industry that future, more stringent laws may also be imposed retroactively, encouraging the industry to develop safer disposal methods in advance.

[128] Had a company known it would be held liable for cleanup of any release of its wastes, it might have taken greater precautions or even stopped doing business altogether in order to avoid the risk.

[129] Some would argue that if the law was too lax, it was probably due to the efforts of the industry's lobby and the industry should therefore be liable for the shortfall.

[130] Representative Gore remarked: "In the decades since the postwar petrochemical boom, only the chemical companies themselves had the expertise to understand the damage their dumping practices were doing to the environment. They chose to recklessly disregard that damage and benefitted from the economics of cheap disposal practices." H.R. REP. NO. 1016, pt. 1, 96th Cong., 2d Sess. 63, *reprinted in* 1980 U.S. CODE CONG. & AD. NEWS 6119, 6140.

restitution argument, however, suffers from the fact that groups currently paying for cleanup actually may have received little or no benefit from disposal practices that took place many years ago.[131] The benefits may have gone to former employees in the form of higher wages, to former shareholders as dividends, or to former consumers in the form of lower prices. But some continuity nevertheless may exist between past and present beneficiaries. If the company's past profits enabled it to prosper, the current owners, employees, and business partners of the company are probably better off as a result. Thus, although the correlation between benefit and burden is not perfect, the fit may be closer when liability is imposed on the waste-generating industry than when it is imposed on the taxpayers generally.

If Congress intends to achieve its goal of cleaning up inactive, abandoned waste sites, it will find it necessary to impose retroactive liability on the waste-generating industry. If a site was already abandoned when the statute was passed, the only way to reach the parties responsible is to hold them liable for their pre-CERCLA disposal activities. The industry's arguments against retroactivity appear more convincing, however, when one considers them in combination with the weakness of CERCLA's causation requirement, its no-fault liability standard, and the possibility that one defendant may be required to pay for cleaning up the wastes of many others. The potential inefficiencies and unfairness of retroactivity thus underscore the need to assist defendants in spreading costs by imposing joint liability in suits for contribution. To maximize efficiency and fairness, cleanup costs should be spread across as large a group of firms as possible. Nevertheless, because the waste-generating industries arguably have profited more than any other element of society from past waste disposal, the industry should bear the cost of restoring the healthful environment that its wastes have despoiled. Despite the inexact correlation between past benefit and present burden, it seems least unfair to place liability for cleanup costs on those companies.

F. Conclusion

As interpreted by the courts, CERCLA imposes a standard of liability more sweeping than any the tort system has yet developed. Congress appears to have determined that the chemical industry is to bear the costs of cleaning up hazardous waste disposal sites. In an effort to carry out that intent, the courts have closed most avenues of escape from liability. The courts have held, and Congress may soon confirm, that liability is strict, retroactive, and can be made joint and

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[131] In one case, for example, the defendant was charged with liability for waste disposal that it had been performing as long ago as 1960. United States v. Conservation Chem. Co., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,207, 20,208 (W.D. Mo. Feb. 3, 1984).

several at a court's discretion. The statute imposes this liability without requiring definite proof of causation. Moreover, the existence of joint and several liability encourages the government to focus its efforts on a few target defendants rather than to join all those responsible for a release.

Despite its deficiencies, CERCLA can provide a reasonable response to the problem of inactive, abandoned wastes sites. But its effectiveness will depend on proper enforcement. If the government focuses only on wealthy defendants, a segment of the industry will remain unmoved by the safety incentives CERCLA was designed to create. Such a system will place liability on parties not necessarily responsible for creating the hazards and thus lead to misallocation of resources and inequitable distribution of benefits and burdens.

CERCLA liability must extend to as many responsible parties as possible. To promote the successful joinder of all potential defendants, and to spread the transaction costs of litigation and settlement among those defendants, the courts should modify common law rules to permit the imposition of joint liability in suits for contribution. There is no reason why the EPA's decision to sue a given number of parties should result in fixing upon them a disproportionate share of the burden of cleaning up hazardous waste sites. If the government is permitted to use joint and several liability to shift its transaction costs onto the parties it decides to sue, it is only fair that these parties be given the same leverage in their attempt to join others responsible for creating the hazardous waste problem.

VI. Affirmative Defenses

Defendants liable under CERCLA section 107(a) may seek to raise a variety of affirmative defenses. Section A of this Part will address the defenses available under CERCLA, both the express causation defenses under section 107(b) and implied statutory defenses. Defendants also challenge the statute itself as unconstitutional and thereby seek to avoid liability. Section B of this Part will discuss constitutional challenges to CERCLA's retroactive liability, and Section C will discuss challenges to government cleanup pursuant to CERCLA.

A. Statutory Defenses

1. Causation Defenses Under Section 107

(a) Three Intervening Causes. — Section 107(b)[1] lists defenses to liability for cleanup costs under CERCLA. A defendant "otherwise liable" can escape liability by establishing "by a preponderance of the

[1] 42 U.S.C. § 9607(b) (1982).

evidence" that the actual or threatened release was "caused solely" by: (1) an act of God; (2) an act of war; (3) the act or omission of a third party; or (4) any combination of the above.[2] Because the government need not meet the traditional tort requirements of negligence and causation in order to prove liability,[3] these defenses are especially important. Indeed, these defenses serve as a substitute for a requirement of causation. The Second Circuit in *New York v. Shore Realty Corp.*[4] called each of these three defenses "an exception based on causation" that would be superfluous if the prima facie case required proof of causation.[5]

Viewed as a whole, then, section 107 does not eliminate the requirement of causation. In effect, section 107(b) completes what is merely a shift of the burden of proof of causation from the plaintiff to the defendant. Given the difficulties of establishing individual causation in the toxic waste context, this shift prevents defendants who cause harm from avoiding liability. The traditional rules of proof would create loopholes that undermine the broad purposes of tort law in shifting social costs to those who cause them. CERCLA closes this loophole, but it does so at the cost of imposing liability upon some individual defendants who caused no harm, but are unable to prove it by a preponderance of the evidence.[6] Under any rule of proof, there is both the risk of imposing liability upon defendants who should not be liable and the risk of allowing defendants who actually cause harm to avoid liability. CERCLA strikes an appropriate balance between these risks and provides incentives to take safety precautions. Shifting the burden of proof encourages firms to seek disposal practices that allow better identification of parties whose wastes are released. Preexisting law perversely encouraged firms to aggravate the problems of proof by disposing of their wastes in common sites in a manner that made identification of waste generators difficult.

Although courts have not yet created much case law interpreting section 107(b) defenses, the early cases confirm that the defenses are

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[2] *Id.*

[3] *See supra* Sections B & C of Part V (discussing strict liability and requirements for proof of causation).

[4] 759 F.2d 1032 (2d Cir. 1985).

[5] *Id.* at 1044.

[6] The law of torts has doctrines analogous to this policy. When a plaintiff proves that one of several defendants caused the injury, but cannot prove which one, courts will sometimes shift the burden of proof to the defendants. *See, e.g.*, Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 163 Cal. Rptr. 132, 607 P.2d 924, *cert. denied*, 449 U.S. 912 (1980); Summers v. Tice, 33 Cal. 2d 80, 199 P.2d 1 (1948); Ybarra v. Spangard, 25 Cal. 2d 486, 154 P.2d 687 (1944); Anderson v. Somberg, 67 N.J. 291, 338 A.2d 1, *cert. denied*, 423 U.S. 929 (1975); *see also* W. KEETON, D. DOBBS, R. KEETON & D. OWEN, PROSSER AND KEETON ON THE LAW OF TORTS § 41, at 270–71 (5th ed. 1984) [hereinafter cited as PROSSER & KEETON] (discussing tort cases shifting the burden of proof on causation). Similarly, CERCLA seeks to prevent defendants from using anonymity to avoid internalizing the cost of harms they cause.

very narrow. The release or damage must be caused *solely* by the intervening agent. This hurdle is particularly significant because proof of causation is so difficult in hazardous waste litigation. Even aside from these general difficulties, the "solely" requirement will pose problems for defendants who fail to prevent or clean up hazardous conditions. In *New York v. Shore Realty Corp.*,[7] for example, the defendant site owner raised the "third party" defense, claiming that it had had nothing to do with the transportation of the waste and that prior tenants were the sole cause of the problem. The court held that the tenants were not the "sole cause," because the defendant knew of their activities before buying the property and "could readily have foreseen" that they would continue to dump there.[8]

(b) The "Third-Party" Defense. — Among these three causation defenses, the third-party defense is most likely to be invoked by defendants, but it features further requirements that limit its reach. Most important, the defense requires that the third party be someone "other than an employee or agent of the defendant, or than one whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly with the defendant."[9] This limit on the third-party defense ensures that generators, for example, cannot avoid liability by contracting with another party to transport or dispose of hazardous waste. This limit derives from the common law doctrine of vicarious liability. Although generally a defendant is not liable for the torts of independent contractors, tort law contains exceptions that courts could apply to toxic waste disposal.[10]

The economic rationale for imposing such liability is that it creates incentives for the firm to employ responsible contractors and to monitor their activities. This rule imposes liability in such a way that it minimizes the social cost of accidents. The burden is placed on the employer because the damage is a cost of its business. This rule is particularly appropriate when the employer is the only party available for suit that had any control over safety measures. To impose liability on the independent contractors alone would be ineffective if these parties were unavailable for suit when the harm materialized. It is fair as well as efficient for the employer to bear this risk, in light of the benefits the employer derives from the activity and the freedom of the employer to provide for indemnity in the contract.[11]

The statute provides that a contractual relationship may bar invocation of the third-party defense if the relationship exists "directly

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[7] 759 F.2d 1032 (2d Cir. 1985).

[8] *Id.* at 1049.

[9] CERCLA § 107(b)(3), 42 U.S.C. § 9607(b)(3) (1982).

[10] *See infra* p. 1625 n.120; *see also* PROSSER & KEETON, *supra* note 6, § 71, at 509–15 (discussing exceptions to the general rule of nonliability).

[11] *See* PROSSER & KEETON, *supra* note 6, § 71, at 509.

or indirectly."[12] The statute does not define "indirect," but its legislative history suggests that it should be read to deny the defense to a defendant with a "business relationship" with the third party, even if a contractual relationship is technically absent.[13] For example, a court may deem a waste generator who arranges for disposal by a contractor, who in turn enters into a subcontract, to be in a "business relationship" with the subcontractor through an "indirect" contractual relationship.[14] Commentators suggest that a generator may raise the defense only if the third party was another generator using the site, a transporter of another's waste, or a stranger.[15] In short, the defense seems applicable only if the third party is completely unrelated to the defendant.[16]

Although CERCLA liability is retroactive,[17] one commentator has suggested that the "contractual relationship" limitation upon the third-

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[12] CERCLA § 107(b)(3), 42 U.S.C. § 9607(b)(3) (1982).

[13] *See* 126 CONG. REC. 26,783 (1980) (statement of Rep. Gore).

[14] *See* CHEMICAL MFRS. ASS'N, SUPERFUND: KEY LIABILITY ISSUES at V-67 n.107 (1982); Comment, *Generator Liability Under Superfund for Clean-up of Abandoned Hazardous Waste Dumpsites*, 130 U. PA. L. REV. 1229, 1261 (1982).

[15] *See* Hinds, *Liability Under Federal Law for Hazardous Waste Injuries*, 6 HARV. ENVTL. L. REV. 1, 28 (1982). A stranger may be a vandal or other unrelated party who caused damage to the site. *See* Comment, *supra* note 14, at 1264 n.179. The chemical industry argues that a generator does not have a direct or indirect contractual relationship with a subsequent site owner. The industry reasons that this relationship is "so remote that no contractual relationship whatsoever should be inferred," because the generator "has no control whatsoever over the selection or actions of a subsequent purchaser of a disposal site." CHEMICAL MFRS. ASS'N, *supra* note 14, at V-66 n.107 (1982). Although an absence of control does undercut the efficiency and fairness rationales for imposing vicarious liability, the chemical industry's argument fails in this situation. Generators may in fact exercise control by providing in their contracts that subsequent purchasers of the site assume the same obligations as the contracting site owner.

[16] As the author of the provision explains, the defense may be raised when damages are caused by an "unforeseeable" act or omission by a third party with "no connection whatsoever" with the defendant. *See* 126 CONG. REC. 26,783 (1980) (statement of Rep. Gore). Hence a landowner will be liable for the acts or omissions of a tenant who operates the site. *See* United States v. South Carolina Recycling and Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,275 (D.S.C. Feb. 23, 1984).

A landowner should also be liable for cleanup of its site even if hazardous conditions were created by previous owners. The economic rationale for imposing liability on successor owners is that it creates an incentive for buyers to clean up or avoid such sites. This liability depresses the real estate market for these sites and thus reduces the ability of owners to escape the internalization of social costs by selling their sites and becoming unavailable for suit. *See* New York v. Shore Realty Corp., 759 F.2d 1032, 1048 n.23 (2d Cir. 1985) (noting in dictum that the current owners had a contractual relationship with the previous owners that would block the use of the "third party" defense, because the purchase agreement included "a provision by which Shore assumed at least some of the environmental liability of the previous owners"). No such special provision should be necessary, however, because the economic rationale is still persuasive without it.

[17] *See supra* Section E of Part V (discussing retroactive liability under CERCLA); *cf. infra* Section B of this Part (discussing the constitutionality of retroactive liability).

party defense should not be applied retroactively.[18] This construction of the third-party defense is implausible, however, given Congress's clear intent to apply liability retroactively.[19] Representative Albert Gore, Jr., the author of the "contractual relationship" limitation, describes the purpose of his amendments as the removal of "various escape hatches" that "would enable the parties who are most responsible for our hazardous waste problem to avoid liability."[20] Because Gore referred to the problem existing before enactment, these "parties" would include generators who had contracted out disposal in the past. The underlying policy of the Gore Amendment, therefore, favors full retroactive application.[21] Indeed, to the extent that section 107(b) may merely preserve common law vicarious liability in some jurisdictions, it would be perverse to read that section to permit evasion of that liability.

Once the defendant establishes causation by an unrelated third party, it still must prove that it acted with "due care." The third-party defense requires that the defendant establish that he exercised "due care with respect to the hazardous substance" and "took precautions against foreseeable acts or omissions of any such third party" and against the foreseeable consequences of such acts or omissions.[22] The definition of "due care" in the legislative history includes "all

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[18] *See* Comment, *supra* note 14, at 1250–65. According to this view, generators who had contracted for disposal by the "third party" before CERCLA's enactment could successfully raise the defense, but those who had done so afterwards could not. The author points out that whereas the other provisions in § 107(b) use the past tense, the "contractual relationship" clause uses the present tense "occurs" rather than "occurred." 42 U.S.C. § 9607(b) (1982) (providing that there shall be no liability for damages "caused solely by . . . an act or omission of a third party other than . . . one whose act or omission occurs in connection with a contractual relationship"). The author argues that this language should be taken to apply this limitation prospectively only. *See* Comment, *supra*, at 1256.

[19] It strains reasonable construction to apply one portion of a single subsection of a single sentence only prospectively while applying the remainder of the subsection retroactively. It is true that § 107(b) mixes its tenses, creating a defense when the harm is "caused" by a third party's act or omission, but not if the act or omission "occurs" in connection with a contractual relationship. 42 U.S.C. § 9607(b) (1982). But this draftsmanship is so subtle that it seems to be a mistake rather than a calculated signal to the courts.

Furthermore, reliance on tense alone should raise some doubt about the retroactive application of the "employee or agent" limitations as well. That phrase appears without a verb, but parallels the "contractual relationship" limitation. The Gore Amendment added both limitations to modify the same phrase, "third party." *See* 126 CONG. REC. 26,781 (1980). The author assumes without explanation that the "employee or agent" limitation applies retroactively, while claiming that the "contractual relationship" limitation does not. *See* Comment, *supra* note 14, at 1254. The common history and parallel structure of these two limitations militate against prying them apart in this fashion.

[20] 126 CONG. REC. 26,785 (1980).

[21] *See* Comment, *supra* note 14, at 1255–56 (conceding that Gore's statement supports retroactivity).

[22] CERCLA § 107(b)(3), 42 U.S.C. § 9607(b)(3) (1982).

precautions with respect to the particular waste that a similarly situated reasonable and prudent person would have taken in light of all relevant facts and circumstances."[23] The issue of due care was litigated in *New York v. Shore Realty Corp.*, in which the court rejected the third-party defense not only because Shore was not the "sole cause," but also because Shore had failed to take precautions against the foreseeable acts of the third parties involved.[24]

(c) Conclusion. — The defense provisions of section 107(b), together with the liability provisions of section 107(a), resolve uncertainties and remedy defects in preexisting law that could permit many defendants to avoid liability.[25] The shift in the burden of proof of causation corrects a previous bias in favor of defendants. CERCLA applies the doctrine of vicarious liability to toxic waste disposal, in order to create useful incentives for greater precautions and to ensure that parties cannot transfer responsibility to others who may later be unavailable for suit.

2. Procedural Defenses and Cost-effectiveness

(a) Defenses Under Section 104. — Defendants have looked beyond the limited reach of section 107(b) for defenses to section 107(a) liability. In particular, the chemical industry and some commentators have suggested that the procedural requirements of section 104 may provide defendants with defenses to government recovery actions.[26] Section 104(c) states that the federal government "shall" consult with affected states before deciding upon permanent remedial action,[27] implement such action only after entering a cooperative agreement with the state,[28] and select cost-effective responses.[29] Section 104(c) also imposes dollar and time limitations on Fund-financed initial response actions.[30] Section 104(d)(1) requires Fund-financed state re-

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[23] H.R. REP. NO. 1016, 96th Cong., 2d Sess., pt. I, at 34 (1980), *reprinted in* 1980 U.S. CODE CONG. & AD. NEWS 6119, 6137.

[24] *See* 759 F.2d 1032, 1048–49 (2d Cir. 1985).

[25] *See infra* Part IX (discussing the shortcomings of common law doctrine).

[26] *See, e.g.*, CHEMICAL MFRS. ASS'N, *supra* note 14, at V-10 to -30; Giblin & Kelly, *Judicial Development of Standards of Liability in Government Enforcement Actions Under the Comprehensive Environmental Response, Compensation and Liability Act*, 33 CLEV. ST. L. REV. 1, 14–17 (1984); Mott, *Defenses Under Superfund*, 13 NAT. RESOURCES L. NEWSLETTER 1 (May 1981).

[27] *See* 42 U.S.C. § 9604(c)(2) (1982) (incorporated into the National Contingency Plan (NCP) at 40 C.F.R. § 300.62(f) (1984)).

[28] *See id.* § 9604(c)(3) (incorporated into the NCP at 40 C.F.R. § 300.62(c)(1) (1984)).

[29] *See id.* § 9604(c)(4) (incorporated into the revised NCP at 50 Fed. Reg. 47,975 (1985) (to be codified at 40 C.F.R. § 300.68(i)(1), formerly at 40 C.F.R. § 300.68(j) (1984)).

[30] *See id.* § 9604(c)(1) (incorporated into the NCP at 50 Fed. Reg. 47,971 (1985) (to be codified at 40 C.F.R. § 300.65(b)(3))). The "initial response" that "must be undertaken quickly to protect or prevent actual or potential injury," is distinguished from remedial action, which

sponse to be pursuant to a federal-state cooperative agreement that follows a federal determination that the state is capable of conducting the response.[31] Defendants have asserted that government failure to comply with these procedural requirements serves as a defense in government suits to recover costs after cleanup.[32]

Courts have rejected these claims, stating that the defenses listed in section 107(b) are exhaustive because section 107(a) imposes liability "[n]otwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (b)."[33] For example, in *United States v. Reilly Tar & Chemical Corp.*,[34] the defendant argued that the government could not recover because it had failed to enter into a cooperative agreement with the state as required by section 104(c)(3).[35] The court, citing the "subject only" clause, held that liability under section 107(a) is independent of that requirement.[36]

"involves the more permanent, costly measures which may be necessary after the need for emergency action has terminated." S. REP. NO. 848, 96th Cong., 2d Sess. 53–54 (1980). Private party response action pursuant to § 106, however, is exempt from these requirements. *See* 50 Fed. Reg. 47,971–72 (1985) (to be codified at 40 C.F.R. § 300.65(h)(3)).

[31] *See* 42 U.S.C. § 9604(d)(1) (1982). Some have also argued that § 104(a)(1) prevents the government from undertaking cleanup if private parties offer to undertake cleanup themselves. *See, e.g.*, Malter & Muys, *Emerging and Significant CERCLA Issues*, in ALI-ABA COURSE OF STUDY: HAZARDOUS WASTES, SUPERFUND, AND TOXIC SUBSTANCES 137, 147–61 (1985). Section 104(a)(1) authorizes government response "unless the President determines that such removal and remedial action will be done properly by the owner or operator of the vessel or facility from which the release or threat of release emanates, or by any other responsible party." 42 U.S.C. § 9604(a)(1) (1982).

Pending legislation, however, would amend that provision to make clear that the government may perform the cleanup itself. The Senate Committee on Environment and Public Works reported a bill that would replace the current language with: "The President may authorize the owner or operator of the vessel or facility from which the release or threat of release emanates, or any other responsible party, to perform the removal or remedial action if the President determines that such action will be done properly by the owner, operator, or responsible party." S. 51, 99th Cong., 1st Sess. 58 (1985). The Committee report explains that the federal government need not make such a determination before acting, even if responsible parties are willing to clean up the site. *See* S. REP. NO. 11, 99th Cong., 1st Sess. 16 (1985).

[32] Courts have uniformly held that private parties may not challenge remedial actions until the government seeks to recover its costs from those parties. *See supra* pp. 1488–89 (discussing § 104 judicial review). Allowing such challenges before cleanup, these courts reasoned, would delay remedial action and hamper governmental responses to hazardous conditions.

[33] 42 U.S.C. § 9607(a) (1982).

[34] 546 F. Supp. 1100 (D. Minn. 1982).

[35] *See id.* at 1117 (citing 42 U.S.C. § 9604(c)(3) (1982)).

[36] *See id.* at 1118 (stating that § 107(a) liability is "absolute" and that "Congress did not intend that courts engage in the complex inquiry and statutory tracing of the various sections" of CERCLA); *see also* United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 850 (W.D. Mo. 1984) (holding that the government need not comply with § 104 in order to maintain a recovery action); Ohio *ex rel.* Brown v. Georgeoff, 562 F. Supp. 1300, 1315 (N.D. Ohio 1983) (same). One court, in dictum, has suggested that a defendant may not be liable for the cost of agency response actions that are inconsistent with § 104(a). *See* J.V. Peters & Co. v. Ruckelshaus, 584 F. Supp. 1005, 1011 (N.D. Ohio 1984), *aff'd on other grounds*,

Courts appear to be mistaken in reading the "subject only" clause literally. As one court has noted, the section 107(b) defenses cannot be exhaustive, because defenses such as res judicata, payment, accord and satisfaction, statute of limitations, waiver, and laches must be available.[37] Indeed, CERCLA itself recognizes bars to liability beyond those mentioned in section 107(b). For example, section 107(j) bars government recovery for response costs resulting from a federally permitted release, and section 112(d) imposes a three-year statute of limitations on certain claims.[38] To read section 107(a) as precluding all defenses other than those listed in section 107(b) would directly contradict the plain language of these provisions. Rather, the legislative history of CERCLA suggests that the "subject only" clause was primarily intended to exclude defenses based on the absence of negligence.[39]

But even if courts recognize defenses not enumerated in section 107(b), they should not find them in section 104. Section 104, unlike the other provisions of CERCLA described above, contains no explicit reference to liability. Although defenses based on noncompliance with section 104 would create a major incentive for the government to comply with statutory procedures,[40] there is no indication that Congress intended to create such defenses.[41]

(b) Defenses Based on the National Contingency Plan. — Unlike section 104, section 107(a)(4)(A) does provide a defense to liability in certain circumstances. That provision limits the government to re-

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767 F.2d 263 (6th Cir. 1985). That case dismissed an action to enjoin government remedial action because the complaint failed to set forth any material facts to support its allegations. *See id.* at 1010. The opinion stated that inconsistency with § 104(a) and the NCP could be raised later as a defense to liability, but did not address the "notwithstanding any other provision" language of § 107(a). *See id.* at 1011.

[37] *See* Mardan Corp. v. C.G.C. Music, Ltd., 600 F. Supp. 1049, 1056 n.9 (D. Ariz. 1984); *see also id.* at 1056–58 (granting summary judgment against a private plaintiff seeking to recover costs, on the grounds that the plaintiff was barred by a release executed by the parties and by the equitable defense of "unclean hands").

[38] *See* 42 U.S.C. §§ 9607(j), 9612(d) (1982). Furthermore, § 107(d) bars liability for acts or omissions "in accordance with the national contingency plan or at the direction of an onscene coordinator appointed under such plan," *id.* § 9607(d), and § 107(i) bars government recovery for response costs resulting from the application of pesticide products registered under the Federal Insecticide, Fungicide, and Rodenticide Act, *see id.* § 9607(i).

[39] *See, e.g.*, 126 CONG. REC. 31,965 (1980) (remarks of Rep. Florio) (describing § 107(b) defenses as exclusive and concluding that "the absence of negligence is not a defense to liability").

[40] *See* Giblin & Kelly, *supra* note 26, at 16–17 (arguing in favor of § 104 defenses).

[41] The chemical industry points to language in § 111(a)(1), 42 U.S.C. § 9611(a)(1) (1982), which suggests that the government must comply with § 104 to be reimbursed from the Fund. *See* CHEMICAL MFRS. ASS'N, *supra* note 14, at V-15. Although this requirement may limit government reimbursement from the Fund, there is no similar requirement for government recovery from a private defendant. *See* United States v. Reilly Tar & Chem. Corp., 546 F. Supp. 1100, 1118 (D. Minn. 1982) (holding that § 107(a) liability is "independent of the authorized uses of the Fund under section 111").

covery of those costs that are "not inconsistent with the national contingency plan"[42] (NCP), a set of rules required by CERCLA and promulgated by the EPA to govern the cleanup of hazardous waste sites. Courts have generally read this language as creating another affirmative defense.[43] Cases rejecting defenses based directly on section 104(c) ignore the fact that the relevant requirements of subsection (c) are incorporated in the NCP.[44] Government departures from those procedures incorporated in the NCP should provide some affirmative defense to liability.

Defendants, however, should not be permitted to escape all liability merely because the government neglected to follow the NCP. Section 107(a)(4)(A) does not provide a complete defense, because it bars only recovery of "costs" inconsistent with the NCP, not recovery for "action" inconsistent with the NCP.[45] Procedural irregularities should not be a defense unless they lead to greater liability than would have resulted from proper procedure, and even then they should only shield against liability for the excess costs.[46] Most of the provisions adopted by the NCP from section 104 deal with federal-state relations and are not designed for the protection of defendants. Violations of these provisions are unlikely to increase cleanup costs. In contrast, the requirement of cost-effectiveness in the NCP incorporated from section 104(c)(4) is designed to protect defendants and thus should provide a defense.

(c) "How Clean is Clean?" and the Meaning of "Cost-effectiveness." — The chemical industry stresses that it may challenge the "cost-effectiveness" of cleanup actions.[47] CERCLA, however, does not specify precisely what "cost-effectiveness" means and thus allows the EPA to resolve this question in the NCP.[48] Most important, CERCLA

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[42] 42 U.S.C. § 9607(a)(4)(A) (1982).

[43] *See, e.g.*, J.V. Peters & Co. v. EPA, 767 F.2d 263, 266 (6th Cir. 1985); New York v. General Elec. Co., 592 F. Supp. 291, 304 (N.D.N.Y. 1984); United States v. Northeastern Pharm. & Chem. Co. (NEPACCO), 579 F. Supp. 823, 850 (W.D. Mo. 1984). The *NEPACCO* court contrasted the double negative "not inconsistent" in § 107(a)(4)(A) with the language in § 107(a)(4)(B), which imposes liability for "'costs of response incurred by any other person consistent with the national contingency plan.'" *Id.* (quoting 42 U.S.C. § 9607(a)(4)(B) (1982)) (emphasis deleted). The court concluded in dictum that *private* plaintiffs seeking to recover under this provision carry the burden of proving inconsistency with the NCP. *See id.* at 850–51; *see also* Pinole Point Properties, Inc. v. Bethlehem Steel Corp., 596 F. Supp. 283, 290 (N.D. Cal. 1984) (same).

[44] *See supra* notes 27–30.

[45] *See* 42 U.S.C. § 9607(a)(4)(A) (1982). In the phrase, "all costs of removal or remedial action incurred by the United States Government or a State not inconsistent with the national contingency plan," *id.*, the words "not inconsistent" — like the parallel phrase "incurred by" — are most sensibly read to modify the word "costs."

[46] *See* United States v. United Nuclear Corp., 610 F. Supp. 527, 529 (D.N.M. 1985) (dictum); Lone Pine Steering Comm. v. EPA, 600 F. Supp. 1487, 1499 (D.N.J. 1985) (dictum).

[47] *See* CHEMICAL MFRS. ASS'N, *supra* note 14, at V-21 to -23.

[48] The NCP includes response action requirements beyond those set forth in CERCLA, such

is ambiguous with regard to whether defendants may challenge the *degree* of cleanup as well as the cost-effectiveness of the means used to achieve that degree of cleanup. Section 104(c)(4) provides only that cleanup must be practicable in accordance with the NCP and must be "that cost-effective response which provides a balance between the need for protection of public health and welfare and the environment at the facility under consideration, and the availability of amounts from the Fund . . . to respond to other sites."[49] Section 105(7) states that the NCP shall include "means of assuring that remedial action measures are cost-effective."[50] At a minimum, "cost-effectiveness" must mean that any particular degree of cleanup is achieved at the lowest possible cost; the statute leaves open the question whether "cost-effectiveness" also means that cost-benefit analysis must determine the degree of cleanup.

The NCP as recently revised by the EPA, in any event, may provide only a limited defense for defendants, because it restricts the selection of cost-effective alternatives. The remedy selected must be one "that attains or exceeds applicable or relevant and appropriate Federal public health and environmental requirements."[51] The EPA will treat these requirements as "a baseline or floor for CERCLA" cleanup "as a matter of policy," although they are "not legally applicable to CERCLA response actions," because Congress preempted these requirements in enacting CERCLA.[52] "Applicable" require-

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as detailed procedures for the government to follow in developing and comparing remedial alternatives. *See* 50 Fed. Reg. 47,974–75 (1985) (to be codified at 40 C.F.R. § 300.68 (f)–(h)).

[49] 42 U.S.C. § 9604(c)(4) (1982). Pending legislation that would amend § 104(c)(4) elaborates on the government's selection of remedial actions. The new section 104(c)(4)(C) would require "a degree of cleanup" and "control of further release" which, "at a minimum," "assures protection of human health and the environment" and also would insist that the specific remedy shall be "relevant and appropriate" to the circumstances of the site. *See* S. 51, 99th Cong., 1st Sess. 63 (1985). The Senate committee report explains that:

> For example, the mix of wastes and the size, topography, and geology and other important factors for one site will likely vary from any other. No rigidly uniform remedy would likely be the best at all of these sites. This subsection provides flexibility to the President in the choice of design standards selected for remedial action . . . .

S. REP. NO. 11, 99th Cong., 1st Sess. 20 (1985).

The new § 104(c)(4)(E) would retain the current language calling for a balancing test. *See* S. 51, 99th Cong., 1st Sess. 64 (1985). The Senate committee report explains that the balancing test "should assure that available funds are used to attack the most important problem sites." S. REP. NO. 11, 99th Cong., 1st Sess. 20 (1985).

[50] 42 U.S.C. § 9605(7) (1982).

[51] 50 Fed. Reg. 47,975 (1985) (to be codified at 40 C.F.R. §300.68(i)(1)). The EPA believes that the agency "should weigh risks and costs only with respect to remedies that adequately protect public health and welfare and the environment," *id.* at 47,922, and should use federal requirements as the standard for determining this "adequate protection." The EPA explains that the cost-effectiveness analysis should not be performed until after compliance with such standards is assured. *See id.* at 47,918, 47,921.

[52] *Id.* at 47,917. CERCLA was an "implied repeal of other environmental and public health requirements." *Id.* at 47,918.

ments are defined as those federal requirements that would apply to the site but for preemption by CERCLA.[53] "Relevant and appropriate" are other requirements "designed to apply to problems sufficiently similar to those encountered" at the site; these may be "'applicable' but for jurisdictional restrictions."[54] The EPA emphasizes that it "does not suggest that a cost-benefit analysis should be performed" in determining whether a requirement is "appropriate."[55]

The EPA's policy of adopting federal requirements as floors for the cleanup level would limit a cost-effectiveness defense to those cleanups that exceed such floors. The EPA's policy in determining the extent of cleanup is generally within its discretion and consistent with CERCLA section 105(3), which directs the EPA to decide "methods and criteria for determining the appropriate *extent*" of response.[56] Although CERCLA's sponsors recognized that rational policy requires some weighing of costs and benefits, and envisioned that such weighing would be site-specific,[57] they also dismissed the notion of formalized cost-benefit analysis.[58] They expressed doubts about the ability

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[53] *See id.* at 47,951 (to be codified at 40 C.F.R. § 300.6), *explained in id.* at 47,918 (preamble).

[54] *Id.* at 47,954 (to be codified at 40 C.F.R. § 300.6). State and local environmental laws, while not "applicable or relevant and appropriate," will be "considered," *Id.* at 47,917 (preamble); *see id.* at 47,975 (to be codified at 40 C.F.R. § 300.68(i)(4)).

[55] *Id.* at 47,918. Although the revised NCP lists five situations in which the agency "may" choose *not* to comply with "applicable or relevant and appropriate" requirements, it repeatedly rejects any cost-benefit analysis in defining these exceptions. *See id.* at 47,975 (to be codified at 40 C.F.R. § 300.68(i)(5)), *explained in id.* at 47,921, 47,947–48 (preamble and memorandum). Even when the agency invokes one of these exceptions, the NCP insists that the agency select the alternative that "most closely approaches the level of protection provided" by federal requirements, not necessarily the alternative suggested by cost-benefit analysis. *See id.* at 47,975 (to be codified at 40 C.F.R. § 300.68(i)(5)(ii)–(v)).

[56] 42 U.S.C. § 9605(3) (1982) (emphasis added).

[57] Senator Stafford, for example, stated that "considerations of the relationship between the costs and benefits of a particular response action are an essential part of both the national contingency plan" and "the selection of remedial and response actions." 126 CONG. REC. 30,985 (1980). Senator Randolph explained that in deciding when and how to respond, "it is appropriate to the extent practicable and with deference to the threat to public health, welfare or the environment, to consider the benefits and to consider the costs of such action." *Id.* at S16,428 (daily ed. Dec. 12, 1980).

[58] Senator Randolph cautioned that considerations of costs and benefits are "certainly not intended . . . to become cumbersome analytic processes. Formalized benefit/cost analyses would only preclude timely response and would be deceiving, since the current state of science is unable to provide with sufficient certainty much of the necessary information on benefits . . . ." *Id.* at S16,428 (daily ed. Dec. 12, 1980). Senator Stafford concurred, stating that "the balancing process is to include not only benefits which are susceptible of easy or exact calculation, but those other considerations which are customarily included when the Congress uses the term 'welfare.' Such intangible or long-term benefits must be considered in weighing whether a particular response or cost is inappropriate." *Id.* The response action "is not to be constrained by a rigid or inflexible construction of this language concerning cost effectiveness or considering costs or benefits." *Id.*

of economists to quantify the benefits of a clean environment and fears that analysis would be so cumbersome that it would delay remedial action. As a result of these considerations, CERCLA does not provide firm constraints on the extent of cleanup. When governmental authorities have determined that a particular level of pollution is unacceptable, it will usually be appropriate for courts to abide by that decision.

But CERCLA's legislative history indicates that the EPA's policy should be qualified. Because CERCLA's sponsors did contemplate some site-specific weighing of costs and benefits,[59] courts should allow defendants to raise a defense when the costs of a cleanup are obviously disproportionate to the benefits. Of course, litigating the "how clean is clean" issue in every case would be difficult and costly. Thus, courts should not permit defendants to raise such a defense unless cleanup is so excessive as to be arbitrary and capricious — that is, an abuse of agency discretion.

Defendants should have greater freedom to raise a defense based on the agency's choice of the means to achieve the target level of cleanup. Although CERCLA leaves the EPA with broad discretion in deciding "how clean is clean," courts should grant the agency little discretion in choosing the most cost-effective means of achieving that level. Once the EPA sets the criteria for the extent of cleanup, CERCLA demands that the the agency use the technology that achieves the target level of cleanup at the lowest cost.[60] Because the choice of means requires only a comparison of the costs of remedial action — rather than a comparison of costs and benefits — this issue provides simpler questions for judicial review and does not pose the problems of measuring benefits that were noted by CERCLA's sponsors.[61] A defendant demonstrating that the same degree of cleanup could have been achieved at lower cost should not be liable for the excess costs.

The NCP, however, appears to limit the ability of a defendant to challenge the cost-effectiveness of the means chosen to effect a specified level of cleanup. The NCP allows any "applicable or relevant and appropriate" standards to determine not only the extent of cleanup, but also the means to achieve that cleanup regardless of cost-effectiveness. The EPA explicitly approves of adopting "engineering and technology-based standards" from other statutes, even though these "may be set without regard to pollutant concentrations that protect public health or welfare or the environment."[62] Hence, the

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[59] *See supra* note 57.

[60] *See supra* p. 1552.

[61] *See supra* note 58.

[62] *See* 50 Fed. Reg. 47,919 (1985). For example, the EPA contemplates using "technology-based standards" from the Clean Water Act, *id.* at 47,919 n.1, arguing that "Congress determined in enacting those statutes that technology-based limitations were the best means to that end,"

NCP on its face violates even a minimal interpretation of CERCLA's requirement of "cost-effectiveness." Although the EPA correctly notes that section 105(7) mandates that the NCP decide the "*means* of assuring that remedial action measures are cost-effective,"[63] this language does not allow the EPA to define away the requirement of a "cost-effective" remedy. The defendant should be permitted to challenge the cost-effectiveness of remedial action even if the action was mandated by "applicable or relevant and appropriate" technology-based standards. To the extent that the government relies upon the NCP to justify excessively costly cleanup, the NCP runs contrary to statutory authority.

In reviewing the cost-effectiveness of government cleanup, however, courts should grant some deference to agency decisions.[64] One court has held that government response action should be upheld unless "arbitrary and capricious,"[65] and pending legislation would also direct courts to award cleanup costs unless the response action was "arbitrary and capricious or otherwise not in accordance with law."[66] Courts should apply this standard to remedial action challenged by defendants as not cost-effective. As long as the remedial action is reasonably cost-effective, or was reasonably believed to be cost-effective, the defendant should be liable for cleanup costs.

B. Constitutional Challenges to Retroactive Liability

Congress clearly intended CERCLA to apply retroactively, in order to clean up wastes generated prior to enactment.[67] The chemical industry, however, encouraged by recent Supreme Court decisions protecting property and contract interests in other contexts, has raised

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id. at 47,919. Those regulations, however, were general rules, designed to apply to sites across the board and to guide private behavior. They are inappropriate when Congress has specified that governmental remedial action is to be site-specific and cost-effective.

[63] *Id.* at 47,921 (citing 42 U.S.C. § 9605(7) (1982)).

[64] Senator Randolph stressed that:

> The plan is intended as guidance — the best thinking at the time of publication — but not as a rigid rule or set of procedures which must be adhered to, when Federal response authorities believe the particular circumstances . . . require other procedures or policy in order to protect public health or welfare or the environment. To consider the plan as a rigid limiting document . . . would be to make it useless in dealing with emergencies.

126 CONG. REC. S16,427 (daily ed. Dec. 12, 1980).

[65] *See* United States v. Ward, No. 83-63-CIV-5 (E.D.N.C. Sept. 9, 1985) (available March 26, 1986, on LEXIS, Genfed library, Dist file).

[66] S. 51, 99th Cong., 1st Sess. 106 (1985). What constitutes "arbitrary and capricious" action will depend upon the agency action reviewed. Given the difficulty of deciding the optimal *level* of cleanup, courts should grant agencies great deference in these decisions and should find very few of them "arbitrary and capricious." Given that the choice of the optimal *means* of cleanup is more amenable to economic analysis and to judicial review, courts should be less reluctant to find these choices "arbitrary and capricious." *See supra* p. 1554.

[67] *See supra* Section E of Part V (discussing retroactive liability under CERCLA).

constitutional challenges to the retroactive application of the liability provisions of CERCLA.[68] Neither courts nor commentators have been sympathetic to such claims.[69] However questionable retroactive liability may be as a policy choice in some instances, the chemical industry's arguments fall far short of establishing any constitutional violation.

1. The Due Process Clause

(a) The Standard of Review. — Chemical industry defendants have challenged retroactive liability as a violation of the due process clause of the fifth amendment.[70] *United States v. Northeastern Pharmaceutical and Chemical Co.*[71] (NEPACCO) was the first case to rule on such a challenge. In rejecting the defendant's argument, the court looked to *Usery v. Turner Elkhorn Mining Co.*,[72] in which the Supreme Court set forth the appropriate standard of review. That case upheld the Black Lung Benefits Act,[73] which imposed retroactive strict liability on employers of coal miners in order to compensate past employees and their survivors for black lung disease. The *Turner Elkhorn* Court stated that legislation "is not unlawful solely because it upsets otherwise settled expectations," even if it imposes "a new duty or liability based on past acts."[74] Laws "adjusting the burdens and benefits of economic life come to the Court with a presumption of constitutionality" and will be upheld unless "the legislature has acted in an arbitrary and irrational way."[75] Despite this language, the chemical industry quotes other language in *Turner Elkhorn* to argue that the Supreme Court established a higher level of scrutiny for retroactive legislation than for prospective legislation: "It does not follow . . . that what Congress can legislate prospectively it can leg-

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[68] *See* CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-14 (1982) (citing Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419 (1982) (finding that a taking of property had occurred requiring just compensation); Kaiser Aetna v. United States, 444 U.S. 164 (1979) (same); Allied Structural Steel Co. v. Spannaus, 438 U.S. 234 (1978) (striking down a state statute under the contract clause); United States Trust Co. v. New Jersey, 431 U.S. 1 (1977) (same).

