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The Future "Superfund" Sites: A Primer for the Next Generation

*Thomas J. Lavelle**

I.

INTRODUCTION

They were a 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 that they had made.

F. SCOTT FITZGERALD, *THE GREAT GATSBY* (1925)

It is not hard to imagine that future generations will look back on the latter part of this century and think such thoughts; we should have known that the hazardous waste industry that had been burying for years had not been "disposed" of, but had been put into long term storage for another generation to deal with. Love Canal, one of the first places this came to be, played so heavily on the consciousness of the nation that its name has become part of the common vernacular as a phrase describing an abandoned hazardous waste dump.

Congress responded to Love Canal and other abandoned hazardous waste sites by passing two laws: The Resource Conservation and Recovery Act (RCRA)¹ and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).² These laws address the cleanup of abandoned hazardous waste sites, and mandate design and operating parameters for existing facilities. Neither RCRA nor CERCLA, however, adequately addresses the virtual certainty that hazardous waste landfill facilities permitted under U.S. Environmental Protection Agency (EPA) regulations will eventually leak and release toxic substances into the environment. Despite this, neither law contains any means for compensating individuals harmed by such releases; injured plaintiffs must rely

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1. 42 U.S.C. §§ 6901-92 (1988).

2. 42 U.S.C. §§ 9601-75 (1988).

instead on common law remedies. Although the common law provides causes of action, private litigants face considerable substantive and procedural barriers in actions to recover damages for personal injury and/or property damage caused by toxic substances released from abandoned hazardous waste dumps. These include ineffective doctrines of liability and problems of establishing causation.³ Although many of the barriers to recovery once inherent in toxic torts have been eased, difficulties nevertheless persist.

The first part of this article examines the RCRA landfill facility⁴ closure and postclosure requirements as well as the current RCRA corrective action provisions. This section suggests that the RCRA permitted hazardous waste landfill facility is a potential future superfund site, and there are no statutory means to compensate persons injured by toxic substances released from these facilities.

The second part of this article evaluates the application of enterprise liability as the most likely cause of action to be of utility to the plaintiff injured by releases from a hazardous waste landfill. This section also examines issues of apportionment of liability and medical causation and proposes a new cause of action based on a finding of enterprise liability and failure to minimize production of hazardous waste.

This article concludes that common law liability, including the proposed cause of action, provides an inadequate method of compensating victims of future Superfund sites. Accordingly, EPA must recognize as a matter of policy that some closed RCRA facilities will leak and release toxic substances into the environment. EPA should then commit to the development of a strategy to deal with long term postclosure concerns in a way that protects human health and the environment, while providing fair and inadequate compensation to persons injured by such releases.

3. See *infra* section III.A.

4. This article focuses on one class of hazardous waste facility: facilities that have been granted a RCRA permit under 40 C.F.R. § 270 for the "disposal" of hazardous wastes via landfill. 40 C.F.R. §§ 264.300-317 (1991). Other forms of hazardous waste treatment and disposal that utilize "land" as part of the disposal or treatment process include: surface impoundments, *id.* at §§ 264.220-.231; waste piles, *id.* at §§ 264.250-.258; and land treatment units, *id.* at §§ 264.270-.283; these are not covered in this article. Other permitted facilities, such as incinerators, treatment and/or storage facilities can reasonably be expected to "clean close," *i.e.* remove all hazardous wastes from the site at the time of closure and thus pose no long-term postclosure threat to human health or the environment.

II.

RCRA LAND DISPOSAL FACILITIES AND POSTCLOSURE
LIABILITYA. *The Future "Superfund" Sites*

Hazardous waste landfills permitted under RCRA must meet mandatory standards for construction, operation and closing of the facility designed to minimize the potential for release of toxic substances into the environment.⁵ After a RCRA permitted hazardous waste landfill ceases operation, EPA regulations require that closure activities be performed,⁶ including maintenance and monitoring activities at the facility for a thirty-year postclosure period.⁷ Owners/

5. The EPA Hazardous Waste Permit Program is promulgated at 40 C.F.R. § 270 (1991). Standard Applicable Hazardous Waste Landfills are promulgated at 40 C.F.R. § 264.300-.317 (1991). The basic standards required for hazardous waste landfills include: 1) Mandatory waste migration prevention measures, including the installation of double liners under any new landfill unit or any replacement or expansion of an existing unit. Draft EPA guidance for double liners requires that the top liner be constructed of a flexible synthetic material, such as high-density polyethylene, and the bottom liner be constructed of either compacted low-permeability soil or a combination of a synthetic material and compacted low-permeability soil. The double liner requirement may be waived by the EPA for certain monofill facilities and for facilities that can demonstrate that alternative design and operating procedures will prevent waste migration as effectively as liners. The regulations do not require the retrofitting of landfill units in existence prior to RCRA with liners. 2) Installation of leachate collection systems over the top liner and between the two liners. The leachate collection system must consist of a drainage layer to collect liquids generated in the disposal unit and a pump to remove the leachate for treatment. 3) Cover of all disposal units at closure. The EPA's minimum technology guidance recommends that covers be of a multi-layer design that includes a synthetic material and compacted soil. Further, facilities seeking a RCRA permit must comply with location standards that prohibit the siting of new facilities in areas that could be affected by floods or earthquakes. The permit requirements of RCRA were "grandfathered" (hazardous waste disposal facilities in operation on or before November 19, 1980 were allowed to continue operating under interim status until a final permit had been issued or denied). As of January 1990, of the 1,467 RCRA hazardous waste land disposal facilities known to the EPA, a total of 277 were on the EPA's "permit track," of which 172 had obtained the required operating permit, 24 were under permit application and review, and 81 had their operating permits denied. The remaining 1,190 facilities did not seek a RCRA permit. See *Hazardous Waste: Funding of Post-closure Liabilities Remains Uncertain* (GAO/RCED-90-64, June 1, 1990) at 9 [hereinafter *GAO Postclosure Report*].

6. The requirements for closure of a hazardous waste landfill specify the following general procedures: Continue all operations necessary to enhance degradation and transformation of waste and to sustain immobilization of hazardous waste constituents in the treatment zone; establish vegetative cover; maintain run-on control system; maintain run-off management system; control wind dispersal; and continue unsaturated zone monitoring, except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone. 40 C.F.R. §§ 264.300-317 (1991), 40 C.F.R. § 270 (1991)

7. The primary 30-year post-closure care activities expected for hazardous waste

operators of such facilities must provide financial assurance that funds will be available to conduct required postclosure activities.⁸ However, they are not required to provide any financial assurances against costs for cleanup and/or third-party damages that may result during or after the postclosure period.

Before Congress passed the Hazardous and Solid Waste Amendments of 1984 (HSWA),⁹ only three statutory authorities and regulations authorized EPA to require corrective action at RCRA permitted facilities: 1) RCRA section 7003,¹⁰ which provides EPA enforcement authority to take action where solid or hazardous waste may present an imminent and substantial endangerment to human health or the environment; 2) RCRA section 3013,¹¹ which provides EPA authority to require investigations where the presence of hazardous waste or release of hazardous waste may present a substantial hazard to human health or the environment; and 3) 40 C.F.R. part 264, subpart F, which provides a regulatory program to address releases of hazardous wastes and hazardous constituents to ground water from "regulated units."¹² Similar to RCRA section 7003, section 106 of CERCLA¹³ also provides EPA with broad authority to take abatement actions to remedy any actual or potential, imminent and substantial endangerment caused by actual or threatened releases of hazardous substances from abandoned hazardous waste sites.

