Common Law Liability for Toxic Torts: A Phantom Remedy

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Lois Weiss**

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INTRODUCTION

Ut quod aliis cibus est aliis fiuat acre venenum.¹

On August 2, 1978, the New York State Commissioner of Health issued an order declaring the existence of a health emergency at the Love Canal hazardous waste disposal site in Niagara County.² Toxic materials buried in the Canal during the 1940’s and early 1950’s had “migrated” into the basements of nearby homes. Subsequent events at the site became the subject of national publicity. As one writer put it: “Not until the nightmare of the Love Canal unfolded . . . did Americans become aware of the vast dangers of ground pollution. . . .”³

The Commissioner’s order concluded that “a great and imminent peril to the health of the general public” existed.⁴ As a result, children under two years of age and pregnant women living adjacent to the site were evacuated. The State acquired 239 homes, and more than $20 million of public funds were spent in efforts to contain the migration of hazardous substances.⁵ Residents of the area initiated actions for several billion dollars for personal injury

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¹ What is food to some creatures, is to others rank poison.’ TITUS LUCRETIUS CARUS, DE RERUM NATURA 326 (Book IV W. Rouse trans. 1975) (On the Nature of Things).

² Order of Robert P. Whalen, M.D., Commissioner, New York State Department of Health 9 (Aug. 2, 1978) [hereinafter cited as Commissioner’s Order]. The need for such an action had been anticipated by the New York State legislature approximately one month earlier, A. 13149, 2 N.Y. ASSEMBLY J. 3639, 201st Sess. (1978), and was pre-sanctioned by statute. N.Y. PUB. HEALTH LAW §§ 1385-1388 (McKinney Supp. 1980).


⁴ See Commissioner's Order, supra note 2, at 7.

and property damage. The Federal Government filed an action for $120 million in damages, and the State also brought the issue into court.

The ability of the judicial system to provide an efficient mechanism for compensation is uniquely challenged by the claims of those injured by hazardous wastes emanating from disposal sites. When toxic wastes migrate into a residential neighborhood, the impact is likely to be greater than that of most other industrial "accidents" in terms of the number of people involved and the effect on the community as a whole. Homes may be rendered uninhabitable or their market values appreciably reduced—due either to actual health risks or the fear of such risks generated by publicity. Residents of the area surrounding the site may be required to leave their homes by health authorities or may decide to do so for their own peace of mind. Often the home will be the owner's only capital asset, subject to a substantial mortgage loan. When it is vacated, expenses for substitute shelter will be incurred, while mortgage and real property tax payments continue to come due on the empty dwelling. Homeowner's insurance policies do not cover property value loss from nonphysical damage, and the intruding contaminants will probably leave the structure intact.

6. Mervak v. City of Niagara Falls, 101 Misc. 2d 68, 69, 420 N.Y.S.2d 687, 689 (Sup. Ct., Niagara County 1979). Residents and former residents of the Love Canal area, together with "transients" who visited the area, attempted to file notices of claim against the City of Niagara Falls, Niagara County, and the Board of Education of the City of Niagara Falls pursuant to N.Y. GEN. MUN. LAW § 50-e (McKinney 1977) (amended 1980). 101 Misc. 2d at 69, 420 N.Y.S.2d at 689. The N.Y. Supreme Court sitting in Niagara County held that the issue of notice of claim must be dealt with on a case by case basis. The injuries to the various plaintiffs did not occur at the same time so that there was no single date from which to measure the accrual of the various causes of action. Id. at 75, 420 N.Y.S.2d at 692.


8. Complaint, State v. Occidental Petroleum Corp., No. 41006 (Sup. Ct., Niagara County Apr. 28, 1980). Occidental is the parent of Hooker. Various remedies are requested, including an order directing defendants to abate the nuisance and awarding damages of $250 million for injury to natural resources, $95 million for costs incurred by the State, and $250 million as punitive damages. Id. at 40. In Sept. 1980, a new complaint, identical except for jurisdictional allegations, was filed by the State in the United States District Court for the Western District of New York. The State was then joined as a party to the pending federal action. The action in the state court was stayed pending the outcome of the federal litigation. The State received an answer and counter-claim from the defendants on Oct. 28, 1980.

9. A typical homeowners insurance policy insures against "all risks of physical loss to the property covered, except as otherwise excluded or limited." Form HO-3
Residents may suffer both immediate and long-range health consequences ranging from miscarriages and birth defects to cancer; exposure to toxic chemicals may also leave profound emotional scars. Victims may require extensive medical care and counselling, and may suffer loss of income for prolonged periods of disability.

The welfare of the community as an entity may be severely affected. Schools may be closed. The abandonment of homes or commercial areas could result in a substantial loss of real property tax revenues. There may also be a long-term loss of assessable value of occupied property in and near the contaminated area. Where family earnings are disrupted, there could be a sudden demand for social services. Local health facilities may be overburdened. The financial consequences to the community of reduced

(emphasis added). This form is currently used in Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, and Westchester Counties by the CHUBB Group of Insurance Companies.

10. See text accompanying notes 54-57 infra.

11. The testimony of present and former Love Canal homeowners at the Love Canal Hearings, supra note 5, attests to the enormous psychological and emotional impact which exposure to toxic wastes can have upon young and old alike. The mother of a 14-year-old girl testified that her daughter became so despondent over her physical ailments that she attempted suicide. Id. at 425 (statement of Nancy Rebon). Her older daughter corroborated this testimony. Id. at 393 (statement of Laurie Nowak).

"Our children talk of being sick and of chemicals hurting us, and of death at their tender ages. We do not prompt them. We try to hide it, to shelter them. But they know." Id. at 398 (statement of Laurie Nowak). Another Love Canal resident testified that:

We will worry of things such as leukemia, cancer, lung damage, allergies, asthma, liver and kidney disorders, epilepsy, nervous breakdowns, heart problems and genetic problems until our children are grown and then some.
That's not a pleasant future of fears to have to face.

Id. at 416 (statement of Patricia Grenzy).

[My three year old talks of death continuously, even in her sleep. This is very disturbing to us. I have been told by a counsellor that it all results from the fears of the canal.]

Id. at 419 (statement of Patricia Grenzy).

12. The school on the Love Canal site was closed following the Commissioner's Order, supra note 2. Subsequently another school in the same district was closed because of percolating wastes. N.Y. Times, Sept. 10, 1979, § 2, at 1, col. 1, at 7, col. 1; id., Aug. 31, 1979, § 2, at 2, col. 5.

13. Special legislation has been enacted to grant partial real property tax exemptions to real estate near the Love Canal that has not been acquired by the State. The exemptions will be phased out over a five-year period. State aid will be provided to the affected tax jurisdictions in an amount equal to the loss in tax revenues occasioned by the abatement legislation. See N.Y. REAL PROP. TAX LAW § 1700 (McKinney Supp. 1980).
revenues and increased expenses could be devastating, depending on the size of the taxing jurisdiction and the geographic area affected. The net effect may approximate that of a disaster area in the aftermath of a flood, hurricane, or earthquake.

Unlike the damage normally accompanying such "natural" catastrophes, however, the consequences of hazardous waste migration are likely to be long term. Contamination of land and buildings may render the area uninhabitable for decades. The human impact may also continue for years, particularly where the injurious effects of toxic substances are not revealed until long after actual exposure has terminated. Governmental emergency relief, while important, only mitigates short-term consequences. Even where the state purchases the contaminated residences, as at the Love Canal, most of the major costs in terms of medical care and lost earnings can be recovered only by resort to the courts.

14. See Disaster Relief Act of 1974, 42 U.S.C. §§ 5121-5202 (1976). This act is designed to mitigate the immediate hardships caused by widespread destruction. It assumes that most of the property damage which occurs can be restored and that there will be few, if any, long-term health effects. The President is authorized to provide rent-free temporary housing and unemployment assistance, but these provisions expire one year after the major disaster or emergency is declared. Id. § 5174(b). No reference is made to compensation for long-term health effects.

On May 21, 1980, President Carter declared a federal emergency at the Love Canal which permitted the federal government to pay for the evacuation and temporary housing of residents. New York Governor Carey complained that this assistance did not go far enough and requested that the federal government purchase the houses. Eugene Eidenberg, an assistant to the President, claimed that federal law did not authorize such actions. See N.Y. Times, June 5, 1980, § 2 at 3, col. 1; id., May 24, 1980, § 1 at 25, col. 6; id., May 22, 1980, § 2 at 4, col. 2; id. § 1, at 2, col. 1. Subsequently, apparently spurred by presidential politics, the federal government agreed, on Aug. 22, 1980, to make grants of $7.5 million and loans of another $7.5 million to enable the state to purchase houses in the Love Canal area so that residents could permanently relocate. See id., Aug. 23, 1980, § 1 at 27, col. 1.

15. The authors recognize that many of those injured will be covered by health insurance, either privately obtained or provided as an incident of their employment. Coverage under such policies and programs may be adequate in many circumstances. If there are substantial lost earnings, however, it is unlikely that those injured will have substantial disability insurance. In addition, such policies rarely provide for full reimbursement. Employer disability programs are also limited in coverage. Governmental sources of compensation for such harms are almost nonexistent.

Relatively few states have addressed the issues of hazardous waste cleanup costs and the compensation of those harmed. However, a few coastal states have provided for funds to clean up oil spills. See, e.g., MD. NAT. RES. CODE ANN. § 8-1411(f) (Cum. Supp. 1980); OR. REV. STAT. § 468.800 (1979); VA. CODE § 62.1-44.34:7 (Cum. Supp. 1990).

However, little headway has been made in providing compensation funds for damage caused by hazardous materials. Florida legislation provides for remedial ac-
The courts, having little statutory guidance concerning liability for hazardous waste injuries, must rely primarily on common law doctrines. It is our purpose to evaluate the effectiveness of compensation and the payment of damages from pollution that arises from the transfer of certain materials between vessels or between vessels and the land. Pollutant Spill Prevention and Control Act, Fla. Stat. Ann. § 376.12 (Supp. 1981). While originally directed only towards oil spillage, the statute covers, in addition to petroleum products, pesticides, ammonia, chlorine, and other hazardous materials. Id. § 367.031(7) (1974). The Florida fund derives its revenue from an excise tax levied for the privilege of operating terminal facilities and is measured by the volume of pollutants transferred. The Florida law provides for private parties who have suffered damages to apply to the fund within six months after the cause of action arises. However, the department can, if good cause is shown, waive the statute of limitations. Id. § 376.12(2) (Supp. 1981). An earlier version of the Florida act, passed in 1970, set no ceiling on industry liability, and caused much consternation in oil and oil-related industries. Id. § 376.12 (1974) (amended 1974). After the 1970 law was passed, shippers refused Florida business or required their Florida contractors to hold the shipper harmless for any spills occurring in Florida waters. The statute was amended in 1974 to set a ceiling on a potential defendant’s liability. See Barrett & Warren, History of Florida Oil Spill Legislation, 5 Fla. St. U.L. Rev. 309, 314, 318, 337 (1977).

The New Jersey Spillage Compensation Fund is liable for cleanup costs and property damage resulting from the discharge of hazardous substances on water or land. N.J. Stat. Ann. § 58:10-23.11a-z (West Supp. 1980). Compensation does not include medical costs or loss of income, unless the loss of income is due to damage of real or personal property. Id. § 58:10-23.11g. Private claims against the fund must be made within one year after discovery, but no later than six years after the pollutant discharge originally occurred. Id. § 58:10-23.11k.

New York law, similar to the New Jersey statute, is applicable only to discharges of petroleum. N.Y. Nav. Law §§ 170-204 (McKinney Supp. 1980).

Maine also has created a compensation fund. Maine Coastal Protection Fund, Me. Rev. Stat., tit. 38, §§ 551-552 (1978 & Supp. 1979). The revenues are generated by license fees for oil transferred, penalties, and other fees and charges. Polluters are held strictly liable for the damages they cause. Private parties can collect from the fund for damage to real and personal property and for loss of income directly or indirectly caused by an oil discharge. Id. § 552(2) (1978).


Existing federal legislation has been directed toward regulation of waste disposal practices, rather than issues of compensation. See Resource Conservation and Recovery Act of 1976 (RCRA), 42 U.S.C. § 6907. Most state legislatures apparently assume that common law liability doctrines are adequate for the task of compensating victims of hazardous wastes. New York has provided that responsibility for carrying out remedial programs shall be determined “according to applicable
mon law approaches to liability for personal injury and property damage arising from hazardous waste disposal sites. Since a doctrine's utility can best be measured in the context of a particular fact situation, we will use the facts of the Love Canal tragedy, to the extent that they are known, as a backdrop for our analysis. As will be shown, common law recovery for injuries arising in this context is uncertain. In addition, litigation in such situations is likely to be protracted and expensive. Thus, victims of hazardous waste disposal will be poorly served by the common law and the judicial process. We conclude that, in view of the enormous potential for prolonged and widespread harm which land-burial sites pose, federal legislation creating an administrative remedy should be enacted.

HAZARDOUS WASTE DISPOSAL SITES: THE NATURE AND SCOPE OF THE PROBLEM

Hazardous waste, a byproduct of society's industrial processes, has been defined as waste "which, because of its quantity, concentration or physical, chemical, or infectious characteristics may—

(A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

(B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of or otherwise managed."  

principles of statutory or common law liability." N.Y. ENVIR. CONSERV. LAW § 27-313(4) (McKinney Supp. 1980); N.Y. PUB. HEALTH LAW § 1389-b(4) (McKinney Supp. 1980). Maryland has curious legislation with respect to injury from oil spills which provides, "The person responsible for the oil spillage shall be liable to any other person for any damage to his real or personal property directly caused by the spillage." Md. NAT. RES. ANN. § 8-1409 (1974) (emphasis added). Plaintiffs, defendants and courts are left to their own devices to determine the meaning of "responsible."

17. RCRA, 42 U.S.C. § 6903(5). However, the difficulties of definition are illustrated by the conclusion of the Toxic Substances Strategy Committee of the Council on Environmental Quality:

"Toxic" is a relative term. The effects of any chemical substance or mixture depend not only on its composition and basic properties but also on dosage, route and conditions of exposure, susceptibility of the organism exposed, and other factors. It is not possible to categorize all chemical substances as "toxic" or "nontoxic," although some are more toxic than others during normal conditions of use and exposure, and some are generally innocuous.

COUNCIL ON ENVIRONMENTAL QUALITY, TOXIC CHEMICALS AND PUBLIC PROTECTION iv n.1 (May 1980).
While the volume of such substances currently being produced can only be approximated, a federal study concluded that the nation will generate approximately 56 million metric tons of hazardous waste in 1980.18

In recent decades, waste materials have grown increasingly complex and harmful to the environment and human health. Traditionally, wastes have been disposed of by incineration, discharge into bodies of water, or land burial. However, national concern for abating air and water pollution has resulted in legislation and regulatory programs encouraging land disposal.19 Although the exact number of hazardous-waste disposal sites in the country is unknown, a study done for the Environmental Protection Agency placed the figure at over 50,000.20 The most intensive study of the subject was conducted in Erie and Niagara counties in New York State following the Love Canal tragedy.21 A total of 215 land-

18. COMPTROLLER GENERAL OF THE UNITED STATES, HAZARDOUS WASTE MANAGEMENT PROGRAMS WILL NOT BE EFFECTIVE: GREATER EFFORTS ARE NEEDED 1 (CED-79-14, Jan. 23, 1979) (Report to Congress). The source of this projection is given as the Environmental Protection Agency (EPA). That agency estimated that 35 million metric tons per year of hazardous waste will be subject to regulation. 43 Fed. Reg. 58,946, 58,946-47 (1978).

The Comptroller General also found that “[n]one of the officials in the 26 States visited or contacted knew the exact volume of hazardous waste generated in their States, and none of the States could adequately account for the disposition of these wastes.” COMPTROLLER GENERAL OF THE UNITED STATES, supra, at 5.

19. Issues of air pollution were addressed in a comprehensive manner on the federal level by the Clean Air Amendments of 1970, 42 U.S.C. § 1857 (1976). A similar approach to water pollution was taken in the Water Pollution Control Act, 33 U.S.C. § 1151 (1976). Most methods of air pollution control and water treatment result in the creation of sludges, pollutants removed from the air and water, which require disposal. As a result, the volume of materials requiring land disposal has increased. See 42 U.S.C. § 6901(b)(3) (1976). RCRA, a national approach to the regulation of land disposal, was adopted in 1976, but the necessary regulations were slow in being issued. Litigation was initiated in Sept. 1978 in order to force the EPA to implement the act. Illinois v. Costle, 12 ENVIR. REP. (BNA) 1597 (D.D.C. 1979); Environmental Defense Fund v. Plehn, No. 78-1715 (D.D.C., filed Sept. 13, 1978).