[69] *See, e.g.*, United States v. Northeastern Pharm. and Chem. Co. (NEPACCO), 579 F. Supp. 823, 840–41 (W.D. Mo. 1984) (rejecting a due process challenge to the retroactive application of CERCLA); United States v. South Carolina Recycling and Disposal, Inc., 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272, 20,276–77 (D.S.C. Feb. 23, 1984) (rejecting both due process and contract clause challenges to the retroactive application of CERCLA); Blaymore, *Retroactive Application of Superfund: Can Old Dogs Be Taught New Tricks?*, 12 B.C. ENVT'L AFFAIRS L. REV. 1, 20–50 (1985) (arguing that retroactive application of CERCLA is constitutional); Comment, *supra* note 14, at 1246–50 (same).

[70] U.S. CONST. amend V.

[71] 579 F. Supp. 823 (W.D. Mo. 1984).

[72] 428 U.S. 1 (1976), *cited in NEPACCO*, 579 F. Supp. at 840.

[73] 30 U.S.C. §§ 901–962 (1982).

[74] 428 U.S. at 16.

[75] *Id.* at 15.

islate retrospectively. The retrospective aspects of legislation, as well as the prospective aspects, must meet the test of due process, and the justifications for the latter may not suffice for the former."[76]

The industry misreads *Turner Elkhorn*. The levels of scrutiny for retroactive and prospective legislation do not differ, only the types of justifications that qualify as rationally related to the legislative means chosen.[77] Retroactivity requires only a legitimate state interest, not a compelling or important one, and does not require the least restrictive alternative. The mine operators in *Turner Elkhorn* argued that retroactive liability was "arbitrary and irrational" because it gave "an unfair competitive advantage to new entrants into the industry," so that competitive forces would prevent the incumbent firms "from effectively passing on to the consumer the costs of compensation" imposed by the statute.[78] The Court rejected this argument and stated that it is for Congress to choose how to distribute the burden:

> We are unwilling to assess the wisdom of Congress' chosen scheme by examining the degree to which . . . retrospective liability imposed on the early operators can now be passed on to the consumer. It is enough to say that the Act approaches the problem of cost spreading rationally; whether a broader cost-spreading scheme would have been wiser or more practical under the circumstances is not a question of constitutional dimension.[79]

Given this deferential standard of review, the *NEPACCO* court held that CERCLA's "imposition of liability for past acts is rational and satisfies the due process clause," because Congress "rationally" viewed this liability "as a means to spread the costs of the clean-up on those who created and profited from the waste disposal."[80] The *NEPACCO* court did not discuss the particular equity arguments raised by the chemical industry to attack the rationality of this liability, but an analysis of these arguments in fact supports the constitutionality of CERCLA. Indeed, the following discussion shows that CERCLA is precisely the type of retroactive legislation that should be upheld.

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[76] *Id.* at 16–17, *quoted in* CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-40. Some lower courts have also read *Turner Elkhorn* in this way. *See* Daughters of Miriam Center for the Aged v. Mathews, 590 F.2d 1250, 1259 & n.25 (3d Cir. 1978); Adams Nursing Home of Williamstown, Inc. v. Mathews, 548 F.2d 1077, 1080 (1st Cir. 1977).

[77] The *Turner Elkhorn* Court simply pointed out that different considerations apply to retroactive and prospective legislation, so that a rationale that makes sense for the latter may not work for the former. For example, the Court stated in dictum that it would be reluctant to accept deterrence or blameworthiness as rationales for retroactive legislation. *See* 428 U.S. at 17–18.

[78] 428 U.S. at 18.

[79] *Id.* at 18–19.

[80] 579 F. Supp. at 840–41. Indeed, it would be less "rational" to impose this burden on new firms that have not profited from past disposal practices.

(b) An Analysis of the Equities of CERCLA's Retroactive Liability. — The most common objection to retroactive legislation is that it violates the reliance interests of affected parties. In their unsuccessful due process challenge to CERCLA, the defendants in *United States v. South Carolina Recycling and Disposal, Inc.*,[81] for example, argued that had they known they would later be held liable, they would have taken steps to avoid incurring liability.[82] One defendant insisted that it could have implemented alternatives that would have prevented interference by others with proper disposal. The chemical industry argues that retroactive liability is especially unfair when it not only upsets expectations but also holds a defendant liable for damage it would have prevented had it anticipated the liability.[83]

These arguments are perverse because they support reliance on deficient laws. Some changes in law may be more reasonable to expect than others; laws that are obviously deficient in protecting recognized public interests, such as the environment and public health, are particularly subject to reform. CERCLA is a prime example of a predictable reform.[84] The *South Carolina Reecycling* defendants claim

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[81] 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272 (D.S.C. Feb. 23, 1984). The *South Carolina Recycling* court did not consider CERCLA "'retroactive' in the constitutional sense" because "CERCLA is a broad remedial statute premised upon *present and future effects* of defendants' past actions." *Id.* at 20,276. The court held that liability for "present conditions stemming from past acts does not necessarily have retroactive effects that are subject to due process limitations," but stated in the alternative "even if CERCLA were considered retroactive it would clearly satisfy the requirements of due process." *Id.*

[82] *See* Reply Memorandum of "Generator" Defendants and Amicus Curiae in Support of Motion for Summary Judgment on Constitutional Grounds at 21, *South Carolina Recycling*, 14 ENVTL. L. REP. (ENVTL. L. INST.) 20,272 (D.S.C. Feb. 23, 1984) (Civil Action No. 80-1274-6) [hereinafter cited as Memo], *reprinted in* PRACTICING LAW INSTITUTE, HAZARDOUS WASTE LITIGATION 1984, at 333, 353 (1984).

[83] *See, e.g.*, *id.* (stating that retroactivity deprives defendants of "the basic opportunity to conform their conduct so as to avoid liability"); CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-63 to -65; *id.* at VI-64 (including the failure to take "such measures as abandoning the generating activities, incinerating their waste, or . . . making alternative arrangements for waste disposal" among its examples of reliance interests). To support this position, the chemical industry, *see id.* at VI-49, cites language in *Turner Elkhorn*, 428 U.S. at 17, which states that "the justification for the retrospective imposition of liability must take into account" the possibility that even if mine operators "did know of the danger" of black lung disease, "their conduct may have been taken in reliance upon the current state of the law, which imposed no liability on them." The *Turner Elkhorn* Court noted, however, that the mine operators had "not specifically pressed the contention that they would have taken steps to reduce or eliminate the incidence of pneumoconiosis [black lung disease] had the law imposed liability upon them." *Id.*

[84] One may object that although changes in the law are foreseeable, retroactive changes in the law are not. To assert, however, that people are entitled to assume that no retroactive legislation will be enacted merely begs the question of whether they *should* be entitled to make such an assumption. *See* L. TRIBE, AMERICAN CONSTITUTIONAL LAW, § 9-5, at 467 (1978); Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509, 522–25 (1986). In this sense, all reliance arguments are circular. Courts cannot determine doctrine regarding retroactivity by reference to reasonable expectations, because what expectations are reasonable

that they knew of the risk of improper disposal and chose not to reduce that risk because current law did not hold them responsible. These facts should not militate in favor of the defendants. It would be ironic if defendants with knowledge of a risk who deliberately refused to take precautions could thereby obtain *increased* protection from retroactive liability: this situation is precisely the one in which the threat of liability creates the greatest social benefit. The possibility of future retroactive liability will be most effective in discouraging socially undesirable reliance when firms know of the risks they create and the safety measures they can take. The risk of retroactive liability creates an incentive for firms to take greater care than is profitable under existing law. A firm will be most inclined to exceed safety standards when they seem most likely to be changed in the future — that is, when they seem least adequate.[85]

The existence of prior federal and state regulation further undercuts the industry's reliance arguments. Given prior heavy regulation in the hazardous waste area, the industry knew that the government sought to guard against these hazards, and it was reasonable to anticipate that the legal regime would change. The imposition of additional obligations is most equitable when the parties have been put on notice by prior legislation.[86] To the extent that CERCLA goes beyond existing law, it merely removes defects that were inconsistent with the broad purposes of environmental regulation and tort law. Defendants may not claim a constitutional right to exploit such deficiencies in the law.[87]

In fact, CERCLA draws upon existing principles of tort law and prior statutory environmental law, so that its extrapolation from familiar principles should not have been completely unexpected.[88] Strict

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will depend upon what doctrine the courts adopt. To the extent that the "settled expectations" argument "is cast exclusively in terms of the expectations that persons in fact entertain in reliance upon legal commitments expressly made by the sovereign, it is within the sovereign's power to hedge those commitments in order to cut the expectations down to any desired size." L. TRIBE, *supra*, § 9-6, at 469.

[85] Professor Kaplow argues that contrary to the commonly held view, the incentive effects of legal changes upon private investments are economically efficient. *See* Kaplow, *supra* note 84, at 528–30. An ideal retroactivity policy would require fully retroactive application "when the justification for a reform suggests that the prior activity was undesirable." *Id.* at 551. In such a regime, private actors will adjust their investments according to the probabilities of such retroactive legislation, taking into account the risk that their actions are actually undesirable.

[86] *See* Allied Structural Steel Co. v. Spannaus, 438 U.S. 234, 242–43 n.13, 250 (1978).

[87] *See* Blaymore, *supra* note 69, at 27–29 (arguing that CERCLA must be sustained because it is intended merely to close loopholes in existing law and to codify existing standards). Retroactive remedial statutes, which are designed to remove "unintended flaws in existing legislation and help give full effect to the legislative intent behind the initial legislation," may be sustained on that ground. J. NOWAK, R. ROTUNDA & J. YOUNG, CONSTITUTIONAL LAW 473 (2d ed. 1983).

[88] *See infra* pp. 1610–17, 1624–30 (advocating strict, joint, and several liability for toxic

and vicarious liability is common for ultrahazardous activities; joint and several liability is also familiar from the common law. Even shifting the burden of proof on causation derives from tort law precedent. The chemical industry acknowledges that the "potential for pre-existing liability often cannot be determined with great precision" given "the uncertain application of state nuisance law," but claims that the "mere possibility of pre-existing liability under state nuisance law should not by itself preclude a generator from challenging the assertion of retroactive liability."[89] But it is hardly unfair to impose retroactive liability on a party who was already subject to the risk of liability. No defendant who had reason to anticipate liability should be permitted to escape it when remedial legislation is enacted to make the liability clear.

Nevertheless, the chemical industry argues that the equities of retroactive liability militate against liability for defendants who have tenuous connections to the hazardous waste site. The *South Carolina Recycling* defendants argued that CERCLA's retroactive "no-causation" liability "violates basic due process limitations."[90] The defendants read *Turner Elkhorn* to hold that causation is an essential condition for the retroactive imposition of liability.[91] Yet nowhere does *Turner Elkhorn* insist on the technical requirement of proximate cause as traditionally used in the common law. That case approved of shifting to firms the costs of their business by imposing liability for harms "arising out of" their operations.[92] The Court's dicta expressed doubts only regarding harms "unrelated to" and "due to causes other than" the firm's "conduct."[93] These dicta, if read to create a causation requirement at all, should be read to require nothing more than "but

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waste disposal); 126 CONG. REC. 26,782–85 (1980) (statement of Rep. Gore) (arguing that existing tort law principles of strict, joint, and several liability should be applied in the CERCLA context); S. REP. NO. 848, 96th Cong., 2d Sess. 14–15, 33–36 (1980) (citing legal precedents for strict, joint, and several liability in the hazardous waste disposal context).

[89] CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-66.

[90] Memo, *supra* note 82, at 4, *reprinted in* PRACTICING LAW INSTITUTE at 336 (argument heading).

[91] *See id.* at 13–18, *reprinted in* PRACTICING LAW INSTITUTE at 345–50. CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-41 to -45, -59 to -60, develops the same argument and points in particular to two passages in *Turner Elkhorn*. The *Turner Elkhorn* Court described the liability as a means of allocating to the defendant "an actual, measurable cost of his business" to compensate for harms "arising out of employment in its mines." 428 U.S. at 19–20. Dicta in that case also stated that retroactive liability for damages "unrelated to the operator's conduct" would "present difficulties not encountered in our prior discussion of retroactivity," because harm "due to causes other than the operator's conduct can hardly be termed a 'cost' of the operator's business." *Id.* at 24–25.

[92] 428 U.S. at 19–20. The court stated that the scheme simply allocated "to the operator an actual cost of his business, the avoidance of which might be thought to have enlarged the operator's profits." *Id.* at 24–25.

[93] *Id.* at 24–25.

for" causation. The less stringent causation requirements under CERCLA are sufficient to meet any minimal requirements one may read into *Turner Elkhorn*. Thus, the conduct of a generator, which is responsible for creating hazardous waste and arranging for disposal, is a cause of subsequent harmful releases. The section 107(b) causation defenses protect a defendant that demonstrates that a hazardous release resulted solely from intervening causes unrelated to the defendant.[94] With this provision, CERCLA merely shifts the burden of proof to the defendant to adjust for the difficulties of proof at hazardous waste sites.[95] Although these causation defenses are limited, they nevertheless permit a defendant to show that it was unrelated to the harm and thus to avoid any liability that would conceivably be unconstitutional under *Turner Elkhorn*.[96] Even if some defendants that caused no harm are unable to make this showing, CERCLA liability is constitutional, just as tort doctrines that similarly shift the burden of proof on causation are constitutional.[97]

The chemical industry undercuts its own "causal nexus" argument by claiming that Congress must use the "less drastic means" of taxation to fund cleanup.[98] The *South Carolina Recycling* defendants contended that "the ready availability of the $1.6 billion statutory Trust Fund demonstrates" that section 107 liability "cannot be justified as a narrowly tailored method of spreading cleanup costs."[99] The industry implies that using CERCLA's taxing mechanism is preferable to section 107 as a means for funding cleanup because it makes all firms contribute. Ironically, this argument favors shifting costs to firms with

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[94] *See* 42 U.S.C. § 9607(b) (1982); *see supra* pp. 1543–45.

[95] Hence CERCLA causation doctrine is "remedial" in that it "neither enlarges nor impairs substantive rights, but rather relates to the means and procedure for enforcing those rights." Bagsarian v. Parker Metal Co., 282 F. Supp. 766, 769 (N.D. Ohio 1968) (discussing a long-arm statute for obtaining personal jurisdiction), *quoted in* Ohio ex rel. Brown v. Georgeoff, 562 F. Supp. 1300, 1306 n.7 (1983) (rejecting the argument that CERCLA in general is "remedial"). Remedial legislation is not constitutionally suspect. *See supra* note 87. CERCLA modifies traditional rules of proof of causation because these would make causation too difficult for the government to prove and would thereby allow firms to evade the substantive liability for harms they actually caused. *See supra* p. 1544.

[96] Furthermore, other provisions of CERCLA moderate the impact of retroactive liability. Section 107(c)(1), 42 U.S.C. § 9607(c)(1) (1982), sets ceilings on liability. Section 107(e)(2), *id.* § 9607(e)(2), permits a defendant to maintain a separate cause of action for indemnification from other parties with whom the defendant may have agreements to transfer liability. The indemnification provision was particularly important in the *South Carolina Recycling* court's rejection of a contract clause challenge. *See infra* p. 1563.

[97] *See supra* note 6.

[98] *See* CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-51. This argument is simply inconsistent with the "rational means" test used in *Turner Elkhorn* and adopted in *NEPACCO*. *See supra* pp. 1556–57.

[99] Memo, *supra* note 82, at 18, *reprinted in* PRACTISING LAW INSTITUTE at 350; *see* CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-70 n.105 (claiming that "Congress created its own less drastic alternative by establishing duplicative means of accomplishing its cleanup objectives").

even *weaker* causal connections to the hazardous waste sites. The industry's own suggestion of alternative means is inconsistent with its claim that *Turner Elkhorn* creates a constitutional requirement of a "causal nexus."[100]

(c) Conclusion. — All of the factors weighed in this due process analysis go to the question of whether retroactive liability under CERCLA is equitable and therefore rational. The above discussion supports the conclusion reached in *NEPACCO* that such liability meets these criteria.[101] Congress, seeking to distribute the costs of cleanup most equitably, chose to put part of the burden upon those firms available for suit that are most closely connected with the sites, and part of it upon the entire industry through a tax. Congress sought to make the firms that created hazardous wastes sites and benefited from past waste disposal practices, rather than the general taxpayer, bear the social costs imposed by their operations. Although one may dispute empirical assumptions underlying its policy, this legislative choice simply cannot be attacked as irrational under the due process clause.

2. The Contract Clause

The chemical industry also argues that the enactment of CERCLA section 107 impaired the transfer of liability in waste disposal contracts and thereby violated the contract clause, which guarantees that no state shall pass any "Law impairing the Obligation of Contracts."[102] The *South Carolina Recycling* court rejected this claim. The waste generators in that case had contracted with South Carolina Recycling and Disposal, Inc. for the disposal of their wastes. They transferred ownership of the waste in order to avoid the kind of liability imposed by section 107.[103] The court rejected their claim that their contracts had been unconstitutionally impaired and noted that the contract clause itself applies only to the states, not to Congress. This rationale is questionable, because the protections of the contract clause are

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[100] As one commentator notes:

> In fact, imposing liability for dumpsite clean-up on past waste generators, who have at least a common-sense connection — if not a previously recognized legal connection — to the problem, may be more rational than holding all chemical companies or the general public responsible for clean-up through an across-the-board tax scheme: such parties may have no connection whatsoever to the condition.

Comment, *supra* note 14, at 1250; *see* Blaymore, *supra* note 69, at 32–33 (quoting legislative history in defense of this rationale).

[101] *See supra* p. 1557.

[102] U.S. CONST. art. I, § 10; *see* Memo at 23–30, *reprinted in* PRACTISING LAW INSTITUTE, *supra* note 82, at 355–62 (challenging CERCLA under the contract clause); CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-71 to -74 (same).

[103] *See* Memo, *supra* note 82, at 26–27, *reprinted in* PRACTISING LAW INSTITUTE at 358–59.

usually thought to be effectively incorporated in the due process clause of the fifth amendment, and hence to apply to federal as well as state laws.[104] The court held in the alternative, however, that CERCLA did not substantially impair the defendants' waste disposal contracts.[105] The court reasoned that the contracts remained valid because the generator defendant could still seek indemnity under the contract.[106]

By rejecting the claim that CERCLA imposes a "substantial" impairment, the court avoided an evaluation of the competing interests at stake. The "substantial impairment" requirement is the initial inquiry in contract clause analysis as set forth in *Allied Structural Steel Co. v. Spannaus*.[107] In assessing an impairment, the Supreme Court has considered such factors as whether the parties relied on the law heavily and reasonably and whether the law operates in an area already subject to regulation.[108] As discussed in the due process analysis above, these factors favor retroactive application of CERCLA. Thus, even without an explicit indemnity provision, CERCLA would not impose a "substantial impairment," and the courts should not have to "push the inquiry to a careful examination of the nature and purpose" of the legislation[109] in order to decide whether the impairment was "reasonable and necessary to serve an important public purpose."[110]

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[104] *See, e.g.*, Shelter Framing Corp. v. Pension Benefit Guaranty Corp., 705 F.2d 1502, 1512–13 & n.12 (9th Cir. 1983); L. TRIBE, *supra* note 84, § 9-5, at 465 n.1 (1978); Hochman, *The Supreme Court and the Constitutionality of Retroactive Legislation*, 73 HARV. L. REV. 692, 695 (1960).

[105] 14 ENVTL. L. REP. (ENVTL. L. INST.) at 20,276.

[106] *See id.* Section 107(e), 42 U.S.C. § 9607(e)(2) (1982), prevents a party from using a contract as a shield against liability, but does not prevent such a party from using the contract to seek recovery from another party.

[107] 438 U.S. 234, 244 (1978).

[108] *See id.* at 245–46, 250.

[109] *Id.* at 245.

[110] United States Trust Co. v. New Jersey, 431 U.S. 1, 25, 29 (1977). Some argue that CERCLA would meet such a test by pointing to CERCLA's overall purpose of dealing with hazardous waste sites. *See, e.g.*, Blaymore, *supra* note 69, at 39–40 (justifying CERCLA under the analysis suggested by *Allied Structural Steel*). The *South Carolina Recycling* defendants correctly noted that this purpose is irrelevant to the constitutionality of the liability provisions. *See* Memo, *supra* note 82, at 29, *reprinted in* PRACTISING LAW INSTITUTE at 361. The interest in protecting public health and the environment is met by government cleanup; the liability provisions must be justified in their own right. Any substantial impairment imposed by CERCLA would have to be justified by the "important general social problem" that those particular provisions address. *Allied Structural Steel*, 438 U.S. at 247. Although CERCLA's liability provisions serve both efficiency and corrective justice by forcing the chemical industry to internalize the costs of cleanup and pay for the harms it caused, *see supra* pp. 1557, 1559, 1562 n.100, these purposes may be difficult to characterize as "important" given the Supreme Court's new solicitude for property interests, *see supra* pp. 1555–56 & n.68.

C. Takings Clause Challenges to Government Cleanup

The chemical industry has also suggested that remedial action at waste sites may be a "taking" requiring just compensation under the takings clause.[111] Courts generally decide takings cases by performing "ad hoc, factual inquiries," weighing factors such as "the economic impact of the regulation, its interference with reasonable investment backed expectations, and the character of the governmental action."[112] Given the overwhelming state interest in public health and safety, courts will generally not find a "taking" when the government is eliminating a nuisance and not affirmatively exploiting the property.[113] Hence, even assuming facts favorable to the site owner, courts balancing all relevant factors should find that cleanup measures are not "takings."[114]

Loretto v. Teleprompter Manhattan CATV Corp.[115] established the only exception to the balancing approach: a "permanent physical occupation" is a "taking" of the owner's property, however minor the intrusion and whatever the public interest served. The chemical industry notes that cleanup measures give rise to such an occupation by requiring the building of permanent structures to contain waste, prevent access, or monitor ground water.[116] This rigid formalistic approach has no plausible justification in economics or common sense.[117] The hazardous waste site context illustrates the illogic of this rule: the government could avoid a per se "taking" claim by

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[111] U.S. CONST. amend. V ("nor shall private property be taken for public use without just compensation"); *see* CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-75 to -77 (developing the takings clause challenge to CERCLA cleanup). For example, the industry claims that government cleanup under § 104 or private cleanup ordered by the government under § 106 may deprive the site owner of any remaining valuable use of the property. *See id.* at VI-76 to -77 & n.115. Complete deprivation would make a "taking" claim plausible, because "the extent of the diminution" in property value is a significant factor in takings analysis. Pennsylvania Coal Co. v. Mahon, 260 U.S. 393, 413 (1922). Most often, however, it is the toxic waste itself that has rendered the land useless. *See* Blaymore, *supra* note 69, at 44, 46.

[112] Kaiser Aetna v. United States, 444 U.S. 164, 175 (1979).

[113] One discerns this pattern in the Supreme Court cases, although they do not expressly adopt this approach. *See, e.g.*, Goldblatt v. Town of Hempstead, 369 U.S. 590, 595 (1962) (upholding a zoning regulation as a "safety measure"); Miller v. Schoene, 276 U.S. 272 (1928) (upholding the governmental destruction of valuable cedar trees deemed a threat to neighboring apple orchards); *see also* Blaymore, *supra* note 69, at 45–46 (using the "noxious use" approach to defend CERCLA).

[114] *See* Blaymore, *supra* note 69, at 40–46. Much of this balancing in takings cases follows the due process analysis discussed above. For example, although investment-backed expectations are deemed relevant in this analysis, *see* Kaiser Aetna v. United States, 444 U.S. 164, 174–75 (1979), reliance interests are weak in the context of toxic waste disposal because of the obvious dangers posed by such wastes and the heavy regulation of disposal. *See* Blaymore, *supra*, at 43.

[115] 458 U.S. 419, 425–26 (1982).

[116] *See* CHEMICAL MFRS. ASS'N, *supra* note 14, at VI-75 to -76.

[117] *See Loretto*, 458 U.S. at 447–51 (Blackmun, J., dissenting).

ordering the private party to carry out the same cleanup or by compelling the private party to purchase any permanent structure erected upon the property. Even if applied, however, this per se rule would have minor practical consequences. Little or no payment may be "just" compensation for the taking, especially in light of the fact that government cleanup confers benefits upon the owner by fulfilling the owner's legal obligation to clean up the site, benefits much larger than any harms that cleanup might cause the owner.

VII. Natural Resource Damages

A. Liability Under CERCLA

1. Introduction

Under CERCLA's primary liability provision, section 107, parties responsible for a release are liable for natural resource damages as well as for cleanup costs. Section 107(a)(4)(C) of CERCLA creates liability for "damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from" a release of hazardous substances.[1] Section 107(f) provides that defendants are to pay damages to the United States and the affected states.[2] "Natural resources" are defined by section 101(16) as "land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States . . . , any State or local government, or any foreign government."[3]

The damages at stake in natural resource cases can be staggering. For example, the United States is seeking to recover as much as $1.8 billion from Shell Oil Company for natural resource damages at the Rocky Mountain Arsenal in Colorado.[4] Claims by federal and state governments are proliferating.[5] Moreover, a recent district court holding that municipalities may also sue for natural resource damages[6] could further expand the use of these suits.

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[1] 42 U.S.C. § 9607(a)(4)(C) (1982).

[2] *See id.* § 9607(f).

[3] *Id.* § 9601(16).

[4] *See* United States v. Shell Oil Co., 605 F. Supp. 1064, 1084 (D. Colo. 1985).

[5] *See* W. Frank & T. Atkeson, BNA Special Report, Superfund: Litigation and Cleanup 75 (1985); Breen, *CERCLA's Natural Resource Damage Provisions: What Do We Know So Far?*, 14 Envtl. L. Rep. 10,304, 10,304 & n.2 (1984); Note, *Theories of State Recovery Under CERCLA for Injuries to the Environment*, 24 Nat. Resources J. 1101, 1103 & n.20 (1984).

[6] *See* Mayor and Bd. of Aldermen of Boonton v. Drew Chem. Corp., 621 F. Supp. 663, 667 (D.N.J. 1985).

2. Requirements for Liability

(a) Timing Requirements. — Section 112 sets forth procedures for natural resource damage actions. Section 112(d) requires that claims be presented and actions commenced within three years of the date of discovery of the damage.[7] Furthermore, section 107(f) states that there "shall be no recovery . . . where such damages and the release of a hazardous substance from which such damages resulted have occurred wholly before December 11, 1980."[8] Courts have held, however, that this timing requirement will not bar liability as long as some damage continues after the enactment date.[9]

(b) The Requirement of a Nexus Between the Resource and the Government. — Some have read the definition of "natural resources" in section 101(16)[10] to require a special nexus between the government and the natural resource. For example, the chemical industry reads this definition to include only publicly owned or controlled resources,[11] because section 101(16) refers only to resources "belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by" the government.[12] One commentator similarly argues that section 101(16) requires a "nexus" between the resource and the government, although he interprets this requirement to include resources that are directly regulated for environmental protection.[13] Under this view, unregulated resources fall outside of the language of the statute, because "if Congress meant to include any resources within a government's geographic jurisdiction, it could easily have said so, and to read 'appertaining to' this broadly seems to make the other nexus descriptors in the statute redundant."[14]

No special "nexus," however, should be required. Other provisions of CERCLA appear to give broad reach to the cause of action for natural resource damage. Section 111(b), for example, permits the

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[7] *See* 42 U.S.C. § 9612(d) (1982). Damages discovered before the enactment of CERCLA, however, had to be presented and filed before December 11, 1983. *See id.*

[8] *Id.* § 9607(f).

[9] *See* United States v. Shell Oil Co., 605 F. Supp. 1064, 1076 (D. Colo. 1985); United States v. Wade, 20 ENVTL. L. REP. (Envtl. L. Inst.) 20,435, 20,436 (E.D. Pa. Feb. 2, 1984); United States v. Reilly Tar & Chem. Corp., 546 F. Supp. 1100, 1120 (D. Minn. 1982).

[10] *See supra* p. 1565.

[11] *See* CHEMICAL MFRS. ASS'N, SUPERFUND: KEY LIABILITY ISSUES at V-47 to -49 (1982). The industry correctly notes that only the federal or state governments may recover, but this fact does not imply that they may not recover for privately owned resources. *See supra* p. 1565.

[12] 42 U.S.C. § 9601(16) (1982). But the statute on its face goes beyond mere ownership or control. For example, the word "trust" indicates that this definition should include not only resources owned or possessed by the government, but also resources in the "public trust," such as navigable waters, wetlands, and parklands. *See generally* R. ZENER, GUIDE TO FEDERAL ENVIRONMENTAL LAW 377 (1981) (discussing the notion of "public trust").

[13] *See* Breen, *supra* note 5, at 10,305–06. Such resources would include "endangered species, coastal zones, public water supplies, and air." *Id.* at 10,305.

[14] *Id.* at 10,306.

United States to assert claims "as trustee" of any natural resources over which it has "sovereign rights," that is, the power to regulate.[15] Section 107(f) establishes liability for damage to any natural resources "*within the State or* belonging to, managed by, controlled by, or appertaining to such State."[16] This provision uses the disjunctive "or," implying that the nexus terms *expand* upon mere sovereignty. The language in these sections indicates that Congress intended that CERCLA be construed broadly to reach all resources within the government's jurisdiction; a narrower reading of "natural resources" would require contorted readings of these sections. Furthermore, distinguishing between privately and publicly owned natural resources conflicts with CERCLA's goal of forcing defendants to internalize the social costs of natural resource damage, because all natural resources may provide services to, and be valued by, the public.[17]

B. Measurement of Damages

1. Use Value Versus Restoration Cost

CERCLA provides little guidance in the measurement of damages. Section 107 merely indicates that the sums recovered "shall be available for use to restore, rehabilitate, or acquire the equivalent of such natural resources . . . , but the measure of such damages shall not be limited by the sums which can be used to restore or replace such resources."[18] Rather than specifying more precise rules, section 301(c)(1) directs the President to "promulgate regulations for the assessment of damages for injury to, destruction of, or loss of natural resources."[19] Section 301(c)(2) provides that these regulations shall specify "(A) standard procedures for simplified assessments requiring minimal field observation, including establishing measures of damages based on units of discharge or release or units of affected area, and (B) alternative protocols for conducting assessments in individual cases" that "shall take into consideration factors including, but not limited to, replacement value, use value, and ability of the ecosystem

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[15] *See* 42 U.S.C. § 9611(b) (1982). "Sovereign right" is defined by BLACK'S LAW DICTIONARY 1252 (5th ed. 1979) as the right that "the state alone, or some of its governmental agencies, can possess, and which it possesses in the character of a sovereign, for the common benefit, and to enable it to carry out its proper functions." In particular, this right is "distinguished from such 'proprietary' rights as a state, like any private person, may have in property or demands which it owns." *Id.*

[16] 42 U.S.C. § 9607(f) (1982) (emphasis added).

[17] This is not to say that the law should not distinguish between public and private *damages*. *See infra* p. 1572.

[18] CERCLA § 107(f), 42 U.S.C. § 9607(f) (1982).

[19] 42 U.S.C. § 9651(c)(1) (1982).

or resource to recover."[20] The President delegated responsibility for promulgating these regulations to the Department of the Interior (DOI),[21] and a consent order obtained in a lawsuit by New Jersey and others established a schedule for the promulgation of these rules.[22]

The rules proposed by the DOI as of this writing illustrate some of the issues raised by natural resource damages. The DOI stresses that CERCLA requires these damages to be compensatory rather than punitive.[23] CERCLA's broad directive alludes to two distinct measures of compensatory damages: (1) restoration or replacement cost, or (2) diminution of use value. The latter is measured by the decrease in fair market value or by some economic construct that similarly estimates the economic value of the services lost. Although some have suggested that CERCLA favors restoration cost as the appropriate measure of damages,[24] the rules proposed by the DOI generally adopt

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[20] *Id.* § 9651(c)(2). Type A assessments based on amount of discharge or units of affected area are inaccurate methods for estimating actual damage. These formulas unrealistically assume a "linear damage function" — that is, they assume the harm is proportional to the quantity of discharge or the area affected. *See* Yang, *Valuing Natural Resource Damages: Economics for CERCLA Lawyers*, 14 ENVTL. L. REP. 10,311, 10,313 (1984). Perhaps for this reason, CERCLA's legislative history indicates that type A methods should only be used for "minor" releases. *See* S. REP. No. 848, 96th Cong., 2d Sess. 86 (1980).

[21] *See* Exec. Order No. 12,316, § 8(c)(3), 46 Fed. Reg. 42,237, 42,240 (1981).

[22] Pursuant to that order, the DOI proposed "B regulations" on December 20, 1985. *See* 50 Fed. Reg. 52,127 (1985) (preamble to rules proposed Dec. 20, 1985) (citing New Jersey v. Ruckelshaus, No. 84-1668 (D.N.J. Feb. 5, 1985) (consent order)).

[23] *See* 50 Fed. Reg. 52,127–28 (1985) (preamble to rules proposed Dec. 20, 1985).

[24] *See, e.g.*, Breen, *supra* note 5, at 10,304, 10,307–10; Note, *supra* note 5, at 1104 n.24, 1105. These commentators cite CERCLA § 107(f), 42 U.S.C. § 9607(f) (1982), which states that "damages shall not be limited by the sums which can be used to restore or replace such resources," in support of their position. They argue that this language suggests that restoration costs were intended as a minimal floor, and that Congress envisaged even greater liability. *See* Breen, *supra*, at 10,307; Note, *supra* note 5, at 1103 n.16. This language merely rejects a ceiling, however, and does not exclude the possibility of smaller damages. The better reading of this provision is that it was intended to allow recovery of use value lost during the time when natural resources are being restored. The rules proposed by the DOI effectively adopt this reading, allowing such recovery above restoration cost when restoration cost is the appropriate measure of damages. *See infra* p. 1571. In determining restoration cost for comparison with use value, this recovery above restoration cost should be included as part of the "restoration cost."

The above commentators also cite the language in the Clean Water Act, 33 U.S.C. § 1321(f)(5) (1982), which states that damages "shall be used to restore, rehabilitate, or acquire the equivalent," and argue that CERCLA adopts the same standard for damages. *See* Note, *supra* note 5, at 1102 n.16; *see also* Deepwater Port Act § 18(i)(3), 33 U.S.C. § 1517(i)(3) (1982) (providing that sums recovered "shall be applied to the restoration and rehabilitation" of natural resources), *cited in* Breen, *supra* note 5, at 10,309 (arguing that CERCLA adopts the same standard). Yet these other statutes show that Congress will expressly state any intended restriction on the measure of sums recovered. Had Congress wished to follow the standard in the Clean Water Act, it could easily have copied the phrase "shall be used." Other evidence cited by these commentators is discussed *infra* at notes 26 & 48. At best, their arguments demonstrate that the statute is ambiguous.

the common law approach of taking the lesser of restoration cost and lost value.[25]

This rule is supported by CERCLA's legislative history and is generally consistent with economic theory. Senator Simpson stated:

> I also trust that the traditional legal rules for . . . damages for injury in tort will be observed as part of cost effectiveness. For example, the law achieves cost effectiveness by awarding the difference in value before and after the injury, and where the injured interest can be restored to its original condition for less than the difference in value, the cost or [sic] restoration is used.[26]

The objective of the damage awards should be to force private parties to internalize the social costs imposed by their hazardous waste releases so that these parties will invest optimally in safety precautions. The proper measure of this damage is the actual loss suffered once society has efficiently mitigated the damage. If the lost resource can be restored at a cost less than its value, then the cost of restoration is the social loss. If the resource cannot be restored economically, then the use value foregone is the social loss. A still better policy would not limit the alternatives to *full* restoration cost or use value. The optimal policy would also consider partial restoration and would require the government to restore the resource only up to the point at which the marginal benefit equals the marginal cost. The defendant would pay the costs of partial restoration plus compensation for any residual loss in use value. For any case in which some restoration is optimal, this sum will be less than the total loss in use value when zero restoration is assumed. A more sophisticated rule would direct a court or agency to estimate this optimum,[27] but the proposed rules fail to provide for this more complex analysis.

The proposed rules also carve out an exception to the general common law rule that limits recovery to use value when restoration costs exceed use value. This exception allows the trustee to seek

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[25] *See* 50 Fed. Reg. 52,154 (1985) (to be codified at 43 C.F.R. § 11.35(b)(2)) (proposed Dec. 20, 1985), *explained in id.* at 52,141 (preamble to proposed rules). The chemical industry has also advocated this common law approach. *See* CHEMICAL MFRS. ASS'N, *supra* note 11, at V-35 to -46.

[26] 126 CONG. REC. 30,986 (1980) (statement of Sen. Simpson). Senator Mitchell described CERCLA as providing for recovery of restoration cost, noting that the government can recover "the cost of repairing the damage" and "may be fully reimbursed from the fund for the cost of restoring." *Id.* at 30,941–42, *quoted in* Breen, *supra* note 5, at 10,308. Unlike Senator Simpson, however, Senator Mitchell did not specifically address the situations in which actual restoration would not be worth undertaking because restoration cost would exceed lost value.

[27] *See* Farny v. Bestfield Builders, Inc., 391 A.2d 212, 214 (Del. Super. Ct. 1978) (directing the lower court to consider whether awarding full restoration costs for damaged trees was appropriate given "that their replacement cost may unreasonably exceed their marginal aesthetic value" and that the plaintiffs could "have replaced the lost trees with less mature trees of a somewhat lower replacement cost but with an aesthetic value near to that of the lost trees").

recovery of restoration or replacement costs when the natural resource is a "special resource," provided that such restoration or replacement is technically feasible and that these costs will not be "grossly disproportionate to the benefits gained."[28] A "special resource" is defined as a resource set aside and committed to a specific use by law before the release was detected.[29] The DOI recognizes that this provision departs from the common law theory and explains that it applies only when the resource is set aside "consciously and clearly . . . by elected representatives."[30]

The DOI created the "special resource" exception to respect federal or state legislative determinations that "certain natural resources are worthy of protection even if their use values are relatively low," because otherwise "these resources could be left unrestored or unreplaced" contrary to legislative intent.[31] This exception, then, should be invoked only when the legislature evinces clear intent. The theory behind the exception is that the political process has attached a social value to these resources that exceeds measurable use value and that agencies should abide by this decision.

2. Methodology for Determining Damages

(a) Restoration Costs. — The proposed rules define restoration or replacement damages as the costs necessary to return the resource services to the baseline level provided in the absence of damage.[32]

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[28] *See* 50 Fed. Reg. 52,154 (1985) (to be codified at 43 C.F.R. § 11.35(d)) (proposed Dec. 20, 1985).

[29] *See id.* at 52,150 (to be codified at 43 C.F.R. § 11.14(pp)), *explained in id.* at 52,141 (preamble to proposed rules). According to the DOI, this definition would include wildlife preserves, which are managed for resource preservation only, but not military land, public lands, or national forests, which are managed for a variety of uses. The definition also excludes resources protected by "regulatory statutes," or those resources designated by administrative agencies for special protection. *See id.* This language excludes endangered species, which are listed administratively and protected by statutes that establish specific civil and criminal penalties for harming the species. *See id.* at 52,141.

[30] *Id.* at 52,141 (preamble to proposed rules).

[31] *Id.* The DOI provides no guidance for identifying this intent in any particular statute.

[32] *See id.* at 52,169 (1985) (to be codified at 43 C.F.R. § 11.81(c)(1)). This baseline includes both services provided to humans and services provided to the ecosystem. *See id.* at 52,164 (to be codified at 43 C.F.R. § 11.71(e)). The DOI explains that nonhuman services include "supporting wildlife, controlling floods, assimilating wastes," and "any other services that may be important," but does not explain why these must be restored if they are not ultimately of value to humans. *See id.* at 52,138 (preamble to proposed rules). Inclusion of nonhuman services in the restoration baseline seems to assume a duty to nature per se. *See generally* Sagoff, *On Preserving the Natural Environment*, 84 YALE L.J. 205, 221–22 (1974) (arguing that natural objects have rights); Stone, *Should Trees Have Standing? — Toward Legal Rights for Natural Objects*, 45 S. CAL. L. REV. 450 (1972) (same). This assumption is inconsistent with the rest of the DOI's methodology, which assumes duties only to humans. Use value, for example, is based on services provided only to humans. *See* 50 Fed. Reg. 52,170 (1985) (to be codified at 43 C.F.R. § 11.83(b)).

Damages are based upon the most cost-effective alternative for reaching this objective, and the alternatives considered must include a "no action" option that relies upon natural recovery alone.[33] Damages also include the diminution in use value suffered before the resource is restored or replaced, and these social costs are included in the determination of the most cost-effective route to restoration.[34]

(b) Use Value. — Measurement of lost use value depends on whether the resource is traded in a market.[35] If a resource is traded in a reasonably competitive market, the diminution in the market price of the resource shall be the measure of lost value.[36] This market value rule envisions a resource with primarily commercial uses, such as marketable uncut timber, so that use value may be represented by the price that private parties will pay for it, and the loss to the public by the revenue foregone.[37]

Courts should take care to distinguish between the market value of resources in the wild and the market value of the "harvested" good. The latter price includes the value added by the process of harvest. Many resources are sold in their "harvested" state but have no commercial value in the wild at all. Because a market for the "unharvested" good does not exist, courts may be tempted to use the price

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[33] *See id.* at 52,169, 52,170 (to be codified at 43 C.F.R. §§ 11.81(d)(2), .81(f)(1), .82(d)(2)(i)).

[34] *See id.* at 52,169, 52,170, 52,172 (to be codified at 43 C.F.R. §§ 11.81(b), .82(d)(3)(ii)(C), .84(g)(1)).

[35] *See id.* at 52,170 (to be codified at 43 C.F.R. § 11.83(a)(2)).

[36] *See id.* at 52,171 (to be codified at 43 C.F.R. § 11.83(c)(1)). If the market is not reasonably competitive, but similar resources are traded in such a market, an appraisal technique is used. *See id.* at 52,171 (to be codified at 43 C.F.R. § 11.83(c)(2)), *explained in id.* at 52,142–43 (preamble to proposed rules).