The 1984 HSWA amendments significantly expanded the corrective action required for both permitted RCRA facilities and interim status facilities, including the requirement that any RCRA section 3005(c)¹⁴ permit issued after November 8, 1984, address corrective

landfills and for other types of facilities which have been closed with wastes or waste residues remaining (e.g. land treatment facilities and surface impoundments) include the following: Annual facility inspection; maintenance and/or reestablishment of cover and vegetation; fertilization and mowing; groundwater monitoring; fence maintenance and repair; collecting, removing, and treating leachate; operation and maintenance of gas collection systems. *Id.* Not all of these activities will be necessary at each facility—determination of adequate postclosure care is highly site specific and will depend on the size, engineering characteristics, waste composition, and closure procedures at each site.

8. 40 C.F.R. § 264.143 (1991).

9. Pub. L. No. 98-616, 98 Stat. 3221 (1984) (codified as amended in scattered sections of 42 U.S.C. §§ 6901-6991i (1988)).

10. 42 U.S.C. § 6973 (1988).

11. 42 U.S.C. § 6934 (1988).

12. "Regulated units" are defined in 40 C.F.R. § 264.90 (1991) as surface impoundments, waste piles, land treatment units, and landfills which received hazardous waste after July 26, 1982.

13. 42 U.S.C. § 9606 (1988).

14. 42 U.S.C. § 6925(c) (1988).

action for releases of hazardous wastes or hazardous constituents from any Solid Waste Management Unit at the facility.¹⁵ HSWA section 3004(v) authorizes EPA to require corrective action beyond the facility boundary where appropriate.¹⁶ HSWA section 3008(h) provides EPA with authority to issue administrative orders or sue in court to require corrective action or other measures, as appropriate, when there is or has been a release of hazardous waste or hazardous constituents from a RCRA facility operating under interim status.¹⁷

EPA published a Proposed Rule for Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities on July 27, 1990.¹⁸ The Proposed Rule establishes EPA's regulatory framework implementing the HSWA provisions for corrective action under section 3004(u) of RCRA.¹⁹ The Proposed Rule also provides guidelines for corrective action orders imposed through administrative orders under RCRA section 3008(h),²⁰ as well as a section by section description of EPA's approach to corrective action for RCRA facilities and CERCLA response actions. Although this program would significantly bolster EPA's efforts to mitigate the environmental impact of existing RCRA facilities (assuming final passage of the existing proposed rule), the Proposed Rule does not include any provisions that address long term, post closure releases.²¹

This lack of a mechanism for funding potential long term liabilities of closed RCRA facilities is problematic. The legislative history accompanying HSWA states: "Regardless of the care with which such [hazardous waste landfill] facilities are managed and the regulatory or legal responsibilities imposed on these facilities, assuring protection of public health and the environment long after the active phase of a facility's existence has ended is a difficult task."²² In the March 1986 proposed rule implementing the statutory provi-

15. The Hazardous and Solid Waste Amendments of 1984, Pub. L. No. 98-616, § 3004(u), 98 Stat. 3239 (codified as amended at 42 U.S.C. § 6942(u) (1988)).

16. 42 U.S.C. § 6924(v) (1988).

17. 42 U.S.C. § 6928(h) (1988).

18. 55 Fed. Reg. 30,797 (1990); *see also* 55 Fed. Reg. 34,721 (1990) (proposed rule; 60 day extension of comment period).

19. 42 U.S.C. § 6924 (1988).

20. 42 U.S.C. § 6928(h) (1988).

21. The EPA suggests that this is nonetheless an issue: "However, if environmental contamination remained at unprotective levels, long-term institutional or other controls would be required to prevent human and environmental exposure." 55 Fed. Reg. 30,805 (proposed July 27, 1990).

22. S. REP. NO. 284, 98th Cong., 1st Sess., at 65 (1983).

sions of HSWA, EPA stated an even more pessimistic assessment of the long-term ability of RCRA hazardous waste landfills to prevent migration of hazardous constituents: "EPA's position was, and still is, that absolute prevention of migration forever, or for the long term, is beyond the current technical state of the art. Thus, at some time, some migration through the [hazardous waste landfill] liner will probably occur."²³

Congress initially addressed this issue by establishing the Post-closure Liability Trust Fund (PCLTF).²⁴ The PCLTF was created to assume the liabilities of RCRA permitted hazardous waste disposal facilities after closure. Under the PCLTF, liability would transfer to the fund within five years after facility closure upon an "adequate demonstration of there being no likelihood of migration or release of waste constituents" by the owner/operator of the facility.²⁵ After transfer of liability, the fund would pay for damages resulting from a release of hazardous substances from the facility during the thirty-year postclosure period.²⁶ The fund would also pay for monitoring and maintenance beyond the thirty-year post-closure period if required.²⁷ The maximum balance of the fund was set at \$200 million which was to be generated by a tax on disposal of hazardous waste.²⁸

During deliberations on the reauthorization of CERCLA in 1985, concerns were raised regarding the PCLTF; in particular, the scenario of unlimited liability being transferred to the U.S. government and the PCLTF not having sufficient resources to cover the expense.²⁹ As a result, Congress suspended the PCLTF under section 201 of the Superfund Amendments and Reauthorization Act of 1986 (SARA).³⁰ To date, the PCLTF has not been re-established,

23. 51 Fed. Reg. 10,706, 10,708 (1986).

24. CERCLA § 107(k), 42 U.S.C. § 9607(k) (1988), Pub. L. No. 96-510, 94 Stat. 267 (1980). The PCLTF was the end-product of major uncertainties faced by Congress in its efforts to provide for a new and safe hazardous waste disposal facility capacity. Primary among these uncertainties were: 1) The ability and willingness of private industry to establish new hazardous waste facility capacity under RCRA; 2) the acceptability of new hazardous waste sites by local communities; 3) the distribution of responsibilities for the "perpetual" care and liability attendant to permitted sites; and 4) the availability and affordability of private insurance as a source of financial assurance for such sites. 47 Fed. Reg. 58,435 (1982).

25. CERCLA § 107(k), 42 U.S.C. § 9607 (1988).

26. GAO *Post Closure Report*, *supra* note 6, at 10.

27. *Id.*

28. *Id.* at 10-11.

29. *Id.* at 11.

30. Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499, 100 Stat. 1613 (codified as amended in 42 U.S.C. 9601-9626 (1988)).

and the issue of long term liability from RCRA hazardous waste landfills remains open.

EPA has established some financial requirements under RCRA to assure available funding for certain postclosure activities. Owners/operators must provide financial assurance based on the estimated cost of maintenance and monitoring activities during the postclosure period; any of five mechanisms may be used to do this.³¹ RCRA does not, however, require financial assurances for potential but unknown liabilities such as personal injury, property damages and natural resources damages. CERCLA is also inadequate to deal with this problem, as a leaking RCRA site (active or closed) must first be placed on the National Priorities List to be eligible for Superfund money.³² Even if a site makes the list, Superfund would pay only for cleanup and related activities, as well as for natural resource damages; CERCLA does not provide for compensation for personal injury, personal property damage, or economic loss that may result from release of hazardous substances.³³

Private insurance does not provide a feasible option for postclosure liabilities, either. According to a 1982 report by the U.S. Treasury Department, private insurance for postclosure financial responsibility was not feasible because insurers would not accept uncertain and potentially unlimited liability, would not provide financial assurance for liability in perpetuity, and would not assume managerial liabilities for insured sites.³⁴ More recently, the Government Accounting Office (GAO) published two reports which, although not addressing the issue of postclosure liability insurance *per se*, concluded that insurance for hazardous waste facilities in

31. 40 C.F.R. § 246.142(a) (1991). The five mechanisms are: 1) trust fund, 2) surety bond, 3) letter of credit, 4) postclosure insurance, and 5) financial test/corporate guarantee. In addition, EPA allows owners/operators to use state-authorized mechanisms that provide assurance equivalent to the mechanisms specified above. Individual states may allow modifications of these assurance mechanisms and/or disallow the use of others. *See also GAO Postclosure Report, supra* note 6, at 27-28.