20. See FRED. C. HART ASSOCIATES, PRELIMINARY ASSESSMENT OF CLEANUP COSTS FOR NATIONAL HAZARDOUS WASTE PROBLEMS 22 (1979) (report of work performed for Office of Solid Waste, EPA, contract no. 68-01-5063) [hereinafter cited as HART REPORT]. “The total of 50,644 sites is therefore a very rough estimate of the number of active and inactive sites that contain hazardous wastes and (by virtue of this characteristic alone) may pose an environmental or health threat.” Id. (emphasis in original).

21. INTERAGENCY TASK FORCE ON HAZARDOUS WASTES, DRAFT REPORT ON HAZARDOUS WASTE DISPOSAL IN ERIE AND NIAGARA COUNTIES, NEW YORK (1979) [hereinafter cited as TASK FORCE REPORT]. The Task Force was established by order of Peter A. Berle, Commissioner of the New York State Department of Environ-
disposal areas were identified in the two counties, of which 36 sites definitely received large quantities of hazardous wastes and 116 may have received significant quantities. Of the 215 sites, 126 (including the Love Canal) were inactive.

The risks posed by a hazardous waste disposal site depend upon factors such as the nature, quantity, and condition of the material deposited, the geological and hydrological conditions at the site, and the proximity of populated areas. Liquid and solid wastes may be dumped into a landfill either directly or in containers. Although containers may decrease immediate risks, they often deteriorate before their contents have lost their toxicity. Hazardous substances may migrate from a landfill, carried by percolating surface waters or groundwater, or may escape to the atmosphere in the form of gases and vapors. If the waste is contained in soils or clays of low permeability and covered with similar materials capable of diverting surface water, the risk of migration is substantially reduced. In recent years, plastic membranes have been used to line and cover fill sites, but their long-term value is questionable.

Land-disposal sites have also been provided with leachate collection and treatment systems and facilities for monitoring the quality of adjacent ground and surface waters. These precautions, how-

mental Conservation on November 20, 1978. It was composed of three representatives of the New York State Department of Environmental Conservation, four of the New York State Department of Health, and three of the Region II Office of the United States Environmental Protection Agency. Id. at Introduction.

22. Id. at II-1 to -2.

23. Id. at II-1. An inactive site is one in which waste is no longer being deposited. In most instances an earth and vegetation cover will have been established over the wastes making their nature and exact location difficult to ascertain. Many such sites are currently owned by parties having no connection with the prior disposal activity. See Hazardous and Toxic Waste Disposal: Joint Hearings before the Senate Subcomms. on Environmental Pollution and Resource Protection of the Comm. on Environment and Public Works, 96th Cong., 1st Sess. 325-26 (1979) (pt. 1) (statement of Rep. John J. LaFalce, N.Y.) [hereinafter cited as Environmental Hearings].

24. See Task Force Report, supra note 21, at II-75 to -76.

25. See T. Shen & T. Tofflemire, Air Pollution Aspects of Land Disposal of Toxic Waste (Technical Paper No. 59, 1979) (authors are Research Scientists with New York State Dep’t of Environmental Conservation, Division of Air Resources and Bureau of Water Research respectively).

26. See note 129 infra.

27. A. Geswein, Liners for Land Disposal Sites 8, 23 (1975) (EPA/530/SW-137); H. Haxo, Evaluation of Liner Materials Exposed to Leachate (1976) (second interim report, EPA-600/2-76-255). Both studies were written for the Municipal Environmental Research Laboratory, Office of Research and Development. U.S. E.P.A. Cincinnati, Ohio.

ever, have been sporadically taken. Moreover, many substances remain hazardous for hundreds or even thousands of years, and require long-term maintenance and supervision. In addition, there is an impressive array of threats to the integrity of the most carefully designed land-burial site: Storms, earthquakes, floods, burrowing animals, tree roots, household pets and human error all contribute to the conclusion that “[t]here is no such thing as a ‘secure landfill.’”

The Love Canal is the nation’s most widely publicized example of the consequences which can result from the land burial of toxic wastes. The site is, however, merely a symptom of a national disease which transcends the particular situation in Niagara Falls. Environmental pollution is a concomitant of our industrial era; in years to come, it may manifest itself in injuries as yet unforeseeable. While the Love Canal is a useful springboard for examining the efficacy of common law remedies available to victims of buried wastes, the ultimate question raised by that tragedy is more universal: How will our society accommodate the costs of industrial pollution?

THE LOVE CANAL

In 1894, William T. Love began to excavate a navigation and power canal between the upper and lower levels of the Niagara River. The project was soon abandoned. In the early years of the 20th century, the open ditch, located in the southeast corner of the City of Niagara Falls may have served as a swimming hole. In 1942, the Hooker Electro Chemical Company (Hooker) entered into an agreement to purchase the canal site from the Niagara Power and Development Company, the then owner. Pending the closing of title, Hooker was granted permission to “deposit fill” in the excavation. Hooker took title from Niagara Power and Devel-

29. Love Canal Hearings, supra note 5, at 352 (statement of C.N. Richardson); see T. Shen & T. Tofflemire, supra note 25, at 12-16. The authors conclude that “[t]he actual destruction of the toxic components of the waste may be a better choice than placing them in a landfill where they may end up being a ‘time-bomb.’” Id. at 21.
30. TIME BOMB, supra note 5, at 3.
opment in 1947, and continued to use the canal to dispose of chemical wastes until 1953. In that year, the company “sold” the 16 acre property to the Board of Education of the City of Niagara Falls for $1.00 for use as an elementary school site.

Hooker’s generosity in donating the land for educational purposes was, however, shaded by caution. The deed, in addition to informing the School Board that “the premises . . . have been filled, in whole or in part, to the present grade level thereof, with waste products resulting from the manufacturing of chemicals,” contained exculpatory language providing that “the purchaser assumes all risk and liability incident to the use thereof [and] no claim, suit, action or demand of any nature whatsoever shall ever be made . . . against the [grantor] for injury to a person . . . or loss of or other damage to property caused by . . . said industrial waste.”

Notwithstanding these warnings, explicit and implied, the Board of Education constructed an elementary school. There is some confusion concerning the condition of the site at the time it was transferred to the Board of Education. The deed quoted above stated that the Canal was filled with chemical waste extending “in whole or in part” to the level of the surrounding land. This is corroborated by the findings of an independent study conducted for the City of Niagara Falls in 1977, which concluded that “the depths of soil cover over drums range from zero cover to about 6 feet.” An earthen or clay “cap” may have been placed over the materials. However, the existence of such a cap appears incon-
sistent with findings that chemical wastes were exposed to the elements at the surface of the landfill. 39

When Hooker began to use the Love Canal as a waste disposal site, the surrounding area was relatively undeveloped. 40 After the Board of Education took title, however, homes were constructed in the vicinity, some immediately adjacent to the landfill area. 41 During the construction of the elementary school in 1955, there were problems with chemicals buried at the site. 42 Subsequently, in the

water Regime Love Canal Chemical Landfill 4-6 (June 1978) (prepared for City of Niagara Falls by Conestoga-Rovers & Assocs., Waterloo, Ontario, Canada) (copy on file in office of the Hofstra Law Review). An earlier report, R. Leonard, P. Werthman & R. Ziegler, supra note 37, makes no reference to an earth or clay cover and finds facts inconsistent with the existence of such a cap.


40. An aerial photograph taken in 1938 and supplied to the authors by the Photography Unit of the New York State Department of Health, Division of Laboratories and Research shows the Love Canal excavation filled with water and shows surrounding roads and fields. Residential construction has occurred approximately three blocks east of the Canal, but not to the north or west. The site is bounded on the south by Frontier Blvd. No. 2359, Division of Laboratories and Research, N.Y. State Dep’t of Health.

41. The development may, in part, have been stimulated by the presence of the new elementary school. There is a conflict as to whether any homes were built on the land formerly owned by Hooker. On the one hand, Michael J. Cuddy, Coordinator of the Love Canal Task Force, stated that “[t]he property not required for the school’s purposes was sold to developers and speculators.” M. Cuddy, The Love Canal Toxic Chemical Waste Dump Site 1 (written statement submitted at Love Canal Hearings, supra note 8).

An investigation conducted by A.J. Woolston-Smith of the Investigations unit of the New York State Assembly indicates that Hooker does not appear in the chain of title of deeds for area homes. Letter from Paul T. Wells, On-Site Coordinator Love Canal Task Force, N.Y. State Department of Transportation, to Peter J. Millock, Director, Interagency Task Force on Hazardous Wastes (May 15, 1979). In addition, Hooker has stated publicly that no homes were built over the site. See Environmental Hearings, supra note 23, at 296 (statement of Hooker Chemical Co.).

It appears to the authors, from a site visit and an aerial photograph of the Love Canal area taken on Nov. 24, 1974, and supplied to the authors by the Photography Unit, Division of Laboratories and Research, New York State Department of Health, that numbers 400-514 and 680-794 on 99th Street and 703-799 and 903-995 on 97th Street may be located on the land formerly owned by Hooker.

The confusion on this issue is compounded by the “Findings of Fact” in the Commissioner’s Order, supra note 2, which states that “[t]he City of Niagara Falls Board of Education subsequently [after 1953] sold part of the site to others,” id. at 4, yet concludes that the site is currently owned by the Board of Education, the City of Niagara Falls, and one L.C. Armstrong. Id.

42. A resident of the Love Canal area has testified that “they had to know the severity of the problem when they began building the school and had to stop and vote on moving the school over 60 feet because of noxious fumes and chemicals
late 1950's, children playing in the schoolyard suffered injuries which were brought to the attention of Niagara City officials and Hooker. These incidents appear to have taken place on the site itself, and there is no indication that migration had yet occurred.

In 1968, a highway (The LaSalle Arterial Expressway) was constructed to the south of the Love Canal, requiring the relocation of Frontier Avenue, now the southerly border of the site. In the course of construction, chemical wastes were excavated. Property owners complained about the "stench" emitted by the materials. Hooker was consulted and approximately 1800 cubic yards of chemicals were removed.44

At some time after the chemical wastes were deposited in the Canal excavation, they began to migrate away from the site, carried by percolating groundwater. An understanding of this movement requires a digression to consider local geologic conditions. At the Canal, there is limestone bedrock approximately 40 feet below the surface of the ground. Above the bedrock is 15 to 20 feet of compact, loamy glacial till of low permeability. The next highest stratum (the clay layer), the one into which the Canal was originally dug, consists of 15 to 20 feet of silts and clay of very low permeability and jeopardizing the health of the construction workers . . . ." Love Canal Hearings, supra note 5, at 384 (statement of Debra Cerrillo).

43. Hooker Chemical Co. admits that there were "some isolated incidents in the late 1950's" at which time "[a] few children playing in the area were slightly burned by some of the chemicals." Hooker contends, however, that the cause of these "incidents" was "ill-advised road construction." Letter to the Editor of the New York Times from Donald L. Baeder, President, Hooker Chemical Co. (Aug. 10, 1979) (published N.Y. Times, Aug. 18, 1979, at 18, col. 1), and reproduced in a full page advertisement by Hooker Chemical. N.Y. Times, Sept. 5, 1979 at D3. Hooker may be confusing the incidents which appear to have occurred "in the late 1950's" with subsequent problems caused by major highway construction which took place in 1968. See note 44 infra and accompanying text. The company's own testimony on this point is contradictory. Bruce Davis, President of The Industrial Chemicals Group of Hooker Chemical Co. has stated publicly that the children were exposed to chemicals because the clay cover was removed by the Board of Education. Love Canal Hearings, supra note 5, at 86-87 (statement of Bruce Davis).

44. This episode was investigated in the summer of 1978 by D.H. Ketchum, Regional Director, N.Y. State Department of Transportation, Region 5. On August 9, 1978 he rendered a detailed report to W.C. Hennessy, Commissioner of Transportation. A copy of that report, with exhibits annexed, is in the possession of the authors. One of those exhibits is a memorandum dated March 22, 1968 from K.L. Reitmeier, Supervising Soils and Materials Engineer, to Joseph P. Cain, Engineer in charge, N.Y. State Department of Transportation. Mr. Reitmeier notes that "[i]f the [chemical waste] material were allowed to remain there is always the possibility that the toxicous [sic] fumes could follow service connections into dwellings resulting in legal implications."
ability. Finally, the 4 to 6 feet of soil immediately below the surface consists of more permeable silts and fine sands.45 When rain and surface water soaked down into the Canal excavation, it was largely contained by the clay layer, as if the excavation were a giant bathtub. As the water rose, however, it eventually reached the surface-soil stratum, and “spilled over” the clay “bathtub,” carrying chemicals into the permeable soil.46 This leachate,47 containing organic compounds, migrated laterally in the permeable soil layer until it reached the basements of homes adjacent to the Canal.48

More than eighty chemical compounds have been identified at the site.49 The U.S. Environmental Protection Agency (EPA) identified twenty-six organic compounds in air samples taken from the basements of fourteen houses adjacent to the site.50 In July 1978, the N.Y. State Health Department tested for ten specific compounds in air samples from the basements of eighty-eight houses surrounding, but not adjacent to, the Canal. Each of the components was found in some of the homes; one was present in

45. See Conestoga-Rovers & Assocs., supra note 38, at 3; Calspan Report, supra note 37, at 16. Commissioner Whalen appears to have erroneously taken Calspan’s figures showing the distance below the surface of the strata and used these to show the thickness of the strata. Commissioner’s Order, supra note 2, at 5 (Finding of Fact 14).
46. See Conestoga-Rovers & Assocs., supra note 38, at 6-7. It is also possible that some of the chemical leachate entered the deeper permanent ground water table. See Calspan Report, supra note 37, at 10.
47. Percolating water contaminated by dissolved soluble materials, liquids, and suspended solids. A. Geswein, supra note 27, at 2.
48. Commissioner’s Order, supra note 2, at 5 (Finding of Fact 16). “[T]he upper 10 feet of soil . . . was interlaced with a network of pores which were the result of decayed organic matter such as root systems and a fracture network which is the result of weathering . . . .” Conestoga-Rovers & Assocs., supra note 38, at 6. The report concluded that lateral migration of liquid waste had taken place through this upper layer, confirming the same finding in an earlier report. Id.; see Calspan Report, supra note 37, at 16. More recent consideration of the issue indicates that this view of the migration of the toxic materials may be over-simplified. It has been suggested that leachate seeped through fissures in the clay wall of the Canal and followed old stream beds that intersect the Canal and are filled with permeable materials. See Subcomm. on Oversight and Investigations of House Comm. on Interstate and Foreign Commerce, 96th Cong., 1st Sess., Report on Hazardous Waste Disposal 12 (Comm. Print 1979).
49. Commissioner’s Order, supra note 2, at 5 (Finding of Fact 17).
50. Id. (Finding of Fact 18).
93% of them.\textsuperscript{51} Seven of the substances identified are carcinogenic in animals, and one, benzene, is a known human carcinogen.\textsuperscript{52}

The State Health Department found that there was a significant increase in spontaneous abortions (miscarriages) among women who resided in a particular area adjacent to the Canal, and that the overall risk of miscarriages among all female residents of the Canal vicinity was greater than normal. In addition, congenital malformations were found in five children of parents residing adjacent to the Canal.\textsuperscript{53} No indication was given, however, whether this incidence of malformation was excessive in terms of normal statistical probability. The Department concluded that further studies were necessary to "delineate chronic diseases afflicting all residents who lived adjacent to the Love Canal landfill site, with particular emphasis on the frequency of spontaneous abortions, congenital defects, and other pathologies, including cancer. . . ."\textsuperscript{54}

A study conducted by Beverly Paigen, a cancer research scientist at Roswell Park Memorial Institute in Buffalo, New York, was more specific in its conclusions.\textsuperscript{55} Dr. Paigen found that residents

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
Type of Waste & Estimated Total Tonnage \\
\hline
Misc. acid chlorides (20) & 400 tons \\
Thionyl chloride (17) & 500 tons \\
Misc. chlorinations (19) & 1,000 tons \\
DDM (15) & 2,400 tons \\
TCP (16) & 200 tons \\
Benzoyl chloride (7) & 800 tons \\
Metal chlorides (11) & 400 tons \\
LDS/MCT (9) & 700 tons \\
BHC (5) & 6,900 tons \\
Chlorobenzenes (6) & 2,000 tons \\
Benzyl chlorides (1) & 2,400 tons \\
Sulfides (3) & 2,100 tons \\
Misc. 10% of above & 2,000 tons \\
Total & 21,800 tons \\
\hline
\end{tabular}
\caption{Estimated Total Tonnage of Deposited Wastes}
\end{table}

\textit{Task Force Report, supra note 21, at III-72 to -73.} For a chemical analysis of water taken from storm sewers and basement sumps, see Calspan Report, \textit{supra} note 37, at 8. Their findings show high concentrations of PCB's, and they conclude that "PCB's are actively being leached from the Love Canal area." \textit{Id.} at 10. These findings are confirmed by those of Conestoga-Rovers & Assocs., \textit{supra} note 38, at 8-9.