[37] The DOI explains that although this surrogate measure "will not always coincide with . . . the loss in social value," it "is widely recognized by courts as the measure of damages when a commodity is injured." *Id.* at 52,142 (preamble to proposed rules). *See, e.g.*, Chevron Oil Co. v. Snellgrove, 253 Miss. 356, 364–67, 175 So. 2d 471, 474–75 (1965) (applying this measure to timber); Dep't of Fisheries v. Gillette, 27 Wash. App. 815, 822–24, 621 P.2d 764, 768–69 (Ct. App. 1980) (applying this measure to fish in a hatchery). If the resource has aesthetic and recreational values as well as commercial uses, this measure may undervalue the use value of the damaged resource. *See* Note, *supra* note 5, at 1112 & n.72. The market price of these resources represents the opportunity cost of keeping them in the wild. If a state seeks to maximize social welfare and chooses to sell any of the resource, it must perceive the marginal social benefit to be equal to the market price. In economic terms, total use value lost will exceed market value by the "consumer surplus" (the excess of the consumer's willingness to pay over the market price). Thus, for goods sold by the state, market price is a fair surrogate for use value only if this "consumer surplus" is small, as when substitute resources are readily available.

When a state chooses not to sell any of the good, it is possible that use value may exceed market price even at the margin. A state that chooses not to sell any of the good perceives the marginal social benefit of the "unharvested" resource to be greater than the market price it could obtain by selling. In these situations, market price will understate use value not only by the usual amount of "consumer surplus," but also by the difference between marginal social benefit and market price.

of the "harvested" good. The use of this price as a surrogate for use value may lead to unreasonable results. A particularly absurd example was the formula used by the district court in *Puerto Rico v. SS Zoe Colocotroni*.[38] To determine the value of ninety-two million small marine invertebrates killed by an oil spill, the court turned to the market prices of "harvested" organisms. Based on prices found in biological supply catalogs, the court awarded damages exceeding $5.5 million. The First Circuit vacated this award.[39] The market value rule should not include such organisms because they are not sold in their "unharvested" state, and thus their market value is largely due to the harvesting process.

The proposed rules go on to provide that if the "marketed resource methodologies" are "inappropriate," a "non-marketed resource methodology" must be used.[40] This framework is appropriate for measuring the value of resources such as the *Colocotroni* organisms that are not traded in markets. The proposed rules suggest a variety of economic techniques for measuring the willingness of individuals to pay for the lost service or to accept compensation for that loss.[41]

(c) *Duplicate Damages.* — The proposed rules also take care to avoid the award of duplicate damages. For example, damages are based on the injury to the environment remaining after the EPA has taken response action.[42] This provision ensures that a defendant will not pay both for response costs and for damage cured by that response. The rules also allow recovery of only public use values, that is, "value to the public of recreational or other public uses of the resource" or income lost by a public enterprise.[43] Income lost by private individuals may be recovered in private lawsuits under other law.[44]

C. Use of Damages for Restoration

The rules as initially proposed also specify that all damages, whether based on restoration cost or use value, must be used for restoration, replacement, or acquisition of the equivalent resources, "in keeping with the emphasis in CERCLA and the CWA [Clean Water Act] on restoration."[45] This rule is of questionable legality

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[38] 456 F. Supp. 1327, 1344–45 (D.P.R. 1978), *aff'd in part, vacated in part*, 628 F.2d 652 (1st Cir. 1980), *cert. denied*, 450 U.S. 912 (1981).

[39] 628 F.2d at 677.

[40] *See* 50 Fed. Reg. 52,171 (1985) (to be codified at 43 C.F.R. § 11.83(d)(1)), *explained in id.* at 52,143 (preamble to proposed rules).

[41] *See id.* at 52,171 (to be codified at 43 C.F.R. § 11.83(d)(2)–(6)).

[42] *See id.* at 52,171 (to be codified at 43 C.F.R. § 11.84(c)(2)).

[43] *See id.* at 52,170 (to be codified at 43 C.F.R. § 11.83(b)).

[44] *See id.* at 52,143 (preamble to proposed rules); *see also* Breen, *supra* note 5, at 10,310 n.85 (noting that courts may be reluctant to recognize a possibly redundant right of the government to recover for damage to private property).

[45] 50 Fed. Reg. 52,147 (preamble to proposed rules) (1985) (explaining *id.* at 52,173 (to be codified at 43 C.F.R. §§ 11.92(e), .93(a))).

because the DOI's statutory mandate, section 301(c), does not include the authority to restrict the government's use of damages recovered. That statute authorizes only "regulations for the assessment of damages,"[46] not regulations regarding restoration decisions.

Furthermore, this rule makes little sense as a policy matter, because it requires the government to pursue restoration regardless of how little use value is gained thereby. When full restoration costs exceed use value, and damages are therefore based on use value, there is no guarantee that any degree of restoration will yield benefits exceeding costs. The government should instead be permitted to use such damages in whatever way it believes yields the greatest public benefit.[47] The proposed rule will both force the government to waste these funds in suboptimal uses and reduce its incentive to bring suits.

The DOI seems influenced by the statutory language suggesting that CERCLA favors restoration cost as the proper measure of damages. But this reading of CERCLA is no more persuasive in dictating the use of damages than it is in dictating the measure of damages.[48] Indeed, CERCLA obviously contemplates that some damages may be put to other uses. Section 107(f), for example, allows for damages exceeding the sum that can be used for restoration or replacement;[49] these excess damages, by definition, cannot be used for restoration. Given that CERCLA does not specify how governments are to use the sums recovered, the DOI should leave the restoration decision solely to the discretion of the government.

VIII. Bankruptcy and Insurance Issues

After the legal system assigns liability for a tort claim or a cleanup action to a responsible party, it must determine who — among the responsible generators and disposers, their insurers, the government, and the victims — will actually bear the cost of that liability. The

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[46] *See* 42 U.S.C. § 9651(c)(1) (1982).

[47] *See* Note, *supra* note 5, at 1114 (noting that the state "might prefer funds earmarked for research aimed at improving scientific capability of cleaning up releases of hazardous substances, or other projects on pollution control, management of natural resources, or other significant public interests").

[48] *See supra* note 24. Section 107(f), 42 U.S.C. § 9607(f) (1982), for example, states that damages "shall be available for use to restore, rehabilitate, or acquire the equivalent" of the injured resources, but the phrase "shall be available" does not exclude other uses. Section 111(c) also states that the "uses" of the Fund "include" the "costs of Federal or State efforts in the restoration, rehabilitation, or replacement or acquiring the equivalent" of injured resources. 42 U.S.C. § 9611(c)(2) (1982), *cited in* Breen, *supra* note 5, at 10,307. Again, this language need not be read to exclude all other uses for the sums recovered. EPA regulations, however, have specified that only those costs necessary for restoration and damage assessment may be reimbursed from the Fund. *See* 50 Fed. Reg. 51,216 (1985) (to be codified at 40 C.F.R. § 306.21(a)). Even if § 111(c) is read as an exhaustive list of uses, it limits only damages paid out of Superfund and need not constrain trustees who recover directly from defendants.

[49] *See* 42 U.S.C. § 9607(f) (1982).

same determination is important for firms prospectively estimating their liability costs.

A firm facing the risk of environmental liability — liability for tort claims or cleanup costs arising from improper hazardous waste disposal — can purchase insurance against that risk.[1] Alternatively, it can fail to insure adequately and assume the risk of insolvency.[2] In this sense, bankruptcy and insurance are different aspects of the same question: how does a firm finance its liabilities for the infliction of waste-related injuries? The answer to that question, and the attendant consequences for society, are shaped by the legal doctrines that define bankruptcy and insurance systems. If either system allows a firm to pay less than its full liabilities, the firm will finance its liabilities through that system and produce more injury costs than would an efficient market.[3]

A. Insurance

Those who risk incurring liability for injuries can purchase, for periodic payments, the promise of an insurer to pay the costs of those injuries. To avoid sudden overwhelming liabilities, waste-handling firms often purchase insurance covering potential payments to tort victims as well as the costs of waste-site cleanup.[4] This Section examines the recent crisis in the market for environmental liability insurance, the kinds of insurance now being offered for sale, and the litigation that has resulted from ambiguities in current insurance policies.[5]

1. The Insurance Crisis

Environmental liability insurance has recently undergone a shift from apparent under-deterrence to apparent over-deterrence of envi-

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[1] *See* Sparrow, *Hazardous Waste Insurance Coverage: Unexpected Past, Uncertain Future*, 64 MICH. BAR J. 169 (1985); Hilder, *Changes in Liability Insurance Spur Confusion Among Business Clients*, Wall St. J., Nov. 20, 1985, at 33, col. 4.

[2] *See* Drabkin, Moorman & Kirsch, *Bankruptcy and the Cleanup of Hazardous Waste: Caveat Creditor*, 15 ENVTL. L. REP. 10,168, 10,169 (ENVTL. L. INST.) (1985). In New Jersey in recent years, 10 major cases per year have involved bankruptcy filings by firms seeking shelter from the enforcement of environmental regulations and related tort rules. *See* Note, *Cleaning Up in Bankruptcy: Curbing Abuse of the Federal Bankruptcy Code by Industrial Polluters*, 85 COLUM. L. REV. 870, 871 n.14 (1985).

[3] The efficient prevention of injuries requires not that all injuries be prevented but that the sum of accident costs and avoidance costs be minimized. *See* Rosenberg, *The Causal Connection in Mass Exposure Cases: A "Public Law" Vision of the Tort System*, 97 HARV. L. REV. 849, 861 (1984).

[4] *See* Meyer, *Compensating Hazardous Waste Victims: RCRA Insurance Regulations and a Not So "Super"Fund Act*, 11 ENVTL. L. 689, 705 (1981).

[5] This Part does not examine alternative forms of insurance, such as a victims' compensation fund. This form of insurance is discussed in detail in Part X below.

ronmental damages. In the past, insurance was available at prices that did not reflect the full environmental risks of each insured firm. Insurers had little incentive to tailor premiums closely to an individual firm's risk profile, because such tailoring requires the expense of monitoring each firm[6] and because insurers did not expect courts to impose significant waste-related liabilities.[7] Instead of forcing the insured to internalize its risk costs by tying premium rates to the firm's safety record ("experience rating")[8] or by threatening to deny coverage,[9] insurers arranged insureds in broad risk categories at fixed premiums. Without premiums tied closely to risks, the insured had insufficient incentives to avoid risky activities.[10]

In recent years, however, the sharp increase in environmental liability litigation and the courts' broad construction of insurance policies[11] have combined to shock the insurance industry.[12] Facing massive awards to insureds who had paid low premiums[13] and fearing further surprises, most insurers have withdrawn from the environmental liability market.[14] Forcing insurers to pay for the liability from toxic waste operations covered under old insurance policies has

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[6] *See* Sugarman, *Doing Away With Tort Law*, 73 CALIF. L. REV. 555, 575–76 (1985).

[7] Insurers believed both that environmental risks were small, particularly before the startling news of waste-site leaks, and that liability for those risks was unlikely, particularly before the enactment of new environmental laws in the last decade. *See* Meyer, *supra* note 4, at 692–93. Insurers also believed that they had excluded environmental pollution from their insurance policies. *See infra* pp. 1582–83.

[8] *See* Sugarman, *supra* note 6, at 575.

[9] *See id.* at 579.

[10] Cost internalization is frustrated by insurance premiums that are fixed across categories or across time. When a premium is tied to a broad category of insureds instead of to an individual firm, it is insensitive to variations in risk generation within the category, and the correlation of premiums with risks is often too weak to be an effective deterrent. *See* Sugarman, *supra* note 6, at 575–78. When the premium is not adjusted to variations in the firm's generation of risk over time, the insured has an incentive to take on additional risks not contemplated in the original premium price but covered by the insurance policy. *See* Note, *Tort Creditor Priority in the Secured Credit System: Asbestos Times, the Worst of Times*, 36 STAN. L. REV. 1045, 1071 & n.112 (1984). These shortcomings were powerful enough to persuade the state of New York, for a time, to prohibit pollution liability insurance in an effort to make polluters internalize all costs. *See* Fields, *Superfund: The Court Search for Insurance Money*, BRIEF, Fall 1984, at 7, 9.

[11] *See infra* pp. 1578–79.

[12] *See* Sparrow, *supra* note 1, at 169.

[13] In the last several years, intense competition pushed insurers to cut premiums and rely more heavily on investment income. The recent decline in interest rates has forced insurers to raise premiums sharply. *See* Madden, *Liability Insurance Cost Is Soaring for Localities*, N.Y. Times, Sept. 30, 1985, at B1, col. 5.

[14] *See Businesses Struggling to Adapt as Insurance Crisis Spreads*, Wall St. J., Jan. 21, 1986, at 31, col. 1; Angelo & Bergeson, *The Expanding Scope of Liability for Environmental Damage and Its Impact on Business Transactions*, 8 CORP. L. REV. 101, 116–17 (1985) (noting that only nine firms offer such insurance now and that the number "will undoubtedly continue to decrease").

required much litigation.[15] New liability insurance policies are rarely available and often prohibitively costly.[16] Until environmental risks and the courts' construction of insurance policies covering those risks become more predictable, insurers are likely to litigate many environmental liability claims and to demand extremely high premiums for very limited coverage.[17]

The high cost of purchasing environmental insurance, coupled with waste handlers' large liability exposure, is driving some firms to insolvency.[18] The Resource Conservation and Recovery Act (RCRA) requires such firms to establish that they are at least partly insured against the risks involved in waste handling;[19] the high cost of even that limited responsibility has forced some waste handlers to cease operations.[20]

2. Types of Insurance Available

The changing problems of the market for environmental liability insurance have encouraged insurers to devise new policy forms. The oldest form is the comprehensive general liability (CGL) form, which provides coverage for all "occurrences" causing damage or injury.[21] Most CGL forms contain a "pollution exclusion" clause exempting the insurer from coverage for gradual polluting leaks; these exclusion

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[15] *See* Rodburg & Chesler, *Beyond the Pollution Exclusion: Emerging Parameters of Insurance Coverage for Superfund Liability*, in PRACTICING LAW INSTITUTE, HAZARDOUS WASTE LITIGATION 347, 347–48 & n. 1 (1985) (citing cases). One insurance company now writes insurance for the costs of litigating against one's own insurance company. *See* Smith, *Environmental Damage Liability Insurance — A Primer*, 39 BUS. LAW. 333, 334 n.4 (1983).

[16] *See* Bacas, *Liability: Trying Times*, NATION'S BUS., Feb. 1986, at cover ("The liability insurance crisis is the most serious threat to business today."); Sparrow, *supra* note 1, at 171–174; *Sorry, America, Your Insurance Has Been Canceled*, TIME, Mar. 24, 1986, at cover; *Businesses Struggling to Adapt as Insurance Crisis Spreads*, Wall St. J., Jan. 21, 1986, at 31, col. 1 ("The soaring cost and worsening shortage of liability insurance are taking their toll on businesses, professionals and local governments across the country.").

[17] *See* Sparrow, *supra* note 1, at 171–74 (suggesting that as insurers regain confidence in their ability to predict liabilities, they will resume selling environmental liability insurance).

[18] *See* Note, *supra* note 2, at 871; Wall. St. J., Jan. 21, 1986, at 31, col. I. More complete insurance coverage could help responsible parties and tortfeasors avoid insolvency. *See* Drabkin, Moorman & Kirsch, *supra* note 2, at 10,174.

[19] *See* Meyer, *supra* note 4, at 689. RCRA's specific financial responsibility requirements are codified at 40 C.F.R. §§ 264.140–.151, 265.140–.150 (1984).

[20] *See* Shabecoff, *Most Toxic Waste Dumps Violate Deadline*, N.Y. Times, Dec. 7, 1985, at 1, col. 1. Forty-five waste disposal facilities were forced to close because, although they were evidently operating properly, they could not obtain the required insurance. *See id.* at 9, col. 2.

[21] *See* Note, *The Applicability of General Liability Insurance to Hazardous Waste Disposal*, 57 S. CAL. L. REV. 745, 749 (1984). An "occurrence" may be defined as "'an accident, including continuous or repeated exposure to conditions, which results in bodily injury or property damage neither expected nor intended from the standpoint of the insured.'" *Id.* at 749 (quoting 3 R. LONG, THE LAW OF LIABILITY INSURANCE at app. 60 (1983)).

clauses, however, also contain an exception providing that "sudden or accidental" events remain covered by the CGL.[22]

To cover the gradual events apparently excluded by the standard CGL, the environmental impairment liability (EIL) policy was invented in the late 1970s.[23] While explicitly expanding coverage to include all events, sudden or gradual,[24] the EIL restricts coverage to a narrow slice of potential claimants: the EIL policy covers all *claims* made during the period of the policy, rather than covering all *occurrences* during that period.[25] The EIL form thus provides the insurer repose when the policy period expires. The EIL generally also has a "retroactive date" — usually the starting date of the first EIL policy written by the insurer for a particular insured. The insurer will not cover claims based on events that occurred before the retroactive date.[26] Although this provision protects the insurer from paying for injuries resulting from long past events, it does create a gap in coverage when the insured changes insurers: the new insurer will pay for all claims made during the new policy's duration, if the claims are based on events occurring since the new policy was purchased, but will not pay for claims arising out of occurrences during the old insurer's policy. And the old EIL insurer will not pay for claims made after the old policy has ended. Thus, events in the past producing latent injuries that appear only after the insured has switched insurers are not likely to be covered by any EIL policy.[27]

The EIL form is an effort to limit the duration of the insurance policy and to tie premiums more tightly to risks, in response to the sharp increase in environmental liability claims over the last decade. The EIL does not guarantee long-term coverage, because insurers, wary of even short-term increases in liabilities, usually write the EIL in one-year policies only.[28] The one-year duration forces the EIL premium to be revised and tailored to risks much more closely than would a long-term policy.[29] As a result of this annual monitoring, and because the EIL covers claims from gradual impairments,[30] it is often quite expensive.[31]

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[22] *See* Sparrow, *supra* note 1, at 170.

[23] *See* Angelo & Bergeson, *supra* note 14, at 115.

[24] *See* Smith, *supra* note 15, at 349.

[25] *See* Sparrow, *supra* note 1, at 169–170.

[26] *See* Hilder, *supra* note 1. It may be possible for firms to purchase "tail" insurance covering events before the retroactive date, but "tail" policies are often twice as expensive as initial EIL insurance. *See id.*

[27] *See* Angelo & Bergeson, *supra* note 14, at 115–16.

[28] *See* Smith, *supra* note 15, at 341.

[29] The EIL also requires the insured to inform the insurer quickly of any material change in the insured's risk profile, so that the insurer can monitor risks and manage the insurance accordingly. *See id.* at 352.

[30] *See id.* at 343–46, 349.

[31] *See* Angelo & Bergeson, *supra* note 14, at 117; Sparrow, *supra* note 1, at 173.

A third kind of policy is that prepared by the Insurance Services Office (ISO), the insurance industry rating organization. The ISO form covers all claims made during a defined period, like the EIL, and covers both sudden and gradual events.[32] But unlike the EIL,[33] the ISO also explicitly covers cleanup costs recovered by the government.[34] Coverage for cleanup costs is often extremely expensive.[35]

3. Litigation Concerning the Forms

To this point, little or no litigation concerning the terms of an EIL or ISO form has been concluded.[36] Litigation regarding the CGL form, however, has been extensive. Because the EIL and ISO forms are recent developments and have been used infrequently, most of the litigation in the near future is also likely to involve the CGL form.[37] Thus, this Section focuses on recent decisions involving the CGL, and suggests that litigation involving the EIL and ISO forms will exhibit similar patterns.

The recent insurance cases show a clear trend toward maximizing the coverage provided by insurance policies. The driving force behind this trend has been the presumption that any ambiguity in the terms of an insurance policy will be construed in favor of the insured.[38] One rationale for this result is contractarian: because the insured has little power to bargain over the standard forms and must accept whatever ambiguities they contain, the insured should receive the benefit of the ambiguities.[39] A second rationale is based on efficiency: compelling insurance companies to pay will eventually force them to impose the full cost on the insured, by means of carefully calculated and frequently revised premiums, which will in turn encourage the insured to operate at an efficient level of accident prevention.[40] Al-

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[32] *See* Angelo & Bergeson, *supra* note 14, at 115; Smith, *supra* note 15, at 349.

[33] EIL policies generally do not cover cleanup costs except to the extent that the cleanup removes waste that has migrated to improper areas. *See* Sparrow, *supra* note 1, at 170.

[34] But the ISO limits this coverage to costs resulting from "direct" releases of waste. *See* Smith, *supra* note 15, at 347–49. The import of this language is not yet apparent.

[35] *See* Lockett, *Environmental Liability Enforcement and the Bankruptcy Act of 1978: A Study of H.R. 2767, the "Superlien" Provision*, 19 REAL PROP. PROB. & TRUST J. 859, 860 (1984).

[36] A complete search of the Allfeds and Allstates databases of WESTLAW on March 22, 1986, using for search terms the abbreviations EIL and ISO and their full spellings, found no cases referring to either policy form in any litigation relevant to toxic waste issues.

[37] *Cf.* Sparrow, *supra* note 1, at 170, 172–73.

[38] *See* Liverpool & London & Globe Ins. Co. v. Kearney, 180 U.S. 132, 135–36 (1901); Ostrager & Ichel, *Rules of Construction Affecting the Business Insurance Policy*, in INSURANCE, EXCESS AND REINSURANCE COVERAGE DISPUTES 1984, at 13–15 (B. Ostrager & T. Newman eds. 1984).

[39] *See* Note, *supra* note 21, at 756.

[40] In the effort to impose on waste-handling firms the full costs of the risks they generate, a regime of full insurance with premiums tailored tightly to risks is preferable to a regime of no

though this rule does motivate efficient decisions in the future, in transition cases the new rule works only to compensate the victims of the injurious occurrence. The outcry from insurers against many recent decisions[41] can be seen as a transitional response that will subside when the law is again predictable.

(a) Occurrence: Bodily Injury. — Fixing the date of an injurious occurrence is crucial to determining which of the several insurers in a company's history must bear the liability for an environmental incident. Injuries from toxic wastes usually evolve slowly, and thus it is difficult to define the date on which an occurrence triggers liability for insurance purposes. Many years may pass from the time a toxin enters the body until the time the toxin's presence manifests itself in the form of a disease. The word "occurrence" itself is ambiguous because the injury process is not a definite, discrete event. Courts[42] have set the time of occurrence in three ways: at the date of exposure, at the date of manifestation, and over the continuous period from exposure to manifestation (the "continuous trigger" rule).[43]

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insurance with firms directly bearing all liabilities. The insurance industry is expert in collecting and evaluating risk data, identifying methods of risk reduction, and charging premiums that reflect broad risk experience. *See* Sparrow, *supra* note 1, at 173. Individual firms lack such expertise, and society would pay large transaction costs if each firm had to determine the proper price of every risk it incurred. In addition, large insurance pools provide for the compensation of tort victims and the funding of cleanup agencies, whereas individual firms are often overwhelmed by their waste-related liabilities, *see supra* note 2.

For arguments challenging the notion that insurance premiums can force firms to internalize costs, see Kunzman, *The Insurer as Surrogate Regulator of the Hazardous Waste Industry: Solution or Perversion?*, 20 FORUM 469, 481–88 (1985).

[41] *See* Sparrow, *supra* note 1, at 170–71 (reporting that insurers believe the coverage decisions are motivated by "simple political assumptions as to the proper role of insurance" entitling the insured to "every imaginable benefit within the contractual framework" and "ignor[ing] accepted rules of contract interpretation in favor of the socially desirable goal of finding coverage").

[42] The leading cases on occurrence theory are federal court of appeals cases interpreting applicable state insurance law. The District of Columbia Circuit made clear the importance of state law when, uncertain of Indiana's view on the occurrence theory, it certified that question to the Indiana Supreme Court. *See* Eli Lilly & Co. v. Home Ins. Co., 764 F.2d 876, 884–85 (D.C. Cir. 1985). In most cases, courts of appeals have inferred what state law is, even when no clear ruling by the state's highest court was available. *See* Hancock Laboratories v. Admiral Ins. Co., 777 F.2d 520, 523 nn.6 & 8, 525 n.10 (9th Cir. 1985).

[43] The Second Circuit has ruled that an insurance policy setting the occurrence at the date of injury is unambiguous and triggers coverage at the date of the "injury in fact." *See* American Home Prods. Corp. v. Liberty Mut. Ins. Co., 748 F.2d 760, 764 (2d Cir. 1984). The injury in fact is evidently the point between exposure and manifestation when the exposure actually results in disease. *See id.* at 764–66. The court did not explain how that date could be ascertained, except to say that "it may be possible after diagnosis to infer that the harm must have begun some time prior to diagnosibility," *id.* at 765, and that "'a real but undiscovered injury, proved in retrospect to have existed at the relevant time, would establish coverage,'" *id.* at 766 (quoting American Home Prods. Corp. v. Liberty Mut. Ins. Co., 565 F. Supp. 1485, 1497 (S.D.N.Y. 1983), *aff'd as modified*, 748 F.2d 760 (2d Cir. 1984)). Given the current inaccuracy of medical "inferences" of disease causation and timing, *see infra* p. 1618, the Second Circuit's standard is of limited usefulness.

The exposure theory holds that the date of occurrence is the date on which the injury-producing agent first contacts the body. The leading case espousing this view is the Sixth Circuit's decision in *Insurance Co. of North America v. Forty-Eight Insulations, Inc.*[44] The court in *Forty-Eight* found that the occurrence was the immediate contact of an asbestos fibre with the lungs, even though the disease took some time to develop.[45] The court's central purpose was to maximize coverage: it chose the exposure theory because the plaintiff was effectively uninsured after 1976, and any other theory would have put the date of occurrence after 1976.[46] In most toxic waste cases, however, when exposure is not discoverable until many years after the fact, the exposure rule will not provide a feasible method for insurers to monitor risks and charge appropriate premiums.[47]

Courts have similarly adopted the manifestation theory for its expedience in maximizing coverage. In *Eagle-Picher Industries v. Liberty Mutual Insurance Co.*,[48] the First Circuit argued that the injury resulting from inhalation of asbestos fibres did not "occur" until the disease manifested itself. The court took note of the *Forty-Eight* opinion but distinguished it on the ground that, given the particular facts before the court, the manifestation rule would maximize coverage.[49] In most cases, however, a manifestation rule would reduce coverage: insurers would refuse to write new insurance for the insured when it became apparent that the period of manifestations, and hence a flood of claims, was approaching. The insured would be left without coverage for victims whose diseases were not yet manifested.[50]

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[44] 633 F.2d 1212 (6th Cir. 1980), *clarified in part*, 657 F.2d 814 (6th Cir. 1981), *cert. denied*, 455 U.S. 1009 (1982).

The Ninth Circuit has recently followed the Sixth Circuit in adopting the exposure theory. *See Hancock Laboratories*, 777 F.2d at 524–25; *see also* Galante, *"Trigger of Coverage" Starts With Exposure*, NAT'L L.J., Dec. 30–Jan. 6, 1985, at 3, col. 1 (stating that the *Hancock Laboratories* decision "could be pivotal" in resolving coverage issues in pending asbestos and similar cases). The Fifth Circuit has also supported the exposure theory. *See* Porter v. American Optical Corp., 641 F.2d 1128, 1145 (5th Cir.), *cert. denied*, 454 U.S. 1109 (1981).

[45] *See Forty-Eight*, 633 F.2d at 1218–20. The court noted that the typical asbestosis victim has been exposed to asbestos for 20 or more years. *See id.* at 1215.

[46] *See id.* at 1215 n.6. The court in *Hancock Laboratories* also chose an exposure theory because it "provides coverage and enables the insurance companies to determine their liabilities." *Hancock Laboratories*, 777 F.2d at 524.

[47] In addition, using the exposure theory to shield an uninsured firm from liability will frustrate deterrence. *See infra* p. 1584.

[48] 682 F.2d 12 (1st Cir. 1982), *cert. denied*, 460 U.S. 1028 (1983).

[49] *See id.* at 23.

[50] This argument prompted the Ninth Circuit to reject the manifestation rule. *See* Hancock Laboratories v. Admiral Ins. Co., 777 F.2d 520, 524–25 (9th Cir. 1985); *see also* Note, *supra* note 21, at 753 (concluding that the manifestation rule would probably result in "virtually no coverage at all" for the entire group of industries likely to incur "immense liability" by producing hazardous substances).

The continuous trigger theory has also been justified by its ability to maximize coverage in particular cases. In *Keene Corp. v. Insurance Co. of North America*,[51] the District of Columbia Circuit held that because asbestos-related disease develops slowly, the date of the occurrence should be the continuous period from exposure to manifestation. It held all the insurers over that period liable for the continuous development of the disease. Again, the court relied on the presumption of maximizing coverage.[52] Because it avoids the dangers of the manifestation rule, and because it encourages all insurers to monitor risks and charge appropriate premiums, the continuous trigger rule appears to be the most efficient doctrine for toxic waste cases.

That these incongruent results all emerged from the same rule of construction — requiring that ambiguity be construed to maximize coverage — suggests that, when courts interpret insurance policies, the rule of construction is more important than the scientific description of the disease process. If so, future litigation on this point will not be determined by new understanding of the disease process so much as by an effort to allocate as much of the liability costs to insurance companies as possible.[53] And when the EIL and ISO forms are litigated, any ambiguities in their terms will likely be interpreted in the same way.

(b) Occurrence: Property Damage. — Similarly, courts have generally imposed property damage costs on insurers whenever ambiguity exists in the policy's occurrence clause. The standard rule for property damage caused by hazardous waste has been that the occurrence is continuous, extending from disposal to manifestation of the damage.[54] As in the context of bodily injuries, the continuous trigger rule promotes efficient risk reduction by encouraging insurers to monitor insureds' risks and to charge appropriate premiums.

In a recent cleanup case, a court adopted a new rule, holding that property damage is not found to occur until the time that the government incurs response costs.[55] At the least, this holding ought to be

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[51] 667 F.2d 1034 (D.C. Cir. 1981), *cert. denied*, 455 U.S. 1007 (1982).

[52] *See id.* at 1041. The Court in *Hancock Laboratories* would evidently support the continuous trigger theory when the date of exposure cannot be determined. *See Hancock Laboratories*, 777 F.2d at 524. In the context of hazardous wastes, most injuries are likely to result from exposures that took place at uncertain and continuous times. *See infra* p. 1618.

[53] *See* American Home Prods. Corp. v. Liberty Mut. Ins. Co., 565 F. Supp. 1485, 1491–92 (S.D.N.Y. 1983) (observing that the presumption of maximum coverage "appears to be the single factor that unifies the discordant opinions applying the CGL and its derivatives to insidious diseases"), *aff'd as modified*, 748 F.2d 760 (2d Cir. 1984).

[54] *See, e.g.*, Groul Constr. Co. v. Insurance Co. of N. Am., 11 Wash. App. 632, 633–36, 524 P.2d 427, 429–30 (1974) (involving rot damage to a building).

[55] *See* Continental Ins. Cos. v. Northeastern Pharm. & Chem. Co., No. 84-5034-CV-S-4 (W.D. Mo. June 25, 1985) (available Feb. 12, 1986 on LEXIS, Genfed library, Dist file). If such a holding depends on the government taking cleanup action, its effects would be perverse.

read broadly to mean that insurable property damage "occurs" at the time cleanup costs are incurred by any party, not just the government. Then insureds would be encouraged to clean up as soon as they discover leaking wastes, before their insurers have a chance to cancel the policy and depart. Insurers of waste disposers would try to estimate the risk of future cleanup costs and would have incentives to tailor premiums to those estimates. But even this broad reading of the rule has serious problems: insurers would have incentives to desert the insured when large liabilities appear imminent, and insurance recovery would be predicated on a race to clean up, which might encourage hasty and imprudent cleanup methods. In light of these drawbacks, the standard continuous trigger rule is preferable.

(c) Occurrences: Single or Multiple. — Because most insurance forms limit the total amount that may be paid per claim, and many include deductible amounts, the number of occurrences is an important determinant of the total award paid to the insured. Courts construing a policy to maximize coverage can make use of the distinction between single and multiple occurrences: if the insurance policy has a relatively low limit on the amount paid per occurrence, a court can find that multiple occurrences took place; if the insurance policy has a relatively high limit per occurrence but a large deductible, the same court could find that one occurrence took place.[56] This flexibility encourages insurers to tie premiums very closely to likely liability, no matter what the other features of coverage. Although only a few cases have addressed the number of occurrences in the hazardous waste context, at least one recent case has held that repeated daily acts of improper disposal over a six-year period constitute multiple independent occurrences.[57]

(d) The Pollution Exclusion. — The pollution exclusion is an attempt to remove gradual pollution from the coverage of the comprehensive general liability policy. Most pollution exclusion clauses, however, contain an exception for sudden and accidental releases of waste.[58] The great majority of courts have interpreted the "sudden and accidental" provision quite broadly, to include the kinds of re-

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Such a rule would discourage the firm from cleaning its own wastes, because self-cleaning would eliminate any insurance recovery: once the insured cleaned up, the government would never clean up, and coverage would never be triggered.

The EIL does not generally provide any coverage at all for cleanup costs, whether incurred at the order of the government or voluntarily. *See* Sparrow, *supra* note 1, at 170. Only the ISO is clear in its application to cleanup costs. *See* Smith, *supra* note 15, at 348–49.

[56] *See* Rodburg & Chesler, *supra* note 15, at 378.

[57] *See* Township of Jackson v. American Home, No. L-29236-8 (N.J. Super. Ct. Law Div., Aug. 31, 1984), *cited in* Rodburg & Chesler, *supra* note 15, at 371.

[58] *See* Note, *supra* note 21, at 763 (quoting 3 R. LONG, *supra* note 21, at app. 68). Coverage for sudden and accidental events is thus retained under the exception to the pollution exclusion.

leases that insurers meant the pollution exclusion clause to exclude from coverage.[59]

This judicial strategy has gutted the pollution exclusion clause. Focusing on the term "accidental," the courts have examined whether the release was intentional or not, with the view that an unintentional release must be accidental and hence covered by the insurer.[60] The standard for showing intent has in turn become quite high. The insurer must show that the insured intended to dispose of the waste and to have the disposal result in an improper release.[61] The rule now appears to be that coverage will be denied only if the damage resulting from the particular course of action of the insured could have been foreseen with a high degree of certainty.[62] In sum, the pollution exclusion clause has been circumvented except in cases involving especially compelling factual situations.[63]

One possible consequence of the weakening of the pollution exclusion clause is that the CGL will begin to contain a complete pollution exclusion, without an exception for accidents.[64] Because the liabilities in the toxic waste field are mostly latent, new policies of this kind would not have an effect for several years. A CGL of this kind would presumably be worth less to insureds, but the insurance industry might be willing to bear the losses in premiums because of its fears of being overwhelmed by pollution liability claims.[65]

(e) Apportionment of Damages. — When more than one insurer is liable for an event or a series of events, damage payments must be apportioned among them. Two features of an insurance policy influence the apportionment: the duration of the policy and the policy's liability limits (such as deductibles and ceilings). Dividing liability into equal shares would be unfair to insurers who contracted for lower liability exposure or shorter periods of coverage than did the other insurers. A fair and efficient method of apportioning damages would allocate contributions among the liable insurers in proportion to their

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[59] *See* Sparrow, *supra* note 1, at 171; Note, *supra* note 21, at 763–64.

[60] *See, e.g.*, Allstate Ins. Co. v. Klock Oil Co., 73 A.D.2d 486, 488–89, 426 N.Y.S.2d 603, 604–05 (1980); Note, *supra* note 21, at 764–65 (citing cases).

[61] *See* Jackson Township Mun. Util. Auth. v. Hartford Accident & Indem. Co., 186 N.J. Super. 156, 164, 451 A.2d 990, 994 (1982); *see also* Ashland Oil v. Miller Oil Purchasing Co., 678 F.2d 1293, 1317–18 (5th Cir. 1982) (finding that a naturally foreseeable contamination was intentional and therefore not covered).

[62] *See* Rynearson, *Exclusion of Expected or Intended Personal Injury or Property Damage Under the Occurrence Definition of the Standard Comprehensive General Liability Policy*, 19 FORUM 513, 530–31 (1984).

[63] *See* Fields, *supra* note 10, at 9.

[64] *See id.* at 10.

[65] *See id.* Although a complete pollution exclusion would force waste handlers themselves to bear full liabilities for their polluting activities, a system of insurance is preferable to such an exclusion in several ways. *See supra* note 40.

policy limits and the time periods their policies covered.[66] Some courts have adopted this approach.[67]

An additional problem is raised when the insured was uninsured or self-insured for a time: how can the court determine the "policy liability limits" — such as deductibles and ceilings — of an uninsured actor? Uncertainty about the liability limits of a self-insured actor could be resolved by inferring that no liability limits exist and by assigning the actor 100% of the liability for that time. One court, however, has held that where there was no self-insurance policy form to examine to determine the contours of the insured's self-insured liability, there should be no liability burden on the insured.[68] Given the goal of deterring improper disposal, the court's decision seems clearly wrong. The court should have held that self-insurance is not limited and should have imposed total liability on the firm during its period of self-insurance;[69] otherwise, the insured escapes all liability by failing to carry insurance — the opposite of a rational deterrence scheme.

4. Future Developments

The burgeoning liabilities for toxic waste disposal accidents and the courts' insistence on broad insurance coverage are likely to continue in the foreseeable future, regardless of what type of insurance policy is sold to waste handlers. This trend is forcing insurers to raise rates drastically and to restrict the terms and duration of coverage. Insurers are developing new policy forms, such as the EIL and ISO, to implement those changes. If efficient and stable legal rules are widely adopted by the courts in the near future, insurers will sell environmental liability insurance at rates that accurately reflect risk costs. In the meantime, insureds are beginning to turn to self-insur-

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[66] *See* Note, *supra* note 21, at 760–63. Specifically, each insurer, constrained by the terms of its policy, would be liable for its share of the total time during which occurrences took place. For example, if Firm *A* exposed victims in 1960 and those victims manifested disease in 1980, and Insurer *X* had insured Firm *A* from 1970 to 1974, then under a continuous trigger theory Insurer *X* would be responsible for four-twentieths of the damages. Assume the total damages were $10 million, so that Insurer *X* owes $2 million. Then, if *A*'s policy with *X* had no maximum limit but contained a $100,000 deductible, *X* would pay $1.9 million. Insurer *Y*, who covered *A* from 1960 to 1964 with no deductible but a $1 million limit, would pay $1 million. The same analysis would be repeated for each insurer.

[67] *See* Keene Corp. v. Insurance Co. of N. Am., 667 F.2d 1034, 1047–50 (D.C. Cir. 1981), *cert. denied*, 455 U.S. 1007 (1982).

[68] *See id.* at 1048–49.

[69] The same apportionment theory should apply to legal defense costs. *See* Insurance Co. of N. Am. v. Forty-Eight Insulations, Inc., 633 F.2d 1212, 1225 (6th Cir. 1980), *clarified in part*, 657 F.2d 814 (6th Cir. 1981), *cert. denied*, 455 U.S. 1009 (1982).

ance through mutual pools.[70] These pools will provide yet another battlefront for toxic waste insurance litigation: parties will disagree over which events in the past are covered by the pool, how to treat firms who enter or leave the pool, and how to resolve similar ambiguities in the pool agreement.

B. Bankruptcy

The ultimate in self-insurance — simply "going bare" and risking bankruptcy — is increasingly the route chosen by firms facing large hazardous waste liabilities. This Section analyzes the reasons for that choice and its implications for society, and proposes alterations in bankruptcy law that will bring private choices better in line with social needs.

Businesses enter bankruptcy when the present value of their liabilities exceeds the present value of their assets and they do not expect routine future operations to improve that situation.[71] Bankruptcy is a system for sharing a firm's assets among the owners of the firm's liabilities, either by liquidating the firm or by reorganizing it.[72] A bankruptcy proceeding stalls the enforcement of most claims against the debtor firm, and institutes a collective process[73] to identify who has claims of what type against the firm and to distribute the firm's assets or equity to the creditors according to a defined priority system.[74] Bankruptcy thus attempts the orderly and equitable distribu-

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[70] Mutual self-insurance pools are being formed by local municipalities, *see* Madden, *supra* note 13, at B1, col. 5, and by industry groups, *see Businesses Struggling to Adapt as Insurance Crisis Spreads*, Wall St. J., Jan. 21, 1986, at 31, col. 1.

[71] The new Bankruptcy Code, enacted as the Bankruptcy Reform Act of 1978, Pub. L. No. 95-598, 92 Stat. 2549 (codified at 11 U.S.C. §§ 101–151,326 and scattered sections of 28 U.S.C. (1982)), has omitted any strict requirement that a firm be insolvent in order to reorganize. *See* Hoffman, *Environmental Protection and Bankruptcy Rehabilitation: Toward a Better Compromise*, 11 ECOLOGY L.Q. 671, 671 n.8, 676–77 (1984). Nevertheless, a firm has little incentive to enter bankruptcy unless it is insolvent. As long as the creditors can be paid in full out of the firm's assets, bankruptcy is not helpful to the firm, because bankruptcy is essentially a method for sharing inadequate assets. Faithful directors of a solvent firm would not enter bankruptcy, because the shareholders are ranked last in the priority of distributions. *See* Kennedy, *Creative Bankruptcy? Use and Abuse of the Bankruptcy Law — Reflection on Some Recent Cases*, 71 IOWA L. REV. 199, 202 (1985).

[72] In a liquidation, under chapter 7 of the Code, 11 U.S.C. §§ 701–766 (1982), the assets of the firm are sold, and the revenues are distributed to the claimants. In a reorganization, under chapter 11 of the Code, 11 U.S.C. §§ 1101–1174 (1982), the firm generally reassigns its equity ownership to claimants.

[73] *See* Jackson, *Avoiding Powers in Bankruptcy*, 36 STAN. L. REV. 725, 727–28 (1984). The collective process has two main elements: an orderly distribution, so that no creditor is left out because other creditors arrived first; and an equitable distribution, so that creditors are paid according to their priority status. *See* Kennedy, *supra* note 71, at 201.