32. The National Priorities List is a listing of the worst hazardous waste sites requiring priority cleanup action. *See* National Contingency Plan, Appendix B, 40 C.F.R. § 300 (1991); *See also* 48 Fed. Reg. 40,658 (1983).

33. The federal government can force responsible parties to pay for a hazardous waste site cleanup themselves, as well as reimburse state and federal government agencies for expenses associated with their involvement in the site. *See* CERCLA § 104, 42 U.S.C. § 9604 (1988).

34. *See* Department of the Treasury: Determination on Feasibility of Private Insurance as an Alternative to the Post-Closure Liability Trust Fund, 47 Fed. Reg. 58,435 (1982) (report prepared pursuant to CERCLA § 107(k)(4)(A), 42 U.S.C. § 9607(k) (1988)).

general was extremely limited at best.³⁵

GAO also addressed the probability that toxic substances will eventually be released from facilities currently permitted under RCRA, as well as the absence of any regulatory mechanism to compensate individuals sustaining injury and/or property damage resulting from such releases:

[I]t remains likely that some permitted hazardous waste disposal facilities will leak sometime after they close. The current technology used to prevent the migration of waste—liners and covers—are not believed capable of preventing waste migration forever. In fact, these technologies may fail at some point after facilities close and the mandated 30-year maintenance and monitoring period has ended. Although treatment of wastes is now being required, some currently disposed wastes will remain hazardous for long periods and consequently leakage from permitted facilities could pose a risk to the public health and the environment.

If and when leakage does occur from permitted facilities, current postclosure funding mechanisms are not adequate for ensuring that sufficient resources will be available to pay for liabilities resulting from such leakages. The only postclosure funding mechanisms in place cover routine postclosure care for the established 30-year postclosure period and corrective action for known discharges. Should other problems arise during postclosure, there is no assurance that funds will be immediately available to take necessary actions. Although currently permitted hazardous waste facilities can pass financial tests, present financial conditions provide little guarantee that a facility owner/operator will be financially able to pay for liabilities 30, 50, or more years in the future.³⁶

The permitting of hazardous waste landfill facilities, the development and implementation of Land Disposal Restrictions, RCRA corrective action provisions (including the proposed corrective action rule, if passed), and RCRA closure and postclosure standards represent significant improvements over past hazardous waste management practices. Nevertheless, it remains virtually certain that leakage will occur from some RCRA permitted hazardous waste landfills, posing a real potential for harm to public health and the environment. Despite this, neither Congress nor the federal agencies have enacted any institutional mechanisms that deal with this

35. See *Hazardous Waste: The Cost and Availability of Pollution Insurance* (GAO/PEMD-89-6, Oct. 28, 1988), *Hazardous Waste: Issues Surrounding Insurance Availability* (GAO/RCED-88-2, Oct. 16, 1987).

36. *GAO Postclosure Report*, *supra* note 5, at 38.

problem (other than the PCLTF, which has been suspended indefinitely). The GAO has made some suggestions:

1. Reactivate the PCLTF and remove the fund's \$200 million ceiling. This would provide a larger source of funds to pay for any liabilities that occur.
2. Restructure the fund similar to coinsurance in which owners/operators would pay a deductible of \$1 million, the fund would pay out claims ranging from \$2 million to \$30 million, and owners/operators would pay claims above \$30 million.
3. Require that any facility would have to be in operation for ten years in order to qualify for coverage by the fund.
4. Delay implementation of PCLTF coverage until after the thirty-year post-closure period.³⁷

If the PCLTF is revived, procedures must be developed to streamline the actual claim process so that it works in a way that provides fair and adequate damages to injured parties in a cost-effective and timely manner. As the situation currently exists, the burden of redress for injuries sustained due to exposure to toxic substances released from closed RCRA hazardous waste landfills will be born by the private citizen through actions at common law.

III.

A NEW TOOL FOR THE NEXT GENERATION

This section explores a common law approach to compensation for injuries sustained from release of toxic substances from closed RCRA facilities. First, apportionment of contribution will be examined. Second, a modified theory of enterprise liability will be presented. Third, issues of medical causation will be examined. Finally, a new tort based on a company's negligent failure to minimize production of hazardous waste based on a theory of enterprise liability will be proposed.

A. *Tort Law and the Future Superfund Site*

The tort system has multiple goals. It aspires to compensate victims by remedying a broad range of losses, to deter undue risk by assigning costs to those who generate the losses, to prevent harm by educating the public about the safety of consumer goods and services, to provide a forum where persons may have their "day in court," and to punish and deter outrageous conduct not adequately

37. *Id.* at 36.

reached by the criminal law system.³⁸ Suits in tort involving injury from exposure to substances released from abandoned hazardous waste landfills initially presented many difficulties,³⁹ but the law of toxic torts has developed toward easing some of the initial barriers to recovery.

1. Apportionment of Contribution

Tort law actions for injuries sustained from abandoned hazardous waste sites, regardless of the cause of action on which the claim is based, encounter the difficulty of apportioning damages among multiple defendants. Prior to passage of RCRA, no federal requirements mandated the recording of hazardous waste shipment and disposal. With passage of RCRA came implementation of "cradle-to-grave" record keeping, which tracks a shipment of hazardous waste from the point of generation through transportation and/or storage to disposal. The uniform hazardous waste manifest system is crucial to the "cradle-to-grave" goal of RCRA. The hazardous waste manifest provisions require each person⁴⁰ in the chain of custody to acknowledge receipt of the waste by signing the manifest. All signatories receive a copy of the manifest; most important is the original (first page) which the Treatment, Storage and Disposal (TSD) facility sends back to the generator. The hazardous waste industry refers to this as the "terminated copy." The terminated copy acts as certification to the generator that the waste was transported to and accepted by the TSD facility.⁴¹ By this system, all parties in the chain of custody are put on notice as to the regulated nature of the waste shipped. RCRA manifesting thus should provide a basis for allocating apportionment of contribution by indicat-

38. *Tort Law and the Public Interest: Competition, Innovation and the Consumer Welfare*, American Bar Association/The American Assembly, Columbia University (June, 1990) at 6.

39. See, e.g. *Developments in the Law: Toxic Waste Litigation*, 99 HARV. L. REV. 1458, 1602-03 (1986). It is interesting to note that the Senate version of CERCLA would have created a federal cause of action for individuals injured by exposure to hazardous waste and imposed retroactive strict liability on defendants. See S. 1480, 96th Cong., 2d Sess. § 4(a) (1980). However, these provisions were omitted from the version of the bill that became law.

40. Unlike some of the more creative conceptions of "person" that exist in the Anglo-American legal system, "person" as it pertains to the hazardous waste manifest system is exactly that—the manifest requires original signatures, printed name and date of signing by the waste generator, all drivers transporting the waste, and the individual at the TSD facility responsible for accepting the waste for disposal. 40 C.F.R. § 262 (app. 1991).