\textsuperscript{53} Commissioner's Order, \textit{supra} note 2, at 6-7 (Finding of Fact 23).

\textsuperscript{54} \textit{Id.} at 8.

\textsuperscript{55} B. Paigen, Health Hazards at Love Canal (Mar. 21, 1979) (testimony pre-
of homes located on or near old stream beds in the Love Canal neighborhood experienced increased health problems. In particular, she found an above normal incidence of "miscarriages, birth defects, nervous breakdowns, asthma and diseases of the urinary system."\textsuperscript{56} A more recent survey by the EPA determined that the possibility of contracting cancer may be as high as one in ten for residents living adjacent to the Canal, while the odds drop to one in one thousand for those living a few blocks away.\textsuperscript{57} Although it is apparent that toxic materials escaping from the Love Canal had adverse effects on the health of the surrounding population, further studies may be necessary to prove individual injury.

\textbf{COMMON LAW LIABILITY FOR INJURY ARISING FROM WASTE DISPOSAL SITES}

\textit{Historical Perspective}

At many hazardous waste disposal sites, as at the Love Canal, injury will be produced through the medium of percolating water. A brief review of the evolution of common law rules pertaining to groundwater pollution is necessary to understand the somewhat contradictory cases which will serve as precedents in such situations. The policies underlying these cases reveal a tension between individuals and corporations and between residential or agricultural land use and industrial land use which continues today.

When the common law was developing, England was primarily an agrarian society in which rights in land were zealously protected. English courts tended to look to the nature of the injury in order to determine the plaintiff's right to a remedy, rather than to...
the culpability of the conduct causing the harm.\textsuperscript{58} Thus, activities interfering with another's exclusive possession of land or use of land for agrarian purposes were subjected to strict liability, even for what in the modern context would be considered unavoidable accidents.\textsuperscript{59} Because the use and value of land usually depended upon access to quantities of pure water, a separate category of rights and obligations arose dealing with water flowing on the surface of the earth or beneath the surface in established water-courses.\textsuperscript{60} Percollating groundwater,\textsuperscript{61} on the other hand, was considered inseparable from the land itself, and, therefore, the maxim \textit{cujus est solum, ejus est usque ad coelum et ad inferos}\textsuperscript{62} applied, giving landowners absolute ownership of all water resting beneath or filtering through their soil.\textsuperscript{63}

This maxim, in combination with an equally famous aphorism,\textsuperscript{63} \textit{sic utere tuo ut alienum non laedas},\textsuperscript{64} produced a complex system of water law which distinguished between quantity and quality. It protected landowners, who, in pumping percolating water from beneath their property, drained away the underground supply relied upon by their neighbors. However, landowners who polluted their groundwater were held strictly liable for injuring

\begin{itemize}
\item \textsuperscript{58} VIII W. Holdsworth, A History of English Law 467-68 (1926).
\item \textsuperscript{59} W. Prosser, The Law of Torts § 29, at 140 (4th ed. 1971). "An unavoidable accident is an occurrence which was not intended, and which, under all the circumstances, could not have been foreseen or prevented by the exercise of reasonable precautions." \textit{Id.} (footnote omitted).
\item \textsuperscript{60} These waters were governed by the law of riparian rights which gave every owner of land bordering on or transversed by a natural watercourse both the right to have it kept at normal levels in a natural condition. Quantity and quality were both protected by this approach. R. Powell, Powell on Real Property §§ 711-712 (1980).
\item \textsuperscript{61} Percollating waters are those which ooze, seep, or filter, through the soil beneath the surface, without a defined channel, or in a course that is unknown and not discoverable from surface indications without excavation for that purpose. The fact that they may, in their underground course, at places come together so as to form veins or rivulets, does not destroy their character as percolating waters. Clinchfield Coal Corp. v. Compton, 148 Va. 437, 446, 139 S.E. 308, 311 (1927) (citation omitted); see R. Powell, supra note 60, at § 724.
\item \textsuperscript{62} "To whomsoever the soil belongs, he owns also to the sky and to the depths." Black's Law Dictionary 341 (5th ed. 1979).
\item \textsuperscript{64} "Use your own property in such a manner as not to injure that of another." Black's Law Dictionary, supra note 62, at 1238.
\end{itemize}
others’ property when the same contaminated water migrated beneath adjacent lands. 65

The common law or “English” doctrine of ownership rights in percolating groundwater, accompanied by strict liability for failure to contain pollutants, was followed in fact, if not in name, 66 by many American courts during the late 19th and well into the 20th century. 67 Using nuisance terminology, 68 these courts continued to impose liability for pollution of percolating water without focusing on the presence or absence of fault in the defendant’s conduct. 69

65. See Ballard v. Tomlinson, 29 Ch. Div. 115, 24 Am. L. Rep. 634 (1885) (while there is unlimited right to use percolating water, pollution of such water so to render it unfit for use when it enters neighbor’s land is violation of neighbor’s rights for which action can be maintained). The somewhat anomalous result was that a landowner, by extracting large quantities of groundwater, could deprive his neighbor of the resource with impunity. He could not, however, deprive his neighbor of the resource by contaminating it. This logical inconsistency was not overlooked by some American courts. See, e.g., Upjohn v. Board of Health, 46 Mich. 542, 549-50, 9 N.W. 845, 848 (1881).

66. The early American cases employ various legal theories, but arrive at the same results as their English predecessors: The defendant is held liable for contamination of groundwater without proof of intent to pollute or negligence. In Ball v. Nye, 99 Mass. 582 (1868), liability was assertedly based on negligence, but the court inferred lack of care from the fact that pollutants percolated from defendant’s vault into plaintiff’s well water. Id. at 584. The “rule” of Fletcher v. Rylands, L.R. 1 Exch. Ch. 265 (1866) (anything brought on land that has natural tendency to do mischief if it escapes must be contained at defendant's peril), aff'd, L.R. 3 H.L. 330 (1868), underlies the strict liability holding in Berger v. Minneapolis Gaslight Co., 60 Minn. 296, 62 N.W. 336 (1895). Fletcher v. Rylands, as modified by Rylands v. Fletcher, L.R. 3 H.L. 330 (1868), to apply only to non-natural land uses, is silently invoked in Hauck v. Tide Water Pipeline Co., 153 Pa. 366, 26 A. 644 (1893). It is apparent, however, that several of the cases often cited as illustrations of the strict liability approach actually evidence an erosion of that doctrine. Negligence, while not identified as such, is brought in through the back door. Defendants are found liable for failing to foresee that the accumulation of potential pollutants on land is likely to result in contamination of groundwater. These cases foreshadow the reasonable use doctrine which gradually evolved as the American rule. See, e.g., Gilmore v. Royal Salt Co., 84 Kan. 729, 115 P. 541 (1911); Kinnaird v. Standard Oil Co., 89 Ky. 468, 12 S.W. 937 (1890); Beatrice Gas Co. v. Thomas, 41 Neb. 662, 59 N.W. 925 (1894).


68. Groundwater contamination gave rise to an action in nuisance (trespass on the case) because a trespass action required the injury to result from an immediate and forceful invasion by tangible matter, whereas nuisance encompassed consequential harm by any manner of invasion. See Pan Am. Petroleum Corp. v. Byars, 228 Ala. 372, 153 So. 616 (1934) (trespass possibly not suitable cause of action for groundwater pollution); text accompanying notes 90-95 infra.

69. The term “fault” is at best an imprecise one. It has been defined as “a departure from the conduct required of a man by society for the protection of others . . . .” W. PROSSER, supra note 59, § 4, at 18 (footnote omitted). The authors
Since water pollution was most often caused by business enterprises, the net effect of this policy was to protect agrarian landowners at the expense of their commercial or industrial neighbors. It is, therefore, hardly surprising that the jurisdictions taking this approach were those whose major economic interest at the time was agricultural.\(^7\) Because commercial and industrial concerns were equated with "non-natural" land uses, the "rule" articulated by Lord Cairns in \textit{Rylands v. Fletcher}\(^7\) frequently provided the rationale for strict liability.

The social policy underlying this line of early American decisions is exemplified in the Pennsylvania Supreme Court's opinion in \textit{Hauck v. Tide Water Pipeline Co.}\(^7\) The contamination of plaintiff's land by oil that escaped through a leak in defendant's underground pipeline and percolated through the soil was declared a nuisance without discussion of any behavioral grounds for liability. The court first quoted the trial judge:

\begin{quote}
If the mere fact that the business is a lawful business, and has been conducted with care, would be a defense where a neighbor's land has been injured in consequence of the business carried on there,—the escape of gas, for instance, or the escape of oil,—the result would be that a man might lose his farm, might be compelled to leave it, and have no compensation, simply because the business which brought about this loss was a lawful business, and was carried on carefully. That is not the
\end{quote}

use it here to mean any unreasonable or antisocial behavior. As such, it encompasses not only intentionally inflicted harm and negligence, but also those types of activities characterized as ultrahazardous or abnormally dangerous. Although the latter are often subject to strict liability in that negligence need not be alleged or proved, liability is in fact imposed because the activities are considered essentially unreasonable, as they carry with them an abnormal risk of harm to others. See note 219 infra and accompanying text. This is not strict liability \textit{regardless} of the nature of defendant's conduct, a concept which permeates many of the older pollution cases, but strict liability \textit{due} to the nature of the defendant's conduct. The result is the same in either case, but is based on different social policies.

70. Rose v. Socony-Vacuum Corp., 54 R.I. 411, 420-21, 173 A. 627, 631 (1934): A query arises as to whether the divergence of views [strict liability as opposed to negligence] expressed in these cases is not due to the influence of the predominating economic interests of the jurisdictions to which these apply; in other words, whether these opinions do not rest on public policy rather than legal theory. . . .

It will be observed that in jurisdictions holding that, even though there is no negligence, there is liability for the pollution of subterranean waters, the predominating economic interest is agricultural.

71. L.R. 3 H.L. 330 (1868); see note 227 infra.

law. No man's property can be taken, directly or indirectly, without compensation, under the law of this state; hence these are cases—and a great many of them—where a defendant is held liable in damages, although his business is lawful, and he has exercised care in carrying it on.73

The court then continued:

In the consideration of this class of cases, care must be taken to distinguish between the natural and necessary development of the land itself and injuries resulting from the character of some business, not incident and necessary to the development of the land. . . . The owner of the land has the right to develop it by digging for coal, iron, gas, oil, or other minerals; and if, in the progress of this development, an injury occurs to the owner of adjoining land, without fault or negligence on his part, an action for such injury cannot be maintained. If this were not so, a man might be utterly deprived of the use of his property. It is not so where the injury is caused by the prosecution of a business which has no necessary relation to the land itself, and is not essential to its development.74

New York was one of several states to reject this approach to liability for groundwater pollution. In Dillon v. Acme Oil Co.,75 it was held that a legitimate business is not liable for contamination of groundwater in the absence of negligence or knowledge that such contamination is likely to result from its activities.76 Unwilling to view industrial land uses as non-natural so as to fall within the purview of Rylands,77 the Dillon court laid the foundation for the "American" rule. Unlike its English counterpart, the American rule

73. Id. at 375, 26 A. at 645.
74. Id. at 375-76, 26 A. at 645-46.
75. 49 Hun. 563, 2 N.Y.S. 289 (Sup. Ct., 5th Dep't 1888).
76. Id. at 569-71, 2 N.Y.S. at 291-92. If the result in Dillon appears strange to the modern reader (defendant not negligent despite knowingly permitting oil to saturate his property), it is because the Dillon court differentiated between pollutants carried in percolating water moving laterally along the surface of the soil or immediately below the surface and pollutants which percolate vertically deep into the earth and eventually enter defined subterranean currents. The former type of migration was considered foreseeable in that the percolating water was "diffusing itself according to natural laws . . . ." Id. at 570, 2 N.Y.S. at 591. Presumably, one could be negligent with regard to groundwater contamination arising in this fashion. However, the latter type of migration was deemed unforeseeable, as the presence or direction of hidden underground watercourses could not be anticipated, and one could not be negligent with regard to this unforeseeable risk. A situation of this second type was at issue in Dillon.
77. L.R. 3 H.L. 330 (1868).
did not give agrarian landowners absolute rights to pure groundwater. The rule recognized that both agrarian landowners and industrial landowners have the right to make reasonable use of their property. When agrarian landowners are endowed with invariable rights to pure groundwater, the use to which industrial landowners may put their property is severely restricted.\footnote{78}

Implicit in the American rule is an acknowledgment of the conflict existing between industrial and agricultural or residential land uses, and a resolution of that conflict in favor of industry. The use of land for industrial purposes almost invariably involves storing and handling potential pollutants, and results in producing waste materials which may, even if initially disposed of on land, find their way into surface water, groundwater, or the atmosphere. Under the American rule, nonnegligent (reasonable) industrial users could, by accidently polluting groundwater, completely destroy domestic or agricultural uses without incurring liability. The states initially adopting the rule were those owing their economic growth to the coming of industrialization. As such, they were reluctant to discourage capital investment by making industrial landowners financially responsible for consequences they did not intend and could not foresee.\footnote{79} Dillon's progeny multiplied in response to changing social values and economic conditions to become the common law approach currently used in a majority of states.\footnote{80}

Thus, groundwater pollution resulting from a reasonable use of land—that is, from a lawful activity conducted in an appropriate setting without negligence, intent to pollute, or knowledge that

\footnote{78. There is a danger that the "American" rule be viewed as a complete abrogation of plaintiff's rights to uncontaminated groundwater, when in actuality it is the substitution of a flexible standard (reasonable use) for fixing liability for an absolute one. It is not a question of right denied/right affirmed. See Comment, Liability of Landowner for Pollution of Percolating Waters, 39 Marq. L. Rev. 119 (1955).

79. See Rose v. Socony-Vacuum Corp., 54 R.I. 411, 421, 173 A. 627, 631-32 (1934):  Defendant's refinery is located at the head of... a natural waterway for commerce. This plant is situated in the heart of a region highly developed industrially. ... It is an unavoidable incident of the growth of population and its segregation in restricted areas that individual rights recognized in a sparsely settled state have to be surrendered for the benefit of the community as it develops and expands. If, in the process of refining petroleum, injury is occasioned to those in the vicinity, not through negligence or lack of skill ... we think that public policy justifies a determination that such harm is damnum absque injuria.

pollution is likely to occur—is *damnnum absque injuria*. The sole exception is injury stemming from a unusually hazardous activity.

**Characterizing the Cause of Action**

Historically, property-related injuries have been discussed in terms of nuisance and trespass—terms which classify an injury according to the legal right invaded. These doctrines have become less meaningful; most contemporary analysis focuses more on the culpability of the conduct which caused the injury than on the classification of the injury itself. However, because some states still attach importance to these definitions, and the terms permeate case law and legal commentary in the field of industrial pollution, a discussion of these doctrines is necessary. Where an industrial defendant expels wastes into the environment, characterizing its conduct as producing a trespass or a nuisance may be significant. Once it is established that an "intentional" trespass has occurred, the defendant is liable. On the other hand, liability for an intentionally created nuisance is imposed only where the resulting harm is adjudged unreasonable in light of the circumstances. Moreover, in jurisdictions continuing to determine the statute of limitations by the legal right invaded, the distinction between trespass and nuisance can be crucial.