[74] The bankruptcy distribution should approximate the agreement the creditors would have made had they bargained among themselves before the debtor approached insolvency. *See* Jackson, *Bankruptcy, Non-Bankruptcy Entitlements, and the Creditors' Bargain*, 91 YALE L.J.

tion of the firm's value. By authorizing partial payment and settling the claims permanently, bankruptcy also enables debtors to rehabilitate themselves financially and resume productive activities.[75]

In the field of hazardous waste litigation, two major areas of bankruptcy policy have been challenged by environmental claimants:[76] the current rules for including all claimants and the current rules for prioritizing the claims. This Section considers these two areas and concludes that, although bankruptcy law may be made consistent with the goals of environmental policy, current rules often frustrate those goals. Present bankruptcy law fails to include every claimant: it often ignores as yet unidentified victims of toxins already released into the environment, and it may permit the bankrupt firm to abandon waste sites without including the cleanup costs owed the government in the bankruptcy distribution. Moreover, even when all claimants are included in the bankruptcy distribution, present law ranks environmental liabilities near the bottom of the priority list, further insulating bankrupt firms from the costs of their activities.

1. Including All Claimants

Injuries caused by firms generating or disposing of toxic substances may not manifest themselves until several years after the contaminating incident. If a firm becomes insolvent before the victim sues, then

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857, 859–60 (1982); Note, *Good Faith Inquiries Under the Bankruptcy Code: Treating the Symptom, Not the Cause*, 52 U. CHI. L. REV. 795, 798–802 (1985). Creditors would presumably contract for a collective proceeding rather than risk being beaten to the courthouse by another creditor who foresaw the debtor's weakness sooner. Creditors would rather share the assets than have to incur the large costs of constantly monitoring and pursuing every client in order to be the first to know of and act on the client's imminent insolvency. *See* D. BAIRD & T. JACKSON, CASES, PROBLEMS, AND MATERIALS ON BANKRUPTCY 31–35 (1985).

[75] *See* Roe, *Bankruptcy and Mass Tort*, 84 COLUM. L. REV. 846, 855–62 (1984) (observing that debtor rehabilitation preserves the worth of the firm as a going concern). *But cf.* Jackson, *The Fresh-Start Policy in Bankruptcy Law*, 98 HARV. L. REV. 1393, 1404–14, 1416–18 (1985) (arguing that the principle of debtor rehabilitation applies well to individuals, because they often make impulsive decisions based on their systematic underestimation of risks, but applies poorly to business firms, because the market approves of weeding out firms that make bad decisions and of reallocating resources to firms that calculate risks and benefits better).

[76] In order for a party to share at all in the bankruptcy distribution, the party must have a "claim" against the estate. Recently, the Supreme Court confirmed that governments bringing valid cleanup cost recovery actions do have "claims" within the meaning of the Bankruptcy Code. *See* Ohio v. Kovacs, 105 S. Ct. 705 (1985) (Kovacs II). Strangely, after the trustee had attempted to discharge the State of Ohio's claim, the state argued that it did *not* have a claim under 11 U.S.C. § 101(4) (1982). Ohio evidently reasoned that if its action were not a claim, the action could not be resolved by the bankruptcy proceeding and would therefore be free of the trustee's avoiding powers. The Court, saving Ohio from itself, insisted that Ohio's action was a claim: *Kovacs* involved an individual in liquidation, and absent a claim, the state would receive nothing. *See* 105 S. Ct. at 712 (O'Connor, J., concurring). Ohio's argument was a "mindlessly literal" interpretation of the Code. *See* Baird & Jackson, Kovacs *and Toxic Wastes in Bankruptcy*, 36 STAN. L. REV. 1199, 1204 (1984).

the victim may be left uncompensated. Similarly, the doctrine of abandonment, if construed to permit a trustee in bankruptcy to avoid bearing cleanup costs by discarding waste disposal sites, would prevent recovery by those who eventually clean up those sites. A firm calculating its operating costs will discount the costs of injuries by the likelihood that it will avoid those costs through bankruptcy, and the systematic underinclusion of relevant costs is likely to lead to industry-wide underdeterrence.[77] To prevent such an outcome, a firm must bear the cost of all injuries it causes at or before the time it ceases operations.

(a) Representing Future Claimants. — In bankruptcy, an automatic stay forces early claimants to wait for later claimants.[78] The stay prevents the prosecution or enforcement of most actions against the debtor until the bankruptcy proceeding has equitably resolved all demands on the estate.[79] The stay thus protects the claims of future tort victims against depletion of the estate by early victims.[80] But the stay does not adequately protect as yet unidentified future victims, because if the legal system does not arrange representation for them in the distribution of assets, they receive nothing from the bankruptcy proceeding. It is crucial to a fair system of bankruptcy that future claimants not be divested of their rights to compensation merely be-

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[77] By internalizing the full present and future costs of their activities, firms will produce the optimal amount of each product at the optimal level of safety. *See* Rosenberg, *supra* note 3, at 919–20; *supra* pp. 1477–78.

[78] *See* 11 U.S.C. § 362 (1982).

[79] *See* Hoffman, *supra* note 71, at 674 & n.25. Hoffman argues that the stay injures cleanup agencies and tort victims by delaying their suits for compensation. The main effect of a stay, however, is to put all creditors on equal footing. It is true that some early suits are delayed, and these suits might have been brought by environmental authorities or by tort victims; but these early suits might just as easily have been brought by trade creditors. In the latter case, the stay would benefit environmental victims who had not yet brought claims. *See* Kennedy, *supra* note 71, at 204–05. Stays can also aid debtors by preventing them from being forced into dissolution or liquidation. This advantage to the debtor can also help environmental victims: if the firm is worth more to creditors as a going concern, all claimants may receive larger distributions.

Even if environmental victims are more harmed than helped by the stay, however, there are avenues for mitigating that harm. In the most serious cases, claimants may get relief from the stay for cause under 11 U.S.C. § 362(d) (1982). *See* Kelley & Kastanakis, *What to Do When the Deep Pocket Goes Under*, 69 A.B.A. J. 740, 743 (1983). But even without such relief, courts can permit prosecution of cases to judgment, while refusing to allow enforcement of those judgments. *See* Hennigan, *Accommodating Regulatory Enforcement and Bankruptcy Protection*, 59 AM. BANKR. L.J. 1, 35–37 (1985); Hoffman, *supra* note 71, at 688.

[80] Exactly this purpose was invoked by a bankruptcy court in one of the Manville asbestos cases: the court upheld a stay because a suit threatened to divert substantial portions of Manville's assets from the claims of potential tort victims. *See* United States v. Johns-Manville Sales Corp., 18 ENV'T REP. (BNA) 1177, 1181 (D.N.H. 1982), *appeal dismissed per stipulation*, No. 83-1152 (1st Cir. Mar. 29, 1983); Hennigan, *supra* note 79, at 27–28. But because the suit stayed was a cleanup order, the court's decision may have undermined efficient injury prevention. *See infra* note 146.

cause those claimants are not yet individually identified. Moreover, failing to consider the full present value of all liabilities will underdeter the behavior that causes injuries.[81]

To account for future liabilities from prebankruptcy acts[82] in the bankruptcy proceeding,[83] bankruptcy courts should establish funds for the compensation of future plaintiffs.[84] A trustee would oversee such a fund in the bankruptcy proceeding and thereafter. The amount of the fund would be the discounted present value of the estimate of future claims,[85] adjusted by the priority of these claims relative to the claims of other creditors. The fund would then distribute money to plaintiffs as they arrived to pursue their claims, reserving money for remaining potential plaintiffs.[86]

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[81] *See* Note, *supra* note 10, at 1067 n.97.

[82] Prebankruptcy acts (acts done before the petition is filed) should be compensated out of the bankruptcy distribution, regardless of when the injury caused by the act is manifested. If claims based on postbankruptcy injuries caused by prebankruptcy acts were treated as post-bankruptcy claims, the claimants of such injuries would receive nothing, no matter what their legal priority, if the firm ceased to exist after bankruptcy. This result would encourage firms to liquidate when they faced large impending liabilities, effectively evading the costs of their accidents. *See* Hennigan, *supra* note 79, at 29–30.

Acts done by a firm while in bankruptcy (that is, after filing of the bankruptcy petition but before final liquidation or emergence from reorganization) are paid as administrative expenses, ahead of all other unsecured creditors. *See* 11 U.S.C. § 507(2)(1). Because latent harms may not be discovered until long after the bankruptcy proceeding is closed, a future claimants' fund ought to include an estimate of the liabilities resulting from the ongoing acts of the firm in bankruptcy.

The difficulty with this analysis is in determining the discrete date of the act that produces liability. For a discussion of the problems of continuous events, see note 143 below.

[83] Because many businesses fail without going through bankruptcy proceedings, optimally all dissolutions should require some representation of future claimants. State law should compel all dissolving corporations to set up funds similar to those described here.

[84] *See, e.g.*, Note, *Allocating the Costs of Hazardous Waste Disposal*, 94 HARV. L. REV. 584, 597–601 (1981) (advocating funds for compensation of future plaintiffs against bankrupt firms); Note, *Toxic Torts and Chapter 11 Reorganization: The Problem of Future Claims*, 38 VAND. L. REV. 1369, 1388–93 (1985) (same); Note, *supra* note 74, at 818 (same); *see also* Rosenberg, *supra* note 3, at 919–24 (advocating insurance fund judgments in actions by victims of latent diseases). In addition to satisfying the claims of tort plaintiffs, such funds might be established to pay for the government's future cleanup costs resulting from prebankruptcy waste disposal.

It is clear that funds should be created for future plaintiffs whose injuries are statistically predictable, based on past exposures to known toxins, but who are as yet individually unidentified. A more difficult problem is presented by future plaintiffs whose injuries are now unforeseeable because they have been exposed to a substance not yet known to be toxic. Such plaintiffs may never be compensated by a firm that goes bankrupt before their injuries are understood.

[85] *See* Roe, *supra* note 75, at 866. Bankruptcy Code section 502(c), 11 U.S.C. § 502(c) (1982), appears to require the estimation of the value of large future claims. A bankruptcy court should expedite estimations of these claims when their large number or great complexity render full adjudications impractical. *See* Note, *Procedures for Estimating Contingent or Unliquidated Claims in Bankruptcy*, 35 STAN. L. REV. 153, 158–73 (1982).

[86] Problems of estimating the proper fund size can be addressed by using complex payment

These funds, in addition to benefiting the group of future claimants that would otherwise be omitted, would ration that group's share of the firm's assets among the members of the group.[87] In this way, the funds resemble limited fund class actions, which join claimants when it is likely that early individual claims would impair the ability of later claimants to secure their interests.[88] The fund device institutes a collective proceeding to avoid the possibility that individual suits will threaten other claims merely by coming first,[89] and it thus supports central policies of the bankruptcy system.[90]

The courts have approved of such funds in the asbestos cases. At the urging of the bankruptcy court, one debtor, Manville Corporation, has established a fund to pay the present and future claims of asbestos plaintiffs.[91] In two other asbestos cases, involving UNR Industries and Amatex Corporation, the bankruptcy courts originally refused to appoint representatives for future plaintiffs[92] but later were ordered to appoint representatives[93] after the Seventh Circuit criticized the lower court's opinion in the *UNR* case.[94]

Although these cases illustrate the power of the bankruptcy courts to fashion appropriate remedies for prospective environmental liabil-

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methods. *See* Roe, *supra* note 75, at 864–79. A simple pension fund, having a fixed aggregate size and making lump-sum payments to claimants, could over- or under-compensate the claimants if the initial aggregate size does not match the eventual total of claims. *See id.* at 865 & n.56, 870. The risk of this error can be reduced by offering a stream of payments and periodically revising them through a variable annuity fund. The fund would be similar to an investment portfolio; claimants would hold shares in the fund and receive annual payments instead of lump-sum judgments. The payment each year would be based on a payout ratio of the fund value divided by the estimate of claims, and this ratio would be revised periodically (perhaps daily, monthly, or annually) as new information was acquired about the fund's expected value and the expected value of future claims. The eventual payment stream would thus afford each annuity recipient a pro rata share of her damages and would minimize the risk of inequitable compensation. *See id.* at 870–79.

[87] *See* Roe, *supra* note 75, at 870–74. Such rationing could also be accomplished by court-ordered damage scheduling. *See* Rosenberg, *supra* note 3, at 917–19.

[88] *See* FED. R. CIV. P. 23(b)(1)(B).

[89] *See* Transgrud, *Joinder Alternatives in Mass Tort Litigation*, 70 CORNELL L. REV. 779, 794–801, 815–16 (1985) (arguing that certification of a limited fund class action is always appropriate when failure to do so would lead to a "race to the courthouse" impinging on later plaintiffs' claims).

[90] Recognizing the usefulness of the class action device, the Bankruptcy Rules explicitly authorize the use of class actions for handling claimants. *See* 11 U.S.C. app. rule 7023 (1984).

[91] *See* Joseph, *Judge Urges Manville Have 20-Year Fund for Payment of Future Asbestos Claims*, Wall St. J., Oct. 26, 1983, at 16, col. 1.

[92] *See In re* UNR Indus., 29 Bankr. 741, 744 (Bankr. N.D. Ill. 1983); *In re* Amatex Corp., 30 Bankr. 309, 311 (Bankr. E.D. Pa.), *aff'd*, 37 Bankr. 613, 614 (Bankr. E.D. Pa. 1983). The bankruptcy courts initially feared that the fund would not provide its unidentified claimants with constitutionally required notice and due process. *See UNR*, 29 Bankr. at 744.

[93] *See In re* Amatex Corp., 755 F.2d 1034, 1043–44 (3d Cir. 1985); *In re* UNR Indus., 46 Bankr. 671, 675 (Bankr. N.D. Ill. 1985).

[94] *See In re* UNR Indus., 725 F.2d 1111, 1116–21 (7th Cir. 1984).

ities, it is not yet clear that bankruptcy courts are obligated to take such action. Arguments may be made under two sections of the Bankruptcy Code that representation for future claimants is mandatory.[95] First, future claimants may be creditors under section 101(9) of the Bankruptcy Code and, as such, not excludable from the bankruptcy proceeding.[96] A "creditor" is an "entity that has a claim against the debtor that arose at the time of or before the order for relief concerning the debtor."[97] Although the claims of future plaintiffs are contingent on future manifestation of injury, such contingent claims would still be claims under the Code.[98] The court would then be required to ensure that the future claimants are represented in the bankruptcy proceeding.

The second argument for mandatory inclusion of future claimants stems from the requirement that any plan of reorganization be "feasible."[99] The plan must resolve all claims against the debtor firm and not leave it vulnerable to future liability problems.[100] A plan that

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[95] *See* Note, *The Manville Bankruptcy: Treating Mass Tort Claims in Chapter 11 Proceedings*, 96 HARV. L. REV. 1121, 1131 n.52 (1983).

[96] *See* 11 U.S.C. § 1141(a) (1982).

[97] 11 U.S.C. § 101(9) (1982).

[98] *See* 11 U.S.C. § 101(4) (1982) (defining a "claim" as, inter alia, a "right to payment, whether or not such right is reduced to judgment, liquidated, unliquidated, fixed, contingent, matured, unmatured, disputed, undisputed, legal, equitable, secured, or unsecured"). The legislative history of the definition of "claim" indicates that the "broadest possible" reading was intended, to include "all legal obligations of the debtor, no matter how remote or contingent." S. REP. NO. 989, 95th Cong., 2d Sess. 22, *reprinted in* 1978 U.S. CODE CONG. & AD. NEWS 5787, 5808; H.R. REP. NO. 595, 95th Cong., 1st Sess. 309 (1977), *reprinted in* 1978 U.S. CODE CONG. & AD. NEWS 5963, 6266. Indeed, the Code requires contingent claims to be estimated so that the bankruptcy proceeding can include those claims without delay. *See* 11 U.S.C § 502(c)(1) (1982); Roe, *supra* note 75, at 893–96.

Arguments for excluding future claimants because their claims have not yet "arisen" under state law are unpersuasive. Because the act producing the eventual claim for damages has already occurred, the aggregate amount of future claims should be included as a set of claims that have arisen, in order to make the debtor internalize the costs of its prebankruptcy acts. *See supra* note 82. And because the fund is inherently a prospective remedy, it does not require that the claims be vested at the time of bankruptcy. In order to collect from the fund, individuals will still have to demonstrate valid state-law claims in the future. One of the crucial parameters of the estimate of the size of the fund would be the likelihood that these future state-law claims will be successful in court. *See* Roe, *supra* note 75, at 896–98.

[99] The Code requires that "[c]onfirmation of the plan is not likely to be followed by the liquidation, or the need for further financial reorganization, of the debtor or any successor to the debtor under the plan, unless such liquidation or reorganization is proposed in the plan." 11 U.S.C. § 1129(a)(11) (1982). The feasibility theory is the main ground on which the Seventh Circuit criticized the original *UNR* decision. *In re* UNR Indus., 725 F.2d 1111, 1119–20 (7th Cir. 1984).

[100] *See In re* Pizza of Hawaii, 40 Bankr. 1014 (D. Hawaii 1984). Note that the feasibility theory applies only to reorganizations and not to liquidations, because a liquidating firm need not fear for its future cash flow. In addition, the feasibility theory does not necessarily require inclusion of environmental liabilities that are small relative to the firm's net value.

failed to deal with future claimants would expose the rehabilitated firm to another liability crisis. It would be perverse to admit the firm to bankruptcy proceedings partly because of its large future liability, but to exclude that liability from the proceedings' settlement of the estate.

Even if bankruptcy courts must establish funds for future claimants, a currently solvent firm might not be driven to enter bankruptcy on behalf of the future, unknown plaintiffs. Bankruptcy is normally initiated by the debtor firm or by its creditors. But no existing creditor has an interest in forcing the debtor to enter bankruptcy to satisfy future claimants, because the existing creditor would then have to share the bankrupt firm's assets with those future claimants.[101] Thus, firms whose assets are sufficient to pay present claimants, but who are so financially weak that they cannot pay future claimants, may not enter bankruptcy.[102] If the firm avoids bankruptcy, it may quietly dissolve or be depleted before the as yet unidentified victims assert their claims. One proposed remedy is to amend or interpret the Bankruptcy Code so that public agencies and representatives of as yet unidentified tort claimants can trigger reorganization, provided that they make a preliminary showing that the contingent claims represent a large fraction of the firm's net value.[103] Although this remedy is imperfect because it ignores contingent claims that are small relative to the firm's net value, it is at least a useful starting point for effective representation of future victims.

The alternatives to bankruptcy are clearly deleterious to the interests of future claimants. Depletion of the firm's assets by current creditors will exclude future claimants. And nonbankruptcy dissolution under state law does not provide the collective safeguards of the bankruptcy proceeding.[104] Dissolution allows an "escape" from environmental liability with no protection for future claimants.

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[101] *See* Roe, *supra* note 75, at 905–17.

[102] Bankruptcy filings by currently solvent firms, however, may become more common. The Manville case is an example of a currently solvent firm which entered bankruptcy because accounting rules required it to list its future liabilities on its financial statements and to set up a reserve to pay them. *See* Kennedy, *supra* note 71, at 203. Like Manville, firms with long-range interests will want to satisfy future claimants now in order to prevent the firm from being incapacitated by the threat of future liabilities: firms carrying large future liabilities will shrink and collapse as they are unable to find new creditors or customers, and as they divert resources to managing the liability instead of to conducting the firm's normal operations. *See* Roe, *supra* note 75, at 855, 862. In these cases, early bankruptcy is beneficial to future claimants, who share in the firm's worth before it shrinks. Employees and shareholders of the firm also benefit because the firm's ability to continue operating is preserved.

[103] *See* Roe, *supra* note 75, at 914–20.

[104] *See* Baird & Jackson, *supra* note 76, at 1202, 1208; *supra* note 73. Of course, a dissolving corporation is regulated by state corporate law: it could not, for example, violate fraudulent

A system designed to include all claimants would serve the fundamental purposes of bankruptcy law. The establishment of funds for future claimants and early resort to bankruptcy will protect as yet unidentified claimants from being deprived of their claims against the debtor firm. In turn, the firm will internalize the future costs of its operations and will thus be encouraged to minimize accident and avoidance costs.

(b) Abandonment. — The inclusion of all claims also requires that a trustee in bankruptcy finance the cleanup of the debtor firm's waste site. Avoiding cleanup payments would effectively disenfranchise one claimant on the estate, the cleanup agency. Under section 554 of the Code, the trustee of the bankrupt debtor's estate may abandon a property if the property is "burdensome to the estate or . . . of inconsequential value to the estate."[105] The property then reverts to a person with a possessory interest in it,[106] usually the debtor.[107] In most cases, the debtor has few or no assets, and the abandonment effectively separates the waste site from the finances that could be used to clean it up.[108] If a government agency steps in to clean up the waste site, abandonment excludes it from sharing in the bankruptcy distribution. The government and the taxpayer are forced to bear the costs of cleanup.[109]

In *Midlantic National Bank v. New Jersey Department of Environmental Protection*,[110] the Supreme Court held by a 5-4 vote that abandonment is not permitted "in contravention of a state statute or regulation that is reasonably designed to protect the public health or safety from identified hazards."[111] In *Midlantic*, the trustee of Quanta Resources Corporation was faced with a $2.5 million bill for cleanup costs at a New York site[112] and an administrative order to clean a site in New Jersey.[113] The trustee abandoned the sites. The Supreme

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conveyance doctrines by using dissolution to transfer its assets to preferred creditors for less than full consideration. *See* Baird & Jackson, *supra* note 76, at 1202 n.9.

[105] 11 U.S.C. § 554(a) (1982).

[106] *See* Ohio v. Kovacs, 105 S. Ct. 705, 711 n.12 (1985).

[107] *See* Drabkin, Moorman & Kirsch, *supra* note 2, at 10,172.

[108] *See id.* at 10,172, 10,180.

[109] The power to abandon is important only in limited circumstances. In suits against tortfeasors, waste generators, or past site owners, where no property can be discarded to alienate the liability, abandonment is useless. Waste site owners can generally take advantage of abandonment only in liquidations, because 28 U.S.C. § 959 clearly prohibits abandonment in a reorganization if the abandonment would be an illegal disposal of wastes. *See* Note, *supra* note 2, at 880–81 & nn.81–83.

[110] 106 S. Ct. 755 (1986) (decided with *O'Neill v. City of New York*).

[111] *Id.* at 762.

[112] *See In re* Quanta Resources Corp., 739 F.2d 912, 914 (3d Cir. 1984), *aff'd sub nom.* Midlantic Nat'l Bank v. New Jersey Dep't of Envtl. Protection, 106 S. Ct. 755 (1986).

[113] *See In re* Quanta Resources Corp., 739 F.2d 927, 928 (3d Cir. 1984), *aff'd sub nom.* Midlantic Nat'l Bank v. New Jersey Dep't of Envtl. Protection, 106 S. Ct. 755 (1986).

Court, in holding the abandonment illegal, ruled that Code section 554 codified "the judicially developed rule of abandonment" and therefore "presumably included the established corollary that a trustee could not exercise his abandonment power in violation of certain state and federal laws."[114] The Court emphasized that these "certain" laws are only those "calculated to protect the public health or safety from imminent and identifiable harm."[115] The majority also drew support from 28 U.S.C. § 959(b), which provides that the trustee in bankruptcy must "manage and operate the property in his possession . . . according to the requirements of the valid laws of the State in which such property is situated."[116]

Writing in dissent, Justice Rehnquist questioned the basis of a public health exception to the abandonment provision. He insisted that Bankruptcy Code section 554 is clear and unequivocal in granting a right to abandon without exception,[117] and that 28 U.S.C. § 959 applies to the actual operation of the business as a going concern and to reorganization proceedings, but not to abandonment in a liquidation proceeding.[118]

The holding in *Midlantic* turned in large part on the Court's interpretation of Congress's intent in codifying abandonment in section 554 in 1978. The majority believed that Congress meant the term "abandonment" to include judge-made exceptions;[119] the dissent disputed the extent of those exceptions[120] and believed that Congress's simple language meant to give the trustee an unconstrained right to abandon burdensome property.[121] The majority's holding was "a narrow one," restricting abandonment only when it conflicts with laws that protect the public from "imminent and identifiable harm."[122] Because CERCLA is certainly one such law, the *Midlantic* holding lays the basis for denying abandonment in CERCLA cases. Indeed, the majority saw the enactment of RCRA in 1976 and CERCLA in 1980 as persuasive indicia that Congress could not have meant to allow polluters to escape from environmental regulation when it codified abandonment in 1978.[123]

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[114] *Midlantic*, 106 S. Ct. at 759.

[115] *Id.* at 762 n.9.

[116] 28 U.S.C. § 959(b) (1982).

[117] *See Midlantic*, 106 S. Ct. at 763 (Rehnquist, J., dissenting) (arguing that the majority's interpretation of § 554 "rests on a misreading of three pre-Code cases, the elevation of that misreading into a 'well-recognized' exception to the abandonment power, and the unsupported assertion that Congress must have meant to codify the exception").

[118] *See id.* at 766.

[119] *See id.* at 759–60

[120] *See id.* at 764–66 (Rehnquist, J., dissenting).

[121] *See id.* at 763–64 (noting that § 554 is "absolute in its terms [and] makes no mention of other factors to be balanced or weighed").

[122] 106 S. Ct. at 762 n.9.

[123] *See id.* at 762. Justice Rehnquist's view of CERCLA was less clear. He admitted that

A more restrained but equally effective restriction on section 554 would be to allow abandonment but to require that the estate be liable for cleanup costs attached to a property and for compliance with cleanup orders, even after the property is abandoned.[124] Under this rule, the trustee would be empowered to abandon the property but would not be rid of the obligation to pay the cleanup costs. Abandonment could be used to escape other costs of administering the land, but not costs imposed by laws calculated to prevent imminent and identifiable harm to the public health.[125] Such a rule would preserve the integrity of the bankruptcy process while forcing firms to internalize the costs of their disposal activities.

The real issue of debate in the abandonment cases is who will pay for cleanup. Allowing abandonment forces the government to assume the cost of cleanup. But although restricting abandonment is a prerequisite to making the polluter pay at all, restricting abandonment does not resolve the priority status of the duty to pay cleanup costs.[126]

2. The Priority of Claims

Creditors sharing in the bankruptcy estate do so according to a defined priority system. Because bankruptcy is mainly a collective proceeding to enforce rights that arise outside of bankruptcy, the priority system is mainly derived from the state property law that defines those rights.[127] This law generally places secured creditors first, followed by unsecured creditors, and then shareholders. The claims of tort plaintiffs and, to some extent, government orders to clean up waste sites, are given low priority in the scheme of bank-

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if CERCLA and RCRA barred abandonment, "this might be a different case." *Id.* at 764 n.3 (Rehnquist, J., dissenting). But he added that the federal laws "do not bar abandonment," *id.*, without explaining his reasoning.

[124] Current law may already make the trustee liable for CERCLA costs, even after abandonment, as an "owner" of the property. *See* 42 U.S.C. § 9601(20)(A) (1980) (defining "owner" of a disposal facility to include any person who owned or operated an abandoned facility immediately prior to its abandonment); *In re* T.P. Long Chem., 45 Bankr. 278, 284–85 (N.D. Ohio 1985); Drabkin, Moorman & Kirsch, *supra* note 2, at 10,181.

[125] This distinction appears to have been favored by a unanimous Court in Ohio v. Kovacs, 105 S. Ct. 705 (1985), which stated both that "the bankruptcy trustee . . . must comply with the environmental laws of the [state]," *id.* at 711–12, and that the trustee could abandon a waste site, *id.* at 711 n.12.

[126] The *Midlantic* majority carefully noted that it was not deciding the priority issue. *See Midlantic*, 106 S. Ct. at 758 n.2. *See also* D. BAIRD & T. JACKSON, *supra* note 74, at 379–80 (distinguishing the power to abandon from the priority accorded claims attaching to unabandoned property).

[127] *See* Baird & Jackson, *supra* note 76, at 1205, 1208–10, 1212; Kennedy, *supra* note 71, at 211. The priority of different categories of creditors is primarily determined by article nine of the Uniform Commercial Code, which establishes the rights of secured credit in states where it is adopted. *See* Note, *supra* note 10, at 1046, 1047–49. Within the category of unsecured creditors, priorities are determined by § 507 of the Bankruptcy Code, 11 U.S.C. § 507 (1982).

ruptcy distributions. Tort plaintiffs recover as general unsecured creditors, just before shareholders.[128] The priority of actions by the government is in dispute: orders to clean up are exempt from the automatic stay,[129] whereas orders to spend money in cleanup activities are not, but the distinction between the two is unclear.[130] In general, tort victims and cleanup agencies usually stand a very small chance of collecting any funds from the estate.[131]

This Section proposes exempting all government regulation of toxic wastes from the automatic stay, to promote efficient cleanup activities. It then advocates changing state property law to give involuntary creditors, such as future tort plaintiffs, top priority in the bankruptcy distribution. Finally, the Section examines statutory superliens as another mechanism for engineering the high priority of environmental claims.

(a) Exempting Cleanups from the Automatic Stay. — Under the Bankruptcy Code, all actions against the debtor are automatically stayed so that all claimants can equitably share the limited assets of the bankrupt firm.[132] But the stay is not intended to provide an escape from the laws and regulations governing businesses outside bankruptcy.[133] Thus, the enforcement of important regulatory goals is exempt from the stay: Bankruptcy Code section 362(b)(4) provides that the stay does not apply to "an action or proceeding by a governmental unit to enforce such governmental unit's police or regulatory power."[134] To avoid giving the government effective priority when it acts as a creditor recovering on its claims, section 362(b)(5) provides that suits by the government for "money judgment[s]" are not exempt from the stay.[135] That is, the government is not stayed in its attempts to regulate activity, but it is stayed if that regulation takes the form of a demand for a money judgment.

There has been much dispute over whether government cleanup orders can be stayed. Because orders to firms to clean up their own waste sites are efforts to enforce environmental policy,[136] they seem

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[128] *See* Note, *supra* note 10, at 1046.

[129] For a discussion of the automatic stay under 11 U.S.C. § 362 (1982), see above at p. 1587.

[130] *See infra* pp. 1595–97.

[131] *See* Drabkin, Moorman & Kirsch, *supra* note 2, at 10,171–72.

[132] The automatic stay is codified at 11 U.S.C. § 362 (1982).

[133] *See* D. BAIRD & T. JACKSON, *supra* note 74, at 378.

[134] 11 U.S.C. § 362(b)(4) (1982).

[135] 11 U.S.C. § 362(b)(5) (1982).

[136] Congress meant to include environmental policy in the exemption for regulatory acts. *See* S. REP. NO. 989, 95th Cong., 2d Sess. 5, *reprinted in* 1978 U.S. CODE CONG. & AD. NEWS 5787, 5838 (stating that "environmental protection . . . is not stayed under the automatic stay"); H.R. REP. NO. 595, 95th Cong., 2d Sess. 5, *reprinted in* 1978 U.S. CODE CONG. & AD. NEWS 5963, 6299 (same).

exempt from the stay; but because the act of cleaning clearly involves the expenditure of money, those orders may not be exempt. In *In re Kovacs* (*Kovacs I*),[137] the Sixth Circuit ruled that an order to clean up a waste site was a demand for a money judgment because it required the debtor to pay for the cleanup endeavor; the court therefore approved the application of the stay. Shortly thereafter, in *Penn Terra Ltd. v. Department of Environmental Resources*,[138] the Third Circuit concluded that an order to clean up a waste site was not a request for a money judgment and thus could not be stayed.

These conflicting rulings may be reconciled in two ways. The special facts of *Kovacs I* suggest one answer: in that case, all of the debtor's assets were in the control of a court-appointed receiver. The court emphasized that the government could not have asked the debtor to clean up property he did not control and could only have asked the debtor to pay money to the receiver.[139] The legal inability of Kovacs to do anything but pay money distinguishes his case from *Penn Terra*.[140] There, no such receiver was appointed, and the firm could have cleaned up the waste site itself.

These cases may also be distinguished by the view the courts took of the timing of the act for which the government sought a cleanup remedy. Because the stay does not apply to postbankruptcy acts,[141] an order aimed at postbankruptcy events — such as an order to cease polluting — is not subject to the stay.[142] In *Kovacs I*, the Sixth Circuit saw the cleanup order as aimed at the prebankruptcy act of dumping the waste and therefore as subject to the stay. In *Penn Terra*, on similar facts, the Third Circuit saw the order as aimed at the prevention of future harm and denied a stay.[143] Several courts have followed *Penn Terra*'s reasoning.[144]

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[137] 681 F.2d 454 (6th Cir. 1982), *vacated and remanded*, 459 U.S. 1167 (1983). The Court vacated the case because it believed that the issue of discharge, decided in Ohio v. Kovacs, 105 S. Ct. 705 (1985) (*Kovacs II*), might moot the stay issue.

[138] 733 F.2d 267 (3d Cir. 1984).

[139] *See Kovacs II*, 105 S. Ct. at 710–11 & n.11.

[140] *See id.* at 711 n.11; Note, *Clean-Up Orders and the Bankruptcy Code: An Exception to the Automatic Stay*, 59 ST. JOHN'S L. REV. 292, 295–96 n.14 (1985).

[141] *See* Baird & Jackson, *supra* note 76, at 1209. If the stay applied to postbankruptcy acts, the newly reorganized firm would effectively be immune from liability for its injurious acts.

[142] *See* Baird & Jackson, *supra* note 76, at 1209; Note, *supra* note 140, at 310–11.

[143] *See Penn Terra*, 733 F.2d at 278. This argument has been inappropriately criticized for confusing future *acts* with future *harms*. *See* D. BAIRD & T. JACKSON, *supra* note 74, at 379. A continuously leaking waste site is a present act that predictably involves future acts as well. An order to clean a leaking site, even if the original disposal took place long ago, is an order to remedy future, postbankruptcy releases for which the debtor is independently liable. This kind of order is more like an injunction against future leakage than a punishment for past disposal. *See* United States v. Price, 688 F.2d 204, 212 (3d Cir. 1982).

[144] *See In re* Commonwealth Oil Refining Co., 22 Envt. Rep. Cas. (BNA) 1069 (Bankr. W.D. Tex. 1985); Illinois v. Electrical Utilities, 41 Bankr. 874 (N.D. Ill. 1984); *see also* Ohio

The best rule would accord environmental cleanup the equivalent of top priority[145] in bankruptcy by exempting from the stay all cleanup orders and all suits for recovery of cleanup costs. None of those actions would be deemed requests for money judgments, and none would be stayed. This result would be ideal because it would effectively place cleanup actions ahead of even secured creditors,[146] and the credit market would respond by charging higher interest rates to firms more likely to incur cleanup costs.[147]

(b) Giving Tort Victims High Priority. — The Uniform Commercial Code (U.C.C.) and state property laws should be amended to place involuntary plaintiffs at the top of the priority ladder.[148] Each state should amend its property law to rank victims of toxic waste, or perhaps all involuntary tort creditors, first in line in claiming the assets of the responsible party. This change would improve the priority system's efficiency in minimizing accident and avoidance costs and its fairness in compensating victims.

The priority system as it now functions — ranking the victims of hazardous waste activities below most other creditors —- is inefficient.[149] Placing environmental liability at the bottom of the priority scheme allows a firm in bankruptcy to pay no environmental injury

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v. Kovacs, 105 S. Ct. 705, 711 n.11 (1985) (dicta approving of the holding in *Penn Terra*); *In re* Canarico Quarries, Inc., 466 F. Supp. 1333 (D.P.R. 1979) (predating *Penn Terra* but applying similar reasoning).

[145] The exemption to the automatic stay accords cleanup orders the "equivalent of top priority" because it gives cleanup agencies an opportunity to recover costs ahead of other claimants. Technically, the term "priority" refers to the rank of claims sharing in the bankruptcy distribution, not those exempt from the bankruptcy process.

[146] Tort claims should be ranked at the top of the priority list, *see infra* pp. 1597–99, and cleanup orders should be given at least equal rank with tort actions, because both kinds of action represent the claims of involuntary victims of the waste disposal process. Cleanup orders should be ranked even higher than tort victims because the preventive value of cleanup is likely to exceed the deterrent value of current tort recovery. *See* Roe, *supra* note 75, at 855 (stating that there is "expert consensus that a dollar spent on [compensating current victims] will save fewer lives than a dollar spent on [preventing injuries to future victims]"). Further study of the particular prevention strategies and deterrence strategies in the toxic waste field (or individual determinations by bankruptcy courts) should further illuminate the proper choice.

[147] *See infra* p. 1598.

[148] *See* Note, *supra* note 10, at 1083–84. As long as this superpriority arrangement applied outside bankruptcy as well as inside bankruptcy, the courts would be likely to approve of it. Priority laws applying only inside bankruptcy may be held invalid pursuant to 11 U.S.C. § 545(1) (1982). *See* D. BAIRD & T. JACKSON, *supra* note 74, at 199–200; *In re* Telemart Enterprises, 524 F.2d 761, 764–65 (9th Cir. 1975) (dicta). Moreover, priorities that operate only within bankruptcy should be eschewed because they would provide incentives for corporations to dissolve under state law. *See* Note, *supra* note 10, at 1076 n.136, 1084 n.161.

[149] This analysis applies equally to all torts. Low priority for any tort results in that cost being discounted by the firm and hence in inefficient accident prevention. By the same rationale, government cleanup actions should also have top priority. *See supra* note 146

costs if its other liabilities exceed its assets.[150] Knowing that it will not have to pay waste victims their damages if it enters bankruptcy, the firm will discount those damages by the likelihood that it will enter bankruptcy, and will thus be underdeterred.[151] Placing hazardous waste victims at the top of the priority list — giving those claimants "superpriority" — would generate an efficient level of accident costs. If environmental victims had top priority, then the voluntary creditors of a waste-handling firm would monitor the firm and would charge a premium for the risk that they would lose to environmental claimants in case of insolvency.[152] This premium would be equal to the expected value of the cost to the creditor of the environmental claims.[153] Firms more likely to cause injury would be forced to pay more for their credit and would thus internalize the costs of hazardous waste disposal.[154] Giving environmental claims the highest priority ensures that all creditors will charge appropriate risk premiums, thus creating the most complete and most efficient cost internalization possible.[155]

Low priority for the victims of hazardous wastes is also unfair. Those victims are unlikely to be compensated because the assets of the bankrupt firm are unlikely to be sufficient to pay the low ranking claimants. And those victims do not have the chance to bargain and receive payment in advance for their risk, as voluntary creditors do.[156] Giving waste injury victims top priority in bankruptcy would ensure that the victims are paid the present value of the compensation they

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[150] *See* Note, *supra* note 10, at 1069.

[151] *See* Pierce, *Encouraging Safety: The Limits of Tort Law and Government Regulation*, 33 VAND. L. REV. 1281, 1301–02 (1980).

[152] *See* Roe, *supra* note 75, at 920 n.236; Note, *supra* note 10, at 1076. Creditors will also be forced to charge risk premiums when they are held directly liable for the waste-related liabilities of their solvent debtors. Creditors who are significantly involved in the day-to-day management of a debtor's waste disposal facility have been held liable for cleanup costs as "owners" under CERCLA. *See* United States v. Mirabile, No. 84-2280 (E.D. Pa. Sept. 6, 1985) (available Feb. 20, 1986, on LEXIS, Genfed library, Dist file); *Legal Times*, Dec. 23-30, 1985, at 13, col. 1. Such lawsuits encourage creditors to monitor firms for likely cleanup liabilities, *see id.* at 17, col. 3, and thus help impose those costs on hazardous waste handlers.

[153] The cost of environmental claims to the creditor is the cost of the claims to the firm, weighted by the relative priority of the creditor. A secured creditor, second in line to environmental claims under the proposed ranking system, will see each dollar of environmental liability as a lost dollar of credit repayment. A trade creditor, farther down the priority list, will see environmental claims as lost repayment but will discount that loss by the likelihood that the secured creditors would have exhausted the firm's assets in any case.

[154] *See* Drabkin, Moorman, & Kirsch, *supra* note 2, at 10,180, 10,184; Note, *supra* note 2, at 891; Note, *supra* note 10, at 1077–78.

[155] *See* Kennedy, *supra* note 71, at 211; Note, *supra* note 10, at 1081. If voluntary creditors are excessively risk-averse, however, they may charge risk premiums so large that firms are overdeterred from hazardous waste activities.

[156] *See* G. CALABRESI, THE COSTS OF ACCIDENTS 90 (2d ed. 1970); R. POSNER, ECONOMIC ANALYSIS OF LAW 293 (2d ed. 1977); Note, *supra* note 10, at 1076.

would receive if they could seek damages in court. Voluntary creditors would not be injured by being subordinate to these victims, because voluntary creditors could charge higher interest rates for credit extended to risky firms.[157]

(c) Enacting Priority Liens. — As a substitute for the in-bankruptcy priority mechanisms just discussed, and as an additional method for forcing cost internalization outside of bankruptcy, governments may enact liens on the property of firms responsible for injurious disposal activities. In bankruptcy, the lien would be a functional replacement for changes in the U.C.C. or exemptions from the automatic stay for government suits, because holders of priority liens collect ahead of all other creditors. Outside of bankruptcy, the lien would add a new avenue for recovering cleanup costs and tort damages.

A lien creates a legal right to collect from a debtor by attaching specified assets. To collect its debt, the creditor has a right to take possession of and sell the specified property. A lien is in this respect much like a secured interest, which also attaches to specific assets.[158] Several states have enacted,[159] and the federal government has considered,[160] a statutory lien that would allow the government to recover the costs of waste cleanup ahead of other creditors, including secured creditors.

The power of a lien to enforce environmental law depends on the time at which the lien applies and the specific property to which the

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[157] Moreover, voluntary creditors (or any firms in a market economy) are fairly burdened when they make unprofitable business decisions. *See* Brief of Respondent New Jersey Dep't of Envtl. Protection at 40–41, Midlantic Nat'l Bank v. New Jersey Dep't of Envtl. Protection, 106 S. Ct. 755 (1986) (No. 84-801).

[158] *See* J. EDDY & J. WINSHIP, COMMERCIAL TRANSACTIONS 102–03 & n.2 (1985). Liens may be created by statute (such as a tax lien), at common law (such as a mechanic's lien on repaired property), and by contract (such as secured credit). *See id.* at 102 n.2, 353.