41. H.R. REP. NO. 1491, 94th Cong., 2d Sess., pt. 2, at 2841 (1976), reprinted in 1976 U.S.C.C.A.N. 6238, 6265.

ing who shipped how much to the landfill, assuming such records are available at the time suit is brought. Also, records of waste disposal locations and quantities must be provided to EPA or state environmental regulatory authority by a TSD facility upon the facility's closure.⁴²

In examining apportionment of contribution to a hazardous waste landfill, a distinction must be made between the actual "generator" of the waste and the "broker" or "transporter" of the waste. It is common practice in the hazardous waste management industry for hazardous waste management firms to operate a RCRA permitted storage facility. A hazardous waste shipment from a generator to a broker, therefore, generates a uniform hazardous waste manifest that tracks movement of the waste from the generator to the broker's storage facility. Typically, the broker accumulates hazardous waste shipments from clients, consolidates them into bulk (tractor-trailer, tank truck or rail car) shipments at the storage facility, and transports the shipment to the TSD facility. The uniform hazardous waste manifest generated by this transaction tracks the waste from the broker to the disposal facility; the regulations do not require that this second manifest indicate the original waste generator, and the identity of generator is thus "insulated."⁴³ Since the bulk of hazardous waste enters commercial TSD facilities via broker/transporters, a search of hazardous waste manifest forty years from now would likely be more indicative of the hazardous waste management firms that shipped waste to the site and not necessarily the original waste generators.

If the National Priorities List (NPL) names a closed RCRA facility, then most of work necessary to determine apportionment of contribution will already have been done by EPA in determining a

42. 40 C.F.R. § 264.74(c) (1991).

43. Large hazardous waste management firms routinely use this point as a marketing tool. The pitch goes something like this: "We'll pick up your hazardous waste and ship it back to our permitted storage facility, where we terminate the manifest and send you back a copy which is your receipt that we accepted your waste. Then we'll consolidate what we have on site and ship to a TSD facility. That manifest is executed by us and is terminated by the TSD facility. You don't have to worry about your waste with respect to our facility because we don't dispose of anything. We don't even open the drums—we just put them on a bigger truck. And if the TSD facility we ship to goes under, all of the manifests on their site point back at us, not you. Since we have deep pockets, and we want to maintain our good reputation, we take care of the expense. The state and EPA are happy because they are getting their money, we are happy because we can write it off, and since everyone's happy, there is no reason for the regulatory authorities to attempt to track the first generation manifests to find out who generated the waste in the first place. So don't worry, trust us!"

Non-Binding Allocation of Responsibility (NBAR)⁴⁴ for the identified Potentially Responsible Parties (PRPs); EPA ranks these on the basis of the volume of materials sent to the site.⁴⁵ If the facility is not on the NPL, contribution information may be available through a Freedom of Information Act Request⁴⁶ (or comparable state public records law) for old manifests or copies of the facility's Biennial Hazardous Waste Report. Information may also be gathered from state and/or federal initial response and remedial investigation actions.⁴⁷ Information gained through these routes may be of considerable value in identifying parties responsible for shipping hazardous waste to the landfill. However, under the exemption for investigative records, EPA has the discretion and authority to shield this information.⁴⁸

Thus, assuming that the appropriate records are available, apportionment of contribution to a hazardous waste landfill could be done via a "volumetric approach," i.e. by the amount of hazardous substance contributed to the site by each party. One can already look to Superfund enforcement (as interpreted by the courts) as an appropriate model for contribution apportionment in toxic tort suits involving hazardous waste landfills.⁴⁹ In terms of a suit in tort, it ultimately makes little difference if the broker or original generator is required to pay damages, so long as the targeted entity has the ability to pay damages.

44. See Superfund Program; Non-Binding Preliminary Allocations of Responsibility (NBAR), 52 Fed. Reg. 19,919 (1987).

45. See Hazardous Waste Enforcement Policy, 50 Fed. Reg. 5034, 5037 (1985).

46. 5 U.S.C. § 552 (1988).

47. See 42 U.S.C. § 9604(i)(6)(D) (1988); EPA National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. § 300.5 (1990) (defining "remedial investigation/feasibility study (RI/FS)": An RI/FS shall, as appropriate, be undertaken by the lead agency conducting the remedial action to determine the nature and extent of the threat presumed by the release and to evaluate proposed remedies. This includes sampling, monitoring, and exposure assessment, as necessary, and includes the gathering of sufficient information to determine the necessity for the proposed extent of remedial action).

48. 5 U.S.C. § 552(b)(7)(A) (1988).

49. The courts have held that CERCLA does not require specificity in determining what generator contributed which chemical that caused the particular injury because the co-mingling and migration of wastes at a disposal site make identification of specific wastes and specific sources scientifically difficult and economically infeasible. See *United States v. South Carolina Recycling and Disposal, Inc.*, 653 F. Supp. 984, 993 n. 6 (D.S.C. 1986) (identification of all waste types in the conglomerate of materials at the dump site would cost approximately five times the cost of surface removal); *United States v. Wade*, 577 F. Supp. 1326, 1332-33 (E.D. Pa. 1983) (holding that requiring a plaintiff under CERCLA to fingerprint waste would eviscerate this statute).

2. Modified Enterprise Liability

The theory of enterprise liability is based upon the idea that the costs of an activity or enterprise should be born by that activity.⁵⁰ In its pure form, enterprise liability places liability on an entire industry as opposed to individual manufacturers for damages arising from identically defective products.⁵¹

The seminal case on enterprise liability is *Hall v. E. I. Du Pont De Nemours & Co.*,⁵² which involved claims by children injured by blasting caps they had found outdoors while playing. The plaintiffs were unable to identify the particular companies that had manufactured the particular blasting caps that had caused injury to them. The *Hall* court, although not adopting a theory of enterprise liability *per se*, did enunciate the circumstances in which an entire industry might be held liable for harm from its operations: When injury to the plaintiff is caused by multiple parties and the only feasible way of "anticipating costs or damages and devising practical remedies is to consider the activities of a group."⁵³ Other factors the court considered relevant in considering application of enterprise liability were the defendants' joint awareness of the risks of their activity or product, joint capacity to reduce the risks, joint control of the risk, and adherence to industry-wide standards.⁵⁴

According to the *Hall* court, a plaintiff, invoking enterprise liability has the burden of proof for the following: 1) The plaintiff is reasonably unable to identify the producer of the injuring agent; 2) all of the defendants manufactured substantially similar defective products; 3) the defective product caused the plaintiff's injury; 4) the defendants owed a duty of care to the class in which the plaintiff is a member; 5) clear and convincing evidence shows that the plaintiff's injury was caused by one of the defendants (specifically which one is not required); and 6) plaintiff has joined virtually all potential tortfeasors.⁵⁵ A key holding in *Hall*, and one that many courts have relied upon in rejecting enterprise liability, is that such liability is most appropriate in industries comprised of a small number of

50. LOUIS R. FRUMER & MILTON FRIEDMAN, 1 PRODUCTS LIABILITY § 1.03[1] (1990).

51. *Id.*

52. 345 F. Supp 353 (E.D. N.Y. 1972).

53. *Id.* at 378.

54. *Id.* Such adherence alone would not support a finding of enterprise liability, but if the individual manufacturers cannot be identified, then adherence to such standards could support the notion of joint control of the risk and shift the burden of proof to the individual defendants. See FRUMER & FRIEDMAN, *supra* note 50, § 1.03 [1].