**Trespass.**—A trespass is an invasion of one's right to the exclusive possession of property. At early common law, absolute liability was imposed for every unauthorized entry upon another's property, even if accidental. Absolute liability for trespass is no longer the rule. The vast majority of jurisdictions adhere to the position adopted by the *Restatement (Second) of Torts*, and impose liability only where the invasion is intentional, attributable to the defendant's negligence, or the result of the miscarriage of an unusually dangerous activity. However, since negligence and abnormally

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81. "Loss, hurt, or harm without injury in the legal sense; that is, without such breach of duty as is redressible by an action." BLACK'S LAW DICTIONARY, *supra* note 62, at 354.
82. See text accompanying notes 219-231 *infra.*
84. *Id.* at 64.
dangerous activity are independent bases of liability equally applicable to other categories of harm, trespass has come to denote intentional entry only. In the context of a trespass, the term intent does not necessarily refer to motive. Defendants, in committing an intentional trespass, need not have sought deliberately to damage their neighbor. Liability attaches where a defendant acted purposefully to enter the land or, in setting some object in motion, almost certainly knew that it would come to rest in that location.

In the Love Canal case, contaminants buried by Hooker and emanating from land owned by the Board of Education invaded adjacent homes. However, plaintiffs would be hard pressed to show that either Hooker or the Board had the requisite intent to establish an intentional trespass, since neither intended the contaminants' migration. In fact, it is difficult to imagine any inactive, hazardous waste disposal site situation, short of one in which wastes have been dumped directly on another’s property, where the right to recovery could be predicated successfully on this doctrine. Perhaps in the rare instances where wastes have been accumulated in a place from which the defendant “knew” that contaminants

87. See Phillips v. Sun Oil Co., 307 N.Y. 328, 121 N.E.2d 249 (1954). The jurisdictions vary in their linguistic treatment of the basis for liability in trespass. Some courts hold that trespass is an intentional tort and that invasion due to negligence and abnormally dangerous activities involve separate theories of recovery. Others define trespass to encompass the three traditional categories of tortious conduct. This disparity is more a matter of semantics than substance, but makes trespass cases difficult to read on a comparative basis.

88. RESTATEMENT (SECOND) OF TORTS § 162, Comments b-c, at 100-10 (1976); see Hawke v. Maus, 141 Ind. App. 126, 131, 226 N.E.2d 713, 715 (1967); Cover v. Phillips Pipe Line Co., 454 S.W.2d 507, 512 (Mo. 1970).

89. This is the typical “midnight dumper” situation. As the phrase suggests, the injured party is most often left “in the dark” as to the identity of the potential defendant, thereby rendering moot the subject of intent. Some typical problems (although in unusual combination) are illustrated by Woburn, Massachusetts, a community a few miles north of Boston. Radioactive wastes were discovered buried in the town dump; arsenic and lead compounds lined an area frequented by joggers and picnickers; chloroform was found in the city's water supply system; two chromium-filled “settling lagoons” are the legacy of a defunct chemical company; drums containing hazardous chemicals were found in a marshy area near the intersection of Route 128 and Interstate 93; and two wells—part of the city's water supply system—were contaminated with trichloroethylene and tetrachloroethylene. It is perhaps not coincidental that Woburn appears to have the highest cancer rate of any community in Massachusetts with a population exceeding 20,000. N.Y. Times, May 16, 1980, § 1, at 16, col. 2. With the exception of the defunct chemical company (whose viability as a defendant is minimal), the sources of the town's chemical ills are unknown, and probably unknowable. Hazardous wastes will frequently defy being traced to an identifiable source. In this respect the Love Canal may be the unusual situation.
would be washed by rain or surface water or be blown by wind onto neighboring property, a case imposing liability for intentional trespass might be made.

Even in the rare situation where the required intent is present, trespass may prove an unwieldy doctrine for plaintiffs living in states still steeped in common law tradition. A few jurisdictions continue to recognize the historic distinction between trespass and trespass on the case (comparable to nuisance), despite its abandonment by the Restatement (Second) of Torts.90 The former is a direct and immediate invasion of another's interest in exclusive possession of land, the latter an indirect, consequential invasion.91 In these states, the distinction can have a profound effect on the issue of liability because it often determines the applicable statute of limitations—which is usually longer for trespass. For example, Alabama has a six-year statute of limitations for trespass, while actions on the case are time-barred after one year.92

Intertwined with the distinction between direct and indirect application of force is the common law differentiation between invasion by solid or liquid matter and invasion by fumes, gases, smoke, or vibrations. Several courts adhere to the traditional theory that direct interference with exclusive possession of land can be made only by an object capable of occupying measurable space.93 They hold that the entry of microscopic matter gives rise to an action in trespass on the case. The absurdity of this distinction was highlighted by the Oregon Supreme Court in Martin v. Reynolds Metals Co.:94

It is quite possible that in an earlier day when science had not yet peered into the molecular and atomic world of small particles, the courts could not fit an invasion through unseen instrumentalities into the requirement that a trespass can result only from a direct invasion. But in this atomic age even the uneducated know the great and awful force contained in the

94. 221 Or. 86, 342 P.2d 790 (1960).
atom and what it can do to a man’s property if it is released. The now famous equation $E=mc^2$ has taught us that mass and energy are equivalents and that our concept of “things” must be reframed. . . .

[When looking] to the character of the instrumentality . . . we prefer to emphasize the object’s energy or force rather than its size. Viewed in this way we may define trespass as any intrusion which invades the possessor’s protected interest . . . whether the intrusion is by visible or invisible pieces of matter or by energy which can be measured only by the mathematical language of the physicist.95

Despite the logic of the Oregon opinion, the classification of defendant’s act, in jurisdictions true to the letter of the common law, continues to turn in part on the size of the invading instrumentality. Thus, when intentional conduct is involved, a claim for damages wrought by a stone may be subject to a different, usually longer, statute of limitations than a claim for damages wrought by microscopic particles, noxious fumes, or toxic gases.96 This archaic limitation in the law of trespass could have unfortunate ramifications for victims of hazardous waste disposal sites, where as at the Love Canal, the invasion will most often be by substances invisible to the naked eye.

**Nuisance.**—Nuisance describes a particular category of harm—an interference, other than a trespass, with the use and enjoyment of land.97 Such interference need not result in liability; the concept of reasonableness is at the core of nuisance doctrine.98 The law recognizes that nearly all human activity results in some inconvenience to others. Since every use of land affects the use or enjoyment of surrounding property, people must be permitted, within reasonable limits, to inflict minor annoyances on their

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95. Id. at 93-94, 342 P.2d at 793-94 (emphasis omitted).
97. Restatement (Second) of Torts § 821D (1979). This describes a private nuisance. A public nuisance is an interference with a right common to the community at large, such as an interference with public health, safety, or convenience. Id. § 821B. As Prosser points out, there is little similarity between the two, aside from the fact that each results in inconvenience to someone. W. Prosser, supra note 59, § 86, at 573. Although the doctrine of public nuisance may represent an effective theory of recovery for federal and state governmental entities seeking remuneration for clean-up and containment costs at hazardous waste disposal sites, a discussion of public nuisance as applied to environmental pollution is beyond the scope of this Article.
98. W. Prosser, supra note 59, § 87, at 580-81.
neighbors while pursuing their own interests. Consequently, liability is imposed for a condition or activity alleged to create a nuisance only where the interference is significant and the defendant's conduct has been unreasonable.

Many older cases imposed liability under the nuisance label without discussing the tortious nature of the defendant's acts. They appear to suggest that a plaintiff can recover merely by establishing a substantial invasion of his or her rights. In fact, however, such cases almost invariably arose in situations in which the defendant's intentional conduct was designated a nuisance by statute; where the defendant intentionally engaged in an activity that was clearly out of place in its surroundings; or where the defendant's activity was extraordinarily hazardous, as in the case of blasting. Modern case law explicitly affirms that nuisance liability must be predicated upon a showing that the defendant intentionally, negligently, or in the course of an unusually risk-laden undertaking, impaired the ability of neighboring landowners to enjoy their property. Except for the ultrahazardous situation, there is no financial responsibility for purely accidental interference.

The contamination of homes and the adverse human health consequences caused by wastes migrating from a landfill clearly constitute a substantial intrusion. To attach the nuisance label is, however, to say little with regard to a generator, disposer, or site-owner's liability. At inactive sites, intentional behavior will rarely be at issue. Although the waste generator or disposer created the landfill intentionally, the harm to surrounding property owners is

99. An amusing example of the legal system's recognition of this truism can be found in the opinion of Justice Daniel E. Fitzpatrick in Louisiana Leasing Co. v. Sokolow, 48 Misc. 2d 1014, 266 N.Y.S. 2d 447 (1966), a case dealing with the right of a "downstairs" apartment house tenant to be free from disturbances caused by his "upstairs" neighbor.

100. RESTATEMENT (SECOND) OF TORTS § 812F, Comment c, at 105 (1979); W. PROSSER, supra note 59, § 87, at 577-81.

101. See W. PROSSER, supra note 59, § 87, at 573-74, 582-83, and cases cited therein.

102. Id. at 582-83.


104. Where the harm involves more than mere discomfort or an assault on the senses, but affects the physical condition of the plaintiff's property or results in injury to his or her person, the substantial nature of the interference is apparent. See RESTATEMENT (SECOND) OF TORTS § 821F, Comment d, at 105-06 (1979); W. PROSSER, supra note 59, § 87, at 578.
produced by movement of contaminants beyond the confines of the site, an unintended occurrence. While intentional nuisance is often an effective theory of recovery where an ongoing concern knowingly emits pollutants into the atmosphere or releases them into water, it is unlikely to prove useful in the land-burial context. In most instances, the defendant will not have "created or continued the condition causing the nuisance with full knowledge that the harm to the plaintiff's interests is substantially certain to follow." In the inactive, hazardous waste disposal site situation, liability will require proof that toxic substances contaminated plaintiffs' property as a result of the defendant's lack of care (negligence), or that the land burial of hazardous wastes is an inherently dangerous activity warranting the application of strict liability.

The harm which the contents of an inactive site inflict on surrounding residents results from an activity occurring many years before the actual injury manifests itself. In some cases, a site that becomes a nuisance continues to be owned by the waste generator or by a municipal or private disposal agency or firm. In others, title may have been transferred to a party unconnected with waste generation or disposal, as at the Love Canal. The new owner may have acquired the property with notice of its former use, or may be totally ignorant of its capacity for harm. The law is clear that landowners who have tortiously created or maintained an artificial condition on their land, which becomes a nuisance to surrounding residents, cannot escape liability by conveying the offending property. It is equally clear that landowners who have not contributed to the harm by their own tortious conduct are not liable for injury caused by a dangerous, artificial condition created or maintained by their predecessors until they know or should know that it exists, and have had reasonable opportunity to abate the danger. Particularly in the area of environmental abuse, the courts

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106. W. PROSSER, supra note 59, § 87, at 574 (footnotes omitted).
have recognized that "reasonable opportunity to abate" does not extend to enormous clean-up costs for another's pollution. As the Superior Court of New Jersey noted:

[M]ere ownership of property without anything more cannot and should not be the determinative factor in imposing liability. . . . In this industrial age ownership has no more relationship to the problems of pollution than did the theory of privity of contract to the problems of products liability. As the privity of contract theory prevented just results and enabled the party responsible for defects in products to escape liability, so would blind adherence to a theory making every landowner liable for pollution on his land regardless of the source of that pollution.

Thus, while the doctrine of nuisance appears applicable to harms resulting from inactive, hazardous waste disposal sites, so labeling plaintiff's cause of action will not determine defendant's liability. The important inquiry will focus on the nature of the conduct which caused or contributed to the harm. Except in the rare instance where intentional behavior is involved, nuisance doctrine will be impotent as a mechanism for gaining compensation unless negligence or a proper case for strict liability can be established.

Negligence.—Negligence has been defined as conduct "which falls below the standard established by law for the protection of others against unreasonable risk of harm." The standard requires the actor to have done what the careful, prudent individual supposedly would have done in the same situation. In many areas of human endeavor, the community's expectations for this mythical individual are clear—either because they have been articulated in statutes, or because there is a general consensus based on a long history of shared experience. Few would question, for example, that reasonable behavior before crossing a busy thoroughfare includes stopping and looking. Proof of negligence in this commonplace situation is a single-faceted endeavor: proof of the standard's

112. W. Prosser, supra note 59, § 32, at 150.
violation. Sufficient evidence must be produced to satisfy the fact-finder that the actor did not stop and look.

Negligence in the inactive, hazardous waste disposal site context will be far more difficult to define and establish. Because the setting in which the activity took place is often remote in time, and the materials involved are relatively unfamiliar to laypersons, what constitutes unreasonable conduct is not so immediately clear. Proof of negligence becomes double-faceted. It requires more than producing evidence concerning what the defendant did or did not do years earlier—in itself a difficult task. It also requires first establishing a standard of reasonable care against which the specific conduct alleged may be measured.114

The commonly accepted formula for determining reasonable care in a given situation involves three variables: (1) The probability that an accident will occur; (2) the gravity of the injury which will be suffered if an accident does occur; and (3) the cost, financial or in terms of inconvenience, of precautions to prevent the accident.115 If the cost of preventing plaintiff’s injury would have been less than the cost of the injury, discounted by the probability of its occurrence, the defendant’s failure to prevent the injury is deemed unreasonable, that is, negligent.116 Thus phrased, the formula presupposes that the defendant had perfect foresight as to the consequences of his or her conduct. Since few defendants are clairvoyant, the degree of foresight actually possessed becomes a major issue in the negligence action, along with the cost and feasibility of accident avoidance.

Thus, negligence is a conclusion of law requiring a fact-intensive analysis. As such, there is a limit to the utility of discussing it in the abstract. The Love Canal situation, however, can be used to illustrate some of the proof problems facing plaintiffs in other hazardous waste disposal litigation. In discussing negligence at the Love Canal, we do not presume to prejudge the conclusions which will be reached by the trier of fact. We do not have at our

114. See generally W. PROSSER, supra note 59, § 37, at 205-08.
115. This is the Learned Hand formula articulated in United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947). For a discussion of Hand’s formula in general economic terms, see Posner, A Theory of Negligence, 1 J. LEGAL STUD. 29, 32-33 (1972).
116. For another view of cost allocation, see Calabresi & Hirschoff, Toward a Test for Strict Liability in Torts, 81 YALE L.J. 1055 (1972) (reverse learned Hand formula is discussed as test for strict liability).
disposal all the evidence from which a case in negligence might be made or defeated. We merely seek to demonstrate that a broad range of complex factual issues will have to be explored and resolved, and that an attempt to prove negligence will be time consuming, expensive, and difficult.

a. Proving Negligence at The Love Canal.—For Hooker\textsuperscript{117} to be found negligent, plaintiffs must: (1) Establish that, at the time of burial, the chemical company was able to foresee that the wastes might pose a future threat of injury to residents of property surrounding the site and (2) establish that, despite having knowledge of the potential hazard or access to such knowledge, the company failed to take reasonable precautions, either in its choice of disposal alternatives, in siting the landfill, in its disposal practices, or in its subsequent conveyance of the Canal.

There is a danger in assessing with the benefit of hindsight acts occurring in the past: “Nothing is so easy as to be wise after the event.”\textsuperscript{118} Although the public is now aware of the hazards posed by the land disposal of chemical substances,\textsuperscript{119} an evaluation of the reasonableness of Hooker’s conduct in 1942-52 (or the past conduct of any generator-disposer of hazardous wastes) must be made in the context of the time in which it occurred.\textsuperscript{120} Such an evaluation must recognize, however, that a chemical company may be charged with the highest degree of knowledge of both the dangers posed by land disposal and the injurious potential of its wastes, which was available at that time.\textsuperscript{121}

\textsuperscript{117} Defendants in the lawsuits arising out of the Love Canal tragedy include the Niagara Falls Board of Education, the City of Niagara Falls and Niagara County, as well as Hooker and its parent Occidental Petroleum Corp. See United States v. Hooker Chems. and Plastics Corp., No. 79-990, at 40 (W.D.N.Y., filed Dec. 20, 1979); Mervak v. City of Niagara Falls, 101 Misc. 2d 68, 420 N.Y.S.2d 687 (Sup. Ct., Niagara County 1979); New York v. Occidental Petroleum Corp., No. 41006 (Sup. Ct., Niagara County, Apr. 28, 1980). An analysis of the differing legal positions of each of these defendants is beyond the scope of this Article and is not pertinent to the development of our thesis. The defendants will vary in every hazardous waste disposal situation. Public entities will not always be involved. Therefore, we are focusing on Hooker, the generator and landfill owner, because a discussion of its position has broader application to other fact situations.