In efforts to evade liabilities and attachment mechanisms like liens, some corporations have created subsidiary corporations to carry out the parent's waste-related activities. In these cases, courts should pierce the corporate veil to reach the assets of the parent. *See* Note, *Liability of Parent Corporations for Hazardous Waste Cleanup and Damages*, 99 HARV. L. REV. 986 (1986).

[159] *See, e.g.*, MASS. GEN. LAWS ANN. ch. 21E, § 13 (West 1983); N.H. REV. STAT. ANN. § 147-B:10 (Supp. 1983); N.J. STAT. ANN. ch. 58, § 10-23-11(f)(e) (West 1982 & Supp. 1983). At least ten other states also have such provisions. *See* Note, *supra* note 2, at 890 n.150.

Justice O'Connor, in dicta, has recently approved of state liens for waste cleanup cost recovery. *See* Ohio v. Kovacs, 105 S. Ct. 705, 712 (1985) (O'Connor, J., concurring) (noting that "a State may protect its interest in the enforcement of its environmental laws by giving cleanup judgments the status of statutory liens or secured claims").

[160] Most recently, the Senate and the House of Representatives passed identical lien provisions, which are now in conference with the rest of the CERCLA reauthorization. For a text of the lien provision, inserted by the Senate as CERCLA § 107(m) and by the House as CERCLA § 107(k), see 131 CONG. REC. H11,606, H11,624 (daily ed. Dec. 10, 1985). In 1983 Congress considered but did not enact a superpriority lien. For a detailed analysis of the 1983 bill, see Lockett, *supra* note 35; Note, *supra* note 2, at 890.

lien attaches. A statutory lien is generally perfected[161] either at the time actual notice is filed, or by implied notice on the date of enactment. In the latter case, the lien may be superior to all other property interests and thus may be labeled a "superlien."[162] The time-dependent lien rests on the idea that within a class of property interests under the Bankruptcy Code, unless otherwise specified, all members of a class share on a "first in time, first in right" basis. Hence the date of perfection of the lien would determine its priority as against other secured creditors.[163] The superlien, perfected on the date the statute was passed, is clearly more powerful.

In addition to a date of perfection, liens must specify the property to which they attach. The toxic waste cleanup liens already in force generally apply either to the cleaned property[164] or to all of the property owned by the responsible party.[165] Because the cleaned property is usually a waste disposal site, a lien applying only to property subject to cleaning will generally only affect disposers and not waste generators or transporters. More importantly, because the waste disposal site itself may have very little value,[166] a lien limited to that property may not force payment of the entire cleanup cost bill.[167] A lien on all property of the responsible party, on the other hand, enables the lienholder to acquire any property, whether or not it is involved in the waste activity.

The most significant problem with powerful liens appears to be that they may disrupt the real estate market. In Massachusetts, for example, after the state enacted a lien attaching to "all property owned

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[161] A lien is perfected when its right of priority is secured. Perfection usually occurs when the debtor is given actual or implied notice of the lien. *See* J. EDDY & P. WINSHIP, *supra* note 158, at 100–01.

[162] The failed 1983 bill authorized such a superlien. *See* Lockett, *supra* note 35, at 877. New Jersey's lien is a superlien, authorizing "a first priority claim and lien paramount to all other claims and liens," N.J. STAT. ANN. ch. 58, § 10-23-11(f)(e) (West 1982 & Supp. 1983).

[163] The proposed CERCLA lien is perfectable and prioritized by the date on which notice of it was given. *See* 131 CONG. REC. H11,606, H11,624 (daily ed. Dec. 10, 1985). This kind of lien is vulnerable to the trustee's avoiding powers under 11 U.S.C. § 545(2), if the lien is not perfected by the date of the filing of the petition for bankruptcy. An avoided lien converts to an unsecured claim. *See* Lockett, *supra* note 35, at 882–83.

[164] *See, e.g.*, OHIO REV. CODE ANN. §§ 3734.20(B), 3734.22 (Page Supp. 1984) (enacted in 1980, after the causes of action in *Kovacs I & II* accrued, and placing a lien against "the property on which the [waste disposal] facility is located"). Similarly, the proposed lien under CERCLA would apply only to "all real property and rights to such property which — (A) belong to [a liable] person; and (B) are subject to or affected by a removal or remedial action." *See* 131 CONG. REC. H11,624 (daily ed. Dec. 10, 1985).

[165] *See, e.g.*, N.H. REV. STAT. ANN. § 147-B:10 (Supp. 1983) (entitling the state to "a lien upon business revenues and all real and personal property" of a responsible party); N.J. STAT. ANN. ch. 58, § 10-23-11(f)(e) (West 1982 & Supp. 1983) (enacting a lien against "the revenues and all real and personal property of the discharger, whether or not the discharger is insolvent").

[166] *See supra* p. 1592.

[167] *See* Lockett, *supra* note 35, at 881.

by persons liable,"[168] the Federal Home Loan Mortgage Corporation withdrew from the condominium and apartment mortgage market, and banks began requiring expensive contamination assessments for all real estate transactions before granting loans.[169] Massachusetts then exempted "real property the greater part of which is devoted to single or multi-family housing" from the superlien.[170] Such exemptions should minimize the harm to the residential real estate market while preserving the lien's force against the industrial property of waste handlers.

Designing a lien to protect the interests of present and future tort victims may require some creativity. A "tort lien" could be applied in favor of the government as trustee for the future plaintiffs. Or a fund representative,[171] appointed to administer the fund on behalf of those plaintiffs, could administer the lien. It is important to specify a current trustee for the lien, because many of the future plaintiffs will not be identified for many years, and the property may need to be attached and sold at the time of bankruptcy to finance an adequate fund and to deter the target party appropriately. The lien would be for the estimated total present value of damages to be paid to all plaintiffs, present and future, who have yet to recover.

C. Conclusion

Firms attempting to finance their expected liability from hazardous waste injuries face difficult choices. They are often burdened by liabilities far in excess of their net worths. Private insurance is extremely expensive and difficult to obtain. The main alternative is self-insurance, with the attendant risks of insolvency when claims suddenly arise. The ideal solution to this dilemma is a system of credit and insurance policies that forces firms to pay the full expected costs of their activities in predictable, periodic payments, and that compensates all claimants fairly. Insurance policies that tie premiums tightly to risks, and bankruptcy rules that include all claimants and encourage voluntary creditors to charge risk premiums, are essential for the implementation of that ideal. If either the insurance system or the bankruptcy system fails to force cost internalization, or fails to offer predictable methods for financing risk, firms will shift their investment to the less costly system and society will fail to prevent toxic waste injuries efficiently.

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[168] MASS. GEN. LAWS ANN. ch. 21E, § 13 (West 1983).

[169] *See* Lockett, *supra* note 35, at 863; Note, *supra* note 2, at 890 n.152.

[170] *See* MASS. GEN. LAWS ANN. ch. 21E, § 13 (West 1983) (enacted Mar. 24, 1983, revised by emergency act Dec. 15, 1983).

[171] *See supra* pp. 1588–89.

IX. Common Law Personal Injury Recovery

Compensation of toxic waste victims and deterrence of future personal injuries stemming from exposure to hazardous substances present a serious challenge to our society. Hazardous waste sites are increasingly located in residential communities, and environmentally induced cancers are now considered a major public health problem.[1] Although Congress has begun to confront the social problem of toxic waste disposal by providing for industry regulation and cleanup mechanisms at the worst sites, private remedies for the victims of toxic waste are "[c]onspicuously absent" from the scope of all the federal environmental statutes.[2] Furthermore, the Supreme Court has ruled out recoveries based on an implied cause of action arising out of a violation of federal environmental legislation.[3] At the state level, statutory remedies that provide compensation for persons suffering injuries from hazardous waste exposure are virtually nonexistent.[4] Thus, common law tort actions appear to provide the sole legal remedy for such victims.[5]

It is becoming increasingly apparent, however, that common law tort doctrine is inadequate to provide remedies for the growing number of toxic waste victims. The few reported hazardous waste cases[6] have

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[1] *See* Comment, *Personal Injury Hazardous Waste Litigation: A Proposal for Tort Reform*, 10 B.C. Envtl. Aff. L. Rev. 797, 798 & n.7 (1983).

[2] Comment, *"Close Encounters of the Toxic Kind" — Toward an Amelioration of Substantive and Procedural Barriers for Latent Toxic Injury Plaintiffs*, 54 Temp. L.Q. 822, 823 (1981). The Senate version of CERCLA would have created a federal cause of action for individuals injured by exposure to toxic waste and imposed retroactive strict liability on defendants. *See* S. 1480, 96th Cong., 2d Sess. § 4(a) (1980). These provisions, however, were deleted from the version of the bill that became law. *See* Freeman, *Toxic Torts, Hazardous Waste and the Superfund*, 2 J. Prod. L. 149, 149 (1983).

[3] *See* Middlesex County Sewerage Auth. v. National Sea Clammers Ass'n, 453 U.S. 1, 11–18 (1981) (holding that neither the Federal Water Pollution Control Act nor the Marine Protection, Research, and Sanctuaries Act provides an implied right of action for personal injuries). The Supreme Court has also closed the door to expansion of the federal common law of nuisance as a remedy for private party damages. *See id.* at 21–22; City of Milwaukee v. Illinois, 451 U.S. 304, 317 (1981).

[4] *See* Grad, *Injuries from Exposure to Hazardous Waste: Can the Victim Recover?*, 2 J. Prod. L. 133, 136 (1983). Only Alaska, North Carolina, North Dakota, and Rhode Island have created private statutory causes of action. *See* Senate Comm. on Environment and Public Works, 97th Cong., 2d Sess., Injuries and Damages from Hazardous Wastes — Analysis and Improvement of Legal Remedies 75, 141 n.96 (Comm. Print 1982) [hereinafter cited as CERCLA Report] (primarily authored by Frank P. Grad and Patricia A. Porter for the Superfund Section 301(e) Study Group).

[5] Other compensation mechanisms, however, such as social security, workmen's compensation, and Medicare, may provide relief to certain toxic waste victims.

[6] There are few reported hazardous waste cases of any kind because the public has only recently begun to appreciate the problem of toxic waste management and the dangers of injury from exposure. *See* CERCLA Report, *supra* note 4, at 41; DiBenedetto, *Generator Liability Under the Common Law and Federal and State Statutes*, 39 Bus. Law. 611, 612 (1984). The

revealed a host of barriers to recovery in personal injury toxic waste litigation. Toxic waste injuries are "fundamentally different" from the individualized, immediate wrongs for which, and through which, tort law developed.[7] These differences, such as the ambiguous etiology of many diseases associated with exposure to toxic substances and the long latency periods between exposure and the manifestation of injury,[8] create serious doctrinal and practical problems for the toxic waste victim seeking recovery.[9] Thus, under traditional tort doctrine, latent injuries from toxic wastes remain uncompensated, and dangerous activities remain undeterred. Because courts have long recognized their obligation to do corrective justice by compensating innocent victims and, more recently, to deter wrongdoing by compelling those who create harms to bear the costs, the courts must adapt the common law to the realities of toxic waste litigation.

This Part analyzes the three major barriers preventing recovery for toxic waste personal injuries and discusses the reforms necessary to remove them.[10] Section A describes the first of these barriers:

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number of cases involving toxic waste personal injury is extremely low. Reported cases include: Chappell v. SCA Serv., 540 F. Supp. 1087 (C.D. Ill. 1982); Crown Cork & Seal Co. v. Vroom, 480 So. 2d 108 (Fla. Dist. Ct. App. 1985); Windham v. Florida Dep't of Transp., 476 So. 2d 735 (Fla. Dist. Ct. App. 1985); Johnson v. Tipton, 103 Ill. App. 3d 291, 431 N.E.2d 464 (1982); Kenney v. Scientific, Inc., 204 N.J. Super. 228, 497 A.2d 1310 (Super. Ct. Law Div. 1985); Ayers v. Township of Jackson, 189 N.J. Super. 561, 461 A.2d 184 (Super. Ct. Law Div. 1983); Askey v. Occidental Chem. Corp., 102 A.D.2d 130, 477 N.Y.S.2d 242 (App. Div. 1984); Wilson v. Key Tronic Corp., 40 Wash. App. 802, 701 P.2d 518 (1985). To date, toxic waste actions for major disease personal injury have been virtually nonexistent. *See* Christian Sci. Monitor, Feb. 19, 1986, at 3 (describing the Woburn plaintiffs' suit (Anderson v. Cryovac, Inc., No. 82-1672 (D. Mass. filed May 1, 1982)) for latent injury damages as the first toxic waste suit of its kind "ever to fight its way into a courtroom"). At the same time, dozens of cases have recently been filed, and the potential liability of defendants is enormous. *See* Legal Times, Oct. 22, 1984, at 1, col. 2.

[7] *See* Note, *The Inapplicability of Traditional Tort Analysis to Environmental Risks: The Example of Toxic Waste Pollution Victim Compensation*, 35 STAN. L. REV. 575, 575 (1983).

[8] No clear consensus has formed on the length of such latency periods, but sources set the range at between 15 and 30 years. *See, e.g.*, Comment, *supra* note 1, at 811 (estimating 15–20 years between exposure and manifestation of injury); Note, *Denial of a Remedy: Former Residents of Hazardous Waste Sites and New York's Statute of Limitations*, 8 COLUM. J. ENVTL. L. 161, 163 (1982) (estimating a 20–30 year latency period between exposure and manifestation of injury).

[9] Practical problems are often overlooked. Sometimes there is no "deep pocket" from which to recover by the time the victim learns of her injuries. In the 15–30 year interim between exposure and manifestation of injury, the generators, haulers, and disposers may all have become defunct or insolvent. *See* Note, *supra* note 7, at 584; *supra* Section B of Part VIII.

[10] Because numerous commentators have already described the myriad barriers facing a plaintiff in toxic waste personal injury litigation, *see, e.g.*, CERCLA REPORT, *supra* note 4; Note, *Hazardous Waste Disposal: Is There Still a Role for Common Law?*, 18 TULSA L.J. 448 (1983), this Part will not repeat that task in its full scope. Examples of barriers discussed thoroughly in other essays include: the doctrinal limitations of trespass, private nuisance, and public nuisance; the absence of implied and statutorily created causes of action; and difficulties involving joinder of defendants.

overly restrictive statutes of limitations and repose. This Section argues that courts should adopt a liberal "discovery rule" that delays the running of statutes of limitations until the plaintiff discovers her cause of action, and that legislatures should refrain from passing statutes of repose that unduly protect a causally responsible defendant at the expense of an innocent plaintiff. Section B describes the second barrier: the requirement in most jurisdictions that a victim prove negligence in order to recover for personal injury from exposure to toxic waste. Section B analyzes the defects of applying negligence doctrine in the toxic waste context and argues that the courts should apply strict liability against the generators and disposers of hazardous waste. Section C addresses the final barrier: traditional tort causation doctrine. Although a strong causation requirement is deeply embedded in common law tort doctrine, courts can reduce this barrier to compensation and deterrence by accepting statistical evidence at face value, by allowing proportional recovery when a plaintiff is able to produce only statistical evidence, and by adopting an expanded version of enterprise liability in order to impose joint liability on defendants.

A. Statutes of Limitations and Repose

Every tort action must be brought before it is barred by the state's statute of limitations or repose.[11] Statutes of limitations typically bar actions not brought within two to four years from the time the cause of action accrued.[12] Under the conventional interpretation of these statutes, a cause of action accrues at the time of the defendant's tortious conduct or at the time of harm rather than at the time the victim discovers her injury.[13] Statutes of repose begin to run at the

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[11] Statutes of repose differ from statutes of limitations in two important respects. First, statutes of repose unambiguously begin to run at the time of the defendant's act or neglect. *See* W. KEETON, D. DOBBS, R. KEETON, & D. OWEN, PROSSER AND KEETON ON THE LAW OF TORTS § 30, at 168 (5th ed. 1984) [hereinafter cited as PROSSER AND KEETON]. In contrast, statutes of limitations begin to run when the cause of action "accrues," which in most jurisdictions is not until the the harm from the defendant's conduct results. *See id.* § 30, at 165. Second, statutes of repose run for a longer period of time than do statutes of limitations. *See id.* § 30, at 168.

[12] *See, e.g.*, ARIZ. REV. STAT. ANN. § 12-542 (Supp. 1985) (2 years); FLA. STAT. ANN. § 95.11 (West 1982) (4 years); ILL. ANN. STAT. ch. 83, § 15 (Smith-Hurd 1966) (2 years).

[13] Courts may hold tort actions to accrue at three points in time: (1) when the defendant commits a breach of conduct (by allowing toxic substances to escape and exposing victims); (2) when the breach of conduct results in some harm to the victim (when cancer cells begin to develop); or (3) when the victim discovers her injury. Conventional interpretations of statutes of limitation hold that a cause of action accrues either at point (1), *see, e.g.*, H. Hirschfield Sons Co. v. Colt Indus. Operating Corp., 107 Mich. App. 720, 309 N.W.2d 714 (1981); Steinhardt v. Johns-Manville Corp., 54 N.Y.2d 1008, 430 N.E.2d 1297, 446 N.Y.S.2d 244 (1981), *appeal dismissed*, 456 U.S. 967 (1982), or at point (2), *see* PROSSER AND KEETON, *supra* note 11, § 30, at 165.

time of the defendant's conduct and generally run for a maximum of twelve years.[14] Time-bar statutes present little difficulty for an attentive plaintiff when a defendant's act causes harm that is immediately apparent. In latent injury toxic waste litigation, however, an injury may not manifest itself until many years after the defendant tortiously allowed chemicals to escape.[15] The long latency period often means that the plaintiff's action will be barred before she knows she had a cause of action.[16] Furthermore, several years may pass between the time a victim develops a disease and the appearance of symptoms that enable her to identify her condition. Statutes of limitations and repose can, therefore, present a "substantial barrier" to recovery in toxic waste litigation.[17]

Moreover, even if a plaintiff discovers her injury before it is time-barred, she may fail either to recognize the causal connection between her injury and past exposure to toxic waste or to identify a liable defendant before the time limitation has run. Courts should, therefore, interpret the date of "accrual" in personal injury toxic waste litigation as the date on which the plaintiff discovers her cause of action, and legislatures should refrain from passing statutes of repose covering latent toxic injury actions. The benefits of compensating innocent victims and the resulting deterrence of dangerous activity will exceed the burdens that defendants must bear in defending older claims.

1. Statutes of Limitations

Courts have traditionally understood statutes of limitations to run from the time of the tortious act or the time of the resulting harm. Neither of these interpretations responds to the problems associated with latent injuries. The traditional rules rest on the assumption that a tort cannot occur without immediate "symptoms," an assumption that is patently false in cases of latent injury.[18] Recognizing that the falsity of this assumption undermines the traditional policies supporting a statute of limitations, the Supreme Court has held, in the context of the Federal Employers' Liability Act (FELA), that the statute of limitations does not begin to run on latent injuries until the victim discovers the disease with which she has been afflicted.[19] The ma-

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[14] *See* PROSSER AND KEETON, *supra* note 11, § 30, at 168 n.31.

[15] *See supra* note 8.

[16] *See* CERCLA REPORT, *supra* note 4, at 43; Comment, *supra* note 2, at 843–45.

[17] *See* DiBenedetto, *supra* note 6, at 623; Note, *The Fairness and Constitutionality of Statutes of Limitations for Toxic Tort Suits*, 96 HARV. L. REV. 1683, 1683 (1983).

[18] *See* Comment, *supra* note 1, at 828.

[19] *See* Urie v. Thompson, 337 U.S. 163, 170 (1949); Note, *supra* note 8, at 169–70. The Supreme Court's decision was neither binding on courts interpreting state statutes of limitations nor applicable to all federally created statutes of limitations. The holding in *Urie* applied only

jority of state courts, and a few state legislatures, have acted to remove the barrier that statutes of limitation can present to latent injury victims by adopting the "discovery rule,"[20] which holds that a cause of action does not "accrue" until the victim discovers her injury. The statute of limitations for a toxic waste exposure victim in a jurisdiction employing the discovery rule would, therefore, not begin to run until the latent injury manifested itself and became discoverable.

General acceptance of the discovery rule will not, however, eliminate the problem of time-barred toxic waste actions.[21] A standard discovery rule bars a victim from gaining compensation if she fails to bring her action soon after she discovers her injury. Yet a victim who discovers she has cancer, for example, may have no idea that the possible causes include numerous environmental factors.[22] She may reasonably assume that she was unfortunately prone to the disease. And as the New Jersey Supreme Court observed, there is a significant difference between knowing the cause of an injury and knowing that the injury is "attributable to the fault or neglect of another."[23] A toxic waste victim may need a substantial period of time both to discover the cause of her injury and to discover that another party may be legally responsible for it. It is unreasonable to require a toxic waste victim to make both of these discoveries within

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to FELA actions. Since 1949, the Court has noted approvingly the extension of *Urie*'s holding by many circuits to delay the running of the statute of limitations for medical malpractice claims under the Federal Tort Claims Act until the plaintiff discovers her injury. *See* United States v. Kubrick, 444 U.S. 111, 120–21 & n.7 (1979).

[20] As of 1982, 39 states had adopted the discovery rule. *See* DiBenedetto, *supra* note 6, at 623 n.88; CERCLA REPORT, *supra* note 4, at 43, 133 n.4. For a state-by-state analysis, see Appendix B to the CERCLA Report. In most states, the discovery rule was judicially adopted; Kansas and Missouri, however, have legislatively adopted a general discovery rule. *See* KAN. STAT. ANN. § 60-513(b) (1983); MO. ANN. STAT. § 516.100 (Vernon 1952). And Alabama has legislatively adopted a discovery rule specifically for asbestos injuries and products liability injuries arising from exposure to toxic substances. *See* ALA. CODE §§ 6-2-30(b), 6-5-502(b) (Supp. 1985).

Some state courts, although recognizing the inequities inherent in the traditional rule, have insisted that any change must come from the legislature. *See, e.g.*, Garrett v. Raytheon Co., 368 So. 2d 516 (Ala. 1979); Thornton v. Roosevelt Hosp., 47 N.Y.2d 780, 781–82, 391 N.E.2d 1002, 1003, 417 N.Y.S.2d 920, 922 (1979). The Maryland Supreme Court rejected this argument in Harig v. Johns-Manville Prods. Corp., 284 Md. 70, 394 A.2d 299 (1978). The court argued convincingly that the legislature's statute of limitations merely provides that an action must be brought within a specified number of years after it "accrues," whereas the "question of when a cause of action accrues is left to judicial determination." *Id.* at 75, 394 A.2d at 302.

[21] *See* CERCLA REPORT, *supra* note 4, at 43.

[22] *See* Zeleznik v. United States, 770 F.2d 20, 22 (3d Cir. 1985) (stating that "a person may know that he has been injured but not be sufficiently apprised by the mere fact of injury to understand its cause"), *petition for cert. filed*, 54 U.S.L.W. 3393 (U.S. Nov. 20, 1985) (No. 85-885).

[23] *See* Lopez v. Swyer, 62 N.J. 267, 274, 300 A.2d 563, 567 (1973).

the relatively short period of time allowed by statutes of limitations. Thus, even in a jurisdiction that has a discovery rule, toxic waste victims may be deprived of compensation through no fault of their own.

It is essential that courts respond to this inequity — as they have to the inequities engendered by conventional interpretations of statutes of limitations — by extending the discovery rule. Very few courts have taken the first step and held that the statute of limitations does not begin to run until a plaintiff discovers her injury and its immediate cause.[24] Even fewer jurisdictions have taken the second step and held that the statute of limitations does not begin to run until the victim discovers that another party may be legally liable for her injuries.[25] To ensure that the special difficulties in bringing toxic waste tort actions do not bar meritorious claims, the scope of the discovery rule should be further expanded so that the statute of limitations does not begin to run until the plaintiff discovers her cause of action.[26]

In toxic waste personal injury litigation, fairness dictates that plaintiffs not be systematically barred from litigating their tort claims on the merits. Toxic waste victims cannot be said to be "sleeping on their rights" when they fail to bring a timely suit because they were ignorant of their injury or cause of action.[27] Defendants who would otherwise be liable for generating and tortiously disposing of toxic waste should not escape liability merely because of the latent character of the harm they create and the difficulty of identifying a legally responsible party. Thus, defendants, rather than innocent victims,

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[24] Some federal courts have interpreted the Supreme Court's decision in United States v. Kubrick, 444 U.S. 111 (1979), as providing for something more than the traditional discovery rule. In *Zeleznik*, the court held on the authority of *Kubrick* that a claim "accrues" for statute of limitations purposes when the injured party learns of "the injury and its immediate cause." 770 F.2d at 23. The court apparently did not consider this an extension of the discovery rule, but rather the product of *Kubrick*'s reasoning that it is unfair for a statute of limitations to begin to run until a plaintiff is put "on notice" that a wrong has been committed and that she needs to investigate avenues of redress. *See id.*

[25] Two jurisdictions that do delay the running of the statute of limitations until the plaintiff discovers her cause of action are New Jersey, *see* Lopez v. Swyer, 62 N.J. 267, 274, 300 A.2d 563, 567 (1973), and South Carolina, *see* S.C. CODE ANN. § 15-3-535 (Law. Co-op. 1985 Supp.).

[26] As the discussion above suggests, a plaintiff discovers her cause of action when she discovers, or reasonably should discover, (1) that she is injured, (2) the cause of that injury in the narrow medical sense, and (3) that the cause of the injury may be attributable to the tortious conduct of another. Although two or more of these discoveries may occur simultaneously, often each will occur at a distinct time. A victim discovers she is injured when the first symptoms of disease appear. She knows the cause of her injury (to the extent this is possible) when a doctor informs her of the possible factors that may have contributed to her condition. A victim discovers that the cause is attributable to the tortious conduct of another only when she discovers that the chemicals described by the doctor seeped from a toxic waste site near her home and that those responsible for the site had some duty to prevent the escape.

[27] *See* Note, *supra* note 17, at 1685; Note, *supra* note 8, at 166.

should suffer the inconveniences stemming from the defendants' unique activity.

Extending the concept of "accrual" is also efficient because restrictive time-bar statutes under-deter toxic waste generators and disposers. The limited discovery rule bars not only the occasional unfortunate toxic waste plaintiff, but a significant percentage of all latent injury victims of toxic waste.[28] The systematic insulation of generators and disposers from liability necessarily means that many will not internalize the full cost of their activities and will, therefore, fail to reduce their dangerous activity to the socially optimal level.[29]

Statutes of limitations do promote some legitimate interests of defendants and the judicial system. First, a statute of limitations protects defendants from claims for which "evidence has been lost, memories have faded, and witnesses have disappeared."[30] This protection saves defendants from potential injustice and conserves the courts' resources for claims more likely to prove successful. Second, statutes of limitations enable defendants to plan their affairs without worrying about a sudden reemergence of ancient claims.[31] Statutes of limitations should, however, be tailored "to resolve the competing interests of plaintiff and defendant."[32] Not only is a liberalization of time limitations a precondition to allowing recovery for latent toxic waste injuries, but the evidentiary problems and potential for surprise that justify time limitations are greatly mitigated in the toxic waste context.

The stale evidence rationale for barring actions is less convincing when applied to toxic waste actions because much of the crucially relevant evidence is still fresh many years after exposure.[33] Although memories fade, evidence of the seepage often remains on the site, and documentation of periods of exposure for plaintiffs is often available from municipal records.[34] Indeed, the delay characteristic of latent injury suits actually places courts in a better position to decide difficult questions of medical causation, because "fresh" epidemiological studies will be available at trial that would not have been available at the time of exposure.

As for the surprise the defendants may face when forced to litigate claims originating years in the past, some disposers and generators of toxic waste have known for several years, and perhaps decades, that

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[28] *See* Note, *supra* note 17, at 1685.

[29] *See infra* pp. 1612–13; *cf.* Note, *supra* note 17, at 1690 (noting that insufficient deterrence leads to higher risk of injury and more torts).

[30] Order of R.R. Telegraphers v. Railway Express Agency, 321 U.S. 342, 349 (1944).

[31] *See* Note, *supra* note 17, at 1684–85.

[32] Note, *supra* note 8, at 166.

[33] *See* Note, *supra* note 17, at 1685.

[34] *See* Note, *supra* note 8, at 166.

exposure to the wastes they handle will cause a statistically predictable number of latent diseases.[35] Moreover, it is important to distinguish specific and generalized expectation of risk. Although disposers and generators might legitimately be surprised when a specific agent that they have processed is discovered to be a carcinogen, most disposers and generators have long been *generally* aware that chemical wastes are potentially carcinogenic.

2. *Statutes of Repose*

Although statutes of repose have become increasingly common,[36] they do not currently constitute a barrier to recovery in toxic waste personal injury actions because few statutes of repose apply to toxic waste litigation. Statutes of repose commonly apply only to specific pockets of liability, of which the most common are architects' and contractors' liability, medical malpractice, and products liability.[37] Few states have enacted a general statute of repose.[38] But if courts reform the rules for statutes of limitations, and plaintiffs that were previously barred begin to recover, state legislatures might respond to the complaints of disposers and generators[39] and "whittle[] away"[40] these reforms by enacting statutes of repose to cover latent toxic waste injuries. Statutes of repose represent a return to the "traditional form of time-bar statutes."[41] They characteristically set time limitations that, although longer than statutes of limitations, are shorter than the average latency period for cancer and other diseases.[42] The introduc-

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[35] There is considerable evidence, for example, that asbestos manufacturers knew as early as 1933 that asbestos caused asbestosis and as early as 1955 that it caused cancer. *See* Note, *supra* note 17, at 1685 & n.10.

[36] Over 40 states now have statutes of repose covering specific areas of tort law. *See* McGovern, *The Variety, Policy and Constitutionality of Product Liability Statutes of Repose*, 30 AM. U.L. REV. 579, 587–88 (1981).

[37] For example, in 1981 over 40 states had statutes of repose covering architects and contractors; more than 25 states had medical malpractice statutes of repose; and over 20 states had products liability statutes of repose. *See id.*

[38] Oregon is one state that does have a general statute of repose. *See* OR. REV. STAT. § 12.115(1) (1985) (barring "any action for negligent injury to person or property of another . . . commenced more than 10 years from the date of the act or omission complained of"). The statute has been interpreted to apply to actions under a theory of strict liability as well as negligence. *See* Johnson v. Star Mach. Co., 270 Or. 694, 700–09, 530 P.2d 53, 57–61 (1974).

[39] One authority has suggested that, in enacting statutes of repose, legislatures are responding as much to the political power of the parties affected as to the hardship of unexpected liability. *See* PROSSER AND KEETON, *supra* note 11, § 30, at 167.

[40] Note, *Statutes of Limitations and the Discovery Rule in Latent Injury Claims: An Exception or the Law?*, 43 U. PITT. L. REV. 501, 521 (1982).

[41] Note, *supra* note 17, at 1683.

[42] Statutes of repose begin to run at the time of the defendant's conduct and range in length from 2 to 12 years. *See* PROSSER AND KEETON, *supra* note 11, § 30, at 168 & n.31. The latency period for disease ranges from 15–30 years. *See supra* note 8.

tion of statutes of repose covering latent toxic waste injuries would again deprive many plaintiffs of recovery before they even discover their injuries.[43] The fairness and efficiency costs of systematically barring actions and insulating disposers and generators from liability would outweigh the benefits of repose.[44]

B. Doctrines of Liability

The second major barrier to the efficacy of the tort system in the context of toxic waste personal injuries is the ineffectiveness of those doctrines of liability that are available to plaintiffs. Toxic waste victims have attempted to invoke a number of liability doctrines, including trespass, nuisance, negligence, and strict liability.[45] Of these doctrines, only strict liability serves the tort system's functions of compensation and deterrence. Most courts, however, have refused to apply strict liability to the disposers and generators of hazardous waste,[46] and have required plaintiffs to rely on theories of trespass, nuisance, or negligence.

Although some plaintiffs have recovered damages for personal injury under both trespass and nuisance,[47] neither doctrine meshes conceptually with the issues presented in personal injury cases involving latent disease. Trespass and nuisance actions are designed primarily to combat invasions of property interests.[48] Therefore, most

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[43] *See* PROSSER AND KEETON, *supra* note 11, § 30, at 168.

[44] *See supra* pp. 1607–09.

[45] *See, e.g.*, Kenney v. Scientific, Inc., 204 N.J. Super. 228, 245–46, 497 A.2d 1310, 1319 (Super. Ct. Law Div. 1985) (noting that the "plaintiffs' theories of liability against the generators appear to include strict or absolute liability, negligence, nuisance, trespass, breach of warranty, battery and fraud").

[46] *See* Pollan, *Theories of Liability*, in TOXIC TORTS: LITIGATION OF HAZARDOUS SUBSTANCE CASES 300, 318–19 (G. Nothstein ed. 1984). Although the relevant cases involved claims for property damage rather than personal injury, most state courts that have considered the question have refused to impose strict liability on disposers and generators of toxic waste. *See, e.g.*, Ewell v. Petro-Processors of La., Inc., 364 So. 2d 604 (La. Ct. App. 1978), *cert. denied*, 366 So. 2d 575 (La. 1979); Bagley v. Controlled Env't Corp., 503 A.2d 823 (N.H. 1986). Two jurisdictions, however, have applied strict liability. *See* Ashland Oil, Inc. v. Miller Oil Purchasing Co., 678 F.2d 1293, 1307–08 (5th. Cir 1982) (applying Louisiana law); Langlois v. Allied Chem. Corp., 258 La. 1067, 1083–84, 249 So. 2d 133, 139–40 (1971); New Jersey, Dept. of Envtl. Protection v. Ventron Corp., 94 N.J. 473, 488, 468 A.2d 150, 157 (1983).

[47] *See* Vestal v. Gulf Oil Corp., 149 Tex. 487, 235 S.W.2d 440 (1951) (allowing recovery of personal injury damages in a nuisance action); Nitram Chems. v. Parker, 200 So. 2d 220 (Fla. Dist. Ct. App. 1967) (same); Rogers v. Board of Road Comm'rs, 319 Mich. 661, 30 N.W.2d 358 (1948) (allowing action to recover personal injury damages in trespass action); Kopka v. Bell Tel. Co., 371 Pa. 444, 91 A.2d 232 (1952) (allowing recovery of personal injury damages in trespass action).

[48] Actions for trespass — a direct physical invasion of the plaintiff's right to the exclusive possession of property — are wholly unsatisfactory because (1) the requirement of direct *physical* invasion of a property interest rules out actions for invasion by many "intangible" toxic agents, *see* Comment, *supra* note 2, at 831; (2) the requirement of interference with a property interest

personal injury victims are forced to base their claims on a theory of negligence.[49]

Although no conceptual conflict exists between negligence doctrine and personal injury recovery, four arguments suggest that courts should reject the negligence standard for toxic waste tort actions in favor of strict liability for disposers and generators: because of the extreme difficulty of proving negligence in latent injury toxic waste litigation, even negligent disposers and generators escape liability; strict liability better serves the goals of cost internalization and loss spreading for toxic waste harms; the storage of toxic wastes meets the requirements of *Rylands v. Fletcher*[50] for imposing strict liability on those who engage in dangerous activity inappropriate to the surroundings; finally, the disposal and generation of hazardous waste qualify as abnormally dangerous activity under the Restatement of Torts test for strict liability.

1. The Difficulty of Proving Negligence

Even when a defendant has been negligent, it is extremely difficult for a toxic waste victim to prove either that the defendant's conduct was unreasonable or that the plaintiff's harm was foreseeable. In order to find that a particular risk was "unreasonable," the finder of fact would have to determine that on balance the cost of taking precautionary measures would have been less than the probability and gravity of an accident.[51] This balancing test has proven especially

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rules out actions by plaintiffs who lack a possessory interest in the property invaded; and (3) the current law of trespass requires the plaintiff to prove that the invasion was a result of the defendant's negligent or ultrahazardous activity, *see* PROSSER AND KEETON, *supra* note 11, § 13, at 69, which means that the plaintiff will likely have to make out an independent case of negligence or strict liability anyway. Although nuisance, a "nontrespassory invasion of another's interest in the private use and enjoyment of land," *see* RESTATEMENT (SECOND) OF TORTS § 821D (1979), appears more applicable to toxic waste litigation than does trespass, the standing requirement of a present or future possessory interest in land remains. *See id.* § 821E. Moreover, the defendant is subject to liability only if the invasion is either (1) unintentional and otherwise actionable under doctrines of negligence or abnormally dangerous activities, or (2) intentional and unreasonable. *See id.* § 822. The first requirement is similar to current trespass law in that it effectively demands that a plaintiff independently prove negligence or strict liability. The second requirement may amount to the same standard because the plaintiff still must prove that the defendant's invasion was "unreasonable," in other words, that the invasion, measured ex post, is negligent. *But see* R. EPSTEIN, C. GREGORY & H. KALVEN, CASES AND MATERIALS ON TORTS 600–03 (4th ed. 1984) (suggesting that "unreasonable" in the nuisance context means only "substantial").

[49] A negligence cause of action consists of (1) a duty or obligation recognized by law, (2) a breach of that duty, (3) a proximate causal connection between the breach and plaintiff's injury, and (4) actual loss or injury to plaintiff. *See* PROSSER AND KEETON, *supra* note 11, §30, at 164–65.

[50] 3 L.R.-E. & I. App. 330 (H.L. 1868).

[51] *See* RESTATEMENT (SECOND) OF TORTS § 291 (1965).

difficult to conduct in the context of toxic waste. Unlike the generators and disposers themselves, neither the victims nor the courts have any special expertise in evaluating the availability and expense of the latest technology. Similarly, neither victims nor courts can accurately judge the cost of options such as ceasing to manufacture products that generate toxic waste or storing the waste at a different location. Plaintiffs and attorneys are likely to be reluctant to initiate costly litigation in the face of such uncertainty over the sophistication of the "reasonableness" analysis that courts and juries will apply.

The requirement of proving that the risk was "foreseeable" also creates substantial problems for the plaintiff.[52] Even today, etiology is usually ambiguous in toxic waste cases involving latent injuries, and a negligence standard would require plaintiffs to prove defendants' knowledge of the risk of disease many years in the past. Although some defendants may well have been aware of the risks, proof of this knowledge is probably unattainable through discovery because few of the relevant records or employees are still available.[53] A plaintiff also has the opportunity to prove that the defendant *should* have foreseen the risk; this option, however, would require a time-consuming survey of the relevant literature and would initiate a costly and wasteful battle of expert medical testimony.

2. *The Advantages of Strict Liability*

Because negligence is difficult to prove in toxic waste personal injury litigation, those exposed to hazardous waste currently bear the costs associated with its generation and disposal. Cost internalization and loss spreading arguments suggest, however, that, regardless of negligence in the particular case, disposers and generators rather than innocent victims should bear the cost of the injuries caused by toxic waste. Courts impose strict liability on the sellers of products for two main reasons. First, imposing strict liability "insure[s] that the costs of injuries resulting from defective products are borne by the manufacturers that put such products on the market" and profit from them.[54] Cost internalization is intuitively just, because victims de-

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[52] *See* Note, *Strict Liability for Generators, Transporters, and Disposers of Hazardous Wastes*, 64 MINN. L. REV. 949, 964 (1980).

[53] *See id.*

[54] Greenman v. Yuba Power Prods., 59 Cal. 2d 57, 63, 27 Cal. Rptr. 697, 701, 377 P.2d 897, 901 (1962) (en banc) (Traynor, J.). The primary argument against enforced cost internalization is that cost internalization is *too* effective a deterrent of defendants' conduct. Tort liability, critics argue, will drive many activities that provide valuable jobs and services out of business. The first response is that, in fact, few firms are likely to be driven out of business by tort suits. Except for certain drug and asbestos manufacturers, strict products liability has not led to bankruptcy for the manufacturers of consumer goods. The second response to critics of cost internalization is that it is *efficient* for firms that cannot operate at a profit while internalizing

serve compensation from those who profit from the activity that caused them harm.[55] Moreover, because cost internalization deters future tortious conduct, it protects personal entitlements to bodily safety.[56] Finally, cost internalization promotes efficiency by forcing disposers and generators to maximize social benefits when determining their level of activity[57] and investment in safety equipment.[58]

Second, courts impose strict liability on the sellers of products in order to spread the risk of harm. Strict liability guarantees that a manufacturer becomes an insurer against the risk of injury arising from its products; through higher commodity prices, the cost of injuries caused by their products is then "distributed among the public as a cost of doing business" rather than concentrated on the individual fortuitously injured.[59] Like cost internalization, loss spreading is both fair and socially efficient. Loss spreading is fair because everyone in society benefits from the products and services that generate the hazard of toxic waste; therefore, everyone should pay for a portion of the harm associated with those products and services. Loss spreading satisfies efficiency concerns in two ways. It more efficiently allocates the primary costs of accidents because it is less costly for many people to contribute small amounts to offset the loss than for the individual victim to bear it all. Also, compensation of victims reduces the "secondary" costs of accidents — the costs in human suffering and decreased productivity following an accident.[60]

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the full cost of their conduct not to operate at all. *See* G. CALABRESI, THE COSTS OF ACCIDENTS: A LEGAL AND ECONOMIC ANALYSIS 70–71 (1970). If society collectively determines that an activity deserves to be subsidized by insulation from the full harm it causes in order to serve the long term good, then this subsidy should come from the legislature; the costs of the activity will then be borne by society at large rather than by fortuitous victims.

[55] *See* Borgo, *Causal Pardigms in Tort Law*, 8 J. LEGAL STUD. 419, 419–20 (1979) (stating that "when one man harms another the victim has a moral right to demand . . . compensation for the harm").

[56] *See* Rosenberg, *The Causal Connection in Mass Exposure Cases: A "Public Law" Vision of the Tort System*, 97 HARV. L. REV. 849, 877–79 (1984).

[57] *See* G. CALABRESI, *supra* note 54, 70–71.

[58] Strict liability forces those with the best information about reducing harm (the defendant disposers and generators) continually to make use of that information in order to lower their expected liability. Even if a court could set the level of due care correctly, there would be (1) needless transaction costs involved in forcing plaintiffs affirmatively to discover and present in court information already possessed by the defendants, and (2) a time lag between each advance in available safety features and a corresponding rise in the level of due care, because courts cannot act until someone brings suit.

[59] Escola v. Coca Cola Bottling Co., 24 Cal. 2d 453, 462, 150 P.2d 436, 441 (1944) (Traynor, J., concurring).