55. *Hall*, 345 F. Supp. 353.

producers.⁵⁶

In *Sindell v. Abbott Laboratories*,⁵⁷ the California Supreme Court held it reasonable to measure the likelihood that any of the defendants supplied the product which allegedly injured the plaintiff by using that percentage which the defendant's sales of diethylstilbestrol (DES) bore to the total market sales of DES—the so-called “market share” theory of liability.⁵⁸ The court also held that the plaintiff was obligated to join in the action the manufacturers of a substantial share of the DES, and that, if the plaintiff was successful, the burden of proof would shift to the defendants who would then have the burden of demonstrating that they could not have made the substance which injured the plaintiff.⁵⁹

When considering applying *Sindell* to suits involving injury from hazardous waste sites, it should be noted that the DES manufacturers in *Sindell* were engaged in an identical activity which created a qualitatively identical risk.⁶⁰ However, with a hazardous waste landfill, some contributor's hazardous waste will be more hazardous than others and the *Sindell* element of consistency (a single substance) will not exist. Thus, market share liability as enunciated in *Sindell* will probably not influence courts considering suits in tort for hazardous waste site injuries.⁶¹ However, the *Sindell* court did

56. *Id.* at 378. (“What would be fair and feasible with regard to an industry of five or ten producers might be manifestly unreasonable if applied to a decentralized industry composed of thousands of small producers.”). *See, e.g.*, *Vigiolto v. Johns-Manville Corp.*, 643 F. Supp 1454 (W.D. Pa. 1986), *aff'd* 826 F.2d 1058 (3d Cir. 1987) (applying Pennsylvania law, court rejected enterprise liability in an asbestos case because plaintiff failed to show that defendants were virtually all of the participants of a small industry who exercises control over uniform industry practices either directly or through a trade association); *Mulcahey v. Eli Lilly & Co.*, 386 N.W.2d 67 (Iowa 1986) (rejecting enterprise liability because plaintiff named only twenty-five defendants when there was evidence that 200 companies manufactured DES during the relevant period); *Collins v. Eli Lilly & Co.*, 116 Wis. 2d 166, 342 N.W. 2d 37 (1984) (rejecting enterprise liability in a DES case on ground that case involved perhaps hundreds of defendants and thus assumption that defendant jointly controlled risk of injury was necessarily weak).

57. 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132 (1980).

58. *Id.* at 612, 607 P.2d at 937, 163 Cal. Rptr. at 145.

59. *Id.*

60. W. PAGE KEETON, ET AL., *PROSSER AND KEETON ON THE LAW OF TORTS*, § 104, at 714 (5th ed. 1984) (An “injury or illness occasioned by a fungible product . . . made by all of the defendants” is requisite for market share liability.).

61. The market share theory in *Sindell* has been rejected in cases involving: lead paint poisoning (*see, e.g.*, *Santiago v. Sherwin-Williams Co.*, 782 F. Supp. 186 (1992)), asbestos (*see, e.g.*, *Sholtis v. American Cyanamid Co.*, 568 A.2d 1196 (N.J. Super. 1989)), breast implants (*see, e.g.*, *Lee v. Baxter Healthcare*, 721 F. Supp. 89 (D. Md. 1989), *aff'd*, 898 F.2d 146 (4th Cir. 1990)), Diphtheria-Pertussus-Tetanus (DPT) vaccine (*see, e.g.*, *Shackil v. Lederle Lab.*, 561 A.2d 511 (N.J. 1989)), Tetracycline (*see, e.g.*,

recognize that in circumstances such as these, creative solutions are called for:

In our contemporary complex industrial society, advances in science and technology create fungible goods which may harm consumers and which cannot be traced to any specific producer. The response of the courts can be either to adhere rigidly to prior doctrine, denying recovery to those injured by such products, or to fashion remedies to meet changing needs.⁶²

The courts have yet to adopt enterprise liability in a hazardous waste site case; but with suitable modification, courts could find contributors to a hazardous waste site jointly liable under a theory of enterprise liability.⁶³ First, a plaintiff injured by a release of toxic substance from a closed RCRA permitted landfill facility would have to successfully characterize that landfill as an "enterprise,"⁶⁴ and characterize the entities that disposed of hazardous waste in that landfill as participants in that enterprise. There is ample support for this.

RCRA hazardous waste landfills are pervasively regulated, for-profit operations. Owners and operators of RCRA hazardous waste landfill facilities must obtain site-specific EPA identification numbers, prepare contingency plans, emergency procedures and post-closure plans, comply with manifest, record keeping and reporting requirements, maintain a monitoring program as pursuant to the facility permit, comply with financial responsibility requirements, and notify generators of the receipt of their wastes.⁶⁵ Also, RCRA permitted hazardous waste landfills are somewhat rare—less than 200 nationwide.⁶⁶ In some areas, they are very scarce. For instance, the entire southeast region of the United States is served by two commercial RCRA permitted hazardous waste landfills: the Chemical Waste Management hazardous waste landfill in Emille, Alabama, and the Laidlaw Environmental Services (formerly GSX, Inc.) hazardous waste landfill in Pinewood, South Carolina. Also,

Dawson v. Bristol Lab., 658 F. Supp. 1036 (W.D. Ky. 1982)), and other drugs (*see, e.g., Griffin v. Tenneco Resins, Inc.*, 648 F. Supp. 964 (W.D. N.C. 1986)).

62. *Sindell*, 26 Cal. 3d at 610, 607 P.2d at 936; 163 Cal. Rptr. at 144.

63. For an earlier argument for the application of enterprise liability to the hazardous waste dump, *see Note, Recent Developments—Toxic Waste Litigation*, 99 HARV. L. REV. 1458, 1627-31 (1986).

64. The three main elements if an enterprise are: "related activities, unified operation or common control, and common business purpose." *Brennan v. Arnheim & Neely, Inc.* 410 U.S. 512, 518 (1972). Enterprise has also been defined as simply a venture or undertaking, especially one involving financial commitment.

65. 42 U.S.C. § 6924 (1988); 40 C.F.R. § 264 (1990).

66. *GAO Post Closure Report, supra* note 5 at 9.

because of the limited nature of RCRA permitted hazardous waste landfills and the characterization of hazardous waste as an article of interstate commerce, all commercial RCRA permitted hazardous waste landfills accept out-of-state waste.⁶⁷

The application of enterprise liability to suits involving injury from hazardous waste dump sites would depart from the standard model of enterprise liability enunciated in *Hall*. First, it would be quite common to have more than "an industry of five to ten producers."⁶⁸ Second, there would be no apparent concert of action among the defendant/contributors. Third, the "defective product"—the chemical waste disposed of in the dump—would not be "substantially the same." Finally, as noted in *Sindell*, *Hall*'s enterprise liability was applied to an industry with few participants, all applying the same safety standard,⁶⁹ unlike the many contributors to the RCRA sites who would apply varying standards.

However, as noted earlier, the major contributors to RCRA hazardous waste landfills are the few brokers and transporters which handle consolidated loads from many waste generators. Thus, the number of "participants" may be few enough to allow application of enterprise liability. Second, the claim that there was a "common awareness of the risk" associated from the disposal of hazardous waste could at least be argued from a common sense approach. The *Hall* Court believed that it was appropriate 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."⁷⁰ Thus, in order to establish that a group of contributors to a hazardous waste landfill should be held jointly and severally liable, the plaintiff should only need to demonstrate the defendants' common awareness of the risks of their activity (in this case, the "dangerous" nature of their hazardous waste), and their joint capacity to reduce those risks (for instance, a business could have engaged in source reduction, sent the waste for treatment or incineration, or have treated or stabilized the waste prior to shipment to landfill to immobilize the toxic constituents). Historically,

67. See *National Solid Waste Management Assn. v. Alabama Dept. of Env'tl. Management*, 910 F. 2d 713 (11th Cir. 1990); *Browning-Ferris Indus. v. Alabama Dep't of Env'tl. Management*, 799 F.2d 1473 (11th Cir. 1986); *Government Suppliers Consolidating Services, Inc., v. Indiana*, 793 F. Supp. 739 (S.D. In. 1990).

68. *Hall v. E.I. Du Pont De Nemours & Co.*, 345 F. Supp. 353, 387 (E.D. N.Y. 1972).

69. *Sindell v. Abbott Laboratories*, 26 Cal. 3d 588, 607-10, 601 P.2d 924, 933-35, 163 Cal. Rptr. 132, 141-43 (1980).