\textsuperscript{119} See notes 278-282 infra and accompanying text.

\textsuperscript{120} “The culpability of the actor’s conduct must be judged in the light of the possibilities apparent to him at the time, and not by looking backward ‘with the wisdom born of the event.’” W. PROSSER, supra note 59, § 31, at 146 (footnote omitted); see Ismert-Hincke Milling Co. v. Union Pac. R. Co., 238 F.2d 14 (10th Cir. 1956); Gerber v. McCall, 175 Kan. 433, 264 P.2d 490 (1953).

\textsuperscript{121} See Dunham v. Vaughan & Bushnell Mfg. Co., 42 Ill. 2d 339, 247 N.E.2d
Hooker may claim that during the 1940's neither Hooker nor chemical manufacturers in general fully understood the dangerous character of substances with which they were dealing, especially in terms of their long-term persistence and the quantities and extent of contact necessary to inflict harm. If it becomes apparent that Hooker did not fully appreciate the dangerous qualities of the wastes, plaintiffs may argue, in an analogy to the extensive testing which must precede the marketing of new drugs, that the company was obligated to further inform itself before introducing the substances into the environment. Such an analogy, however, presupposes the existence and availability of adequate testing equipment and techniques, another issue requiring expert testimony.

Further, the value of the analogy does not depend on the ability of the actors in this situation to obtain information. The actor may be engaged in an activity, or stand in a relation to others, which imposes upon him an obligation to investigate and find out, so that he becomes liable not so much for being ignorant as for remaining ignorant; and this obligation may require him to know at least enough to conduct an intelligent inquiry as to what he does not know.

W. Prosser, supra note 59, § 32, at 160 (footnote omitted); see Hopkins v. E.I. DuPont de Nemours & Co., 199 F.2d 930 (3d Cir. 1952).

Primary methods now available for the identification of chemical substances are mass spectrometry and gas chromatography. The first commercial mass spectrometer was used in 1942 at the Atlantic Refining Corporation for petroleum analysis. The instrument did not achieve general use as an analytic tool until the 1960's. Since then, its usage has become standard in analytical laboratories. M.
ogy decreases proportionately with the degree of care taken to ensure that the substances would remain confined to the disposal site. Clearly, there is a significant difference between failing to test the human reaction to drugs which the manufacturer knows will be ingested, and failing to test the human reaction to waste products which the disposer intends to isolate from the public.

During the years 1942-1952, land burial of waste materials was an accepted practice throughout the chemical industry.\(^{126}\) High temperature incineration technology, capable of destroying most organic materials, was still in its developmental stages and even now is not widely available in the United States.\(^{127}\) The only practical alternative to land burial was disposal into a body of water. In retrospect, even the Love Canal may appear more desirable than dumping directly into the Niagara River (which supplies drinking water to the cities of Buffalo and Niagara Falls) or permitting the wastes to be borne away by the municipal sewage system. Thus, it appears unlikely that the company’s decision to bury the wastes, as opposed to using another disposal method, can in itself be deemed unreasonable.

Further, a strong argument can be made that during the 1940’s the Love Canal was an almost ideal site for a landfill. An aerial photograph taken in 1938 shows that the property immediately surrounding the site was undeveloped with the exception of a single dwelling, and that the neighboring area was sparsely popu-

\(^{126}\) See, e.g., TASK FORCE REPORT, supra note 21, at II-75.

\(^{127}\) By burning certain waste materials at sufficiently high temperatures for a sufficient period of time to destroy them completely or render them inert, incineration technology can dramatically reduce both the volume and toxicity of industrial wastes. Such technology is currently being used in Europe and in a few parts of the United States. However, despite this successful experience, there are no commercial high temperature incinerators available in New York. STATE OF NEW YORK, DEP’T OF ENVIRONMENTAL CONSERVATION, HEARING OFFICER’S REPORT ON: INACTIVE HAZARDOUS WASTE DISPOSAL SITES AND THE REPORT OF THE INTERAGENCY TASK FORCE ON HAZARDOUS WASTES 46-47 (1979). It is ironic that today the Hooker Chemical operation in Niagara Falls owns two private incineration facilities, and essentially all of the company’s organic liquid chemical wastes are incinerated. Love Canal Hearings, supra note 5, at 7 (written statement of Bruce Davis, President, Industrial Chemicals Group, Hooker Co.).
The Canal excavation itself was dug in a stratum of relatively impermeable clay, which even by today's standards represents a formidable barrier to migration. In short, it will be difficult to establish that Hooker failed to exercise care and judgment in selecting the Love Canal as a disposal site, particularly in view of the rather primitive approach to waste disposal which has been prevalent in the United States.

Efforts to establish negligence in the disposal methods used at the Canal may be hampered by a lack of records and reliable witnesses. A Hooker spokesman has indicated that documentation does not exist to show the type and quantities of chemicals deposited in the Canal or the dumping procedures used. Testimony from employees who participated in the landfilling or have first-hand knowledge of what occurred is likely to be unavailable or un-

128. Photograph No. 2359, Division of Laboratories and Research, N.Y. State Dep't of Health; see note 40 supra.

129. Among the recommendations made in the report by Calspan Corp. is investigation as to the possible use of clay barriers to prevent lateral migration of contaminated water out of the Canal. Calspan Report, supra note 37, at 27. "The clay barrier would be placed such that it goes through the more permeable upper six feet of soil into the heavy impermeable lower clay layer." Id. This suggests that the clay stratum into which the Canal is dug continues to act as an effective barrier to the movement of contaminants, and use of a clay barrier in the upper stratum is required to contain the overflow. See text accompanying notes 44-48 supra. The regulations issued under RCRA also recommend the use of natural clay barriers in secure landfills. See 43 Fed. Reg. 58,946, 58,989 (1978).

130. A litany of hazardous waste disposal tragedies is incanted in SUBCOMM. ON OVERSIGHT AND INVESTIGATIONS OF HOUSE COMM. ON INTERSTATE AND FOREIGN COMMERCE, supra note 48, at 2, 4, 9-13. At the "Valley of the Drums" in Shepardsville, Kentucky, 17,000 barrels of hazardous waste were simply left on the surface in the hauler's backyard. Id. at 10. In Elizabeth, New Jersey, 40,000 barrels of toxic substances were stacked in twenty foot piles within a few feet of a local road and railroad track. Id. In Lathrop, California, thousands of gallons of pesticide waste were discharged directly into extremely permeable soil. Id. at 11. At Hooker's S-area site in Niagara Falls, New York, chemicals were deposited into porous trenches located only a few hundred feet from a principal source of drinking water. Id. at 9-10. Finally, toxic wastes were spread on Texas roads as an ingredient of road oil. Id. at 12-13. In short, the Subcommittee concluded that "proper disposal of hazardous materials is the exception, rather than the rule." Id. at 2.

131. See Love Canal Hearings, supra note 5, at 71-72, 89-90 (statement of Bruce Davis, President, Industrial Chemicals Group, Hooker Chemical Co.). Davis testified that information and estimated figures were developed for the Interagency Task Force on Hazardous Wastes by reviewing past sales and production records and interviewing workers because few records were kept of chemicals deposited in the landfill. Id. Poor or nonexistent documentation appears to have been standard practice, as other waste generators interviewed by the Task Force also relied on oral histories from present and past employees to quantify and even locate waste disposal areas. Id. at 92.
certain due to the passage of time. Two on-site studies undertaken for the City of Niagara Falls in 1977 and 1978\textsuperscript{132} and the study conducted by the Interagency Task Force on Hazardous Wastes\textsuperscript{133} have clarified some of the factual uncertainties bearing on the negligence question. For example, it was ascertained that quantities of liquid chemical waste were deposited in the site in metal drums which corroded.\textsuperscript{134} Since it is not unreasonable to posit that even in 1942-1952 it was generally known that such deterioration would take place, an issue is raised as to whether more permanent containers were then available at realistic cost. The studies also revealed that some of the liquids were poured directly into the excavation without benefit of containers.\textsuperscript{135} The reasonableness of such conduct—largely a function of the state of Hooker's knowledge as to the toxicity and longevity of the wastes and the hydrogeological nature of the site, is yet another issue. A third issue raised by these on-site studies concerns the location of the wastes within the excavation. There are indications that the Canal was filled above the level of the clay stratum, increasing the exposure of the wastes to infiltration by rain and surface water, and setting the stage for their migration.\textsuperscript{136} However, despite these studies and other investigations conducted at the Canal, at least one key factual question remains unanswered: What was the nature of the cover which Hooker placed over the excavation before transferring the property?\textsuperscript{137} Was there a clay "cap" properly constructed and contoured to deflect water away from the Canal? Since Hooker appears to be in a superior position to have information regarding disposal practices and the existence of a cap, plaintiffs may attempt to invoke the doctrine of res ipsa loquitur\textsuperscript{138} to ease the difficulties of proof. This doctrine is generally confined

\textsuperscript{132} Conestoga-Rovers & Assocs., \textit{supra} note 38; Calspan Report, \textit{supra} note 37.

\textsuperscript{133} \textit{See} \textit{TASK FORCE REPORT, supra} note 21.

\textsuperscript{134} Calspan Report, \textit{supra} note 37, at 2. The report also indicates that solid wastes were deposited in the Canal in cardboard containers. \textit{Id.} at 9.

\textsuperscript{135} \textit{TASK FORCE REPORT, supra} note 21, at II-75. "Bulk quantities of liquid and solid industrial wastes were deposited directly into the Canal." \textit{Id.}

\textsuperscript{136} \textit{See} note 37 \textit{supra} and accompanying text.

\textsuperscript{137} \textit{See} note 38 \textit{supra}; note 148 \textit{infra}.

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to factual settings in which the defendant has maintained exclusive control over the harmful instrumentality, and where the resulting injury does not ordinarily occur unless those in control fail to exercise reasonable care.\footnote{139} At waste disposal sites there are numerous factors other than lack of due care that may cause buried materials to reach the human environment.\footnote{140} Since today many believe that even the most modern, carefully designed and constructed "secure" landfills cannot adequately protect against these factors,\footnote{141} some courts might find res ipsa loquitur particularly inappropriate in a case involving a landfill constructed and operated at a less technologically advanced time.\footnote{142} If the doctrine is used, its procedural effect will vary considerably from court to court.\footnote{143} Were Love Canal plaintiffs to present the identical case in several different jurisdictions, this lack of procedural uniformity could result in disparate outcomes.

Several issues bearing on the negligence question arise with respect to the transfer of the site to the Board of Education. Possibly, the entire Love Canal tragedy might have been averted had Hooker retained possession. By alienating the property, the company cut off its ability to monitor the long-term security of the Canal. Since Hooker knew the nature of the materials in the landfill, information unavailable to others, it might appear that alienation was in itself unreasonable. This could depend, however, on the ex-

\footnotetext{139.}{Norman v. Greenland Drilling Co., 403 P.2d 507 (Okl. 1965); Pacific Northwest Bell Tel. Co. v. Port of Seattle, 80 Wash. 2d 59, 491 P.2d 1037 (1972); W. PROSSER, supra note 59, § 39, at 214-15.}
\footnotetext{140.}{See note 29 supra and accompanying text.}
\footnotetext{141.}{Id.}
\footnotetext{142.}{Prosser points out that in the formative years of aviation, airplane accidents were so frequent due to rudimentary technology that negligence could not be inferred from an unexplained plane crash or disappearance. As safety improved through technological advancement, the application of res ipsa loquitur to many types of airplane mishaps became justified. W. PROSSER, supra note 59, § 39, at 216. An analogous situation exists with regard to inactive disposal sites. Although injury occurs in the present, in itself a time when it is difficult to infer negligence, the activity subject to a negligence analysis may have taken place at a time when technology and scientific knowledge was sufficiently rudimentary that as a matter of common experience, lack of appropriate care cannot be inferred. See Smith v. Lockheed Propulsion Co., 247 Cal. App. 2d 774, 782, 56 Cal. Rptr. 128, 135 (1967) (court found res ipsa loquitur inapplicable where property damage to adjoining lands was caused by seismic vibrations from test firing of huge rocket motor, as experience at time of decision with effects of rockets of that size was too limited to apply standard of reasonable care drawn from past experience). Possibly the same might be said of land burial of chemical wastes in the 1940's and 50's.}
\footnotetext{143.}{W. PROSSER, supra note 59, § 40, at 228-31.}
tent to which the recipient of Hooker's largess was informed of the possibility of the wastes' migration and the need for vigilance. Accordingly, plaintiffs will likely wish to evaluate the nature of any warnings or assurances given by Hooker to the grantee. The exchange of information between the two was not limited to the deed language.144

The contents of these communications also bear on the question of negligence as it pertains to the Board of Education. While Hooker may be presumed to have had more than ordinary knowledge of the dangers of chemical wastes and the insufficiencies of landfills,145 the Board cannot be charged with a similar degree of expertise.146 Love Canal victims may argue that the ominous tone of the deed language was itself sufficient to put the Board on notice of the unsuitability of a chemical disposal site for a school, or at least should have alerted the Board to the need for further inquiry.147 If plaintiffs can produce evidence of more explicit warnings than that contained in the deed, the use to which the Board put the property and its failure to monitor the site might be made to appear clearly unreasonable.

144. Bruce Davis, President, Industrial Chemicals Group, Hooker Chemical Co., testified that there was extensive correspondence between Hooker and the Niagara Falls Board of Education which put the Board on notice of the dangerous nature of the chemicals contained in the Canal. Love Canal Hearings, supra note 5, at 60-61, 84. A Hooker representative testified before the Subcommittee on Oversight and Investigations that the Board of Education was warned against construction activity of any kind on the Canal site and that Hooker transferred the property only at the insistence of the Board. Subcomm. on Oversight and Investigations of House Comm. on Interstate and Foreign Commerce, supra, at 18. A public relations pamphlet published by Hooker in June, 1980 claims that despite repeated warnings by the company, the Board was so anxious to acquire the Canal that it threatened condemnation proceedings in the face of Hooker's reluctance to sell. Hooker Chemical Public Affairs Dept, Love Canal: The Facts (1892-1980) (Hooker Factline No. 11, June 1980).

However, serious doubt is cast upon the sincerity of Hooker's warnings and alleged reluctance to sell the property by the company's attitude concerning the subsequent disposition of another disposal site in the Niagara Falls area. Two internal company memos recommend that the 102nd Street dump, containing toxic wastes, be sold to the City for park and recreational facilities or be sold to a private residential developer. Subcomm. on Oversight and Investigations of House Comm. on Interstate and Foreign Commerce, supra, at 19.

145. "Professional men in general, and those who undertake any work calling for special skill, are required not only to exercise reasonable care in what they do, but also to possess a standard minimum of special knowledge and ability." W. Prosser, supra note 59, § 32, at 161 (footnote omitted); see Restatement (Second) of Torts § 289, Comment m at 45-46 (1965).

146. See Restatement (Second) of Torts § 290 (1965); W. Prosser, supra note 59, § 32, at 157-60.

147. See note 36 and accompanying text.
Complex issues of proximate and intervening cause may also have to be resolved in the course of litigation. Most of the Love Canal homeowners moved to the neighborhood well after dumping had terminated and the property had been conveyed. The question arises as to whether their arrival was foreseeable. Plaintiffs might argue that Hooker and the Board of Education can be charged with knowledge that the school would be a major factor in attracting residents to the area. Under such a view, homeowners cease to be "unforeseeable victims," and become a class which Hooker and the Board were bound to protect from exposure to harmful substances. In addition, the possibility remains that the waste materials might have remained confined to the Canal had not the construction of the LaSalle Expressway, the school, and neighboring homes disturbed the ground. Whether these excavations were sufficiently unforeseeable to absolve Hooker of responsibility is, thus, an additional inquiry.

b. Waste Disposal Sites in General.—In some respects, the Love Canal may be the easy case. The proof problems inherent in a negligence cause of action against Hooker Chemical or the Board of Education have been considerably mitigated by factual findings already made by the public and private studies undertaken, which were prompted in part by the publicity surrounding the Love Canal tragedy. At other inactive, hazardous waste disposal sites, the same keen public and state and federal government interest may be lacking. Plaintiffs at such sites may not have the benefits, practical or financial, of intensive, government-sponsored investigation. Since the nature and quantity of the waste materials and the actual disposal practices have rarely been recorded by generators, haulers, or site owners, plaintiffs may have to initiate and bear the cost of private on-site "digging expeditions," which, depending on

148. Hooker contends that up to 17,000 cubic yards of soil were removed from the Canal site between 1953 and 1955 by the Board of Education in connection with the construction of the elementary school. The company also claims that in 1957 and 1960 the City of Niagara Falls penetrated the clay covering and walls of the Canal excavation while installing storm sewers across the site in connection with construction of two local roadways. The integrity of the Canal was breached again in 1968, this time by the State, when soil and wastes were removed during construction of the LaSalle Expressway. According to Hooker, these events occurred despite well publicized warnings that excavation was undesirable and possibly dangerous. Hooker Chemical Public Affairs Dep't, supra note 144.