[60] *See* G. CALABRESI, *supra* note 54, at 27 (stating that "[t]here is no doubt that the way we provide for accident victims *after* the accident is crucially important and that the real societal costs of accidents can be reduced as significantly here as by taking measures to avoid accidents in the first place"). "Primary costs" are those that necessarily follow from the accident (suffering and medical costs, for example) and can only be reduced by deterring the accident itself.

The same policies that support strict liability for consumer products also recommend imposing strict liability on toxic waste generators and disposers.[61] Because negligence is difficult to prove, and because the doctrine of negligence forces victims to bear the residual risk[62] associated with toxic waste, disposers and generators neither internalize the real costs of their conduct nor act as loss spreaders of the resulting harm. So far, only the New Jersey courts have responded to cost internalization and loss spreading arguments and imposed strict liability on disposers and generators,[63] but more courts should respond to such arguments in the future.[64]

3. *Strict Liability Under* Rylands v. Fletcher

Rylands v. Fletcher[65] provides the third argument for imposing strict liability. Unlike the other rationales, the *Rylands* rule suggests strict liability only for disposers/owners, not for generators.[66] Simply stated, the *Rylands* rule makes a defendant liable for any damages caused by a "thing or activity unduly dangerous and inappropriate to the place where it is maintained, in the light of the character of that

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"Secondary costs" are those that follow from a victim's inability to absorb the primary accident costs. If, for example, an accident victim cannot afford proper medical treatment (and is not compensated), her suffering will dramatically increase. *See id.* at 26–27.

[61] *See* DiBenedetto, *supra* note 6, at 620; *see also* CERCLA REPORT, *supra* note 4, at 111–12 (observing that in toxic waste and defective products cases, the three rationales for strict liability — difficulties of proof, loss spreading, and cost internalization — are equally appropriate).

[62] Residual risk is the risk of injury that remains after the defendant conforms her conduct to the standard of due care.

[63] *See* Kenney v. Scientific, Inc., 204 N.J. Super. 228, 248, 497 A.2d 1310, 1321 (Super. Ct. Law Div. 1985) (concluding that "creators of abnormally dangerous substances are far better able than the victims to sustain the costs of the injuries resulting from those substances"); City of Bridgeton v. British Petroleum Oil, Inc., 146 N.J. Super. 169, 177, 369 A.2d 49, 53–54 (Super. Ct. Law Div. 1976).

[64] The most common argument against the cost internalization and loss spreading rationales for strict liability is that they prove too much because, if we accept them, we must advocate strict liability in almost every area of tort law. *See* R. EPSTEIN, C. GREGORY & H. KALVEN, *supra* note 48, at 643–44. The proponents of this argument are too quick to assume that *effective* cost internalization and loss spreading could be obtained throughout all areas of tort law. In fact, strict liability would rarely prove effective if imposed on parties to relatively random accidents — such as auto or slip-and-fall accidents, or accidents for which neither party is in a better ex ante position to insure against the loss. If, however, there remain many areas of tort law in which cost internalization and loss spreading would be effective, this fact proves only that there are many areas of tort law that are ripe for strict liability.

[65] 3 L.R.-E. & I. App. 330 (H.L. 1868).

[66] This limitation makes *Rylands* less likely to lead to plaintiff recovery than the other rationales because plaintiffs have more difficulty recovering from disposers than from generators. Generators, as a rule, have the deeper pockets. *See* Mott & Rivero, *Generator Liability Under Current Federal Theories*, in HAZARDOUS WASTE LITIGATION 1983, at 14; Note, *supra* note 7, at 585. Nevertheless, some recovery would generally be available, and disposers fearing liability might begin to require indemnity contracts from the generators they serve.

place and its surroundings."[67] The *Rylands* doctrine imposes strict liability not on dangerous activities per se, but on any activity that is dangerous in relation to its surroundings.[68] Therefore, allowing recovery under the *Rylands* rule would encourage firms to store toxic wastes far from persons who might be injured by leakage or, in the alternative, would force firms to compensate without regard to fault those injured as a result of a site in their neighborhood. Application of the *Rylands* principle, although long misunderstood and disapproved in the United States, has been on the rise lately,[69] particularly in the area of environmental hazards,[70] and should be encouraged.

4. The Restatement Standard for Strict Liability

The fourth and final argument in favor of strict liability relies on the Restatement concept of "abnormally dangerous activities."[71] The Restatement advocates imposing strict liability on activity that meets "several" of six independent criteria:

> (a) existence of a high degree of risk of some harm to the person, land or chattels of others;
> (b) likelihood that the harm that results from it will be great;
> (c) inability to eliminate the risk by the exercise of reasonable care;
> (d) extent to which the activity is not a matter of common usage;
> (e) inappropriateness of the activity to the place where it is carried on; and
> (f) extent to which its value to the community is outweighed by its dangerous attributes.[72]

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[67] PROSSER AND KEETON, *supra* note 11, § 78, at 547–48.

[68] *See* DiBenedetto, *supra* note 6, at 620.

[69] *See* PROSSER AND KEETON, *supra* note 11, § 78, at 548–49. Professor Prosser argues that disapproval of *Rylands* stemmed largely from a misunderstanding of its holding. American courts, focusing on the intermediate decision rather than the final decision in the House of Lords, interpreted *Rylands* to hold a defendant absolutely liable when anything in her possession escapes and does damage. Basing their analysis on the misunderstanding of *Rylands*, legal writers concluded that *Rylands* imposed a rule of absolute liability, which was unjustifiable in a society dependent upon expanding industrialization and commercialization. *See id.*

After industrialization and the development of the country's resources, hesitancy to chill enterprise weakened and was replaced by the view that even socially useful enterprises must pay their way and make good for damages inflicted. *See id.* Although the conditions and activities to which the *Rylands* rule is now applied vary, the conditions targeted generally have followed the "English pattern" articulated in the House of Lords. *See id.* at 549. The *Rylands* rule is currently approved by name or in principle in over 30 jurisdictions. *See id.* at 549–50 & nn.64–77.

[70] *See* Pollan, *supra* note 46, at 323; *see, e.g.*, New Jersey Dep't of Envtl. Protection v. Ventron Corp., 94 N.J. 473, 488, 468 A.2d 150, 157 (1983), *overruling* Marshall v. Welwood, 38 N.J.L. 339 (Sup. Ct. 1876) (rejecting *Rylands*).

[71] *See* RESTATEMENT (SECOND) OF TORTS §§ 519, 520 (1977).

[72] *Id.* § 520.

Like the *Rylands* rule, the Restatement rule is concerned with regulating exceptionally dangerous activities. The regulatory scheme suggested by the Restatement, however, differs somewhat from that suggested by the *Rylands* rule. Whereas the *Rylands* rule primarily focuses on the dangerousness of an activity relative to its surroundings and embodies a bright-line rule of strict liability, the Restatement considers independently a number of criteria and arguably allows a defendant to escape strict liability if the activity at issue serves the broad public interest.[73]

Because no single criterion is dispositive under the Restatement, courts applying the Restatement test must decide whether to impose strict liability on a case-by-case basis. In most cases, Restatement strict liability should apply to the generation and storage of toxic waste. The Restatement specifies that "several" of the criteria must "ordinarily" be met before the Restatement test is satisfied.[74] Hazardous waste activities normally involve all six.[75]

The first three criteria of the Restatement are concerned with the dangerousness of the activity itself. Toxic waste generation and disposal should be considered abnormally dangerous. First, toxic waste creates a high degree of risk of some harm to persons or property. Because significant risk of harm results from the seepage of toxic chemicals into ground or surface water, the escape of toxic fumes into the atmosphere, and the contamination of neighboring soil, all of these pathways must be effectively blocked throughout the life of the waste's toxicity before the risk of harm disappears; yet as much as ninety percent of the toxic waste disposed of to date lacks such a guarantee of safety.[76] Second, the harms that do result are likely to be great. Exposure to toxic waste may result in extremely debilitating illness and terminal disease. Environmentally induced cancer and disease (admittedly not limited to hazardous waste exposure) is a major public health problem, causing, according to some epidemiological studies,

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[73] Factor (f) in § 520 embodies a balancing test that weighs the "value to the community" against the danger of the activity. Because the balancing is only one of six criteria, strict liability under the Restatement could be imposed even if the social value of a dangerous activity outweighed the probability of harm; factor (f), however, reflects the American Law Institute's perception that some dangerous activities are necessary. As comment k suggests, there are towns whose "livelihood depends upon" dangerous activity. In such a situation, the American Law Institute believes it is preferable to impose the residual risk of nonnegligent conduct on the residents rather than on the dangerous activity.

[74] *See* RESTATEMENT (SECOND) OF TORTS § 520 comment f.

[75] The New Jersey courts have found the generation and disposal of toxic waste to constitute an "abnormally dangerous activity" within the meaning of the Restatement. *See* Kenney v. Scientific, Inc., 204 N.J. Super. 228, 246–50, 497 A.2d 1310, 1319–21 (Super. Ct. Law Div. 1985); New Jersey Dep't of Envtl. Protec. v. Ventron Corp., 94 N.J. 473, 491–93, 468 A.2d 150, 159–60 (1983).

[76] *See* Comment, *supra* note 1, at 798.

between seventy and ninety percent of all cancers.[77] Third, it is impossible, at reasonable expense, perfectly to contain materials that will remain dangerous for thousands of years; therefore, generators and disposers cannot eliminate the risk by the exercise of reasonable care.

The last three criteria relate the dangerousness of the activity to its surroundings and measure the social utility deriving from it. Toxic waste activity also demands strict liability under these criteria. The fourth criterion asks whether the activity is a "matter of common usage." This phrase is defined in the Restatement comments as an activity "customarily carried on by the great mass of mankind or by many people in the community."[78] Although many people may benefit indirectly from activities generating toxic waste, the mass of mankind clearly does not engage in the creation or disposal of toxic waste. The fifth criterion, inappropriateness of the activity to the place where it is carried on, is fulfilled whenever toxic waste sites are placed in residential areas.[79] Finally, although some communities are "largely devoted to the dangerous enterprise and [their] prosperity largely depends upon it,"[80] the sixth criterion would be met in many communities that presently harbor toxic waste disposal sites.

C. Causation

The third, and largest, barrier to recovery faced by the toxic waste victim today is the burden of proving causation. That burden is twofold, requiring that the victim identify both the hazardous substance that caused her injuries (medical causation) and the defendant responsible for discharging that substance (legal causation).[81] To demonstrate medical causation, a plaintiff must be able to prove that her injury resulted from exposure to a toxic waste substance rather than from the "background risk" — the unknown causes of a disease that everyone faces.[82] Unless the injury is a disease commonly linked with a specific agent (for example, asbestosis and asbestos), proving medical causation is both difficult and expensive. Demonstrating legal causation is equally difficult because dozens of generators typically store

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[77] *See id.* at 798 & n.8.

[78] RESTATEMENT (SECOND) OF TORTS § 520 comment i (1977).

[79] Many toxic waste sites are, in fact, currently located in residential areas. *See* Comment, *supra* note 1, at 798. No statistics indicate, however, whether as a general matter the residents or the waste sites were there first.

[80] RESTATEMENT (SECOND) OF TORTS § 520 comment k (1977).

[81] *See* Note, *Proving Causation in Toxic Torts Litigation*, 11 HOFSTRA L. REV. 1299, 1303–04 (1983).

[82] *See* Delgado, *Beyond* Sindell: *Relaxation of Cause-in-Fact Rules for Indeterminate Plaintiffs*, 70 CALIF. L. REV. 881, 885–87 (1982).

substances at any given waste site, and the site itself may have been owned by several successive parties.

1. Medical Causation

Medical causation in the context of toxic waste is significantly different from causation in more traditional contexts. Although proximate causation has proven an elusive and malleable concept, there is rarely any ambiguity concerning the existence of but-for causation following a paradigmatic tort. But exposure to toxic waste creates no simultaneous injury; it creates only an immediate *risk* of injury that *may* manifest itself after a long latency period. Moreover, once manifest, the injury is rarely attributable to a single toxic agent.[83] Consequently, it is typically impossible to establish a traditional cause-in-fact relationship between the injury and the particular toxic agent.

Demonstrating a causal nexus between a disease and toxic waste is possible, however, through the use of epidemiological studies.[84] An epidemiologist examines the relationship in a population between a disease and a factor (for example, exposure to a particular toxic substance or residency near a toxic waste site) and compares "the disease experiences of people exposed to the factor with those not so exposed."[85] The result of such a study is a statistical measure of a factor's relationship to the disease, known as the "attributable risk."[86] Recognizing that the statistical measure of attributable risk is the best proof of causation and is of "critical importance" to a plaintiff's recovery, some courts have been receptive to epidemiological proof[87] and have resolved evidentiary challenges to such studies in plaintiffs' favor.[88] Yet major reforms remain to be implemented before the studies can be used in court as powerful evidentiary tools.

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[83] *See* Rosenberg, *supra* note 56, at 856 (explaining that "[r]arely is any particular toxic agent the exclusive source of a given disease").

[84] Epidemiological studies often constitute the best, if not the only, proof of medical causation in tort cases. *See, e.g.*, *In re* Agent Orange, 611 F. Supp. 1223, 1231 (E.D.N.Y 1985) (describing epidemiological studies as "the only useful studies having any bearing on causation" questions involving the health effects of exposure to Agent Orange).

[85] Black & Lilienfeld, *Epidemiologic Proof in Toxic Tort Litigation*, 52 FORDHAM L. REV. 732, 750 (1984) (footnote omitted). "Although scientists do not know what causes cancer in humans or how it is caused, they do know that those exposed to certain substances appear to develop cancer more frequently than those not exposed." McElveen & Eddy, *Cancer and Toxic Substances: The Problem of Causation and the Use of Epidemiology*, 33 CLEV. ST. L. REV. 29, 35 (1985).

[86] Black & Lilienfeld, *supra* note 85, at 760.

[87] *See In re Agent Orange*, 611 F. Supp. at 1239–41; *In re* Swine Flu Immunization Prods. Liab. Litig., 508 F. Supp. 897, 907 (D. Colo. 1981).

[88] For example, some defendants have objected to the introduction of epidemiological proof as hearsay. *See* Kehm v. Proctor & Gamble Mfg. Co., 724 F.2d 613, 617 (8th Cir. 1983). Courts, however, have admitted epidemiological studies under Federal Rule of Evidence 803(8)(c) — the public records and reports exception — when such studies are conducted by government

Epidemiological studies are problematic because, by their nature, they are purely statistical. They do not purport to demonstrate that substance A caused harm to plaintiff B; rather, they demonstrate only that exposure to A created an attributable risk of X magnitude to B.[89] At the same time, courts are traditionally hostile to the use of raw statistics.[90] Plaintiffs typically must prove causation by a "preponderance of the evidence," and under the "strong version" of this rule, courts require some "particularistic" proof from the plaintiff even when statistics indicate that the probability of causation exceeds fifty percent.[91] Because no particularistic evidence exists in most toxic waste cases, the strong version of the preponderance rule would bar most toxic waste suits. Under a "weak version" of the rule, courts will refrain from directing a verdict against a plaintiff when the statistical evidence suggests a greater than fifty percent chance of causation. Even the weak version of the preponderance rule will frustrate compensation and deterrence, however, because actions will be dismissed when the excess risk attributed to the defendant is *less* than fifty percent,[92] as it commonly will be.

The gap between the probabilistic evidence available to prove medical causation and the particularistic proof of causation demanded by the common law must be eliminated through reform of the traditional causation doctrine.[93] The common law's resistance to the use of accurate statistical studies reflects a policy choice that insulates

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agencies, as most are. *See* Ellis v. International Playtex, Inc., 745 F.2d 292, 300–04 (4th Cir. 1984); *Kehm*, 724 F.2d at 618; *In re Agent Orange*, 611 F. Supp. at 1240–41. Although defendants have contended that epidemiological studies do not fall within rule 803(8)(c) because they are based on medical opinion and diagnosis rather than on factual findings, courts have refused to construe the phrase "factual findings" so narrowly. Rather, courts have focused on "trustworthiness," which obtains as long as health departments use "uniform procedures and methods . . . widely accepted by their peers." *Ellis*, 745 F.2d at 301; *accord Kehm*, 724 F.2d at 618–19 (holding that the "central inquiry" under rule 803(8)(c) is trustworthiness and admitting studies based on "procedures and methods widely accepted in the field of epidemiology").

[89] *See, e.g.*, Rosenberg, *supra* note 56, at 856–57 (concluding that epidemiological statistics can never "pinpoint the actual source of the disease afflicting any specific member of the exposed population"); Comment, *supra* note 1, at 809–10 (stating that medical scientists are unable to prove that specific environmental pollutants "directly cause" particular health effects). In addition, epidemiology is ineffective at reaching *any* conclusions when the toxicity of a substance is low or exposure is at low doses. In such cases, a huge study group is required, making it difficult to control for a single factor. *See* McElveen & Eddy, *supra* note 85, at 39–40.

[90] *See* Tribe, *Trial By Mathematics: Precision and Ritual in the Legal Process*, 84 HARV. L. REV. 1329 (1971).

[91] *See, e.g.*, Rosenberg, *supra* note 56, at 857; Hamil v. Bashline, 243 Pa. Super. 227, 233, 364 A.2d 1366, 1369 (1976).

[92] *See* Rosenberg, *supra* note 56, at 857–58.

[93] Courts should recognize that medical opinions are commonly based on probability, not certainty. "[I]f epidemiological studies are carefully performed and show material and substantial evidence of causation, such evidence should be accepted by the courts . . . ." McElveen & Eddy, *supra* note 85, at 31.

industries from liability for harms that they have almost certainly caused but that do not lend themselves to traditional forms of particularistic proof.[94]

Judicial refusal to permit verdicts based on statistical evidence has often been justified as a device for requiring the plaintiff to search for all available particularistic proof.[95] That rationale does not, however, apply to toxic waste litigation because toxic waste exposure does not lend itself to particularistic proof.[96] A second argument against verdicts based on statistical proof is that when the plaintiff adduces only statistical evidence, "the public is unable to view a verdict against the defendant as a statement about what actually happened."[97] Again, this argument does not apply as strongly to toxic waste litigation. The public is not likely to form any opinion at all about the acceptability of a verdict except in highly publicized cases such as Love Canal and Woburn. In these cases, dismissal of the plaintiff's case because of the unavailability of particularistic proof is precisely what the public would be unable to accept as a statement about what actually happened.[98]

The proof problems confronting courts in the context of hazardous waste are similar to those encountered in the diethylstilbesterol (DES) cases.[99] A DES victim could identify the cause of her injury but usually could not determine which of many potential defendants produced the drug.[100] Confronted with this situation, the California Supreme Court held in the landmark case of *Sindell v. Abbott Laboratories*[101] that instead of allowing the drug companies to escape liability altogether, each could be held liable for the proportion of the

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[94] *Cf.* Rosenberg, *supra* note 56, at 857 n.27, 858 (noting that judicial views of causation reflect the desirability of particular social policy).

[95] *See, e.g.*, Tribe, *supra* note 90, at 1349.

[96] *See* Rosenberg, *supra* note 56, at 869.

[97] Nesson, *The Evidence or the Event? On Judicial Proof and the Acceptability of Verdicts*, 98 HARV. L. REV. 1357, 1378 (1985).

[98] *Cf.* Christian Sci. Monitor, Feb. 19, 1986, at 3, col. 2 (suggesting that the public perceives that the companies involved in the toxic waste leakage at Woburn, Massachusetts were, in fact, responsible for causing significant personal injury); Loth, *Woburn, Science, and the Law*, Boston Globe, Feb. 9, 1986, (Magazine), at 1 (same).

[99] Diethylstilbesterol (DES) was a drug approved by the Food and Drug Administration from 1947–1971 for prescription to pregnant women to prevent miscarriage. It was subsequently learned that DES causes cancerous vaginal and cervical growths in the daughters of women who received the drug. *See* Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 593–94, 607 P.2d 924, 925–26, 163 Cal. Rptr. 132, 133, *cert. denied*, 449 U.S. 912 (1980).

[100] DES was produced from a common and mutually accepted formula as a fungible drug interchangeable with other brands of the product. *See Sindell*, 26 Cal. 3d at 595, 607 P.2d at 926, 163 Cal. Rptr. at 134. Thus, while a plaintiff suffering from adenocarcinoma or adenosis (the injuries associated with DES daughters) was able to prove that DES was the cause of her injuries, it was usually impossible to prove which of the dozens of drug companies marketing DES produced the actual pills her mother took 20 or more years in the past.

[101] 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132, *cert. denied*, 449 U.S. 912 (1980).

judgment represented by its share of the drug market.[102] The difficulty of proving medical causation in hazardous waste cases, however, lies not in identifying the responsible defendants, but rather in identifying which sufferers from a given disease are toxic waste victims.[103] Just as market share statistics generally suggest the causal responsibility of the defendants while failing to pinpoint any specific defendant responsible for a particular plaintiff's injuries, epidemiological studies suggest the causal responsibility of a hazardous substance while failing to separate those plaintiffs harmed by that substance from those harmed by the background risk of disease. All that such a study can establish is the *proportion* of individuals whose disease can be attributed to the hazardous substance.

As the *Sindell* court recognized, a rational judicial response to probabilistic evidence that does not identify any one defendant or victim with particularity is to apportion the liability or recovery. Thus, if a study established an attributable risk of fifty percent, the court should allow each plaintiff to recover fifty percent of her full damages rather than deny her any recovery.[104] The theory of proportional recovery is feasible, fair, and efficient.

The science of epidemiology provides a feasible means for courts to apportion recovery in each of two situations that could obtain in toxic waste personal injury litigation. The first situation, more common when the substances present at a site have been identified and their migratory pathway tracked,[105] occurs when a plaintiff is able to prove that she was exposed to a specific toxic agent from a nearby waste site. In this scenario, the appropriate epidemiological study begins with the substance to which the plaintiff was exposed, identifies a group that has been exposed to that agent, and compares the disease outcome of that group with a control group not exposed to the agent under study.[106] The study would yield statistics indicating what per-

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[102] *See* 26 Cal. 3d at 612, 607 P.2d at 937, 163 Cal. Rptr. at 145.

[103] *See* Delgado, *supra* note 82, at 882–83 (describing this situation as the problem of the "indeterminate plaintiff").

[104] *See* Landes & Posner, *Causation in Tort Law: An Economic Approach*, 12 J. LEGAL STUD. 109, 123–24 (1983). Likewise, if the statistics show that only 40% of those with plaintiff's cancer developed the disease from exposure to hazardous waste, she may recover 40% of her damages without any danger of overdeterring the defendant. Under a theory of proportional recovery, the usual requirement that a plaintiff prove that the defendant more likely than not caused her injury is unnecessary. That rule was intended solely to prevent overdeterrence when a plaintiff could recover only all or none of her damages.

[105] Even at many of the most publicized sites, however, it is not generally known what hazardous substances are present, in what quantities each is present, or the path along which they may be escaping. *See* Comment, *supra* note 1, at 818–19.

[106] This type of study is known as a "prospective study." Prospective studies can also be conducted by taking an existing group and going back in time to their exposure to the agent under study. This analysis is known as a "noncurrent" or "historical prospective" study. *See* McElvcen & Eddy, *supra* note 85, at 38.

centage of those exposed to a particular substance developed a particular disease as a result of that exposure. The second situation occurs when a plaintiff, because of the passage of time, cannot identify the substance to which she was exposed and may not even be able to show that she was, in fact, exposed. The appropriate epidemiological study in this case would be a "descriptive" epidemiological study.[107] These studies commonly compare geographical locations and indicate what percentage of those individuals with a particular disease, living within the area of the site, can attribute the harm to their proximity to the toxic waste site.[108]

Proportional recovery is also fair and efficient. Because toxic waste defendants will pay for approximately the proportion of disease attributable to the substance for which they are each responsible, the resulting cost internalization is intuitively just and will lead to the correct amount of deterrence.[109] Plaintiffs, in contrast, arguably will not all receive exactly the level of compensation they "deserve." Because epidemiology cannot distinguish those whose cancer was actually caused by the exposure to toxic waste from those harmed by the background risk, the former group will recover only a percentage of what they "deserve," whereas the latter will receive a windfall. This appearance of inequity, however, results from the assumption that the actual level of tort compensation can be measured against an ideal, "true" level of tort compensation.[110] In fact, it is impossible to tell which victims fall into which group. Under proportional recovery, each plaintiff receives precisely the amount of compensation *available information* suggests she should receive. Proportional recovery based on the best available information is not unfair, and at worst, is superior to the current alternative of no recovery at all.

The advent of proportional recovery would dramatically reduce the barrier of proving medical causation, but it would not eliminate

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[107] *See* G. FRIEDMAN, PRIMER OF EPIDEMIOLOGY 58–82 (2d ed. 1980). Although these studies fall short of proving causation to a medical certainty, they do provide indications of etiology. *See id.* at 59. The indications provided should be sufficient for the purposes of trial. Although error can occur because of failure, for example, to account for a relevant variable, the defendants and their experts will have an opportunity during the adversarial process to expose flaws in the study or to introduce a study of their own for the jury's consideration.

[108] The results of a descriptive study that employs "proximity to a waste site" as a variable will not yield results that are as precise, or as profitable from the plaintiff's perspective, as the results of a study that is able to focus on those with known exposure to a known substance.

[109] *See* Delgado, *supra* note 82, at 893–94. For further discussion, *see* note 57 above and accompanying text. The appropriate amount of deterrence will result, however, only if all victims of a given release sue.

[110] Even in the idealized world of "true" deserved compensation, the described result is less unfair than it appears at first glance because environmental factors are not the sole contributing factor in the development of latent disease. A person's susceptibility to disease also plays a role. *See* G. FRIEDMAN, *supra* note 107, at 3–5.

this obstacle. The *cost* of proving medical causation remains a substantial barrier to many plaintiffs.[111] Because the issue is complex, litigating medical causation may add days to an already lengthy trial. Also, the plaintiff will have to pay for extensive discovery, epidemiological and toxicological studies, and expert witness testimony.[112] These fiscal realities have led several commentators to conclude that the costs associated with proving medical causation will bar many toxic waste actions in which the anticipated damage award is not extremely high.[113] Moreover, latent injury toxic waste suits are unlikely candidates for spreading transaction costs through the procedural mechanism of a class action.[114] Because even those individuals exposed to the same chemical leaking from a single site will have been exposed at different times and with varying severity, it would be difficult to certify such a class.[115] And because their injuries will manifest themselves over a long period of time, it is unlikely that large numbers of victims would ever be in a position to bring suit at one time.[116] The burden of paying for and conducting the necessary studies, therefore, rests with government agencies such as the Envi-

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[111] *See* Comment, *supra* note 1, at 824.

[112] *See id.*

[113] *See, e.g.*, CERCLA REPORT, *supra* note 4, at 70–71 (concluding that proof of medical causation will inevitably require "large amounts of sophisticated medical and scientific testimony" and that the resulting cost is "an almost overwhelming barrier to recovery, particularly in smaller cases"); Comment, *supra* note 2, at 853 (suggesting that only the government may have the resources to demonstrate causation in cases in which latent toxic injury is involved).

[114] The advisory committee responsible for promulgating the amended Federal Rule of Civil Procedure 23 specifically noted that a "'mass accident' resulting in injuries to numerous persons is ordinarily not appropriate for a class action." FED. R. CIV. P. 23 advisory committee note. The committee feared that differences in damages and defenses to liability would always predominate. *See id.* Since the rules were promulgated in 1966, however, most commentators have criticized the advisory committee's interpretation. *See, e.g.*, 3 H. NEWBERG, NEWBERG ON CLASS ACTIONS §§ 17.05–.06 (2d ed. 1985); C. WRIGHT & A. MILLER, FEDERAL PRACTICE AND PROCEDURE: CIVIL § 1783 (1972 & Supp. 1985); Rosenberg, *supra* note 56, at 908–16. Moreover, several courts have certified mass accident class actions. *See In re* "Agent Orange" Prod. Liab. Litig., 100 F.R.D. 718 (E.D.N.Y. 1983), *mandamus denied sub nom. In re* Diamond Shamrock Chem. Co., 725 F.2d 858 (2d Cir.), *cert. denied*, 104 S. Ct. 1417 (1984); *In re* Federal Skywalk Cases, 95 F.R.D. 483 (W.D. Mo. 1982); Bentkowski v. Marfuerza Compania Maritima, S.A., 70 F.R.D. 401 (E.D. Pa. 1976).

[115] *See, e.g.*, Note, *Allocating the Costs of Hazardous Waste Disposal*, 94 HARV. L. REV. 584, 592 (1981) (noting that "class certification is usually not available when injuries to different members of the class arise at different times and are of widely varying severity"); Askey v. Occidental Chem. Corp., 102 A.D.2d 130, 134, 477 N.Y.S.2d 242, 246 (1984) (denying class certification to toxic waste exposure victims with manifest injuries in part because common questions of law or fact did not predominate and because the representatives' claims were not typical).

[116] *See, e.g.*, *Askey*, 102 A.D.2d at 134, 477 N.Y.S.2d at 246 (denying class certification to toxic waste exposure victims with manifest injuries in part because the class was not so large that it made joinder impracticable).

ronmental Protection Agency and the Department of Health and Human Services, or groups of potential plaintiffs living near a site who are able to recognize their common interest.[117]

2. *Legal Causation*

Once the plaintiff has successfully identified a particular toxic agent as the cause of her injuries, she must also identify a specific defendant who can be held responsible for her exposure to that agent. Likely targets include the owner or owners of the site and the generators of the toxic waste. During the latency period of the disease, however, the site may have changed ownership several times,[118] and any given site may contain wastes from dozens of generators.[119] Because of tort rules regulating both the liability of vendors and vendees of property and the liability of generators vis-a-vis their independent contractors, not all disposers and generators are suitable targets for liability.[120] Even when suitable targets exist, the burden remains on

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[117] Not only would proportional recovery fail to eliminate the expense of epidemiological studies, it would also not eliminate the nonmedical causation barriers to recovery associated with latent injury, such as statutes of limitations and disappearing defendants. In an effort to circumvent these problems, commentators have suggested an additional reform in which the present risk of future disease would itself be recognized as an actionable, legally cognizable harm. *See, e.g.*, Delgado, *supra* note 82, at 896; Comment, *supra* note 1, at 848–49; Comment, *Increased Risk of Disease from Hazardous Waste: A Proposal for Judicial Relief*, 60 WASH. L. REV. 635, 643–48 (1985). At present, mere potentiality or threat of harm is not sufficient to sustain a common law cause of action for personal injury. *See, e.g.*, Mink v. University of Chicago, 460 F. Supp. 713, 716 n.2 (N.D. Ill. 1978); PROSSER AND KEETON, *supra* note 11, § 30, at 165. *But cf.* Schwegel v. Goldberg, 209 Pa. Super. 280, 288, 228 A.2d 405, 409 (1967) (holding that the risk of future epileptic seizures may be considered in fixing plaintiff's damages).

Such a reform, however, would not be economically feasible because in most cases the awards would prove too low to merit the extensive costs required to litigate the claim. Full recovery for present risk would create unfairness and a danger of overdeterrence. Courts could impose liability only in proportion to the probability of future causation assigned to the excess disease risk created by the defendant. Unless the plaintiff has been exposed extensively to an extremely toxic agent, the excess disease risk will be low.

Thus, actions for at-risk injury must be brought as a class action in order to be economically viable. A class action is more likely to attract the participation of all potential plaintiffs and would therefore make deterrence more effective. *See* Rosenberg, *supra* note 56, at 908. Moreover, the costs associated with determining compensation for each individual claimant could be diminished by "damage scheduling" — awarding compensation "on the basis of characteristics of a class of which the individual was a member." *Id.* at 917. The difficulty is that courts have been exceedingly reluctant to certify classes of tort victims claiming personal injury. *See supra* note 114. Moreover, it is difficult to identify an at-risk class more specifically than those persons who happen to fall within a geographic area — a degree of specificity that has been held insufficient for class certification. *See* Askey v. Occidental Chem. Corp., 102 A.D.2d 130, 135–39, 477 N.Y.S.2d 242, 246–48 (App. Div. 1984).

[118] *See* CERCLA REPORT, *supra* note 4, at 70.

[119] *See* DiBenedetto, *supra* note 6, at 615; CERCLA REPORT, *supra* note 4, at 70.

[120] Generally, the vendor who was responsible for the hazardous condition at the site will remain liable until the vendee discovers the hazard and has a reasonable opportunity to rectify

the plaintiff to identify one as the source of the substance that caused her injury.[121] The scarcity of records prior to the passage of the Resource Conservation and Recovery Act[122] in 1976 and the generic nature of many of the toxic substances make identifying the source of a toxic substance an extremely difficult burden to meet. Thus, courts must adopt some theory of joint liability if the tort system is to serve its compensatory and deterrence functions.[123]

(a) Alternative Liability. — Although the inability to pinpoint a specific defendant is not unique to toxic waste situations (the problem is often confronted by DES[124] and asbestos plaintiffs), none of the liability theories previously adopted by courts is directly applicable to toxic waste.[125] The most widely accepted theory of joint liability is a burden shifting theory known as alternative liability.[126] The theory holds that when the conduct of two or more actors is tortious, but it is uncertain which defendant caused the particular injury at issue, the

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it. *See* RESTATEMENT (SECOND) OF TORTS § 373(2) (1965). As for generators (frequently the sole surviving "deep pocket"), toxic waste plaintiffs must overcome the commonly stated rule that the "employer [the generator] of an independent contractor [the disposal firm] is not liable for physical harm caused to another by an act or omission of the contractor or his servants." RESTATEMENT (SECOND) OF TORTS § 409 (1965).

There are several exceptions to the independent contractor rule, however, and courts have interpreted them liberally. First, an employer is under a general duty to exercise reasonable care in selecting a contractor to do work that will involve risk unless it is carefully done. *See* RESTATEMENT (SECOND) OF TORTS § 411. Second, an employer may not contract out of liability if the work to be performed by the contractor is work dangerous in the absence of special precautions. *See id.* § 416; *see also* Ewell v. Petro Processors of La., Inc., 364 So. 2d 604, 606–07 (La. Ct. App. 1978) (holding that defendant may not contract out of liability for work "intrinsically dangerous unless proper precautions are taken to avoid injury"), *cert. denied*, 366 So. 2d 575 (La. 1979). Finally, an employer may not contract out of liability for work involving an abnormally dangerous activity. *See* Kenney v. Scientific, Inc., 204 N.J. Super. 228, 497 A.2d 1310 (Super. Ct. Law Div. 1985); RESTATEMENT (SECOND) OF TORTS § 427A (1965). In sum, the very number and scope of the exceptions "may be sufficient to cast doubt upon the validity of the rule." PROSSER AND KEETON, *supra* note 11, § 71, at 510 (footnote omitted).

[121] *Cf.* Gray v. United States, 445 F. Supp. 337, 338 (S.D. Tex. 1978) ("It is a fundamental principle of products liability law that a plaintiff must prove . . . that a defendant manufacturer actually made the particular product which caused injury.").

[122] 42 U.S.C. §§ 6901–6987 (1982).

[123] *See* Grad, *supra* note 4, at 139.

[124] *See supra* notes 99–100.

[125] The "concert-of-action" theory, for example, requires that defendants act pursuant to a common plan or design to commit a tortious act. *See* RESTATEMENT (SECOND) OF TORTS § 876 (1977). Except in a case of "midnight dumpings," which might constitute a trespass, it would be difficult to prove that generators or disposers "planned" to commit a tort. *But cf.* Abel v. Eli Lilly & Co., 94 Mich. App. 59, 289 N.W.2d 20 (1979) (finding that the plaintiff had stated a cause of action in alleging "concert of action" by DES manufacturers for distributing the drug without adequate tests or warnings), *modified*, 418 Mich. 311, 343 N.W.2d 164, *cert. denied*, 105 S. Ct. 123 (1984).

[126] The theory was first expounded in Summers v. Tice, 33 Cal. 2d 80, 199 P.2d 1 (1948), and was later embodied in the RESTATEMENT (SECOND) OF TORTS § 433B(3) (1965).

burden is upon each defendant to exculpate herself.[127] A version of the alternative liability doctrine was relied upon in *Sindell*, in which joint liability was imposed on defendants despite the fact that any of over 200 companies might have been responsible for any given plaintiff's injury, provided that plaintiffs joined a substantial percentage of the DES market.[128]

Neither the *Summers v. Tice* nor the *Sindell* version of alternative liability justifies joint liability in the context of toxic waste. Alternative liability is inapplicable because its justification for shifting the burden of proof depends upon the fact that all of the defendants were negligent[129] and therefore could have avoided the hardship of having liability imposed upon them by exercising due care.[130] Not all generators and disposers are negligent. *Sindell*'s market share liability, in turn, substituted known causal responsibility[131] for negligence as its justification for imposing joint liability. Although a breakthrough, market share liability doctrine is not applicable in the context of toxic waste because known causal responsibility is absent. DES presents the *easiest* case for apportioning liability without direct proof of causation. Because every DES defendant in fact caused some injury,[132] it would not be unjust to hold each of them liable without direct proof of causation in the particular instance. In the case of toxic waste litigation, however, there is no reason to assume that all the generators and owners involved with a site were actually responsible for anyone's injury.[133]

In addition, it is difficult to transfer the concept of "market" from DES to toxic waste. If generators and owners are considered part of

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[127] *See* RESTATEMENT (SECOND) OF TORTS § 433B(3) (1965).

[128] *See* Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 611–13, 607 P.2d 924, 937, 163 Cal. Rptr. 132, 144–46, *cert. denied*, 449 U.S. 912 (1980). For discussion of the factual background of *Sindell*, see notes 99–100 above.

[129] In Summers v. Tice, 33 Cal. 2d 80, 199 P.2d 1 (1948), the seminal case for alternative liability, *see supra* note 126, two hunters shot in the direction of the plaintiff and it was impossible for the plaintiff to prove which of the two had actually hit him. Both hunters, however, were negligent in their conduct towards the innocent plaintiff and thus it was not unfair to hold both liable.

[130] *See* Landes & Posner, *supra* note 104, at 124–25.

[131] *See Sindell*, 26 Cal. 3d at 612, 607 P.2d at 937, 163 Cal. Rptr. at 145. Because DES was made from a single accepted formula, and has positively been identified with adenocarcinoma and adenosis, courts are able to conclude with near certainty that a defendant who marketed 10% of the DES was the cause of approximately 10% of the resulting harm.

[132] *See supra* note 131.

[133] As the argument below demonstrates, *see infra* pp. 1627–29, the fact that not all defendants actually caused an injury in the narrow medical sense does not mean that each cannot be held legally liable according to legal causation doctrine. It does mean, however, that they cannot be held liable based on a theory of market share liability. The *Sindell* court justified the fairness of market share liability by pointing out that "[u]nder this approach, each manufacturer's liability would approximate its responsibility for the injuries caused by its own products." 26 Cal. 3d at 612, 607 P.2d at 937, 163 Cal. Rptr. at 145.

the same "market," it might be impossible to join a "substantial percentage" of the market, as *Sindell* market share liability requires.[134] In the DES cases, moreover, all the defendants were engaged in an identical activity, creating a qualitatively identical risk.[135] Thus, their market share could be calculated simply by referring to sales records. In contrast, all who contribute to the danger of a toxic waste site do not create a qualitatively identical risk. Some generators' wastes are more dangerous than others. Some owners are more careful than others. Without identical qualitative risk creation, it is impossible to assign any given defendant a market "share." Therefore, what remains as the most important aspect of *Sindell* for toxic waste litigation is the court's recognition of the generalized harms caused by products and their wastes in our "contemporary complex industrialized society" and the court's willingness to fashion a new remedy to meet the changing realities.[136] If the common law is to provide compensation to victims of toxic waste, some new doctrine must emerge.

(b) Enterprise Liability. — The most promising doctrine would impose liability on the theory that each toxic waste site is an "enterprise" and must be forced to bear all the social costs it creates if it is to be socially justified. The theory of enterprise liability provides a reasonable basis for imposing joint liability on all disposers and generators that directly benefited from a toxic waste site from which toxic agents have leaked.

"Enterprise," or "industry-wide," liability in its narrow sense was adopted by a federal district court in *Hall v. E.I. Du Pont De Nemours & Co.*[137] In *Hall*, the court was confronted with two of eighteen separate accidents scattered across the nation in which children were injured by blasting caps. In most instances, the manufacturer of the cap was unknown to the plaintiffs. The court held that each member of the blasting cap industry could be held liable on the theory that each contributed to the failure of the trade association to set adequate industry-wide safeguards and warnings. Because the blasting cap

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[134] *See* Note, *supra* note 81, at 1323–24. Unlike a DES plaintiff, who needs to join only two or three manufacturers to obtain a substantial percentage of the market, a toxic waste victim might need to join dozens of generators. It must be noted, however, that market share liability need not be applied exactly in accordance with *Sindell*. Commentators have criticized the *Sindell* court for failing to follow the logic of its own reasoning when it held that a substantial percentage of the market must be joined before market share liability applies. Each defendant is held liable only for the proportion of the judgment represented by its share of the market, and defendant's share of the market remains the same whether 100% or 10% of the market has been joined. *See* Robinson, *Multiple Causation in Tort Law: Reflections on the* DES *Cases*, 68 VA. L. REV. 713, 725 (1982).

[135] *See* Robinson, *supra* note 134, at 750; *see also* PROSSER AND KEETON, *supra* note 11, § 104, at 714 (describing "injury or illness occasioned by a fungible product . . . made by all of the defendants" as a requirement for market share liability).

[136] *See Sindell*, 26 Cal. 3d at 610, 607 P.2d at 936, 163 Cal. Rptr. at 144.

[137] 345 F. Supp. 353, 370–81 (E.D.N.Y. 1972).

industry has few members and a trade association to which all belong, interpretations of *Hall*'s enterprise liability have focused on the peculiar fact situation and have stressed that the doctrine is appropriate only for an industry with relatively few participants, all of whom apply the same safety standards.[138] Thus, enterprise liability, as interpreted by the commentators on *Hall*, would appear to have no application in the toxic waste context.