70. *Hall*, 345 F. Supp. at 378.

the courts have presumed that persons handling hazardous materials were aware that such materials were regulated by virtue of the fact that they knew, or should have known, that the materials were dangerous.⁷¹ It would not be unreasonable for the courts to reverse this logic: Since anyone who generates or handles hazardous waste knows that it is stringently regulated, there should be a *prima facie* presumption that they know the waste is potentially dangerous.

The difficulty with the third requirement that the "defective product" must be "substantially the same" is that the specific chemicals contributed to the dump by each defendant are not individually similar. However, if the "defective product" or the "instrument of harm" is instead identified as generic chemical waste defined as "hazardous" pursuant to RCRA, then a plaintiff could show that each defendant produced an instrument of harm substantially the same as all of the other defendants, *i.e.* hazardous waste. The following factors offer support for this argument. The government defines "hazardous waste" as a particular class of characteristic and specifically listed, discarded chemicals and solid wastes.⁷² The courts do not require the identification of specific chemicals in CERCLA enforcement actions.⁷³ Finally, all the participants in the hazardous waste game are controlled by virtually the same regulations,⁷⁴ which should satisfy the *Hall* requirement of operation according to common, equivalent safety standard.

Application of enterprise liability to suits involving injuries from releases of toxic substances from hazardous waste landfills contrib-

71. See *United States v. International Minerals & Chemical Corp.*, 402 U.S. 558, 565 (1971) ("[w]here, as here. . . , dangerous or deleterious devices or products or obnoxious waste materials are involved, the probability of regulation is so great that anyone who is aware that he is in possession of them or dealing with them must be presumed to aware of the regulation."); *United States v. Dee*, 912 F.2d 741, 745 (4th Cir., 1990) (holding that in criminal prosecution of RCRA violations, the government did not need to prove defendants knew violation of RCRA was a crime, nor that regulations existed listing and identifying the chemical waste as RCRA hazardous wastes, but only that chemicals were hazardous and "wastes" within the meaning of RCRA); *United States v. Hoflin*, 880 F.2d 1033, 1039 (9th Cir. 1989), *cert. denied*, 110 S. Ct. 1143 (1990) (holding that defendant, who participated in the burial of paint which met the criteria of hazardous waste under RCRA had only to know that the paint had potential to be harmful to people or the environment to require the jury to find, as an element of the crime, that the defendant knew the material being disposed of was "hazardous").

72. 40 C.F.R. §§ 261.20-24 (1990).

73. See *supra* note 49.

74. Under RCRA §§ 3006(b), (f), 42 U.S.C. § 6926(b), (f), states may apply to the EPA for approval to administer their own hazardous waste management programs. The state program must be no less stringent than the federal program, and states are free to implement regulations that are more comprehensive or stringent. 40 C.F.R. §§ 271.1-25 (1990).

utes to the compensatory, fairness, and deterrence goals of the tort system in general. It is a matter of general fairness that persons who benefit from a good or service should pay the entire cost of receiving that benefit, including appurtenant liabilities. Currently, disposal of hazardous waste via thermal destruction is three times the cost of disposal via landfill for an equivalent volume of material,⁷⁵ so businesses gain an economic advantage by burying hazardous waste.⁷⁶ By compelling those who benefit from a good or service to internalize the entire cost of receiving the benefit, socially "wasteful" enterprise can be deterred.⁷⁷ Given the reality that current hazardous waste landfill technology is apparently unable to provide a "leakproof" landfill, burial of hazardous waste should certainly be considered a "socially wasteful" enterprise.⁷⁸

3. Problems of Proving Medical Causation

A significant barrier encountered by claimants in toxic tort suits has been that of showing medical causation—identification of the substance that caused their injury. Plaintiffs can rarely identify a specific, direct chain of biological events leading from exposure to a

75. Telephone Interview with Ruth L. Rilee, Senior Technical Sales Representative, Laidlaw Environmental Services, Inc., Laurel, Maryland (May 6, 1991).

76. To be permitted under RCRA, a hazardous waste incinerator must demonstrate a "4 nines" (99.99%) Destruction and Removal Efficient (DRE) of Principal Organic Hazardous Constituents (POHCs) of all substances to be thermally destroyed in the incinerator. 40 C.F.R. § 264.3431a(1) (1991). The remaining 0.01% that is not destroyed (primarily metals) is removed via off-gas treatment as fly ash, and as residue from the primary incinerator as bottom ash. Thus, assuming that a RCRA incinerator is properly operated in conformance with the terms of its permit, it is a very effective way of rendering hazardous waste nonhazardous and greatly reducing the volume of what ultimately is disposed of in a hazardous waste landfill (the bottom and fly ash). This is not to say that incineration is without risk; arguably, however, the risk to human health of thermally destroying hazardous waste and burying the ash in the ground (at a greatly reduced volume compared to the pre-incineration volume) poses less risk in terms of potential exposure (small exposure potential via the air pathway, small exposure potential via the ground/groundwater pathway) than burying the waste outright (little or no exposure potential via the air pathway, large exposure potential via ground/groundwater pathway).

77. See, e.g., David G. Owen, *Deterrence and Desert in Tort: A Comment*, 73 CAL. L. REV. 665, 670 (1985).

78. Congress recognized this with passage of the Land Disposal Restrictions (LDRs) with the HSWA amendments of 1984. Although not an outright ban on land disposal, the LDRs, which are codified at 40 C.F.R. § 268 and which became effective in three stages over a two year period, prohibit the landfilling of almost all hazardous waste without prior treatment. The final third segment of the LDRs became effective May 8, 1990. The LDRs do not do away with the practice of landfilling. Rather, hazardous wastes must be treated to reduce the leaching potential of the hazardous constituents below statutorily designated levels. See 42 U.S.C. § 6924 (1988).

toxic substance to their particular injury or disease. Causation in the toxic tort realm has thus evolved into an inquiry of the statistical association between the change in the degree of the putative cause and the change in the frequency of the injury or disease. Even if the two events are statistically associated, further inquiry is required to determine if they are causally related or whether the association may be coincidental, stem from a deficiency in the design of the study, or occur through random events.⁷⁹ This difficulty is compounded by the fact that in cases involving chronic health effects, any one of many factors may cause or contribute to the plaintiff's disease. For example, cancer is known to be caused by a variety of interrelated genetic, physiological and environmental factors.⁸⁰ Absent a substance that is associated with a "marker" disease (for instance, asbestos exposure and mesothelioma), it is difficult if not impossible to relate a specific cancer to a particular causal agent in a particular individual.⁸¹

Traditionally, this causal determination was premised on an inquiry as to whether the methodology used by the expert was "generally accepted" within the scientific community.⁸² One problem with this inquiry is that the science of epidemiology—the relationship between exposure to low levels of toxic substances and cognizable injury—is a relatively new one. Imposing the requirement that expert testimony be based on peer-reviewed science would lead to the harsh result of forcing victims of toxic substance exposure to go uncompensated for their injuries until the "science" necessary to establish causation has wound its way through the arduous and time-consuming process of peer review and acceptance. Moreover, epidemiology deals with populations, not individuals. Epidemiologists can estimate the proportion of disease incidence in a population attributable to the excess risk created by the toxic substance and the proportion attributable to the cumulative risk attributable to all other factors, i.e. the background risk. However, it is virtually impossible to determine the actual source of a disease afflicting a particular individual in the exposed population.⁸³

These problems have been diminished somewhat by the courts,

79. See PHILIP J. HARTER, *THE DILEMMA OF CAUSATION IN TOXIC TORTS* 429 (1986).

80. See generally, Gary M. Williams & John H. Weisburger, *Chemical Carcinogens in CASARETT & DOULL'S TOXICOLOGY* 99-173 (Klaassen et al. eds., 1986).