149. See note 131 supra. Task Force Report, supra note 21, at II-3, stresses that much of its data on the contents of disposal sites is not derived from specific company records, but from rough estimates of past activities and personal recollections.
the site’s age and the attending circumstances, may or may not prove a fruitful source of information. They may also have to arrange and pay for water and air samples to be taken from properties surrounding the site and analyzed at qualified laboratories. Interviews with employees, past and present, of the many different business enterprises that could be involved in the creation and maintenance of the disposal site may have to be conducted. As representatives of potential or actual defendants, these personnel may be reluctant to cooperate with the plaintiffs. In short, without significant factfinding assistance from the public sector, the cost of developing the information necessary to pursue a cause of action in negligence may be prohibitive, and the length of time involved may intensify existing hardship and injuries.

The Love Canal may also be the easy case because there is at least one clearly identifiable defendant. During the critical years that the Canal was in use, the site was owned and controlled by Hooker, the acknowledged waste generator. Transporting toxic substances between Hooker’s manufacturing operations and the Canal was done either by Hooker or by independent carriers acting under its direction. Consequently, decades later, it is possible not only to attribute the bulk of the materials present in the site to a specific source, it is possible to charge that source with knowledge of the chemical composition of the waste and its destination, with knowledge of the on-site disposal practices, and with knowledge of the overall maintenance of the site, at least until its transfer to the Board.

At other hazardous waste disposal sites, identifying the appropriate defendant or defendants may prove far more difficult due to uncertainty surrounding the past relationships and interactions of multiple participants. Typically, there are three separate groups of participants involved in the creation of a hazardous waste disposal site: The generators, the haulers, and a succession of site owners. A single site may contain a variety of substances generated

150. Health and environmental testing at the Love Canal will cost New York taxpayers approximately $2,725,000. Love Canal Hearings, supra note 5, at 5 (written statement of Michael J. Cuddy, Coordinator of the Governor’s Love Canal Task Force). While it is not suggested that costs will necessarily be as high at other hazardous waste disposal sites, this figure conveys some idea of the magnitude of the financial burden. Additionally, there appears to be a nationwide scarcity of private laboratories equipped to perform the required analysis. See id. at 151-53 (oral testimony of Michael J. Cuddy).

151. See notes 152-154 infra and accompanying text.

152. TASK FORCE REPORT, supra note 21, is broken down into these three categories.
by several different enterprises. Some of these substances may be harmful, others not. In many instances, generators will have retained private haulers to remove and dispose of industrial wastes. These haulers may have been uninformed as to the nature of the materials, just as the generators may have been unaware of the wastes' ultimate destination. Site owners, having dealt only with haulers, may have known neither the source nor the contents of the materials being deposited. To further complicate the situation, haulers typically work for several different generators and may use any number of disposal sites. Conversely, generators often retain the services of more than one private carrier. It is apparent that many years later, even with some participants identified, it may be impossible for plaintiffs to isolate a culpable party in the waste disposal chain. While numerous cases have been decided in the last forty years which have used theories such as concert of action,
alternative liability, and res ipsa loquitur to ease the plight of

ew the then existing safety standards in favor of more risk laden, though less costly, practices. Courts which have inferred concert from similar behavior patterns have had at least minimal evidence of a common effort before them. See Roberto Hernandez, Inc. v. Arnold Bernstein Schiffahrtsgesellschaft, M.B.H., 31 F. Supp. 76 (S.D.N.Y. 1940), rev’d on other grounds, 116 F.2d 849 (2d Cir.), cert. denied sub nom. Compania Espanola de Navegacion Maritima, S.A. v. Roberto Hernandez, Inc., 313 U.S. 582 (1941); Firemen’s Ins. Co. v. Jones, 245 Ark. 179, 431 S.W.2d 728 (1968).

157. This theory has been applied in cases where all possible tortfeasors have been joined as defendants and have been proved negligent, but the one who caused plaintiff’s injury cannot be identified. The burden of proof as to cause-in-fact shifts to the defendants. Each must absolve himself or be held jointly and severally liable. See Bowman v. Redding & Co., 449 F.2d 956 (D.C. Cir. 1971); Hall v. E.I. DuPont De Nemours & Co., 345 F. Supp. 353 (E.D.N.Y. 1972); Summers v. Tice, 33 Cal. 2d 80, 199 P.2d 1 (1948); RESTATEMENT (SECOND) OF TORTS § 433B(3), at 441-42 (1965). The policy underlying this approach is that all defendants were wrongdoers whose conduct created a situation which rendered the plaintiff unable to identify the cause of his or her injury. Rather than let the innocent victim go remediless, the tortfeasors should be required to apportion the damages among themselves, or be liable for the entirety. RESTATEMENT (SECOND) OF TORTS § 433B(3), Comment f at 446 (1965). The usefulness of alternative liability in the inactive hazardous waste disposal context is questionable. Most courts have refused to apply it where less than all the possible tortfeasors are before the court or where not all have been proved negligent. See, e.g., Shunk v. Bosworth, 334 F.2d 309 (6th Cir. 1964); Wetzel v. Eaton Corp., 62 F.R.D. 22 (D. Minn. 1973); Eley v. Curzon, 121 Cal. App.2d 280, 263 P.2d 86 (1953). In many cases it will be impossible for victims of hazardous waste disposal to identify all those who participated in the creation and maintenance of a site, just as it will be impossible to prove that the conduct of each participant was negligent. Although the Restatement acknowledges that eventually the theory may be modified to accommodate situations where all involved parties cannot be joined as defendants, this has not yet taken place. RESTATEMENT (SECOND) OF TORTS § 443B(3), Comment h, at 446 (1965).

158. Some courts have used res ipsa loquitur where there are multiple defendants, but only one unidentifiable defendant can be assumed to have caused plaintiff’s injury. In such cases, the burden of proof as to negligence and causation is shifted, and all defendants who cannot absolve themselves are held jointly liable. This use of res ipsa loquitur has generally been confined to situations where every possible tortfeasor is before the court; the circumstances surrounding the injury make it impossible for the plaintiff to identify the harmful conduct and its perpetrator; and the defendants have access to the pertinent facts. See W. PROSSER, supra note 59, § 39, at 221-25; McCoid, Negligence Actions Against Multiple Defendants, 7 STAN. L. REV. 480 (1955); Note, Res Ipsi Loquirit in Suits Against Multiple Defendants, 34 ALBANY L. REV. 106 (1969). This approach has been most frequently used in medical cases involving operating room injuries, where all defendants owed the plaintiff a special duty of care. See, e.g., 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). Prosser notes that with the exception of cases where some special duty is involved or where the defendants are so closely connected as to be considered a single enterprise, “res ipsa loquitur still has not been held to apply against multiple defendants, where it is inferable only that one has been negligent.” W. PROSSER, supra, at 224 (footnote omitted).
plaintiffs unable to identify the party responsible for their injury, none has arisen from so complex a factual setting.

Strict Liability.—The common law has responded over time to fundamental social, demographic, and economic change. In some instances, injuries arising from new circumstances have been accommodated by adapting preexisting doctrine. However, when such accommodation has proved inadequate, the courts have demonstrated a willingness to abandon existing legal principles, and construct substitutes better suited to current needs.

The 19th century transition from strict liability to negligence was a reflection of popular enthusiasm for industrial develop-

Even in situations where each defendant owed plaintiff a special duty of care, the application of res ipsa loquitur to multiple defendants has been attacked for imposing liability without fault. See, e.g., Talbot v. Dr. W.H. Groves’ Latter-Day Saints Hosp., 21 Utah 2d 73, 440 P.2d 872 (1968); Adamson, Medical Malpractice: Misuse of Res Ipsa Loquitur, 46 MINN. L. REV. 1043 (1962); Seavey, Res Ipsa Loquitur: Tabula in Naufragio, 63 HARV. L. REV. 643 (1950).


160. A historical tracing of the doctrine of implied warranty illustrates how seemingly narrow legal constructs have been expanded by the courts to provide relief for previously uncontemplated plaintiffs. Implied warranty of merchantability was first raised in 1815 and ran from the producer to the middleman dealer, not the ultimate consumer. See Cardiner v. Gray, 171 Eng. Rep. 46 (N.P. 1815); K. LLEWELLYN, CASES AND MATERIALS ON SALES 340 (1930). An injured consumer could not invoke this guarantee of quality because there was no privity of contract between the consumer and the parties to the warranty. See Winterbottom v. Wright, 152 Eng. Rep. 402 (Ex. 1842). The English Sales of Goods Act, 56 & 57 Vict., c.71, § 14 (1894), enabled the ultimate purchaser to utilize implied warranties from his seller, but only as to goods which were purchased without opportunity for inspection or as to defects which could not be ascertained by visual inspection. Id. § 14(2). After implied warranties were made available to consumers, additional protection was needed to circumvent the restrictions of privity of contract, which limited recovery to the immediate purchaser seeking relief from his retail seller. Courts began to manipulate the privity concept in order to reach manufacturers and wholesalers who were further up the distribution chain. See, e.g., Johnson v. Cadillac Motor Car Co., 261 F. 878 (2d Cir. 1919); MacPherson v. Buick Motor Co., 217 N.Y. 382, 111 N.E. 1050 (1916). For discussions of the gradual demise of privity, see Bohlen, Liability of Manufacturers to Persons Other Than Their Immediate Vendees, 45 LAW Q. REV. 343 (1929); Gillam, Products Liability in a Nutshell, 37 ORE. L. REV. 119, 153-55 (1958). The necessity for privity of contract was finally abandoned in Henningsen v. Bloomfield Motors, 32 N.J. 398, 161 A.2d 69 (1960). See Prosser, The Assault Upon the Citadel (Strict Liability to the Consumer), 69 YALE L.J. 1099 (1960).

161. See notes 165-174 infra and accompanying text.
The negligence standard shifted many of the social costs of industrialization from entrepreneurs to those harmed by their endeavors, thereby providing an environment in which private enterprise could flourish. The misfortunes of those property owners, consumers, or members of the labor force injured by the inevitable accidents accompanying the industrial era were subordinated to the "public interest"—as represented by material productivity. By the turn of the 20th century, however, societal attitudes concerning the welfare of private individuals began to change, and the benefits of relatively unfettered industrial expansion began to be questioned. With "big business" occupying an increasingly dominant economic and social position by virtue of its superior bargaining power in the marketplace and the workplace, the need to impose social responsibility commensurate with this role began to be recognized.

The judicial effort to make industry more responsive to the public welfare has manifested itself in a marked expansion of strict liability in the law of torts. Over the last two decades, common law instances of liability without proof of fault have increased numeric-
ally and have broadened in scope. Absent an act of God, carriers are now absolutely liable for damage to cargo. Manufacturers and sellers of defective products are held financially responsible to consumers for harm caused by those products. In a dramatic departure from the traditional doctrine of caveat emptor in real estate dealings, developers are beginning to be held strictly liable for defects in housing. Under the doctrine of respondeat superior, employers have long been responsible for the work-related misdeeds of their employees. Today, employer liability, through theories of non-delegable or expanded duty, may encompass independent contractors as well. Harms caused by unusually risk-laden un-


170. See Slagle v. United States, 612 F.2d 1157, 1162 (9th Cir. 1980). The nondelegable-duty doctrine makes the employer liable for the misconduct of an independent contractor whenever dangerous activities are involved. Id. The employer will be responsible for any injury resulting from the independent contractor's failure to exercise reasonable care, even though the employer provides for special precautions in the contract with the independent contractor. The employer is vicariously liable regardless of his or her own due care. See RESTATEMENT (SECOND) OF TORTS §§ 416, 427 (1976). This is the rule in California. Aceves v. Regal Pale Brewing Co., 24 Cal. 3d 502, 595 P.2d 619, 156 Cal. Rptr. 41 (1979); Van Arsdale v. Hollinger, 66 Cal. 2d 245, 437 P.2d 508, 66 Cal. Rptr. 20 (1968). It is also the rule in New York. Rogers v. Dorchester Assocs., 32 N.Y.2d 553, 300 N.E.2d 403, 347 N.Y.S.2d 22 (1973); McDonald v. Shell Oil Co., 20 N.Y.2d 160, 228 N.E.2d 899, 281 N.Y.S.2d 1002 (1967). The reasons most often given for this vicarious liability is that the employer, who selects the independent contractor, can carefully choose one that is financially solvent and can demand indemnity from him or her in the event of finan-
Dertakings are compensable under strict liability for ultrahazardous or abnormally dangerous activity. The shift from contributory negligence to comparative negligence has altered the fault concept, removing it as a bar to recovery. Res ipsa loquitur, technically a procedural device, has frequently been expanded to become a *nom de plume* for strict liability. Movement toward joint liability of multiple defendants, where the identity of the individual causing the harm cannot be ascertained, is yet another example of the growing resolve that the cost of injuries born of a highly technological age be lifted from the shoulders of innocent victims, and be placed on those possessing the tools and knowledge to devise safer products and technology.

Moreover, legislative efforts to ensure a more socially responsible business sector have steadily increased since the turn of the century. In the 1970's, statutory schemes aimed at reducing the social loss. Furthermore, the employer can purchase liability insurance and then distribute the risks to the general public by setting higher prices for the goods or services. W. Prosser, * supra* note 59, § 69, at 459.


175. Such legislation, though somewhat erratic, has taken many forms and in-
adverse environmental impact of industry finally came into their own, as major environmental acts were passed.\textsuperscript{176} Although these acts seek to regulate the behavior of manufacturers, they do not provide for compensation to those injured by environmental abuse. Environmental statutory schemes give little recognition to the behavior-modifying aspect of common law damages.\textsuperscript{177} Such dam-


ages, awarded with regularity, provide an economic incentive to
discover the harmful potential of substances and ways of minimiz-
ing the risk of injury before the substances are introduced into the
marketplace or the environment.\textsuperscript{178}

Since strict liability is the common law's, and perhaps soci-
ety's, most effective means for insuring recovery, its application
should be extended to harms arising from industrial pollution.\textsuperscript{179}

The Toxic Substances Control Act, 15 U.S.C. §§ 2601-2629 (1976), regulates the
manufacture and distribution of potentially harmful chemicals. This act empowers
the EPA to require testing and special handling, but does not provide injured indi-
viduals with a compensatory right of action. \textit{Id.}, §§ 2603, 2605. In 1978, amendments
to The Toxic Substances Control Act were proposed which would have provided
compensation to those harmed by hazardous chemicals. H.R. 9616, 95th Cong., 2d
Sess. (1978); S.1531, 95th Cong., 2d Sess. 1978). The bills were never enacted. None
of the following regulatory schemes provide for private compensation suits: Clean
300f-(10) (1976) (amended 1977, 1978); The Hazardous Materials Transportation Act,

\textsuperscript{178} Situations such as Love Canal illustrate that regulation alone is inadequate
because it may produce change only after substantial injury has occurred. An excel-
 lent example is \textit{N.Y. ENVIR. CONSERV. LAW} § 27-0903 (McKinney Supp. 1980) en-
acted in 1978 by the New York State Legislature as an amendment to the Industrial
Hazardous Waste Management Act, \textit{N.Y. ENVIR. CONSERV. LAW} §§ 27-0301, 27-0900,
27-1101, (McKinney Supp. 1980) and to the \textit{N.Y. PUB. AUTH. LAW} §§ 1281, 1285c,
"hazardous waste" is to be defined according to a list of harmful substances promul-
gated by the Commissioner of Environmental Conservation. Only substances con-
tained in the Commissioner's list are subject to the provisions of the statute. One can
assume that the list will require ongoing expansion as scientific research and inci-
dents like the Love Canal disclose new or previously unlisted toxic substances. In
short, the list, and consequently the substances subject to regulation, will continually
lag behind the realities of the situation. For a discussion of the dangers implicit in
relaying exclusively upon regulation to influence conduct in the hazardous waste con-
text, see \textit{Toxic Substances Control Act Amendments: Hearings on H.R. 9616 Before
the Subcomm. on Consumer Protection and Finance of the House Comm. on Inter-
state and Foreign Commerce}, 95th Cong., 2d Sess. 348-58 (1978) (statement of
Frederick R. Anderson, President, Environmental Law Institute).