The policies behind the court's decision in *Hall*, however, are not so limited in application as *Hall*'s interpreters have argued. The *Hall* court believed it was approprate to consider enterprise liability *whenever* the "sole feasible way of anticipating costs or damages and devising practical remedies is to consider the activities of a group."[139] In order to establish that a group of defendants should be held jointly liable on enterprise liability grounds, the plaintiff's burden is to demonstrate only the defendants' joint awareness of the risks at issue and their joint capacity to reduce those risks.[140] The risk at a toxic waste site is that members of the public will be injured by exposure to the hazardous substances in the event of a leak. Those involved in the industry of generating and disposing of toxic wastes at a particular site[141] are jointly aware of this risk and capable of reducing it. Site owners can influence the types of waste generated by refusing to dispose of the extremely toxic substances of a particular generator; generators can bring pressure to bear on unsafe owners by threatening to take their business to a more responsible disposer.

Not only is enterprise liability for toxic waste sites supported by the *Hall* court's reasoning, but it also accords with compensatory

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[138] *See Sindell*, 26 Cal. 3d at 607–10, 607 P.2d at 933–35, 163 Cal. Rptr. at 141–43; *see also* Starling v. Seaboard Coastline R.R., 533 F. Supp. 183, 187 (S.D. Ga. 1982) (interpreting enterprise liability to provide for joint liability only when an "industrywide standard of safety" is itself the cause of plaintiff's injury).

[139] *Hall*, 345 F. Supp. at 378.

[140] *See id.*

[141] The *Hall* court observed that enterprise liability was *more* appropriate to an industry with a small number of members. *See id.* at 378. The entire toxic waste industry, including all generators (hundreds of manufacturers of thousands of products) and disposers, certainly does not consist of a small number of firms. More importantly, however, a plaintiff would have difficulty demonstrating that the entire industry has joint capacity to reduce risks at any given site. Thus, the "enterprise" should be defined as all generators and disposers associated with a particular site, that is, those collectively responsible for the hazard the plaintiff faces. *See* CERCLA REPORT, *supra* note 4, at 47. Admittedly, the number of firms in the enterprise so defined still might not be small, but a plaintiff would be able to make a good case that those feeding and operating a single site have joint awareness of the risks and joint capacity to reduce them. At the very least, it is more accurate to conceive of a site as an enterprise for the purposes of enterprise liability than to conceive of it as a market for market share liability purposes. The justification for enterprise liability is the defendants' joint capacity to reduce the risk, which is applicable in the context of toxic waste. The justification for the imposition of market share liability is joint production of a qualitatively identical risk, which does not apply in this context.

ideals, basic notions of fairness, and theories of market deterrence. Enterprise liability expresses the compensatory ideal that "tort law can relieve the suffering of individual victims by spreading those losses through the mechanism of the price system or through liability insurance."[142] Moreover, it is fair that the persons who benefit from a good or service generally should pay for the entire cost of receiving that benefit. And finally, by compelling those who benefit from the sale of a good or service to internalize the entire cost of receiving the benefit, socially wasteful enterprises are deterred.[143]

A remaining issue is how to apportion liability under enterprise liability. The standard common law rule dictates that all persons who join in the commission of a tort are jointly and severally liable for the entire harm.[144] There is no reason why this rule should not apply to enterprise liability for hazardous waste disposers and generators.[145] Because courts generally do not apportion the damages awarded, an equitable argument could be made that it is unfair to force the deepest pocket to bear the full cost of an injury it may not have directly caused. Moreover, it could be argued that the threat of joint and several liability will over-deter large disposers and generators.

The fear of crushing liability, however, is probably unwarranted. Disposers and generators have the power to mitigate the inequities by arranging ex ante to distribute the risk of liability among themselves as they deem appropriate.[146] They can, and will, execute indemnity contracts[147] that predetermine the extent of liability for each participant in the enterprise. Of course, disposers and generators will not be able rationally to order their past conduct and liability; however, the deep pocket forced to pay the entire judgment often retains the remedy of contribution even in the absence of indemnity contracts.[148]

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[142] Sugarman, *Doing Away with Tort Law*, 73 CALIF. L. REV. 555, 591 (1985) (footnote omitted). For further discussion, see p. 1613 above.

[143] *See* Owen, *Deterrence and Desert in Tort: A Comment*, 73 CALIF. L. REV. 665, 670 (1985). For further discussion, see p. 1613 above. It is possible, of course, that courts could force plaintiffs, rather than disposers and generators, to internalize the costs of living near a toxic waste site. Such a course might also deter future harm by inducing some plaintiffs to move; however, it would be neither as effective nor as efficient in preventing future harm as forcing disposers and generators to internalize the costs of toxic waste. Liability should always be placed on the cheapest cost avoider — the party in the best position to prevent future harm at the lowest social cost.

[144] *See* RESTATEMENT (SECOND) OF TORTS § 875 (1977).

[145] The alternative would be for the court to apportion damages in loose proportion to the benefit received by each defendant from engaging in the enterprise.

[146] Because strict products liability under Restatement § 402A allows recovery in full from any of the defendants, the manufacturers, distributors, and retailers of products are also forced ex ante to distribute the risks among themselves.

[147] *See* RESTATEMENT (SECOND) OF TORTS § 886B (1977).

[148] Indemnity and contribution are distinct, even exclusive, rights. Thus, when one tortfeasor has a right of indemnity against another, neither has a right of contribution. *See* RESTATEMENT (SECOND) OF TORTS § 886A(4) (1977).

The Restatement provides for a broad right of contribution in favor of a tortfeasor who has paid more than her equitable share.[149]

A second response to the fear of overdeterrence is that slight overdeterrence of deep pocket disposers and generators will actually reinforce the goals served by imposing waste site enterprise liability. Because a victim need find only one deep pocket to recover her full judgment, compensation will be assured and the risk of insolvent tortfeasors will be borne by the enterprise responsible for the injury.[150] Furthermore, the threat of joint and several liability will be an extra incentive upon the deep pockets — likely to be the largest disposers and generators — to work affirmatively to reduce health risks at a site and to influence the behavior of other parties contributing to the risk.[151]

D. Conclusion

The traditional doctrines of common law torts present insurmountable barriers to latent injury victims of toxic waste exposure who seek compensation through the tort system. When victims cannot obtain compensation, inequities and inefficiencies result from the concentration of loss on innocent individuals and a diminished general deterrence of socially undesirable activity. At present, toxic waste generators and site owners are aware that traditional tort doctrine will bar many suits, and consequently they know that it is extremely unlikely that they will be subject to liability. Thus, they fail to internalize the social costs resulting from their activity. Although disposing of toxic wastes properly for the first time is the cheapest alternative, the large number of improperly managed sites indicates that the disposers believe their out-of-pocket costs for improper disposal plus anticipated liability are less than avoidance costs.[152]

The analysis of this Part makes clear what changes in the area of toxic waste personal injury litigation will be necessary if the tort system is to serve its traditional functions. Statutes of limitations must employ an expanded discovery rule, and legislatures must be convinced not to impose statutes of repose in the toxic waste context. Strict liability must become the rule for toxic waste. Courts must

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[149] *See* RESTATEMENT (SECOND) OF TORTS § 886A (1977). The right to contribution applies to all joint tortfeasors. It is not necessary that they have acted in concert or even that they be joined as defendants in the suit. *See id.* comment b.

[150] Unlike the plaintiff, the defendants will actually be able to guard against the risk of insolvency. A deep pocket owner, for example, that is fearful of a generator's solvency in the future can require, as a condition of receiving the waste, a contribution up front to insure against the possibility.

[151] *See supra* p. 1628.

[152] *See* Note, *supra* note 115, at 586.

become more receptive to statistical proof and allow proportional recovery. And, finally, enterprise liability must be adopted.

The analysis of this Part also makes clear the significance of the reforms needed to make the tort system serve its traditional functions in toxic waste personal injury litigation. The ability of courts, even those so inclined, to implement these reforms will be severely tested. It is, therefore, appropriate to consider more seriously the possibility for administrative compensation and regulatory deterrence in the context of toxic waste personal injury. Ironically, the fate of legislative remedies may depend, in part, on the prospects for recovery at common law. Only after the barriers guarding employers from liability began to break down did a political consensus emerge in support of workmen's compensation. Because administrative compensation of toxic waste victims would be very costly, a similar political consensus might be necessary to make it a reality.

X. Administrative Compensation

A. Introduction

The common law of toxic torts places formidable obstacles in the path of a plaintiff who seeks to recover for personal injuries.[1] These obstacles make compensation through litigation a notoriously inefficient process. The amount of compensation provided to injured parties is dwarfed by the transaction costs involved.[2] Moreover, those resources that do reach victims[3] tend to be distributed in a haphazard manner. The few plaintiffs who eventually prevail receive generous jury awards, whereas a large number of perhaps equally deserving victims receive nothing.[4] A federal program of administrative compensation could rectify many of these inefficiencies and inequities by focusing primarily on the provision of adequate relief to victims and

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[1] *See generally supra* Part IX.

[2] *See* J. Kakalik, P. Ebener, W. Felstiner, G. Haggstrom & M. Shanley, Variation in Asbestos Litigation Compensation and Expenses at xii–xix (Rand Corp. 1984) (concluding that litigation expenses consume roughly 63% of expenditures in asbestos trials, leaving only 37% for victim aid); *see also In re* "Agent Orange" Prod. Liab. Litig., 597 F. Supp. 740, 842 (E.D.N.Y. 1984) ("If much of a recovery will go to attorneys and experts rather than to those injured, then traditional tort remedies may be so ineffective as to put in doubt their utility in particular types of cases.").

[3] The uncertain nature of causation makes use of the term "victim" problematic. As used here, the term "victim" means one who has been exposed to toxic waste and who later develops a disease that *may* be attributable to such exposure, regardless of whether exposure was the cause-in-fact of the disease.

[4] For example, those who were "fortunate" enough to have been exposed to asbestos — a toxin that leaves telltale traces in its victims — have been relatively successful under the common law, albeit only after prolonged court battles. Those exposed to toxins that do not leave such traces face a more difficult task when they seek compensation.

only secondarily — if at all — on the identification and punishment of responsible parties.

Administrative compensation schemes have emerged in other areas in which tort litigation was felt to be an inadequate means of dispute resolution. For example, the failure of the common law to provide a swift or certain remedy for laborers injured on the job spurred the creation of a system of workers' compensation.[5] Workers' compensation had three major goals: guaranteeing those injured in industrial accidents at least a subsistence level of compensation; forcing manufacturers to internalize the social cost of workplace injuries; and avoiding lengthy, costly, and uncertain litigation.[6] The desire to achieve analogous goals in the area of hazardous waste litigation may make administrative compensation a preferable alternative to reforms of the common law tort system.

This Part focuses on the compensation of individuals who are exposed to releases from toxic waste generation and storage facilities. The discussion, however, has broader implications. Administrative compensation could be extended to individuals who are exposed to toxic substances through employment[7] or through the consumer product market.[8] Indeed, some have argued that given the difficulty of determining which individuals are the victims of exposure-related (as opposed to natural) disease, no principled distinction exists between toxic exposure compensation and a broader program of national health insurance for all chronic disease victims.[9] Although there is some appeal to the proposition that disease victims should be compensated based on need rather than on cause of injury, the argument for toxic exposure victim compensation rests on narrower premises. Discrete, identifiable segments of the population have an artificially high risk of developing chronic disease and therefore have suffered a real in-

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[5] The historical development of workers' compensation is summarized in W. KEETON, D. DOBBS, R. KEETON & D. OWEN, PROSSER AND KEETON ON THE LAW OF TORTS § 80, at 572–80 (5th ed. 1984) [hereinafter cited as PROSSER AND KEETON]. For a description of elements common to many workers' compensation programs, see 1 A. LARSON, THE LAW OF WORKMEN'S COMPENSATION § 1.10 (1952).

[6] *See* 1 A. LARSON, *supra* note 5, § 2.20, at 7 (noting that the philosophy of workers' compensation is to provide, "in the most efficient, most dignified, and most certain form, financial and medical benefits which an enlightened community would feel obliged to provide in any case . . . [and to] allocat[e] the burden of these payments to the most appropriate source").

[7] For a discussion of the difficulties facing victims of occupational disease under the workers' compensation system, see Note, *Compensating Victims of Occupational Disease*, 93 HARV. L. REV. 916 (1980).

[8] *See, e.g.*, Robinson, *Multiple Causation in Tort Law: Reflections on the* DES *Cases*, 68 VA. L. REV. 713 (1982) (discussing issues arising from consumer exposure to DES).

[9] *See* Kinsley, *Fate and Lawsuits: Litigation Doesn't Work. How about Socialism?*, NEW REPUBLIC, June 14, 1980, at 20, 24 ("The law is indifferent to any sufferer whose cancer was not caused by [exposure to harmful drugs], thus placing great moral and financial weight on a distinction that science cannot make.").

jury.[10] All exposed individuals must live in fear of, and some will eventually die from, exposure-related diseases. These victims are involuntary participants in a game of toxic-exposure roulette, and some of them are bound to lose. Thus, despite the difficulties of determining precisely which exposure victims suffer from exposure-related injuries, the artificial risks imposed on discrete segments of the population are a powerful justification for compensation.

The remainder of this Part will examine possible methods of structuring an administrative compensation system, drawing on both preexisting proposals[11] and independent analysis. Under an administrative program, exposed individuals would file claims for compensation with a government agency, rather than filing complaints against waste generators in court.[12] Claimants would bear the burden of establishing their eligibility for the program.[13] The agency would then determine the appropriate amounts to be awarded,[14] and successful claimants would recover from either the government or the party

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[10] The risks faced by these individuals thus differ from the risks faced by those who would be the beneficiaries of national health insurance. National health insurance would essentially shift the background risk of disease, which threatens everyone, from individual victims to society in general. A toxic exposure compensation scheme, on the other hand, would shift only artificially imposed and unevenly distributed risk. Artificially imposed risks that are fairly evenly distributed (for example, the health risk posed by air pollution) do not present as strong a case for compensation, because a large segment of the population both contributes to the problem and bears the excess risk. In moral terms, compensation is not required because the risk imposed is reciprocal. In economic terms, the transaction costs of determining who suffers from pollution-related disease are prohibitive. Private health insurance is likely to be a more efficient method of spreading these risks than is administrative compensation.

[11] Among the more elaborate proposals are SUPERFUND SECTION 301(E) STUDY GROUP, INJURIES AND DAMAGES FOR HAZARDOUS WASTES — ANALYSIS AND IMPROVEMENT OF LEGAL REMEDIES (Comm. Print 1982) [hereinafter cited as CERCLA STUDY]; KEYSTONE CENTER, POTENTIAL APPROACHES FOR TOXIC EXPOSURE COMPENSATION: A REPORT ON THE CONCLUSIONS OF A KEYSTONE CENTER POLICY DIALOGUE (1985) [hereinafter cited as KEYSTONE PROPOSAL]; Soble, *A Proposal for the Administrative Compensation of Victims of Toxic Substance Pollution: A Model Act*, 14 HARV. J. ON LEGIS. 683 (1977); Trauberman, *Statutory Reform of "Toxic Torts": Relieving Legal, Scientific, and Economic Burdens on the Chemical Victim*, 7 HARV. ENVTL. L. REV. 177 (1983).

[12] Claimants would most likely become eligible for compensation only after they had developed diseases that might be attributable to exposure. Alternatively, claimants could receive compensation immediately after exposure. *See infra* pp. 1651–52.

[13] Criteria for establishing eligibility requirements are discussed below at pp. 1637–44. The agency would presumably follow some quasi-judicial procedure in order to determine whether claims were meritorious. One advantage of administrative compensation is that factual disputes could be resolved by agency experts, who would be better able to understand complex scientific evidence than would a lay jury. Moreover, the agency could resolve such issues in unified proceedings for all of the individuals exposed at a given site, so that victims would no longer be forced to litigate these issues individually and at great expense. The ability of the tort system to accomplish this result through procedural devices such as class actions is unclear. *See supra* Part IX pp. 1623–24.

[14] *See infra* pp. 1645–48.

responsible for the hazardous waste release.[15] The following three Sections discuss three interrelated problems: determining eligibility, awarding damages, and financing the administrative fund.

B. Causation: The Key to Structuring Eligibility

In order to remain within its proper scope, a compensation system for toxic exposure must distinguish eligible exposure victims from the sufferers of natural disease. The common law system employs two major screening mechanisms to identify eligible parties: in order to succeed, plaintiffs must show "legal causation" and "medical causation."[16] Together, these two requirements may prevent the vast majority of victims from recovering in tort. An administrative compensation system could respond to this problem by eliminating the legal causation requirement and by relaxing the medical causation requirement.

Proof of legal causation is impossible if a victim cannot identify which of many possible defendants is responsible for producing the waste to which she was exposed. Absent such identification, courts traditionally have not assessed tort liability against any waste handler; the tort system therefore has provided no compensation to the victim. A major advantage of an administrative system is that it would allow the victim to recover directly from a compensation fund, regardless of whether the responsible waste handler could be identified. Such a system would remove the legal causation hurdle from the victim's path.[17]

The difficulties created by long latency periods and uncertain medical causation will not be eliminated so easily; these problems will present novel challenges for any toxic exposure compensation system. Identifying individuals who have exposure-related disease is inherently more complicated than identifying the victims of typical industrial accidents. Ordinarily, the victim of an industrial accident has little trouble showing that her injury is "work-related": the causal link to employment is obvious, and the injury manifests itself immediately.[18] By contrast, the only "injury" that generally occurs at the time of toxic exposure is an increased risk of developing a disease that might

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[15] *See infra* pp. 1654–59.

[16] "Legal causation" refers to the ability of an exposed individual to identify the waste handler responsible for the release to which the individual was exposed. "Medical causation" refers to a disease victim's ability to demonstrate that exposure was the cause-in-fact of her disease. This terminology is used in conformity with Part IX. *See supra* Part IX pp. 1617–18.

[17] The problem of legal causation remains central to the issue of program financing, which will be discussed below at pp. 1654–59.

[18] Occupational diseases are an exception to this general rule, but they are simply special cases of hazardous substance exposure. *See supra* note 7.

have developed even in the absence of exposure.[19] Even when scientists can measure the increase in risk faced by a certain exposed group, they cannot distinguish members of the group who suffer the disease *because* of the exposure from those who would have developed the disease regardless of the exposure. The difficulty of establishing medical causation indicates that any administrative compensation program will face pervasive problems of under- and over-inclusiveness.

A concrete example may serve as a convenient focus for discussion. Consider a situation in which two exposed individuals later develop diseases of the kind that could have been caused by their exposure. Assume that there is a 60% probability that the first victim's disease was caused by exposure and a 40% probability that the second victim's disease was caused by exposure. For the sake of simplicity, assume further that each disease causes a $100 injury. The expected value of aggregate exposure-related injury would then be equal to $100.[20]

The $100 represents the appropriate amount of wealth that should be transferred from waste handlers to exposure victims. Some such transfer is justifiable, even though the causation question can never be answered with scientific certainty in individual cases. Given this scientific uncertainty, policymakers must determine "whether it is socially desirable to conclude that an activity caused an injury."[21] The remainder of this Section will discuss the implications of applying the traditional "more probable than not" causal test in the context of toxic exposure, and then will examine the use of presumptions as an alternative means of dealing with the problem.

1. The More-Probable-Than-Not Standard

The traditional standard of causation in tort — which asks whether it is more probable than not that the defendant caused the plaintiff's injury — awards all-or-nothing compensation to exposure victims, depending on their ability to show that exposure was more than 50% likely to have caused their disease. Thus, in the above example, the 60% ("high-causation") victim recovers the full $100, but the 40% ("low-causation") victim receives nothing. Given the restrictive facts of the hypothetical, justice is achieved on an aggregate level because waste handlers pay $100 to victims. In reality, this result will be reached only if two rather unlikely conditions are met. First, the high-causation victim must be able to overcome the numerous prac-

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[19] *See generally* CERCLA STUDY, *supra* note 11, at app. J (setting forth epidemiological data on the health effects of toxic substances).

[20] This number is obtained by summing the expected value of the individual injuries: the first victim has an injury of .60 times $100, or $60; the second victim has an injury of .40 times $100, or $40.

[21] KEYSTONE PROPOSAL, *supra* note 11, at 8.

tical and legal impediments that face all exposure victims.[22] For example, plaintiffs must have the resources to procure sophisticated medical testimony in order to demonstrate that exposure-related risks exceed background risks. Without such testimony, even high-causation victims cannot recover. Second, victims must be spread symmetrically along the causal spectrum. When low-causation victims predominate, the traditional standard will lead to under-recovery;[23] when high-causation victims predominate, the standard will lead to over-recovery and, if recovery is from the industry, over-deterrence of waste-generating activity.

Whether the traditional standard is fair for any individual victim depends upon whether one adopts a deterministic or a probabilistic causal perspective. Under a deterministic view, which treats injuries as being caused either completely by exposure or completely by background factors, the traditional standard may be the best possible guess at fair victim compensation. Under the facts of the above hypothetical, however, such a standard yields an incorrect result 40% of the time. High-causation victims will always receive full compensation, even though they will in fact have been injured in only 60% of the cases. Conversely, low-causation victims will never receive compensation, even though they will be the "real" victims in 40% of the cases.

A probabilistic view of causation considers victims to have been injured in proportion to the likelihood that their diseases were caused by toxic exposure.[24] In the above example, exposure would cause a $60 injury to the high-causation victim and a $40 injury to the low-causation victim. From a probabilistic perspective, the more-probable-than-not standard never achieves justice on an individual level because the high-causation victim receives full compensation and the low-causation victim receives nothing even though both victims are partially injured by exposure. Although the deterministic view is intuitively appealing, the probabilistic view more accurately reflects the current state of scientific knowledge in most cases of toxic exposure. An administrative compensation system could adopt a probabilistic perspective and provide some damages to many possible victims rather than attempt to identify and provide full compensation to the "real" victims. Although the tort system could be transformed to

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[22] For a discussion of the numerous reasons why at present even high-causation victims may be unable to recover, see Part IX. *Cf. In re* "Agent Orange" Prod. Liab. Litig., 597 F. Supp. 740, 833–42 (E.D.N.Y. 1984) (discussing the problems of identification and proof that face toxic exposure plaintiffs both individually and in groups).

[23] To return to the example set forth above at p. 1635, note that if only the low-causation victim had been exposed, no recovery would be possible even though the release had caused $40 in damages.

[24] *See* Rosenberg, *The Causal Connection in Mass Exposure Cases: A "Public Law" Vision of the Tort System*, 97 HARV. L. REV. 849, 881–87 (1984).

take on a probabilistic perspective,[25] an administrative program would be preferable to a modified tort system if it reduced litigation and thereby lowered transaction costs.

2. *Evidentiary Presumptions*

One method of providing some damages to many possible victims would be to employ evidentiary presumptions.[26] Presumptions entitle claimants who can prove certain "basic facts" to treat other facts as being true, even though no evidence has been introduced about these "presumed facts."[27] For example, claimants who could show exposure to toxins at a sufficiently high "trigger level" might be allowed the presumption that their diseases were in fact caused by exposure. A simple set of presumptions therefore would act as a threshold test dividing victims into two broad categories[28] — those who can make the required showing of exposure above the trigger level and those who cannot. No elaborate case-by-case inquiry into the relative levels of background and exposure-related risk would be necessary. Such presumptions could both lessen the evidentiary difficulties and alter the absolute burden of proof facing claimants. This Subsection will consider the evidentiary and substantive effects of presumptions. It will then address the issue of who should set the presumptions, and will conclude by noting that an undesirable redirection of program benefits could result if the presumptions are not in harmony with the program's stated goals.

(a) Type of Evidence Required. — Evidentiary difficulties would be reduced if claimants could rely on proof of objective facts about

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[25] *See supra* Part IX, pp. 1621–22.

[26] Several proposed administrative compensation schemes have recommended the use of evidentiary presumptions. *See* CERCLA STUDY, *supra* note 11, at 198–204; Soble, *supra* note 11, at 744–47; Trauberman, *supra* note 11, at 229–30.

[27] Evidentiary presumptions can be of several types. Irrebuttable presumptions conclusively establish the "truth" of the presumed fact, whereas the rebuttable presumptions herein discussed shift the burden of proof to the opposing party. In the context of medical causation, the two types of presumptions will often have identical effects. When the cause-in-fact of a disease cannot be identified, a defendant can no more disprove causation than a claimant can prove it.

A different, weaker form of rebuttable presumption would merely shift the burden of production. For a general discussion of the intricacies of evidentiary presumptions and burdens of proof, see generally 9 J. WIGMORE, EVIDENCE IN TRIALS AT COMMON LAW § 2483–2493(g) (J. Chadbourn rev. ed. 1981).

[28] Victims could be divided into any number of categories by using multiple trigger points for different levels of compensation. For example, two trigger points would divide victims into three categories: low exposure (no recovery), moderate exposure (some recovery), and high exposure (full recovery). As more divisions are made, the program will become similar to the probabilistic approach and will suffer from the same administrative burdens. *See infra* p. 1646.

the duration and severity of their exposure[29] rather than having to demonstrate in each case that the level of exposure-related risk exceeded the natural level of risk.[30] The basic facts regarding exposure should be easier to establish; thus, employing a presumption would reduce the cost of making out a prima facie case for compensation. When the basic fact of exposure and the presumed fact of causation are closely correlated — that is, when claimants who were exposed to toxins at or above the trigger level would generally be able to satisfy the traditional test were they to engage in a prolonged comparison of natural and exposure-related risk — the presumption will merely act as a per se rule obviating the need for inquiry into the existence of the more difficult-to-determine presumed fact.[31] This device will be especially useful when the claimant can show that the connection between exposure and disease exists generally but cannot demonstrate the connection in the individual case. Under these circumstances, the presumption will simply remove an evidentiary hurdle from the path of a victim who deserves to recover even under the traditional standard.

(b) Level of Proof Required. — In addition to reducing a claimant's evidentiary problems, presumptions can directly alter the substantive standard of causation. There is nothing magical about the 50% threshold.[32] Trigger points could be reduced in order to permit the operation of presumptions at significantly lower levels so that the problems faced by low-causation victims would be alleviated.

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[29] For example, as a precondition to invoking a rebuttable presumption of causation under one proposal, an individual must first meet three basic requirements: (1) she must have a "covered" disease — that is, a disease with a latency period long enough to justify special treatment; (2) she must show an exposure to hazardous substance(s); and (3) she must demonstrate a "reasonable likelihood" that the exposure could cause or be a "substantial factor" in causing her disease. *See* Trauberman, *supra* note 11, at 229–30, 263. Any victim with a colorable claim of exposure-related injury should be able to meet these basic requirements. Therefore, most of the burden of determining eligibility rests on other requirements relating to the level of exposure that must be shown before the presumption can be invoked. These requirements are discussed below at pp. 1639, 1640.

[30] Evidentiary presumptions will often eliminate the need for expensive medical testimony on the subject of causation. Also, the presumptions discussed herein make it unnecessary for a victim to "disprove that he smokes or drinks coffee with saccharine, or engages in similar, potentially harmful activities." CERCLA STUDY, *supra* note 11, at 203 (footnote omitted). Note that in theory the system could be refined to take into account certain self-imposed risks. For example, smokers could be required to show more serious exposure in order to be entitled to a presumption of causation for lung cancer.

[31] As the correlation between the basic fact and the presumed fact becomes weaker, the presumption will cause benefits to be distributed to claimants who would not qualify for compensation absent the presumption. *See infra* pp. 1641–44.

[32] Indeed, the more-probable-than-not standard is, in one sense, a kind of presumption: exposure is presumed to be the only origin of the diseases of high-causation victims, whereas natural diseases are presumed to be the exclusive source of suffering for low-causation victims. *See supra* pp. 1635–36.

If the traditional standard were abandoned in order to accommodate low-causation victims, it would become very difficult to articulate a principled method for setting the trigger point. For example, the presumption recommended by the CERCLA Study[33] would operate if a victim could show "death or the kind of injury or disease which is *known to result* from [the] exposure."[34] The "known to result" standard is clearly more lenient than a more-probable-than-not requirement, because victims need only show that the exposure could have produced the kind of disease from which they suffer. But the precise breadth of such a standard is unclear.[35] Whether the trigger point will correspond to a 30% probability that a victim's disease was exposure-related, as opposed to a 10% probability, is basically a policy decision concerning how widely program benefits should be spread. Naturally, this decision must be made in concert with decisions concerning the amount of compensation to award successful claimants[36] and the source of funding for the program.[37]

(c) Setting the Trigger Level. — Because the substantive choice involved in specifying a trigger level is best left to policymakers, the issue — if raised at all[38] — is often dealt with in terms of identifying who shall make the decision. For example, the CERCLA Study proposes that the authority to establish trigger levels be placed in the agency charged with administering the compensation fund. To supplement the general "known to result" presumption, the agency would develop "toxic substance documents," which would define the circumstances under which the most prevalent hazardous substances were

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[33] *See* CERCLA STUDY, *supra* note 11.

[34] *Id.* at 199 (emphasis added).

[35] *See id.* at 204 (acknowledging that the "known to result" standard could be "too broad and could lead to over liberality and abuse in [its] application").

[36] The proper amount of aggregate victim compensation could be achieved by allowing both high-causation and low-causation victims to recover, but limiting recoveries to less than full damages. For a discussion of the proper level of damage awards, see pp. 1645–48.

[37] *See infra* pp. 1654–59.

[38] Unfortunately, the use of evidentiary presumptions can often obscure the pivotal issue of causation. For example, Soble's proposal allows several rebuttable presumptions to arise if an injured party can show that (1) pollution has traveled through an "indicated pathway" to the injured person — that is, that the victim has been exposed, and (2) the pollution "*resulted* in the etiology [medical origin] of the injury or disease." Soble, *supra* note 11, at 745 (emphasis added). The second condition would seem to require a strong showing of causation in order to be satisfied. The proposed program, however, goes on to state that anyone who makes the necessary showings is entitled, inter alia, to the presumption that "the toxic substance did result in the etiology attributed to [it] by the showing." *Id.* at 746. Thus, the victim is entitled only to a presumption about that which she has already been required to prove. Perhaps Soble means to suggest that a modest showing that a toxin *tends* to cause the injury complained of will entitle the victim to the presumption that it has, in fact, caused the injury. The confusion created by using nearly identical language to describe both the basic fact and the fact to be presumed makes it unclear what causal showing is required. *See* CERCLA STUDY, *supra* note 11, at 215–18 (noting the difficulties with the Soble proposal).

known to cause injury.[39] Victims who had been exposed to these substances at levels in excess of the "triggers" specified by the toxic substances documents would be entitled to further presumptions. The CERCLA Study envisions a hybrid approach: basic presumptions would be available to all toxic exposure victims, whereas more detailed presumptions would be developed about widespread toxins as information became available.

In contrast with the the CERCLA Study, which recommends that broad discretion be delegated to the agency, the Trauberman proposal[40] would give the agency no authority to adjust trigger levels. Instead, presumptions would be available to victims who could show that they were exposed under conditions that violated then-existing or current federal standards.[41] The proposed program would base liability on the violation of regulations not in order to reintroduce fault, but rather to "reduce[] the likelihood of open-ended liability by restricting the use of causal presumptions."[42]

Conditioning eligibility for compensation on a showing that an exposure violated federal standards might not achieve this goal. If federal environmental standards became more strict, more victims would become entitled to a rebuttable presumption of causation. State regulation would also affect eligibility under the Trauberman proposal, because "federal standards" are defined to include state regulations promulgated under federal statutes such as the Resource Conservation and Recovery Act (RCRA). Thus, this method of limiting the presumption does not eliminate the possibility of "open-ended liability"; rather, it makes such liability contingent upon the will of state and federal regulators.

The CERCLA Study's single-agency approach allows for more informed decisionmaking. The responsible agency would likely develop greater expertise in the area than would myriad federal and state agencies acting without coordination. Furthermore, a single agency would be more aware of the effect of its actions on program

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[39] *See* CERCLA STUDY, *supra* note 11, at 199–202. Toxic substance documents would set forth: (1) the level, duration, and type of exposure deemed harmful; (2) the resulting disease's etiology, symptoms, latency period, prognosis, and related health effects; and (3) known variations in susceptibility to exposure (for example, by age or sex). *See id.*

[40] *See* Trauberman, *supra* note 11.

[41] *See id.* at 229–30, 263. The presumption would be allowed to operate if the victim could show either that federal standards had been violated or that "the exposure was or is of sufficient duration or quantity to cause the covered disease." *See id.* at 263. The causal showing required under the second branch of the test is not specified, but Trauberman apparently contemplates a narrow scope for this branch of the test. Indeed, except in cases in which information is unavailable, "the claimant must demonstrate that the exposure levels exceeded federal standards." *Id.* at 230. Thus, the second branch of the requirement is effectively a fallback provision for victims who can demonstrate exposure, but who do not know whether the exposure exceeded federal standards.

[42] *Id.* at 230.

eligibility and would become a focal point for public opinion on these matters.[43] Program eligibility would not be altered by unpublicized decisions to change environmental standards.

Finally, and most fundamentally, the single-agency approach is preferable because there is no a priori reason to expect that current toxic substance exposure regulations are maintained at levels appropriate for causal presumptions.[44] Regulations may be set at levels more stringent than needed to prevent harm to human health, in order to protect other aspects of the environment.[45] Although marginal violations of such regulations would present no threat to human health, they might still give rise to a presumption of causation for exposed individuals who happened to develop illnesses of the kind that could have been caused by the toxin had the release been more serious. Conversely, some regulations might allow levels of pollution that are admittedly a threat to health because of the overall beneficial effect of the regulated activity.[46] Although weighing social costs and benefits is desirable when deciding whether to allow a given level of activity, the existence of benefits in excess of costs does not necessarily mean that injured parties should remain uncompensated. Separating the regulation of toxins from the compensation of victims will make it possible to set appropriate standards in both areas.

(d) Radical Presumptions: The Black Lung Example. — The evidentiary and substantive effects of presumptions, although closely related in practice, are logically distinct. By simplifying the inquiry into causation, presumptions can enable high-causation claimants to win compensation awards with greater ease. Because these claimants would be entitled to compensation even under the traditional standard, this effect is clearly beneficial. In addition, by changing the standard of causation, presumptions can extend administrative benefits to victims who would not otherwise be eligible. This outcome

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[43] The CERCLA Study would allow for public comment on all proposed toxic substance documents. *See* CERCLA STUDY, *supra* note 11, at 200. Final decisions of the agency could be subjected to judicial review.

[44] *See* KEYSTONE PROPOSAL, *supra* note 11, at 48 (questioning whether "exposure limits or other governmental standards" should be admissible "evidence of the proper standard of conduct," because such standards might be "unduly politicized and not necessarily . . . fair reflections of any scientific consensus").

[45] The theory of alternative liability, discussed in Part IX at pp. 1625–26, sanctions a shift in the burden of proof to the defendant upon a showing that the defendant has breached a duty of care — in this context, a federal regulation. This theory applies, however, only if the duty is *owed to the victim*. *See* Trauberman, *supra* note 11, at 230 n.327. Although the purpose of most standards dealing with toxins is undoubtedly to protect potential victims from unsafe levels of exposure, some regulations may seek to protect the environment in general or certain vulnerable species of wildlife. In these situations, violation of the regulation is not a breach of a duty of care owed to potential victims, but rather an assault on the environment in general.

[46] The regulation of air pollution might be an example of this situation.

may or may not be viewed as beneficial, depending on one's policy outlook.

Presumptions will have an additional effect. Because the existence of the basic facts of exposure will not correlate perfectly with the ability of claimants to satisfy a risk comparison test, an element of randomness will be introduced into the program. At the extreme, if the connection between the basic fact and the presumed fact is very unreliable, the presumption may transform a program by significantly altering the class of eligible people in a manner inconsistent with program goals.[47] The federal administrative compensation program for coal miners with pneumoconiosis (black lung disease)[48] illustrates these problems.

In order to expedite the recovery of benefits by disabled miners, several presumptions have been established. Miners with more than ten years of exposure to coal dust who have pneumoconiosis are entitled to a rebuttable presumption that they contracted the disease because of employment.[49] The presence of certain pathological abnormalities in the lung serves as irrebuttable proof of total disability or death due to pneumoconiosis.[50] Additionally, a number of guide-

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[47] This effect is different from the *systematic* lowering of the substantive causal standard discussed above at pp. 1638–39. Reliable presumptions can expand eligibility uniformly to a class of victims who nearly qualified for compensation under the traditional standard — for example, those victims who could show a probability of between 30% and 50% that they contracted their diseases through exposure. Unreliable presumptions might make some individuals eligible despite an extremely low probability that their diseases were exposure-related, while at the same time denying the claims of victims whose injuries were much more likely to have been exposure-related.

[48] *See* 30 U.S.C §§ 901–962 (1982).

[49] *See id.* § 921(c)(1) (1982).

Although other causes, such as smoking, contribute to pneumoconiosis and similar diseases, the excessive rate at which miners fall victim to the disease appeared to justify this presumption. *Cf.* Usery v. Turner Elkhorn Mining Co., 428 U.S. 1, 6 & n.1 (1976) (noting that in 1969 pneumoconiosis rates were 10% for active coal miners and 20% for inactive coal miners).

The *Turner Elkhorn* Court upheld the presumptions in the Black Lung Act against a due process attack and held that there need be only "'some rational connection between the fact proved and the ultimate fact presumed'" in order for the presumptions to withstand constitutional scrutiny. *Id.* at 28 (quoting Mobile, J. & K. C. R. Co. v. Turnipseed, 219 U.S. 35, 43 (1910)). Although the Constitution may require only "some rational connection," a closer linkage would better serve public policy.

[50] *See* 30 U.S.C. § 921(c)(3) (1982).

Before 1982, three other rebuttable presumptions operated by statute. Section 921(c)(2) allowed a presumption that death was caused by pneumoconiosis upon a showing of 10 years' exposure to coal dust followed by death from any respiratory disease. Under § 921(c)(4), pneumoconiosis was presumed to be the cause of any total respiratory or pulmonary disability experienced by miners who had worked for 15 or more years. And § 921(c)(5) extended survivors' benefits to dependents of miners with 25 years' experience who had died prior to 1978, unless it could be established that the miners were not disabled by pneumoconiosis when they died. Because it is very difficult to establish that a miner's pneumoconiosis did not arise from exposure to coal dust, coal companies were unable to rebut these presumptions, and therefore a great

lines were promulgated under which miners could presumptively establish that they had been disabled by pneumoconiosis.[51] Miners with ten years of exposure to coal dust who could not pass certain rather stringent tests of cardiovascular fitness were presumed to be disabled.[52]

Unfortunately, the guidelines failed to take into account that cardiovascular performance declines with age. The guidelines therefore enabled elderly miners with test results near normal for their age to qualify as totally disabled.[53] The failure of the guidelines to reflect medical realities effected a major change in the impact of the program. Instead of providing only disabled miners with a portion of their lost wages, all miners with serious — although perhaps not disabling — cases of pneumoconiosis were entitled to recover, as were many elderly miners with no serious injuries whatsoever.

This situation illustrates a inherent difficulty with presumptions: they can serve as a politically expedient method of manipulating the scope of a program. Presumptions can be altered in order to restrict or expand eligibility, and often such action will not be subjected to a great deal of public scrutiny.[54] The government may certainly seek to provide compensation to all who are injured or aged rather than

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many miners and their dependents recovered under the Act. These presumptions were made inapplicable by the passage of the Black Lung Benefits Revenue Act of 1981, Pub L. No. 97-119, § 202(b), 95 Stat. 1635, 1643, in part because the scope of eligibility had become too expansive. *See* CERCLA STUDY, *supra* note 11, at 213 (stating that the presumptions "in the later view of Congress, had led to an excessive number of claims and vastly greater expenditures than had been anticipated").

[51] These guidelines were established by the Department of Labor. *See* Review of Pending and Denied Claims Under the Black Lung Benefits Reform Act of 1977, 20 C.F.R. §§ 727.200–206 (1984).

[52] Without a doubt, these presumptions served the purpose of administrability. Making decisions on the basis of objective data avoids subjective inquiries into the ability of particular victims to work in spite of their injuries. *Cf.* H.R. REP. NO. 151, 95th Cong., 2d Sess. 5, *reprinted in* 1978 U.S. CODE CONG. & AD. NEWS 237, 241 ("In recognition of the historically demonstrated and exceedingly high probability of total disability . . . an objective test was established to simply provide . . . benefits payments to all claimants whose claims had been denied and who could demonstrate 30 or more years of underground coal mining experience.").

[53] *See* Solomons, *A Critical Analysis of the Legislative History Surrounding the Black Lung Interim Presumption and a Survey of its Unresolved Issues*, 83 W. VA. L. REV. 869, 877–84 (1981) (assailing the guidelines for being unjustifiably over-inclusive).

[54] One commentator has noted:

> [T]he flaw in the [administrative] presumption arises from the fact that it was conceived, packaged, and sold to the Congress and the American public as a legitimate mechanism for compensating the real victims of black lung disease. It is not. Instead, it partially accomplishes indirectly what certain congressional advocates could not do directly[,] that is, to turn the black lung program into a *de facto* federal pension program for some older retired miners . . . . This is not an exercise which should be repeated without a full awareness on the part of Congress and the American public of the nature, scope, and consequence of the action proposed.

Id. at 915 (footnote omitted); *see id.* at 882–83 (concluding that political pressure to expand eligibility for the program led to the adoption of unrealistic evidentiary presumptions).

restricting benefits only to those who are totally disabled, but such a choice should be made openly rather than being disguised by presumptions.