81. *Id.*

82. See *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923).

83. See D. Alan Rudlin, *The Admissibility of Mandated Environmental Reports*, *THE BRIEF* 50 (1990).

which have modified their inquiry to whether the expert's opinion is based on a "sound" methodology, as opposed to whether the opinion has general acceptance within the scientific community.⁸⁴ This allows novel theories of causation to reach the factfinder. Of course, novel theories are more susceptible to challenge, and contrary expert opinion may be presented in order to show that the new theory lies outside the "scientific mainstream" and is thus unreasonable, or the underlying methodology is unsound.

Presenting such causal evidence in toxic tort cases requires the use of expert opinion to establish, to the satisfaction of the factfinder, that the substance(s) to which the plaintiff was exposed acted as a substantial factor in producing the injury. The Federal Rule of Evidence, section 702 controls the introduction of such evidence in federal courts. Section 702 provides that when scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or decide a factual issue, a person qualified as an expert by knowledge, skill, experience, training or education may testify in the form of an opinion as to the evidence or issues in question. Federal Rule of Evidence 703 provides that an expert witness may base his or her opinion on otherwise inadmissible facts and/or data so long as such facts and/or data are of the type reasonably relied upon by experts in that particular field to form opinions on the same subject. It is up to the court to decide if the basis of the expert's opinion is sufficiently reliable to allow presentation to the jury.⁸⁵ Recent case law applying Section 702 shows a split between the Circuit and state courts.

In *In re Paoli*,⁸⁶ the Third U.S. Circuit Court of Appeals relaxed the required standards of proof of injury by ruling that, in toxic exposure cases, the plaintiffs could obtain significant recovery without scientific proof of harm. In reversing a lower district court's grant of defendant's motion for summary judgment, the appellate court held that the absence of proof of harm was not a barrier to plaintiff's obtaining medical monitoring expenses. In *Stead v. F. E.*

84. See *Osburn v. Anchor Lab., Inc.*, 825 F.2d 908, 915 (5th Cir.), *cert. denied*, 485 U.S. 1009 (1988) ("What is necessary is that the expert arrived at his causation opinion by relying upon *methods* that other experts in his field would reasonably rely upon in forming their own, possibly different opinions, about what caused the patient's disease."); *Ferebee v. Chevron Chem. Co.*, 552 F.Supp 1293, 1301 (D.C.D.C. 1982), *aff'd*, 736 F.2d 1529, 1534-36 (D.C. Cir. 1984), *cert. denied*, 469 U.S. 1062 (1984) (novel theory in first ever case involving alleged injury due in part to dermal exposure to paraquat allowed due to defendant's inability to show fault with basic diagnostic methodology employed by plaintiff's expert).

85. In cases brought in state courts, the applicable state rules of evidence apply.

86. 916 F. 2d 829 (3d Cir. 1990), *cert. denied*, 111 S. Ct. 1584 (1991).

Meyers Co.,⁸⁷ a Vermont district court adopted similar reasoning, rejecting the requirement that increased risk of harm be qualified to a reasonable degree of medical certainty. However, in recent cases concerning alleged injuries caused by the drug Benedictin, the courts have taken a more traditional approach. In *Richardson v. Richardson-Merrell Inc.*,⁸⁸ the plaintiff's expert testified that there was a statistically significant correlation between Benedictin use and birth defects, even though commonly accepted epidemiological analyses clearly rejected such a correlation. After a jury verdict for the plaintiff, the trial court entered a judgment for the defendant notwithstanding the verdict, holding that the expert testimony offered by the plaintiff was barred by Rule 703.⁸⁹ The District of Columbia Circuit Court of Appeals cited the "overwhelming body of contradictory epidemiological evidence" as a basis for precluding the testimony of the plaintiff's expert as overly speculative and unsupported by fact.⁹⁰

The bottom line is that the courts are inconsistent, and that there are no clear-cut answers to the medical causation issues appurtenant to toxic tort suits—this is an area that will undoubtedly remain problematic in the years to come. One of the primary difficulties with the causation issue is the disparity between causation in a medical sense and causation in the legal sense, and it may take legislation to solve this problem. In any event, easing the medical causation requirement will be necessary to make tort actions more accommodating to hazardous waste site plaintiffs.

B. *A Proposed Tort: Failure to Implement a Hazardous Waste Minimization Program*

A key element in protecting human health and the environment from hazardous waste is the minimization of hazardous waste in the first instance. One way of accomplishing this is through the introduction of a new tort: failure to implement a hazardous waste minimization program. This theory of liability incorporates elements of negligence and public nuisance and imposes an affirmative duty on a company to engage in waste minimization activities. Given the national policy behind waste minimization, the problems of disposal

87. No. 89-169 (D. Vt. Nov. 26, 1990) (available on LEXIS, Genfed Library, Dist. File).

88. 857 F. 2d 823, 829-31 (D.C. Cir. 1988), *cert. denied*, 493 U.S. 882, 110 S.Ct. 218 (1989).

89. *Id.* at 827.

90. *Id.* at 830.

capacity, and the public health and environmental welfare issues involved, a strong argument can be made that the duty to minimize output of hazardous waste can be couched in terms of a public welfare duty.

Negligence is a breach of the duty of due care—"conduct which falls below the standard established by law for the protection of others against unreasonable risk of harm. . . ."⁹¹ Negligence thus concerns the conduct of the actor. To establish a cause of action in negligence, a plaintiff must prove the defendant was under a duty to conform to a standard of conduct; that the established duty was breached; and that there was a reasonably close connection between the conduct and the resulting injury—*i.e.* that the conduct was the proximate cause of the injury and that the plaintiff suffered actual loss or damage as a result.⁹² For purposes of this discussion, assume the following facts: 1) The defendant contributed to a RCRA hazardous waste landfill that has leaked and caused injury to the plaintiff; 2) the defendant has been properly sued under a modified theory of enterprise liability; 3) the defendant was a "large quantity generator;"⁹³ 4) although the defendant properly shipped hazardous waste to the landfill with a properly executed and signed Uniform Hazardous Waste Manifest, the defendant did not have in place, nor attempt to put into place, a hazardous waste minimization program; 5) the defendant is still engaged in viable economic activity that produces hazardous waste; and 6) the defendant has not mooted the claim by enacting a hazardous waste minimization program or by economically justifying why such a program has not been put into place.

1. Duty to Conform to a Standard of Conduct

RCRA Section 3002(b) requires that generators of hazardous waste certify on the hazardous waste manifest required by section 3002(a)(5) that they have in place a program to reduce the volume or quantity and toxicity of the waste that they generate to a degree determined by the generator to be economically practicable. Generators must also certify that their current method of management is the most practicable method available to minimize present and fu-

91. RESTATEMENT (SECOND) OF TORTS, § 282 (1965).

92. KEETON et al., *supra* note 60, §§ 32, 37, at 220-33, 237-38.

93. Large quantity generators (LQGs) generate more than 1000 kilograms of hazardous waste per month. Small quantity generators (SQGs) generate between 100 and 1000 kilograms of hazardous waste per month. This classification becomes important in determining a generator's duty.

ture threats to human health and the environment.⁹⁴

A duty of care or reasonable standard of conduct may be imposed by legislative enactment or administrative regulation, or may be implied by a court from such law or regulation.⁹⁵ Although the waste minimization certification does not rise to the level of law or regulation, it does rise to the level of a national policy statement:

The *national policy statement* emphasizes two concepts. First, Congress declares that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Second, waste that is nevertheless generated should be treated, stored or disposed of so as to minimize the present and future threat to human health and the environment. . . . The need to minimize the volume and toxicity of all hazardous waste is clear and is made an explicit national policy in this bill. ⁹⁶

Congress also made it clear that it did not intend the waste minimization certification to operate as a means by which EPA could intervene in decision making process of the waste generator:

While these provisions encourage the reduction of hazardous waste generated, they are directed at the generators of such waste and do not authorize the Environmental Protection Agency or any other person or organization to interfere with or intrude into the production process or production decisions of individual generators.⁹⁷

Further, Congress disallowed the use of the waste certification statement as an enforcement tool:

[T]his section does not create civil or criminal consequences. Thus, for example, such certifications are not to be treated as a 'material statement' under . . . section 3008(d)(3). . . . Nor is the content . . . to be cause for challenge regarding the issuance of permits. In keeping with the concept of these provisions, judgements made by the genera-

94. The certification, which appears in section 16 of the Uniform Hazardous Waste Manifest (EPA Form 8700-22), reads as follows:

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment OR if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method available to me and which I can afford.