Although courts usually focus on the compensatory nature of damages, another
equally important reason for imposing liability on a defendant is to provide an incen-
tive to avoid future harm.

\textsuperscript{179} Several commentators have discussed strict liability as a means of
detering pollution while compensating pollution victims. \textit{See, e.g.}, Esposito, \textit{Air and
Water Pollution: What to Do while Waiting for Washington}, 5 \textit{HARV. C.R.-C.L. L.
REV.} 32, 38-39 (1970); Katz, \textit{The Function of Tort Liability in Technological Assess-
ment}, 38 \textit{U. CIN. L. REV.} 587, 616-17 (1969); Michelman, \textit{Pollution as a Tort: A Non-
Accidental Perspective on Calabresi's Costs}, 80 \textit{YALE L.J.} 647, 666-83 (1971). \textit{See
generally} Deane, \textit{Industrial Toxicology: A New Frontier for Products Liability}, 1
This is particularly necessary in light of the causation problems inherent in such cases. The following discussion explores the extent to which existing theories of strict liability might be applied to plaintiffs whose claims arise from exposure to toxic substances emanating from hazardous waste disposal sites. The time appears to be ripe for a new dose of judicial creativity, similar to that exercised in the field of products liability.

a. Products Liability Analogy.—At first glance, the liability imposed on the manufacturer or distributor of a defective product to compensate an injured consumer appears different from the liability which might be imposed upon the generator or disposer of hazardous wastes to compensate those injured by environmental pollution. This is essentially because the latter situation lacks the responsibility-creating nexus of a commercial transaction. The two situations, however, are not as disparate as they might seem. In both, an industry, motivated by profit, has created a harm-causing agent. In one, that agent is a product; in the other, a byproduct. Both are inextricably related consequences of the same industrial processes. Although the byproduct does not reach the public via the marketplace, it nevertheless enters the human environment when it is burned, dumped in a body of water, or buried. If one views the commercial transaction requirement of products liability as merely one means of "getting the ball into play," in a manner giving the public participant little control over the outcome of the game, it is apparent that so far as responsibility is concerned, it should matter little whether the harm-producing agent was sold to its recipient or arrived as an unsolicited gratuity.

Strict products liability was promulgated to further two basic goals: (1) To reduce the often catastrophic impact of accident costs by shifting them from the victim to the party better able to spread them, through liability insurance or increased prices, over a broad segment of society and (2) to discourage manufacturing and marketing commodities dangerous to the public, and, conversely, to encourage the development of higher safety standards by placing the

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180. RESTATEMENT (SECOND) OF TORTS § 402A (1976) imposes strict liability on one "who sells any product in a defective condition..." Id. (emphasis added). "[B]y marketing his product for use and consumption, [the seller] has undertaken and assumed a special responsibility toward any member of the consuming public who may be injured by it..." Id., Comment c at 349-50.
cost of accidents on those who monitor and control the production and distribution processes.\textsuperscript{181} Toward these ends, strict liability makes compensation more certain when product-related accidents do occur, by removing the necessity of establishing a specific act of negligence by a business enterprise whose workings are incomprehensible to the average consumer.\textsuperscript{182}

With these goals in mind, the justifications for invoking strict liability in the hazardous waste disposal situation are even more persuasive than in the consumer products area. While the complexity of modern materials and design makes it difficult for consumers to evaluate intelligently the safety of their purchases, the ultimate decision concerning what to buy and from whom remains their's. True, there is unequal bargaining power between buyers and sellers, particularly where a product varies little from producer to producer or is in limited supply. True, there is often gross inequality in the state of knowledge and the opportunity for meaningful inspection, forcing purchasers to rely upon the expertise, reputation, and representations of manufacturers. Yet, ultimately, buyers of defective products had a choice and presumably made that choice after careful consideration. Most important, they might have made the decision not to buy at all. This element of choice, albeit diluted by consumer ignorance and seductive marketing techniques, permits consumers some modicum of control over their fate.

Innocent victims at inactive, hazardous waste disposal sites have no choice: Neither the opportunity to select the types of contaminants to which they will be exposed nor the opportunity to decline them altogether. The "goods" are thrust upon these unsuspecting "consumers" without their consent. We do not refer to those who knowingly purchase homes in close proximity to acknowledged hazardous waste dumps. Their situation raises issues


Those who suffer injury from defective products are unprepared to meet its consequences. The cost of an injury and the loss of time or health may be an overwhelming misfortune to the person injured, and a needless one, for the risk of injury can be insured by the manufacturer and distributed among the public as a cost of doing business.


\textsuperscript{182.} See Dippel v. Sciano, 37 Wis. 2d 443, 460, 155 N.W.2d 55, 63 (1967).
akin to coming to the nuisance\textsuperscript{183} and assumption of the risk.\textsuperscript{184} Whether their damages are compensable depends on the exigencies of their individual situations. We refer to people, like those at the Love Canal, whose title searches and visual surveys did not reveal the information necessary to make a knowledgeable decision,\textsuperscript{185} people who believed they were moving into an area containing a harmless household garbage dump, or those whose water supplies were contaminated by wastes deposited many miles away. The position of these victims is similar to that of the innocent bystander who is injured by a defective product. The California Court of Appeals, in extending strict products liability to such bystanders, pointed out that the policy justifications for invoking the doctrine are particularly persuasive where the victim has not voluntarily sought out the source of injury by becoming a party to the transaction which placed the product in the stream of commerce.\textsuperscript{186}

If liability is to be imposed on the generators or disposers of hazardous wastes as flowing from the same "enterprise" which created the product, there is abundant rationalization for such a re-

\textsuperscript{183} The term "coming to the nuisance" refers to the situation where a person purchases or acquires land next to an already existing nuisance. Some courts hold that a plaintiff may not recover because he or she has voluntarily chosen to live next to the nuisance. See, e.g., McClung v. Louisville & N.R. Co., 255 Ala. 302, 51 So. 2d 371 (1951); East St. Johns Shingle Co. v. City of Portland, 195 Or. 505, 246 P.2d 554 (1952). However, most courts have held that coming to the nuisance is merely one factor that the court will consider when determining what constitutes reasonable use of property. See, e.g., Hall v. Budde, 293 Ky. 436, 169 S.W.2d 33 (1943); Graceland Corp. v. Consolidated Laundries, 7 A.D.2d 89, 180 N.Y.S.2d 644 (1st Dep't 1958), aff'd, 6 N.Y.2d 900, 160 N.E.2d 926, 190 N.Y.S.2d 708 (1959); Hartung v. County of Milwaukee, 2 Wis. 2d 269, 86 N.W.2d 475 (1958). See generally W. PROSSER, supra note 59, § 91, at 611.

\textsuperscript{184} "Assumption of the risk" is defined by the Restatement as "voluntarily and unreasonably proceeding to encounter a known danger. . . ." RESTATEMENT (SECOND) OF TORTS § 402A, Comment n, at 356 (1977); see Colosimo v. May Dep't Store Co., 466 F.2d 1234, 1235-36 (3d Cir. 1973) (experienced swimmer diving into 2½ feet of water constitutes assumption of risk); Denton v. Bachtold Bros., 8 Ill. App. 3d 1038, 1040, 291 N.E.2d 229, 231 (1972) (awareness of danger and failure to use safety features of power mower held assumption of risk).

\textsuperscript{185} See note 41 supra.

\textsuperscript{186} Elmore v. American Motors Corp., 70 Cal. 2d 578, 586, 451 P.2d 84, 89, 75 Cal. Rptr. 652, 657 (1969):

If anything, bystanders should be entitled to greater protection than the consumer or user where injury to bystanders . . . is reasonably foreseeable. Consumers and users, at least, have the opportunity to inspect for defects and to limit their purchases to articles manufactured by reputable manufacturers and sold by reputable retailers, where as the bystander ordinarily has no such opportunities.
Students of the interaction of law and economics have long viewed strict products liability as but an example of a general market approach to resolving the problem of escalating accident costs in a complex industrial society. They advocate a tort system within which the cost of all harms associated with a business activity are absorbed by that activity—to be ultimately reflected in the price of its product or service. Their argument, grossly oversimplified, is that where the costs of all injuries generated by a for-profit undertaking are passed to the consumer, an informed marketplace selection will likely occur. In many cases, consumer preference will require those enterprises generating the greatest injury costs to settle on a safer, but still economically sound, modus operandi, or be forced out of business by less harmful competitors able to offer lower prices. The argument, while worthy of judicial recognition, has not yet received it in significant measure. Those cases that speak of enterprise liability use the term to denote the vertical liability rapidly emerging in the products arena. Despite predictions by its creator that strict products liability will eventually be carried over to other areas of accident law, and despite the fact that its conceptual basis applies with


192. Roger J. Traynor of the California Supreme Court is regarded as the father of strict products liability. See James, A Tribute to the Imaginative Creativity of Roger Traynor, 2 HOFSTRA L. REV. 445 (1974). Judge Traynor’s concurring opinion in Escola v. Coca-Cola Bottling Co., 24 Cal. 2d 453, 150 P.2d 436 (1944), advocated the frank adoption of strict tort liability for the manufacturer of an exploding beverage bottle, in place of the needlessly circuitous res ipsa loquitur on which the court relied. Id. at 463, 150 P.2d at 440 (Traynor, J., concurring).

equal, if not greater, force to harms arising out of industrial pollution of the environment;\textsuperscript{194} it is doubtful that the doctrine will be widely extended by analogy to the hazardous waste disposal site situation in the near future. In general, the courts have been reluctant to stray from the seller-consumer construct created in \textit{Escola v. Coca-Cola Bottling Co.}\textsuperscript{195} and \textit{Greenman v. Yuba Power Product, Inc.},\textsuperscript{196} and incorporated into Section 402A of the 1965 Restatement (Second) of Torts.\textsuperscript{197} Some have been flexible enough to ignore the Restatement’s sales requirement, and apply products liability to leasing,\textsuperscript{198} licensing,\textsuperscript{199} and bailment\textsuperscript{200} arrangements, and to hybrid service-sale transactions that are basically commercial in nature.\textsuperscript{201} Others have been unwilling to deviate even this far from

\begin{itemize}
\item \textsuperscript{194} \textit{See Note, Strict Liability for Generators, Transporters, and Disposers of Hazardous Wastes,} 64 \textsc{Minn. L. Rev.} 949, 983-85 (1980). There the author applies each of the policies set forth by Judge Traynor in \textit{Escola v. Coca-Cola Bottling Co.} to the hazardous waste situation and concludes that each policy is furthered by extending strict liability in this context.

\item \textsuperscript{195} 24 \textsc{Cal. 2d} 453, 150 \textsc{P.2d} 436 (1944).

\item \textsuperscript{196} 59 \textsc{Cal. 2d} 57, 377 \textsc{P.2d} 897, 27 \textsc{Cal. Rptr.} 697 (1963).

\item \textsuperscript{197} \textsuperscript{\textsc{Restatement (Second) of Torts} § 402A (1965) provides:}
\begin{enumerate}
\item \textsuperscript{(1)} One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if
\begin{enumerate}
\item \textsuperscript{(a)} the seller is engaged in the business of selling such a product, and
\item \textsuperscript{(b)} it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.
\end{enumerate}
\item \textsuperscript{(2)} The rule stated in Subsection (1) applies although
\begin{enumerate}
\item \textsuperscript{(a)} the seller has exercised all possible care in the preparation and sale of his product, and
\item \textsuperscript{(b)} the user or consumer has not bought the product from or entered into any contractual relation with the seller.
\end{enumerate}
\end{enumerate}

\item \textsuperscript{198} \textit{E.g.,} McClaflin v. Bayshore Equip. Rental Co., 274 \textsc{Cal. App. 2d} 487, 79 \textsc{Cal. Rptr.} 337 (1969); Cintrone v. Hertz Truck Leasing & Rental Serv., 45 \textsc{N.J.} 434, 212 \textsc{A.2d} 769 (1965).

\item \textsuperscript{199} \textit{E.g.,} Garcia v. Halsett, 3 \textsc{Cal. App. 3d} 319, 82 \textsc{Cal. Rptr.} 420 (1970) (defective washing machine in laundromat).

\item \textsuperscript{200} The bailment situation has occurred in the context of the lending of tools from one subcontractor to another.

\begin{itemize}
\item In such a situation the lending party may be held liable to an employee of the borrowing party [for injury] arising from a patent defect in the tools or equipment lent if the lender was compensated for the bailment, or if the bailment was mutually advantageous to the lender and the borrower.

\item Kennedy v. United States Constr. Co., 545 F.2d 81, 84 (8th Cir. 1976). Other bailment cases include Reid v. Volkswagen of America, 512 F.2d 1294 (6th Cir. 1975); Holmes Packaging Mach. Corp. v. Bingham, 252 \textsc{Cal. App. 2d} 862, 60 \textsc{Cal. Rptr.} 769 (1967).
\end{itemize}

\item \textsuperscript{201} \textit{E.g.,} Worrell v. Barnes, 87 \textsc{Nev. 204}, 484 \textsc{P.2d} 573 (1971) (defective water heater installed by building contractor); Newmark v. Gimbel’s Inc., 54 \textsc{N.J.} 585, 258 \textsc{A.2d} 697 (1969) (defective permanent wave solution applied by beautician).
the language of the Restatement, although the same need for public protection and cost spreading exists in these transactions as in outright sales.\textsuperscript{202} The cases do reveal a degree of judicial tinkering with the ordinary meaning of "consumer product."\textsuperscript{205} An increasing number of courts, more concerned with the social policies underlying products liability than its technical form, have expanded the definition to encompass the sale of new housing.\textsuperscript{204} However, movement toward strict liability for builders of defective homes is by no means universal.\textsuperscript{205} Isolated excursions beyond the pale of the Restatement can, of course, be found. In 1969, for example, the California Court of Appeals held that the "manufacturer" of an improperly filled and graded building lot could be held strictly liable in tort for subsurface defects in the "product."\textsuperscript{206} However, as a rule, the courts have been wary of carrying analogies too far.\textsuperscript{207}

\textsuperscript{202} See, e.g., Speyer, Inc. v. Humble Oil & Ref. Co., 275 F. Supp. 861 (W.D. Pa. 1967), aff'd, 403 F.2d 766 (3d Cir. 1968) (owners of fire-damaged property sued lessor of gasoline pump equipment). "Section 402A is applicable, by its very terms, to sellers. Since the Restatement provides rules for lessors of chattels at Sections 407 and 408, and makes no mention of lessors in Section 402A, it is apparent that this section is not intended to be applied to any but sellers." Id. at 868 (emphasis in original).


The court stated:

The law should be based on current concepts of what is right and just and the judiciary should be alert to the never-ending need for keeping its common law principles abreast of the times. Ancient distinctions which make no sense in today's society and tend to discredit the law should be readily rejected. . . .


\textsuperscript{207} Appellants' argument that an automobile driver with a long history of epilepsy should be subject to strict tort liability upon losing consciousness and crashing into innocent bystanders was rejected in Hammontree v. Jenner, 20 Cal. App. 3d 528, 97 Cal. Rptr. 739 (1971).

Drawing a parallel with . . . products liability cases, appellants argue, with some degree of logic, that only the driver affected by a physical condition which could suddenly render him unconscious and who is aware of that condition can anticipate the hazards and foresee the dangers involved in his operation of a motor vehicle. . . .

We decline to superimpose the absolute liability of products liability
Despite highly vocal advocacy by legal commentators, the majority of courts have steadfastly refused to apply the strict products liability rationale to pure service transactions or to service-sale hybrids involving the learned professions. This stand suggests that the definition of product is not likely to be extended with any regularity to other than objects of a commercial transaction in the near future.