The experience of the black lung program suggests that specifying the causal eligibility requirements for a toxic exposure compensation fund will be a thorny political problem. This prospect is all the more discouraging given that the Black Lung Act dealt with a relatively simple toxic exposure problem. The program focused on a single disease, and it could rely on decades' worth of evidence linking that disease to the inhalation of coal dust. By contrast, a toxic exposure program would most likely have to deal with thousands of toxic agents whose health effects are not well-established.[55]

(e) Conclusion. — Presumptions clearly can ease the plight of victims by reducing the costs of making out a case for compensation and by expanding the class of victims potentially able to bring such a case. They can also reduce the costs to society of protracted case-by-case litigation over similar issues. But presumptions just as clearly can have a negative impact: unless presumptions come reasonably close to representing the underlying realities of toxic exposure, the administrative program will degenerate into a random compensation scheme for certain victims of chronic disease. Setting effective presumptions requires that a sophisticated understanding of the health effects of various toxins be developed and that a conscious choice be made regarding how widely to spread program benefits.[56]

C. Damages Recoverable

In addition to establishing a set of presumptions to determine who may recover, an administrative compensation scheme must determine the amount and timing of recovery. In resolving these issues, two competing goals should be pursued. First, in order to achieve fairness among victims, compensation should be proportional to injury.[57] Second, for internal program efficiency, determinations about compen-

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[55] Congress could address this lack of information by proceeding on an ad hoc basis. As more information becomes available about the harmful effects of various toxins, Congress could establish compensation funds narrowly targeted at the most pervasive threats to public health. This approach was exemplified in the 1970s by the Black Lung Program and various proposals for the compensation of asbestos workers. For a description of some legislative proposals dealing with asbestos, see Comment, *Relief for Asbestos Victims: A Legislative Analysis*, 20 HARV. J. ON LEGIS. 179 (1983). Given the low degree of public concern — or even awareness — of the problems posed by toxins, a piecemeal response to toxic exposure was perhaps all that could be expected in the 1970s. At present, however, heightened public awareness makes a comprehensive solution more likely.

[56] This choice should be made in light of the source of program funding and the amount of damages that successful claimants will receive.

[57] Again, the "fairness" of any individual case depends on one's perspective with respect to causation. *See supra* p. 1636.

sation awards should not create excessive transaction costs.[58] If these goals are achieved, funds will be effectively channeled to deserving victims. This Section discusses the amount of compensation that should be awarded, the treatment of collateral sources of recovery, the role of the tort system once an administrative compensation program is in operation, and the timing of compensation.

1. Determining the Appropriate Amount of Recovery

A compensation system's causation requirement will greatly influence the size of damage awards. For example, the traditional tort system required a very strong causal showing. The defendant could be held liable only upon proof that, more likely than not, he caused the plaintiff's injuries; therefore, shifting the costs of the injury to the defendant was appropriate.[59] Tort awards are based on an individualized calculation of the injury's impact on the plaintiff, because they seek to make the plaintiff whole. Recovery is available for intangible injuries, such as pain and suffering or loss of enjoyment of life, as well as for more concrete economic injuries.[60]

A diluted causation requirement — which allows many disease victims to recover even though toxic exposure may not have been the primary cause of their injuries — makes full compensation for all successful claimants problematic. If the program is justified as a toxic exposure compensation scheme, rather than as national health insurance, aggregate compensation should be roughly equal to aggregate exposure-related injury. Also, if the program is financed through taxes on industry, fully compensating all sufferers of chronic disease will result in over-deterrence. Therefore, an administrative compensation scheme should offer victims a trade-off: relaxed causation requirements will increase the number of victims who receive compensation,

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[58] In addition to these two goals, the compensation mechanism might seek to diminish the anxiety of exposure victims, *see infra* pp. 1653–54, or to encourage the generation of useful information. For example, "discountable" presumptions — which impose liability on waste handlers but allow a reduction of liability if there is a significant probability that the injury was not caused by exposure — would encourage information disclosure by waste generators, who may be in the best position to know about the exposure-related health effects of toxins. *See* Note, *The Inapplicability of Traditional Tort Analysis to Environmental Risks: The Example of Toxic Waste Pollution Victim Compensation*, 35 STAN. L. REV. 575, 613–14 (1983). Unfortunately, the use of discountable presumptions would embroil the compensation system in lengthy disputes over causation on a case-by-case basis and therefore may not be the cheapest method of generating information.

[59] *Cf.* PROSSER AND KEETON, *supra* note 5, § 52, at 345 ("Where no [logical] basis [for apportionment] can be found, the courts generally hold the defendant for the entire loss, *notwithstanding the fact that other causes have contributed to it.*") (emphasis added).

[60] *See* RESTATEMENT (SECOND) OF TORTS § 924 (1979).

but awards will be for less than full damages,[61] perhaps compensating victims only for that part of their injuries attributable to toxic exposure. Partial compensation will prevent the imposition of an onerous burden on taxpayers or a crushing liability on industry.

If transaction costs were not a concern, the best method of reducing damage awards would be to compensate the disease victim only in proportion to the exposure-related increase in the probability of developing disease. Individualized damages could be calculated by determining the full cost of each victim's injury[62] and then reducing that amount to reflect the probability that her injury was not exposure-related.[63] Thus, a share of the victim's damages proportional to the excess risk would be compensable, whereas the expenses proportional to the background level of risk would be borne by the victim. Compensation would not be completely denied simply because exposure was not the most probable cause of a victim's injuries. Such a probabilistic damage system would align victims along the causal spectrum, with the size of recovery tied directly to the relative strength of each victim's causal showing.

Unfortunately, a system of probabilistic damages can only be as accurate as its ability to identify precisely the relative levels of natural and artificially created risk and the actual amount of damages. Risk quantification is a highly complex and imperfect science. Opposing experts rarely agree on the proportion of injuries attributable to exposure.[64] Generating enough information to determine precisely where each individual falls along the causal spectrum would be cumbersome and costly.[65] In-depth inquiries into the precise extent of each individual's full damages would also be very expensive.[66]

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[61] *See* 1 A. LARSON, *supra* note 5, §§ 2.10, 2.50. Larson contrasts workers' compensation with tort liability and notes that the causation requirements of the former are weaker, *see id.* § 2.10, but that the amounts awarded are smaller, *see id.* at § 2.50.

[62] The "full" value can be defined descriptively as the amount that victims could recover in tort, or normatively, as the true value of the injury. The former amount will be greater, to the extent that juries overcompensate victims.

[63] For example, an exposure that increased the probability of developing cancer from 2 out of 1000 to 3 out of 1000 would entitle an exposed cancer victim to one third of full damages. *See* Rosenberg, *supra* note 24, at 859 n.43.

[64] The *Agent Orange* court noted that reasonable estimates of the amount of artificially created risk may "range from almost zero to well over 120" (when expressed as a percentage of the background risk). *In re* "Agent Orange" Prod. Liab. Litig., 597 F. Supp. 740, 836 (E.D.N.Y. 1984); *see also* Allen v. United States, 588 F. Supp. 247, 438, 439 & n.197 (D. Utah 1984) (reporting varying expert estimates of the proportion of leukemia attributable to the atmospheric testing of atomic weapons).

[65] Requiring each claimant to prove the relative level of exposure-related risk in order to receive damages would undercut the usefulness of presumptions, which eliminate the need for such inquiries in establishing eligibility. *See supra* pp. 1637–38.

[66] *See* Rosenberg, *supra* note 24, at 916 ("Possibly the greatest source of litigation expenses [in mass exposure cases] is the individual assessment and distribution [illegible] must follow trial of common liability questions.").

The use of presumptions allows a cruder but more administrable approach to awarding compensation. Inquiries into the extent of each victim's damages can be avoided if damages are awarded according to uniform procedures. Standardized schedules can be used to provide uniform damages to all who suffer certain kinds of injury.[67] The level of such awards should be well below full damages, because relaxed causation requirements allow recovery by many victims whose injuries may have arisen through natural causes. By reducing recoveries uniformly for the entire class of victims rather than making case-by-case damage determinations, administrative compensation programs are able to cut transaction costs and thus to channel a greater proportion of expenditures into direct victim aid.[68] A standardized schedule of awards simple enough to be easily administrable, however, might not be sensitive enough to reflect the differing severity of possible injuries.

Instead of using standardized schedules, recoveries could be reduced from full value by allowing compensation for only some of the kinds of damages available under the tort system. For example, the CERCLA Study recommended limiting recovery to replacement of two-thirds of the first $36,000 of lost yearly earnings[69] plus reasonable medical expenses.[70] No awards would be made for intangible injuries

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[67] *See, e.g.*, MASS. ANN. LAWS ch. 152, § 36 (Michie/Law. Co-op. 1976) (providing lump sum compensation for certain injuries suffered on the job). Tort damage awards vary according to the personal characteristics of the victim: an aspiring young musician receives more for the loss of a hand than would a retiring construction worker. The workers' compensation system, by contrast, treats all injuries as though they had occurred to an objectively average worker. Standardized recovery may be seen as dehumanizing. On the other hand, the tort measure of damages may unfairly value the lives and limbs of the rich and of the upwardly mobile over those of the poor.

[68] If the total amount spent on compensating victims (including transaction costs) is held constant, the victim class as a whole is better off under the administrative system because the average net award is increased. However, victims who would have received higher than average awards under an individualized system may be worse off under the standardized system. Nevertheless, all victims should prefer the standardized system if it is not known in advance which victims have claims that would receive higher awards under individualized damages.

[69] *See* CERCLA STUDY, *supra* note 11, at 219. Because these awards will not be taxable, two-thirds compensation for lost earnings will give claimants approximately the same after-tax buying power. *See id.* at 222.

As an alternative to the CERCLA Study proposal, awards could be limited to two-thirds of the amount by which earned income is reduced below $36,000 — that is, victims who earned more than $36,000 per year despite their injuries would not be eligible for benefits. This limitation introduces a needs-based criterion, whereas the CERCLA Study focuses more on the rights of all victims, rich and poor alike, to recover for their injuries. Choosing between needs-based and rights-based criteria is another subtle way of affecting the scope of the program.

[70] *See id.* The model statute proposed by Trauberman contains similar provisions regarding compensable damages, *see* Trauberman, *supra* note 11, at 265–68, as does the Keystone Proposal, which will be discussed below at p. 1653. Trauberman also would allow recovery for damages to real property if no financially responsible defendant could be located. *See id.* at 290–92. The CERCLA study recommends that property damages should not be recoverable

such as pain and suffering or loss of enjoyment of life. Compensating victims for only certain of their tangible injuries is an effective way to reduce recoveries, because damages for intangible injuries often constitute a large portion of tort awards. If reimbursement were limited to out-of-pocket medical expenses and lost earnings, the program's benefits would be directed at those victims who have suffered the most concrete forms of harm.

Although restricting compensation to a subset of tangible injuries would reduce each individual award, it would not necessarily produce a situation in which aggregate awards equaled the amount of exposure-related harm. If program benefits exceed exposure-related harms, the excess benefits will essentially represent a public assistance program for the natural victims of chronic diseases. Although there are undoubtedly less deserving beneficiaries of public largesse, a decision to provide support to the victims of natural chronic diseases should not be disguised as a compensation program for toxic exposure victims. Thus, to the extent that the administrative fund is justified as a relief program for toxic exposure victims, aggregate compensation should not greatly exceed the amount of aggregate exposure-related injury.[71]

2. Collateral Sources of Recovery

In personal injury lawsuits, damage awards generally are made without taking into account the availability to the victim of other sources of recovery.[72] This rule can lead to over-compensation but is nevertheless supported by two major rationales. The "deterrence rationale" suggests that defendants should pay the full costs of injuries caused by their acts in order to deter activity that is harmful. The "entitlement rationale" suggests that victims who have paid premiums for collateral sources are entitled to "the advantage of [their] own providence."[73] The extent to which the deterrence rationale applies

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from the fund, but should be sought in plenary state actions under modified state law rules. *See* CERCLA STUDY, *supra* note 11, at 252.

[71] The full extent of the aggregate injury caused by exposure to toxins is not well known at present, *see infra* p. 1659 & n.112, but may become clearer in the future as currently latent diseases manifest themselves. There are two possible responses to a future determination that program benefits greatly exceed the costs of exposure-related injuries. First, the program's "subsidization" of natural disease victims could be decreased, by altering presumptions in order to restrict eligibility and/or by reducing the amount of compensation provided to successful claimants. Second, should society choose to maintain the subsidy, the program's funding mechanism could be altered if such action were necessary to prevent the burden of the subsidy from being placed exclusively on waste handlers.

[72] *See* RESTATEMENT (SECOND) OF TORTS § 920A(2) (1979).

[73] *See* CERCLA STUDY, *supra* note 11, at 223. For a critique of both the deterrence and the entitlement rationales, see Note, *Unreason in the Law of Damages: The Collateral Source Rule*, 77 HARV. L. REV. 741, 748–51 (1964).

to an administrative compensation scheme depends in large measure on the method used to finance the program. Unless an administrative compensation program is financed by waste handlers, the deterrence rationale for the collateral source rule will be inapposite.[74]

The applicability of the entitlement rationale depends upon the nature of the collateral source. The entitlement rationale does not apply to purely public collateral sources, because socially provided insurance is not the result of any individual's "own providence" or investment. Therefore, the level of benefits available under the program should depend in part on the availability of compensation from other social programs.[75] By considering all sources of publicly provided assistance, the administrative agency can make more informed choices when determining the amount of awards available under the compensation program.

The compensation system should treat private disability insurance differently from social insurance, because the entitlement rationale applies to private insurance. If individuals are willing to pay a premium in order to carry extra disability insurance, they should be allowed to do so, especially if compensation for lost wages is limited under the program.[76]

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[74] Various methods of financing the administrative compensation scheme will be discussed below at pp. 1654–59.

[75] *See* CERCLA STUDY, *supra* note 11, at 223. This is not to say that dual recovery is necessarily inappropriate. A victim's ability to qualify for another program may indicate that society has made a decision through the legislature that she should receive *both* subsidies. For example, victims who were exposed to toxins at work might be eligible to receive benefits from both the toxic exposure program and workers' compensation. This double recovery might represent a conscious legislative choice to provide more compensation to those who are exposed on the job than to other exposure victims.

[76] *See supra* pp. 1647–48 & n.70 (discussing benefits). Awards given under a "needs-based test," *see supra* note 69, should be offset by private insurance proceeds, so that benefits will be directed towards those without any collateral source of compensation. Under a rights-based test, victims are no less entitled to awards simply because they had the foresight to insure themselves. The extra compensation received from private insurance is justified by the premiums paid for insurance coverage.

Even under a rights-based test, a forceful argument could be made against double recovery for medical expenses (as opposed to disability payments). The distinction between medical insurance and disability insurance is based on the kind of injury involved. Being forced to pay medical expenses is, in one sense, a purely economic injury. Full reimbursement of medical expenses represents full redress of this injury, and therefore double recovery should be avoided. Disability is a much more subjective personal injury. Compensation for lost earnings — even if unlimited — would not always fully redress this injury. In reality, lost earnings are merely a proxy for the disutility of becoming disabled. Individuals who, for whatever reason, place a higher disutility on becoming disabled should not be prevented from obtaining additional insurance.

If dual recovery were not allowed for medical expenses, the burden of such expenses could still be shifted to the administrative fund by requiring it to reimburse insurance companies. *See* CERCLA STUDY, *supra* note 11, at 219 (noting that a minority of the study group proposed such treatment). Allowing such a transfer, however, probably would serve no great purpose.

3. Recovery in Tort

The inability of victims to recover by means of lawsuits is the primary reason for establishing an administrative compensation system for toxic exposure. It therefore may seem anomalous to discuss the need for preventing double recovery from the tort system. Nonetheless, a few victims are currently able to recover in tort, and more will be able to do so in the future if state law is modified in response to their plight.[77] Commentators have therefore expressed concern over the prospect of double recovery and have identified three methods of combatting the problem: (1) preemption, which would completely preclude all future law suits;[78] (2) election, which would require victims to choose in advance between administrative compensation and common law recovery;[79] and (3) reimbursement, which would offset any tort award by the amount previously received from the administrative fund.[80]

Industry naturally would prefer the more restrictive alternatives. Indeed, an administrative compensation system that did not preempt common law recovery or at least require binding election might be viewed by industry representatives as "a national no-fault slush fund used to finance tort litigation."[81] An administrative compensation system would be counterproductive if it increased litigation, because avoiding costly litigation is a fundamental reason for administrative compensation. Preemption or binding election would certainly reduce these costs. These options might also lessen the impact of differences in state law on the compensation received by similarly situated victims who happen to reside in different states.

Private insurance companies are already effective risk spreaders, and allowing them to recover from the fund would create added transaction costs. *See* O'Connell, *A Proposal to Abolish Contributory and Comparative Fault, with Compensatory Savings by also Abolishing the Collateral Source Rule*, 1979 U. ILL. L.F. 591, 600 ("[G]iven the added expense of re-shifting the loss to a third-party tortfeasor the insured victim is the better risk bearer to the extent of his insurance coverage.").

[77] *See generally supra* Part IX pp. 1631–32 (advocating modification of state laws).

[78] The workers' compensation system preempts most suits by employees against their employers. *See* 2A A. LARSON, *supra* note 5, at § 65. One difficulty with preemption would be defining precisely the types of suits that would be preempted. A toxic waste release could presumably have such a direct and immediate effect on health that victims could maintain traditional law suits, such as actions for wrongful death.

[79] *See* CERCLA STUDY, *supra* note 11, at 186 (favoring a system of binding election over preemption, but ultimately rejecting binding election because an impecunious claimant in need of rapid compensation might be forced to forgo a more profitable tort action).

[80] *See id.* at 181–83, 187 (recommending that administrative claimants be able to sue subsequently in tort, but also recommending that a successful tort plaintiff reimburse the fund for any prior award).

[81] Garrett, *Compensating Victims of Toxic Substances: Issues Concerning Proposed Federal Legislation*, 13 Envtl. L. Rep. 10,172, 10,175 (1983).

The argument for reimbursement relies primarily on equitable considerations. Preemption may seem unfair to those victims who would be able to win more generous tort awards. Similarly, binding election will disadvantage victims who discover that they have a strong case only after they have received administrative compensation.[82] A two-tiered system, under which victims with exceptionally strong data on causation could recover in tort, would alleviate these inequities.[83] A requirement that victims return any prior administrative award would prevent outright double recovery by individuals.[84]

The determination of the proper method of preventing double recovery depends on one's assessment of the relative seriousness of the inequities caused by foreclosing litigation and the inefficiencies generated by allowing it. If only a few victims had a chance of prevailing in tort, litigation costs would not be great; however, the inequities of preempting those few individuals would be extreme. Preemption may therefore be unwarranted under the traditional common law, because the vast majority of victims will be unable to recover and will thus be preempted in fact. But if state laws are liberalized and victims have a greater chance of success, limiting access to the tort system through election or preemption may be necessary to avoid excessive litigation.

4. Compensating Risk Versus Compensating Actual Injury

An administrative compensation program could compensate exposure victims[85] either prospectively, for the increased probability of

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[82] Administrative compensation recipients who later discover more extensive injuries may also be treated unfairly, because the original incentive to sue will depend on the expected value of a tort award.

Election may also be inequitable in that it favors rich victims, who have the resources to hold out for a more generous tort award, over poor victims, whose immediate compensation needs are greater. *See supra* note 79.

[83] *See* CERCLA STUDY, *supra* note 11, at 185–87.

An administrative compensation system that does not preclude common law recovery will effectively create three classes of victims: victims exposed at a level below the administrative "trigger point" will recover nothing; those exposed at higher levels will recover from the administrative agency; and those who can satisfy the more stringent common law liability standards will receive (presumably more generous) tort awards in court.

[84] Relying on reimbursement may create aggregate over-recovery if administrative awards are set on the assumption that all exposure victims will participate in the program, but in fact many victims recover more generous tort awards. Those who recover from the administrative fund will receive awards that roughly approximate damages proportional to their increased risk. *See supra* pp. 1645–48. Those who recover under present tort law, however, will receive awards which seek fully to compensate them for their injuries even though the probability that their injuries are exposure-related is less than 100%. Thus, aggregate compensation will exceed aggregate exposure-related injury. The barriers that currently face toxic tort plaintiffs, *see supra* Part IX, make this concern less weighty, at least for the present.

[85] For the purposes of this Subsection, the term "exposure victim" means one who has been

disease suffered at the time of exposure, or retrospectively, for the actual manifestation of physical injury. The issue of whether to compensate for risk or for actual harm is primarily one of timing; it is distinct from the issue of determining the appropriate *amount* of compensation.[86] Prospectively awarded relief, like relief awarded to disease victims, can be reduced to reflect the fact that the cause-in-fact of the injury is indeterminable. Under a prospective probabilistic damage system, an exposure victim's award should be discounted twice: first, by the probability that the victim will never develop disease; second, by the probability that any disease, if it does occur, will be the result of natural causes. The victim could then be given a lump sum award that ideally would allow her to purchase enough insurance to cover the increased risk that she faces.

In a world of perfect markets and perfect information regarding the effects of toxins, a system of lump sum awards to exposure victims would be optimal. Victims could choose to spend their awards either on insurance or on other goods that they valued more. If the proper amount of compensation were given, each victim would find herself at least as well off after the exposure as before.

Once the assumption that markets and information are perfect is relaxed — as it surely must be in order to consider the toxic exposure problem realistically — a lump sum system appears less than optimal. Exposure victims do not have sufficient information to make informed decisions about their insurance needs. Even if such information were available, some individuals might have an excessive preference for present consumption or a lack of concern about developing disease in the distant future. These conditions might be especially prevalent among the disadvantaged, because their present consumption needs are more demanding.[87] Concern about under-insurance may arise in the first instance from the paternalistic fear that victims will not purchase "proper" amounts of insurance for themselves. This concern, however, is not purely paternalistic: under-insured exposure victims who ultimately do become disabled may well qualify for other forms of public assistance and thus become a burden on the public fisc.[88]

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exposed to dangerous levels of toxins, but who has not yet manifested any signs of serious injury.

[86] *See supra* pp. 1645–48.

[87] *See generally*, R. GOODIN, POLITICAL THEORY AND PUBLIC POLICY 147–50 (1982) (arguing that the poor are forced by their "desperate socioeconomic position" to accept unfavorable risks in order to keep themselves above the "'disaster' threshold").

[88] Allowing under-insured victims to take advantage of other welfare programs would create an incentive for under-insurance. Recipients of exposure awards will not need to invest all of their awards in insurance because of the availability of public assistance for the disabled. This problem could be remedied if under-insured victims were partially disqualified from welfare to reflect the results of their own past decisions not to insure; yet disqualification seems unduly harsh, and in any event determining the portion of a victim's distress that was due to her own

These practical difficulties outweigh the theoretical benefits that victims might realize were they allowed to spend exposure awards on items other than insurance.

An insurance scheme that did not give victims the opportunity to opt out would eliminate these problems. The rudiments of one such scheme are contained in the Keystone Proposal.[89] That proposal envisions a two-part response to hazardous waste releases. First, a team of experts would be dispatched to the site to determine the severity of the release and to minimize further exposure.[90] If the presence of toxins in concentrations greater than certain predetermined trigger levels indicated a serious health threat, the agency experts would conduct a further inquiry. The agency would identify the population placed at risk, conduct periodic medical screening, and provide insurance.[91]

Unlike a system that provides lump sum benefits to victims upon or shortly after exposure, the Keystone Proposal does not compensate for risk per se. The insurance program ultimately provides benefits only to those who later develop disease. Indeed, the proposed benefits are quite similar to those that would be available under the more traditional proposals for administrative compensation discussed above.[92] The crucial difference between the two approaches is that with insurance, victims know in advance that they will be provided for if they are later disabled. They are not required to wait until a disabling disease strikes and then to initiate an uncertain and potentially lengthy claims process.

The Keystone Proposal's forward-looking approach would have other advantages. Information about the intensity of exposure would be gathered at the time of exposure rather than after long latency periods.[93] Immediate response would also allow the government to play a more active role in identifying victims. Instead of waiting for disease victims to file claims, the expert team would attempt to identify the class of potential victims in advance upon receiving notice of

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failure to insure would be a formidable task.

For a discussion of the relationship between administrative awards and general public welfare programs, see above at p. 1649.

[89] *See* KEYSTONE PROPOSAL, *supra* note 11, at 13–25. The Keystone Proposal was formulated by a diverse group from academia, industry, environmental groups, and regulatory bodies. *See id.* at 53–60 (setting forth a membership list).

[90] *See id.* at 13–19.

[91] *See id.* at 22–23. The insurance would cover "designated chronic diseases which have been associated with exposure levels at or above certain dose levels and exposure durations to toxic substance(s) associated with the waste site in question." *Id.* at 24.

[92] *See supra* pp. 1647–48 & n.70.

[93] Moreover, if responsible parties were identified at the time of the release, they could be required to make immediate provisions for compensating future victims. Such action would limit the ability of responsible parties to avoid liability by filing for bankruptcy during the latency period. For a discussion of bankruptcy and related issues, see above Part VIII.

a toxic waste release. Fast action could lead to the identification of victims before they migrated throughout the country. Without such immediate governmental involvement, some disease victims might never discover that they had been exposed. Furthermore, an active governmental role might reduce the anxiety of those victims who do know that they have been exposed by demonstrating that the situation is at least being monitored. Finally, and most importantly, medical screening would "provide early detection and . . . increase the prospects for rapid and complete cure,"[94] thus reducing the toll of human suffering caused by the release.

Designing an insurance program that will adequately protect victims is particularly difficult because of uncertainty about the effects of toxic exposure. Accurate predictions of risk levels cannot be made, especially when chemicals are released for the first time. Thus, some adjustment mechanism will be necessary in order to deal with the unanticipated health effects of exposure.[95] Furthermore, an insurance program will be effective only if instituted near the time of exposure; it is therefore not a viable alternative for compensating the large class of victims who were exposed to toxins in the more distant past. Once governmental regulation stabilizes and more information about the effects of toxins becomes available, an insurance program may provide the most effective and equitable means of compensating victims. For the present, however, an insurance program can serve only to supplement other compensation plans that reimburse those who have already been injured.

D. Program Funding

The previous Sections of this Part discussed almost exclusively the means of providing swift, certain, and adequate relief to deserving disease victims. These aspects of the program will naturally be of the greatest concern to victims. However, choosing a source for program funding is also important, because the source of funding will affect perceptions concerning the appropriate scope of the program. If an administrative compensation program is used to shift the losses associated with toxic exposure away from victims, it will be necessary to place this burden elsewhere. This Section will examine the pros and cons of three alternative methods for financing the compensation system: imposing liability directly on responsible parties, adopting industry-wide taxes, or relying on general tax revenues.

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[94] KEYSTONE PROPOSAL, *supra* note 11, at 23.

[95] The Keystone Proposal recognizes this need and recommends that any insurance policies issued be amendable in the event that unexpected diseases arise in the exposed population. *See id.* at 25.

1. *Direct Recovery from Responsible Parties: Subrogation*

An administrative compensation scheme could be designed to shift the costs of a victim's disease to the waste handler responsible for the release. Under a system of subrogation, the agency charged with administering the fund would be entitled to seek reimbursement from responsible parties for all damage awards paid to exposure victims.[96] Shifting all social costs to the waste handler, who receives the benefits of the activity, would deter conduct that does not result in a net benefit to society. Prices that reflected all social costs would encourage more optimal waste generation practices.[97]

Unfortunately, the realities of toxic exposure will often make the direct imposition of liability on every responsible party either impossible or prohibitively expensive. The twin nemeses of toxic exposure victims — uncertain causation and long latency periods — once again prevent easy application of the theoretically correct solution. The exact number of diseases attributable to a given release will be difficult to determine.[98] Moreover, the legal causation problem will become central: it often will be impossible to identify the ultimate source of wastes left in abandoned sites. The agency can impose liability on responsible parties only if they can be identified, and the identification process will conflict with a major goal of the administrative program: keeping transaction costs low. Even when identification is possible,

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[96] Subrogation would not necessarily slow the process of victim compensation. Victims could recover from the fund irrespective of their ability to identify responsible parties, and subsequent proceedings could then be used to determine the agency's right to subrogation. The CERCLA Study recommends this procedure for victims who are exposed after the administrative compensation system is adopted. *See* CERCLA STUDY, *supra* note 11, 234–35.

To the extent that responsible parties fear that they may be identified, subrogation would pose a substantial threat of liability for all handlers of toxic waste. If insurance for such liability was not available, many waste handlers might choose to go out of business rather than face the risk. This problem could be alleviated by requiring compulsory insurance for all waste handlers. If private insurers were unwilling to offer coverage, the government could act as insurer. An insurance program, whether public or private, could effectively deter the careless waste disposal practices of individual firms by raising the rates of waste handlers that had contributed to releases. The insurance fund would bear the threat of liability for any one incident, but over the long run costs would be recovered from the responsible firms in the form of higher premiums, unless they chose to leave the waste handling business altogether. *Cf.* KEYSTONE PROPOSAL, *supra* note 11, at 20 (advocating that the proposal initially be implemented on a small scale in order to give the insurance market time to adjust).

[97] A second justification for imposing liability on responsible firms is that unjust enrichment would result if an actor were allowed to profit by ignoring the rights of others; any ill-gotten gains should be turned over to the victim in order to correct this situation. *See supra* Part II pp. 1477–84 (discussing corrective justice and efficiency norms).

[98] This is a problem of measurement, not a recurrence of the medical causation problem. If increased risk could be precisely measured, so that the number of exposure-related injuries in a given population were known, an appropriate penalty could be extracted from the defendant irrespective of the fact that the identity of the disease victim was unknowable.

recovery will be thwarted if the responsible party has gone out of business during the long latency period between exposure and injury.

2. The Case in Favor of More General Sources of Funding

Instead of relying on subrogation, the compensation program could be financed by general tax revenues or by taxes imposed on waste-generating industries. These options could make sufficient funds available for compensating victims, without requiring expensive — and often futile — investigations into responsibility. In addition, recouping the loss from a larger segment of society would avoid the economic dislocation that results when a crushing burden is placed on a single economic actor. Financing through general revenues or taxes levied on all waste handlers would spread the loss more effectively than would subrogation. Any of these alternatives would be far superior to leaving the burden of loss on individual victims.

In theory, the main drawback with more general financing mechanisms is that they would be less effective than subrogation in deterring undesirable toxic releases.[99] Although deterrence is one goal of the compensation system, its importance is diminished by two factors. First, many of the toxic exposure injuries that will occur in the near future are the result of past exposures. These injuries are unpreventable, because no compensation system can keep latent diseases from manifesting themselves. Imposing liability for these injuries will not increase present safety incentives, because firms will treat retroactively imposed liability as a fixed cost, and therefore will not factor such liability into present decisionmaking. Compensation in such a situation is purely a matter of loss shifting.[100]

The need to foster deterrence of future waste releases is likewise mitigated by the fact that an administrative compensation scheme "would not operate in a regulatory vacuum."[101] Today, federal reg-

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[99] Industry taxes imposed on a uniform basis (for example, on chemical feed stocks or by weight of toxic material produced) would not provide specific incentives for individual firms to avoid waste releases, because such taxes do not differentiate between careful and careless waste handlers. The costs of releases would be spread over the entire industry by the tax, while individual firms that employ improper disposal techniques would enjoy all the benefits of lower expenditures on safety.

[100] In other words, the lax disposal practices of the past will create net social losses as exposure-related diseases manifest themselves. These losses cannot be avoided, so they will necessarily be borne by some segment of society. In terms of the ever popular pie-making metaphor, the question is not how to increase the size of the pie, but rather how to decide who must eat the poisoned slice.

[101] Note, *supra* note 58, at 588. Prior to the advent of extensive federal regulation, decisions regarding the generation and storage of hazardous materials were based primarily on market considerations. The threat of liability for improper disposal therefore acted as an important restraint on waste generation. Because the deterrence justification for imposing liability on individual generators presupposes the existence of a functioning market, the need for deterrence must be reexamined in light of recent regulatory developments.

ulatory programs have preempted much of the autonomy of firms to make independent decisions regarding waste disposal.[102] The most direct constraint on waste handlers is the "cradle-to-grave" regulation of hazardous wastes mandated by the RCRA.[103] Hazardous waste handlers who fail to comply with RCRA standards are subject to fines and criminal liability. This direct regulation of waste disposal greatly reduces the need to deter waste handlers through the administrative compensation system, provided that RCRA standards are properly set and rigorously enforced. An administrative compensation scheme would provide an added safety incentive when RCRA violations go unnoticed or when exposures occur even though RCRA guidelines have been followed.[104] The threat of CERCLA clean-up actions, however, may already provide adequate incentives. The immediate threat of liability under RCRA and CERCLA is clearly better suited to influencing the behavior of waste handlers than would be a personal injury compensation system that imposed liability only after prolonged latency periods.

3. Industry Taxes Versus General Revenues

On first impression, industry taxes would appear to have many advantages over general revenue financing. Using industry-specific taxes[105] would force the industry to internalize costs.[106] Prices charged for chemical goods would increase, and consumption should fall to more efficient levels.[107] Conversely, funding the program

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[102] These programs are discussed above in Part II at pp. 1470–76.

[103] 42 U.S.C. §§ 6901–87 (1982).

[104] One commentator has argued, however, that an administrative compensation scheme cannot further deterrence goals because (1) the uncertainties surrounding toxic exposure will make effective market deterrence impossible, and (2) the CERCLA Post-closure Liability Trust Fund destroys any incentive for going beyond RCRA requirements, because it absolves firms that comply with RCRA from liability for post-closure injuries caused by their activities. *See* Note, *supra* note 58, at 598–604.

[105] The "Superfund" for toxic waste clean-up has been primarily financed in this fashion. *See* CERCLA §§ 221, 232, 42 U.S.C. §§ 4611, 4661 (West Supp. 1984). The CERCLA Study would rely primarily on industry taxes for compensating the victims of past exposures. *See* CERCLA STUDY, *supra* note 11, at 232–33.

[106] As noted above, the importance of deterrence in the toxic waste context is unclear. Nonetheless, where none of the costs of subrogation are involved, it is better to pursue a course that has the potential to deter. Although industry taxes do not specifically deter individual firms, *see supra* note 99, they at least force industry as a whole to bear the cost of exposure-related injury. To some, this may appear only just: if the prices of industrial products should bear the cost of the workers' blood, *see* PROSSER AND KEETON, *supra* note 5, § 80, at 573, so too should they bear the costs of toxic exposure victims' cancers.

[107] Financing the fund through industry tax revenues could lead to a "matching" problem. Because of lengthy latency periods, the costs that would be imposed on the industry by a tax represent the costs of past disposal practices. If present disposal practices pose less of a threat to public health, there will be some over-deterrence of waste-generating activity.

through general taxes would fail to force cost internalization and would create a substantial drain on the deficit-ridden federal treasury. If the toxic waste situation is considered industry's problem, the use of general revenues to fund the compensation system could be viewed as a subsidy to waste generating industries.

Of course, the chemical industry is not responsible for the entire hazardous waste problem.[108] Other industries generate wastes, and the chemical industry should not be made to pay for all waste-producing activity. Partial funding from general revenues may be appropriate if it proves difficult to design a tax system that imposes costs on all industries that contribute in some way to the toxic waste problem.

General revenue financing also can be justified if the toxic exposure problem is considered a problem of society, rather than a problem of industry. For example, government intervention might be necessary if imposing all exposure-related costs on waste generators would destroy their profitability.[109] Imposing liability on American industry could damage its competitive position in world markets, thus causing the loss of American jobs.[110] Partial financing of the system through general revenues may be necessary to preserve chemical industry jobs and keep final responsibility for toxic waste disposal within the country.

4. Conclusion

The direct imposition of liability on responsible parties, which is one of the chief goals of the tort system, must be reevaluated in light

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[108] The CERCLA Study notes that only 60% of waste is produced by the petroleum and chemical industries. The other 40% comes from a wide variety of other sources. *See* CERCLA STUDY, *supra* note 11, app. J, at 239 (estimating relative volumes of toxins produced).

[109] Society is generally made better off by the termination of unprofitable activity, but this is not so when "positive externalities" are present. If the unprofitable activity produces benefits for many people other than the actor, and if the actor for some reason cannot recapture these benefits, imposing all social costs on the actor may be unwise. It could be maintained that the chemical industry produces positive externalities because modern industrial life would be impossible without it. In the nineteenth century, courts invoked this argument, albeit in a more visceral form, as a justification for refusing to require industrialists to internalize all the social costs of development:

> We must have factories, machinery, dams, canals and railroads. They are demanded by the manifold wants of mankind, and lay at the basis of all our civilization. If I have any of these upon my lands, and they are not a nuisance and are not so managed as to become such, I am not responsible for any damage they accidentally and unavoidably do my neighbor. He receives his compensation for such damage by the general good, in which he shares, and the right which he has to place the same things upon his lands.

Losee v. Buchanan, 51 N.Y. 476, 484–85 (1873).

[110] The CERCLA study group noted that this possibility could not be entirely dismissed and suggested that general tax revenues might be used to avoid such a result. *See* CERCLA STUDY, *supra* note 11, at 233–34. An economist might respond that if foreign countries are more willing to bear the adverse health effects of toxins than are Americans, it is efficient to shift toxic waste generation to foreign sources. But exporting our toxic waste problem to developing nations raises serious ethical questions and is almost certainly not advisable in the long run.

of the realities of toxic exposure. Past exposures are undeterrable. Future exposures may already be sufficiently deterred by RCRA regulation and by the threat of CERCLA liability. Therefore, the use of general funding mechanisms such as industry-wide taxes should not create serious under-incentives for safety. This is not to say that imposing liability on identified waste generators is improper. However, the marginal deterrent effect of the threat of this liability will not justify the costs of the inquiry in many cases.[111]

E. Summary of Part X

The adoption of an administrative compensation system could have several beneficial effects. Eligibility requirements and standards for determining the size of damage awards could be set uniformly by a centralized agency overseen by Congress, rather than being haphazardly determined through the process of litigation. From society's standpoint, administrative compensation would allow a more informed choice concerning the amount of compensation provided to toxic tort victims. From the standpoint of individual victims, the uncertainties and delays of litigation would be replaced with a more certain, albeit less generous, administrative award. Funding for the program could be secured through general measures, such as industry taxes, in order to avoid prolonged inquiries into the possible culpability of individual firms. In short, many of the transaction costs associated with litigating complicated toxic tort claims could be eliminated, thereby channeling more money to victims without necessarily increasing the total cost of victim compensation.

The case for administrative compensation is currently a tentative one. Much of the information needed to determine an appropriate structure for the program is unavailable.[112] Until better information is developed regarding the size of the exposed population, it will be difficult to gauge the severity of the problem or the urgency with which a response is required. Moreover, a better understanding of the health effects of toxins is needed in order to match compensation to actual injury and to assign liability to a responsible party. As the health effects of toxins become better understood, the medical causation question should become clearer. Similarly, as government regu-

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[111] Identification will occasionally be easy. When waste is released from an active site, the owner can be held responsible. No one doubts the identity of the responsible party at Bhopal. For inactive sites, however, identification is normally quite difficult. If the relative responsibility of waste generators has already been determined in a CERCLA cleanup action, subrogation liability could be based on this determination. If no prior determination has been made, however, apportioning liability solely for the purposes of recovering victim compensation costs will rarely be worthwhile.

[112] Those studies that have examined the scope of the toxic exposure problem are mostly anecdotal and often reach conflicting results. *See* CERCLA STUDY, *supra* note 11, at 6–7, 16–18.

lation is tightened, determining the identity of responsible parties should become easier.[113] The possibility that an administrative compensation scheme could be more sophisticated in the future does not justify present inaction. Indeed, the effort to establish evidentiary presumptions as part of an administrative compensation program may be precisely what is needed to produce the information that will make future refinements possible.

XI. Conclusion

The analysis presented in this Note highlights the mixed success of governmental responses to the problems caused by releases of hazardous substances into our groundwater. On the one hand, the enactment of CERCLA in 1980 unquestionably provided a badly needed legislative framework for cleanup of hazardous waste sites. On the other hand, hasty congressional action resulted in expensive and preventable court battles in which parties contested the meaning of the statute. Subsequent judicial interpretations of CERCLA's vaguely drafted liability provisions now promote industry responsibility by forcing potentially liable parties to internalize the costs of toxic waste generation, transportation, and storage. Some responsible parties, however, may be able to avoid paying their fair share of the costs of cleanup unless the courts impose joint liability in suits for contribution. Whereas the executive agency responsible for administering the cleanup program appears to be moving toward a balanced enforcement strategy by deemphasizing costly and time-consuming litigation and adminstrative actions and recognizing the role of expedited settlements, the EPA's policies concerning contribution protection and liability releases still unnecessarily restrict the possibility of achieving fair and cost-effective settlements. Moreover, even the imperfect efforts to encourage cleanup contrast sharply with the complete failure of any branch of government to address the special needs of persons injured by toxic releases.

A fair and efficient response to the problems presented by leaking hazardous wastes will require coordination among the different branches of government and integration of a variety of areas of law. CERCLA will not effectively impose cost internalization upon parties responsible for the release of hazardous substances unless insurance and bankruptcy law guarantees that defendants in toxic waste litiga-

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[113] Although the availability of information will make it possible for the compensation system to make these linkages, nothing requires that the system do so. The public may decide that it is socially desirable to have an assistance program for the victims of chronic disease. Likewise, other hazardous waste regulation may make deterrence through the threat of liability under the compensation scheme unnecessary. An increase in available information will make more informed choices possible.

tion eventually pay their full liabilities. Congress may therefore wish to consider modifications to bankruptcy law when debating the merits of extension and amendment of CERCLA. Courts must consider the impact of their insurance case holdings for the over- or under-deterrence of pollution. Additionally, hazardous waste generators, transporters, and disposers will be likely to produce more than the optimal level of toxic substances if the tort system permits them to avoid responsibility for personal injuries — injuries they cause in ways less obvious but no less real than through the negligence of traditional tortfeasors. Courts should recognize that many of the rationales supporting expansive liability in CERCLA cases apply in the same fashion to tort litigation involving personal injuries caused by leakage of toxic waste. Each governmental unit will be more likely to contribute to a solution of the hazardous waste problem if it bears in mind the larger picture as it considers a particular aspect of the problem immediately confronting it.

This Note has outlined a variety of options open to Congress, courts, and regulatory agencies to improve the government's record on cleanup and compensation. Congress can significantly enhance the efficiency and fairness of CERCLA simply by resolving ambiguities in the statute, as some of the clarification proposals currently under consideration in the House and Senate recognize. The EPA can draft its regulations and guidelines to facilitate cleanups that are cost-effective and fair to both the public and responsible parties. If budgetary constraints presently render administrative compensation programs politically infeasible, courts may alleviate the burdens of injured persons by adopting common law innovations that comport with the peculiar complexities of toxic waste litigation. By adopting these proposals, the government may expedite cleanup and assist victims of toxic waste even without massive new appropriations of funds.