Note that the standard gives SQGs quite a bit of discretion on whether or not to minimize waste generation. This would probably place the SQG outside the reach of an action for failure to implement a hazardous waste minimization program.

95. KEETON et al., *supra* note 60, §§ 32, 37, at 220-33, 237-38.

96. S. REP. NO. 284, 98th Cong., 1st Sess. 65 (1983) (emphasis added).

97. *Id.* at 66.

tors are not subject to external regulatory action.⁹⁸

With regard to the notion that the certification does not give rise to civil consequences, it is not clear if this refers to civil administrative enforcement or civil common law tort actions. However, it appears that Congress was primarily concerned that the waste management certification be immune from legal enforcement.⁹⁹ Despite this concern, EPA has determined that it will consider non-compliance with the waste minimization certification on the hazardous waste manifest as a basis for finding a violation of the hazardous waste regulations.¹⁰⁰

The more recent Pollution Prevention Act of 1990 codified Congress' preference for how the nation should manage its environmental problems:

The Congress hereby declares it to be the national policy of the United States that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.¹⁰¹

Thus, "duty of care" seems to fall into a grey zone of national policy rather than an enforceable statutory law.

Yet such a strong policy statement, and EPA's strict stance on compliance with the waste minimization certification, militate toward finding that hazardous waste minimization is indeed a duty of care. The issue will remain open, however, until Congress or the courts decide whether such a duty exists.

2. Breach of the Duty

Given the great latitude apparently accorded to generators in implementing the waste minimization certification, it is likely that the plaintiff would have the burden of proving that the defendant made

98. *Id.* at 67.

99. *Id.* at 66-67.

100. ENVIRONMENTAL PROTECTION AGENCY, EPA OSWER DIR. #9938.10, POLICY STATEMENT: THE ROLE OF RCRA INSPECTORS IN PROMOTING WASTE MANAGEMENT 5 ("If the O/O [owner/operator] does not show a written [waste minimization] plan, cannot describe a plan orally, or cannot demonstrate other evidence of a waste minimization program, this should be noted as a violation for failure to comply with the certification on the manifest.").

101. Pollution Prevention Act of 1990, Pub. L. No. 101-508, § 6602, 104 Stat. 1388, 1388-321 (1990).

no effort whatsoever to put into place a waste minimization program. As a defense, the defendant would only have to show, per the wording of the certification required by RCRA section 3002(b), that it considered a waste minimization program but found that it was not "economically practicable." Thus, the utility of the proposed cause of action would be limited to the true worst case scenarios—those where a hazardous waste generator has simply not considered a viable hazardous waste minimization program.

3. Proximate Cause of the Injury

The plaintiff meets the proximate cause requirement by proving that the defendant disposed of hazardous waste at the landfill in question, that exposure to chemicals released into the environment from the landfill caused injury to the plaintiff to a reasonable degree of medical certainty, and that suit has been successfully brought under a modified theory of enterprise liability.

4. Relief Sought

The purpose of this proposed cause of action is to force the recalcitrant generators of hazardous waste to put into place a hazardous waste minimization program through injunctive relief (monetary damages for injuries could be sought under "traditional" toxic tort theories). Typically, such injunctive relief is a remedy for claims based in nuisance, and the purpose is to enjoin the defendant from interfering with the plaintiff's enjoyment of his or her land. A variation on nuisance, the public nuisance, is somewhat more broadly defined as an unreasonable interference with a general right of the public;¹⁰² because a public nuisance interferes with a public right, it is not tied to interference with enjoyment and use of property. A case must be created here that the failure to implement a hazardous waste minimization program interferes with the public right. The Restatement (Second) of Torts, section 821B defines a public nuisance as:

- 1) A public nuisance is an unreasonable interference with a right common to the general public.
- (2) Circumstances that may sustain a holding that an interference with a public right is unreasonable include the following:
 - (a) Whether the conduct involves a significant interference with the public health, the public safety, the public peace, the public comfort or the public convenience or
 - (b) whether the conduct is proscribed by

102. RESTATEMENT (SECOND) OF TORTS, *supra* note 91 at § 821B(1). *See also* KEETON, *supra* note 60, at §§ 86-88.

a statute, ordinance or administrative regulation or (c) whether the conduct is of a continuing nature or has produced a permanent or long lasting effect, and, as the actor knows or has reason to know, has a significant effect upon the public right.¹⁰³

Congress has recognized the need to minimize hazardous waste in order to minimize the threat to public health.¹⁰⁴ Thus, failure to implement a hazardous waste management program interferes with the public right of health and safety. Based on the precepts of public nuisance and the availability of injunctive relief in nuisance actions, the courts should be willing to grant injunctive relief in an action for failure to implement a hazardous waste management program.

To do this, the courts must be willing to deviate from the established norm and consider granting injunctive relief for a claim grounded in negligence, the relief being for the court to enjoin the defendant from failing to implement a hazardous waste minimization program or justify the lack thereof on grounds of economic impracticability. Were a defendant to choose the latter, then the question of the proper scope of judicial review comes into question; that is, can the court second guess the defendant as to what is economically practicable? Given the legislative history behind the waste minimization requirement, probably not. A court may, however, still require that the defendant have made a legitimate inquiry into implementing a hazardous waste minimization program (process versus substance). Certainly, such a cause of action is highly speculative, but given the compelling health and environmental issues involved, not impossible.

CONCLUSION

It is likely that even the most state-of-the-art RCRA permitted hazardous waste landfills will leak in the future. Therefore, EPA should develop and implement a strategy to address the long-term effectiveness of current hazardous waste disposal requirements so that decisions can be made about postclosure liability funding mechanisms. Given the existing strict liability of generators for cleanup costs, the victims compensation rejected in the 1986 SARA amendments might provide the best approach. EPA has the authority to require additional financial assurances for unknown liabilities; RCRA Section 3004(a)¹⁰⁵ authorizes EPA to promulgate

103. RESTATEMENT (SECOND) OF TORTS, *supra* note 91, at § 821B(1).

104. *Supra* note 96.

105. 42 U.S.C. § 6924(a) (1988).

financial requirements for corrective action as it deems necessary. Under this authority, EPA could implement a victims compensation program, or a modified PCLTF funded by a waste end tax that would also create an economic incentive for more hazardous waste reduction. Absent a legislative solution, persons injured by releases of hazardous substances from closed RCRA landfill facilities will be dependent on common law remedies. The barriers associated with recovery under a toxic tort action, particularly with regard to medical causation, render this option burdensome at best, and patently unfair at worst given the great expense involved in funding and sustaining such suits. Should suits in tort be the only game in town, however, all possible avenues of tort liability must be examined, and the plaintiff's bar must be willing to experiment, be aggressive, and think creatively in driving the development of toxic tort law so that victims of past industrial and technological progress will not go uncompensated.