Should a court occasionally venture outside the narrowly circumscribed parameters of the doctrine in order to accommodate victims of hazardous waste disposal, it is far from certain that compensation will be appreciably facilitated. Negligence-related concepts, primarily that of foreseeability, continue to permeate strict products liability case law, despite the Restatement’s assurance that fault is irrelevant in determining liability under Section 402A, and despite protestations from legal commentators and cases upon drivers under the circumstances here. The theory on which those cases are predicated is that manufacturers, retailers and distributors of products are engaged in the business of distributing goods to the public and are an integral part of the over-all . . . marketing enterprise that should bear the cost of injuries from defective parts. . . . This policy hardly applies here. . . . Id. at 532, 97 Cal. Rptr. at 741-42 (citations omitted); see Clark v. Dziabas, 69 Cal. 2d 449, 445 P.2d 517, 71 Cal. Rptr. 901 (1968); Maloney v. Rath, 69 Cal. 2d 442, 445 P.2d 513, 71 Cal. Rptr. 897 (1969).

208. See, e.g., Note, supra note 194; Note, supra note 159.


211. RESTATEMENT (SECOND) OF TORTS § 402A, Comment n, at 356 (1965): “[T]he liability with which this Section deals is not based upon negligence of the seller, but is strict liability . . . .”

212. The number of articles devoted to criticism of the “negligence approach” to strict liability is staggering, making a bibliography impossible. Two outstanding
some courts\(^2\) that foreseeability is a test for determining due care where negligence is at issue, having no place in the strict liability analysis. Foreseeability has been used by courts following the Cardozoian approach articulated in *Palsgraf v. Long Island Railroad*\(^2\) to set the outer limits of duty in products cases, and thus render a seller liable only to those plaintiffs clearly within the anticipation of the proverbial reasonable man.\(^2\) Such use of the foreseeability concept, while not explicitly condoned by the Restatement, is nevertheless encouraged by Section 402A's limitation of recovery to those who can be classified as "consumers" or "users" of the defective product.\(^2\) On the other hand, the Restatement speaks of causation, but is silent as to proximate causation.\(^2\) Yet, many cases interject a proximate cause requirement into the strict products liability cause of action, and deny recovery for extraordinary consequences that could not be readily foreseen by the supplier.\(^2\)

The use of foreseeability to limit liability ignores the economic goal of strict products liability, and, if transposed to the inactive, hazardous waste disposal site situation, would resurrect proof problems discussed previously in connection with negligence. Victims living distances from the disposal site, those arriving after the dumping had been discontinued, and those developing symptoms of disease well after exposure to toxic substances had terminated may be outside the circle of danger contemplated years earlier by a generator or disposer. The types of injuries that they incur may be exotic when viewed from the perspective of an entrepreneur contributions are Polelle, *supra* note 210; Note, *Strict Products Liability: The Irrelevance of Foreseeability and Related Negligence Concepts*, 14 *Tulsa L.J.* 338 (1978).


215. See, e.g., Winnett v. Winnett, 57 Ill. 2d 7, 310 N.E.2d 1 (1974). A young child's fingers were injured when caught in the exposed belts of a forage wagon. The child did not recover damages because the court held that a manufacturer is liable only to those individuals whose injury from a defect in the product can be reasonably foreseen. Presumably, adult farm workers would have been foreseeable victims, but a four-year-old girl would not. *Id.* at 11-13, 310 N.E.2d at 3-5.


217. See *Restatement (Second) of Torts* § 402A (1965).

operating at a less scientifically sophisticated time. Consequently, knowledge as to the toxicity, mobility, longevity and the long-term effects of the waste materials, as well as the hydrogeological nature of the disposal site, is likely to be an issue even where fault is no longer at issue.

b. Ultrahazardous Activity.—Society accepts a broad range of risks incident to daily living, and individuals are expected to absorb the costs arising from the resulting harms. However, when the risks surpass normal expectations, liability is imposed upon their creator. This may arise either because a reasonable activity was pursued in an unreasonable fashion, that is, negligence, or because the activity itself was unreasonable in terms of the magnitude of the risk that it posed. In the latter instance, society may recognize that the activity is desirable, but require the resulting costs to be borne by those who benefit from the activity most directly. In order to achieve this objective, strict liability is invoked.

Strict liability for harms arising from unusually dangerous conditions and activities is generally traced to the English decision Rylands v. Fletcher. Acceptance of the approach was slow in the United States because strict liability was seen as an impediment to industrialization. While the principle has now received general judicial recognition, this has taken place under different rubrics, each supported by a subtly different analysis. A few states con-

219. W. Prosser, supra note 59, § 75, at 495.

The courts have tended to lay stress upon the fact that the defendant is acting for his own purposes, and is seeking a benefit or a profit of his own from such activities, and that he is in a better position to administer the unusual risk by passing it on to the public than is the innocent victim. The problem is dealt with as one of allocating a more or less inevitable loss to be charged against a complex and dangerous civilization, and liability is imposed upon the party best able to shoulder it.

Id. For a discussion of the moral and economic underpinnings of ultrahazardous activity, see James, Some Reflections on the Bases of Strict Liability, 18 La. L. Rev. 293 (1958); Keeton, Conditional Fault in the Law of Torts, 72 Harv. L. Rev. 401 (1959); Morris, supra note 169.


221. W. Prosser, supra note 59, § 78, at 509; see text accompanying notes 161-163 supra.

222. W. Prosser, supra note 59, § 78, at 509.

223. Texas, for example, applies the Rylands principle in an unusual fashion. Strict liability is invoked for injuries resulting from water pollution only where the defendant has intentionally discharged a harmful substance. All unintentional discharges are governed by the negligence standard. See Atlas Chem. Indus., Inc. v. Anderson, 514 S.W.2d 309, 315 (Tex. Civ. App. 1974), aff’d, 524 S.W.2d 681 (1975).
continue to base liability for high-risk activities directly on the *Rylands* decision.\textsuperscript{224} The majority, however, apply the ultrahazardous test contained in the first *Restatement*\textsuperscript{225} though some jurisdictions now appear to be leaning toward the abnormally dangerous test contained in the *Restatement (Second).*\textsuperscript{226}

The emphasis in *Rylands* was on the inappropriate character of the activity in its surroundings.\textsuperscript{227} With adoption of the term
"ultrahazardous" by the Restatement, the emphasis shifted to the inherently dangerous nature of the activity itself, accompanied by the proviso that it be one not pursued by the general population.\textsuperscript{228} When the semantics changed to "abnormally dangerous" in the Restatement (Second), an evaluation of the activity's relationship to its surroundings was re instituted.\textsuperscript{229} What appears to have emerged are two doctrines within a doctrine. Although each requires a high risk of substantial injury to justify strict liability, one is confined to a narrow group of undertakings that are almost invariably dangerous no matter where conducted, while the other is sufficiently flexible to apply to activities that are dangerous only because of where they are conducted. As applied, however, the two doctrines hardly arouse enthusiasm among those seeking clarity. Many decisions rendered in the name of ultrahazardous or abnormally dangerous activity cannot be reconciled with their namesakes, with one another, or with the fundamental objectives of strict liability.

One might expect a court following the first Restatement to find land burial of toxic or inflammable substances an inherently dangerous activity conducted by only a small segment of society. The logical judicial response based on the Restatement (Second) would be that such an activity is abnormally dangerous when pursued in a populated locale. The cases, however, belie all such attempts to create predictability. Despite the 1939 Restatement's apparent disregard for locale, many decisions purporting to apply an ultrahazardous analysis do in fact consider the surroundings in

\textsuperscript{228} See Restatement of Torts § 520 (1938). The "not a matter of common usage" requirement has been explained in terms of non-reciprocal risks. Strict liability is invoked only where the defendant has created a disproportionately great risk of harm in comparison to the victim's risk-creating capacity. This explains why use of an automobile, a highly dangerous undertaking, is not subject to strict liability. Absent negligent maintenance or operation, the risks created by each motorist are essentially equivalent to those to which each motorist is subject. See Fletcher, Fairness and Utility in Tort Theory, 85 Harv. L. Rev. 537, 541-42, 547-48 (1972).

\textsuperscript{229} Some activities, such as the use of atomic energy, necessarily and inevitably involve major risks of harm to others, no matter how or where they are carried on. Others, such as the storage of explosives, necessarily involve major risks unless they are conducted in a remote place or to a very limited extent. Still others ... involve such a risk only because of the place where they are carried on. In determining whether there is such a major risk, it may therefore be necessary to take into account the place where the activity is conducted. ...
which the activity is conducted.\textsuperscript{230} As one commentator suggests, few, if any, activities are highly dangerous in all circumstances.\textsuperscript{231} Even blasting, which epitomizes the ultrahazardous endeavor, poses little risk when conducted in an isolated area. Many courts have recognized this, and have been reluctant to attach the ultrahazardous label without first taking a hard look at the facts of the case. Thus, in California, a jurisdiction which expressly adopted the ultrahazardous test, strict liability has been applied to blasting in a developed area,\textsuperscript{232} but not to blasting in a deserted one.\textsuperscript{233}

In addition, some courts use ultrahazardous or abnormally dangerous terminology, but, in fact, disregard both \textit{Restatements}, and base their decisions on economic factors such as superior ability to bear or distribute the cost of injury. As a result, the same activity can be subject to strict liability in one jurisdiction, and the negligence standard in another. An example of this inconsistency is different courts' treatment of municipal underground water mains. A Washington court applied the negligence standard to a water main rupture which damaged a telephone company's underground lines,\textsuperscript{234} while an Iowa court allocated the economic burden of the damage wrought by a rupture to the party best able to spread the cost, by invoking strict liability on behalf of individual homeowners.\textsuperscript{235}

Finally, the \textit{Restatement (Second)} encourages courts to approach abnormally dangerous activity on a case-by-case basis. The essential inquiry is: Are this activity's "dangers and inappropriate-ness for the locality so great that, despite any usefulness it may have for the community, it should be required as a matter of law to pay for any harm it causes . . .?"\textsuperscript{236} The \textit{Restatement (Second)} admits its inability to further refine a definition, but proffers a list of factors to be considered by courts in reaching their conclusions.\textsuperscript{237}

Relatively few cases have been decided which have applied these

\textsuperscript{230} See, e.g., cases cited in W. Prosser, supra note 59, § 78, at 513 n.61 & 62.
\textsuperscript{231} Stallybrass, \textit{Dangerous Things and the Non-Natural User of Land}, 3 CAMBRIDGE L.J. 376, 387 (1929).
\textsuperscript{233} Houghton v. Loma Prieta Lumber Co., 152 Cal. 500, 93 P. 82 (1907).
\textsuperscript{234} Pacific Northwest Bell Tel. Co. v. Port of Seattle, 80 Wash. 2d 59, 491 P.2d 1037 (1971).
\textsuperscript{235} Lubin v. Iowa City, 257 Iowa 383, 131 N.W.2d 765 (1964).
\textsuperscript{236} \textit{RESTATEMENT (SECOND) OF TORTS} § 520, Comment f, at 38 (1976).
\textsuperscript{237} See id. § 519; note 226 supra.
factors in an informative way, partly because only a handful of jurisdictions have adopted the abnormally dangerous test, and partly because courts using the test have tended to quote the Restatement (Second) at length, announce their conclusions, and omit meaningful analysis. One of the few cases providing insight into the type of evidence required to establish that an activity is abnormally dangerous is Doundoulakis v. Town of Hempstead, a New York Court of Appeals decision, which does not bode well for victims of hazardous waste disposal. The trial court submitted the case, which involved property damage caused by hydraulic dredging and landfilling, to the jury on a strict liability theory, which had not been raised by the plaintiffs or developed during trial.

In ordering a new trial, the Court of Appeals indicated that to establish a proper case for strict liability, plaintiffs must not only show that hydraulic landfilling, in these circumstances, posed grave risks that could not be eliminated by reasonable care, but must also submit evidence as to the availability and cost of alternative methods.

"It is not insignificant that alternative methods, perhaps more time-consuming and expensive but less dangerous, might have been available to defendants. . . ."

The court's words have a distinct "negligence" ring. A plaintiff who establishes the feasibility of a safer alternative comes perilously close to proving that the activity was conducted in an unreasonable (negligent) manner.


241. Id. at 446, 368 N.E.2d at 25-26, 398 N.Y.S.2d at 403.

242. Id. at 448-49, 368 N.E.2d at 27, 398 N.Y.S.2d at 404.

243. Id. at 450, 368 N.E.2d at 28, 398 N.Y.S.2d at 405.

244. This point was not lost on the Supreme Court of Oregon. In McLane v. Northwest Natural Gas Co., 255 Or. 324, 467 P.2d 635 (1970), the court stated that in proving storage of large quantities of natural gas in a populated area is an abnormally dangerous activity, plaintiff need not present evidence as to the manner of storage:

We do not believe . . . the manner of . . . storage is relevant . . . If there is a manner in which [gas] can be stored with the safety of a usual industrial
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turned the wheel full circle, with strict liability meeting negligence head on. The effect of their collision is to place an evidentiary burden on plaintiffs which, particularly in the inactive, hazardous waste disposal situation, will be difficult to sustain. Neither the ultrahazardous test nor the abnormally dangerous test contemplates activities in which there is a considerable hiatus between execution and injury, and none of the cases decided under either test provides the answer to a crucial question: Does the court look to the present or to the past when making its analysis?

The 1939 Restatement includes foreseeability as to the type of harm inflicted and the class of persons injured as a prerequisite for applying strict liability for ultrahazardous activity.\textsuperscript{245} Cases applying the ultrahazardous test confirm that a defendant will not be held responsible for unexpected occurrences absent a finding of fault.\textsuperscript{246} Although the Restatement (Second) has deleted direct reference to foreseeability,\textsuperscript{247} it remains part of the abnormally dangerous test by implication.\textsuperscript{248} This emphasis on foreseeability sug-

\textsuperscript{245} Id. at 331, 467 P.2d at 639.

\textsuperscript{246} Restatement of Torts § 519 (1938). The actor is liable only to those who he "should recognize as likely to be harmed" and then only for harm "which makes the activity ultrahazardous . . . ." Id.

\textsuperscript{247} The defendant's knowledge, prior to the injury, of the precise nature of the harm which could result from his or her activity is pointed out by courts in most ultrahazardous cases. See, e.g., Smith v. Lockheed Propulsion Co., 247 Cal. App. 2d 774, 787, 56 Cal. Rptr. 128, 138 (1967) (defendant demonstrated, by acquiring 9,100 acres surrounding test site and offering to purchase plaintiff's bordering property, his awareness that vibrations from test firing of rocket motor could cause property damage to neighboring landowners); Luthringer v. Moore, 31 Cal. 2d 489, 190 P.2d 1 (1948) (defendant exterminator demonstrated his awareness that hydrocyanic acid gas is lethal, highly penetrating, and can endanger those entering building, hours after fumigation has been completed, as defendant took every precaution to seal area in question before releasing gas and post warnings on building's doors because of possible gas leakage).

\textsuperscript{248} Restatement (Second) of Torts § 519 (1976) continues to limit liability to the kind of harm which makes the activity abnormally dangerous, but contains no language limiting liability to persons recognized by the actor as likely to be harmed by the activity's miscarriage. See note 226 supra.

\textsuperscript{249} Restatement (Second) of Torts § 159, Comment d, at 35 (1976) states: "The defendant is held liable although he has exercised the utmost care to prevent the harm to the plaintiff that has ensued. The liability arises out of the abnormal danger of the activity itself, and the risk that it creates, of harm to those in the vicinity." Id. (emphasis added).

\textsuperscript{250} Restatement (Second) of Torts § 520, Comment on Clause (e), at 41 (1976), points out that the storage of explosives in a desert area is not abnormally dangerous,
suggests that courts deciding inactive, hazardous waste disposal site cases will look to the time of disposal in order to determine whether strict liability is appropriate. It further suggests that where the nature and magnitude of the risk could not be anticipated at the time of disposal because the locale was undeveloped (and, arguably, appropriate) and the harmful potential of the substances was scientifically unascertainable, strict liability for ultrahazardous or abnormally dangerous activity will not be invoked. To a plaintiff who is forced to muster evidence as to the defendant's knowledge at the time of disposal or suffer defeat, strict liability is hardly a panacea.

One can hope that a long overdue reaction is in its nascence. A recent decision in New Jersey, a state whose problems of chemical pollution entitle it to deference as an authority on the subject, concluded that a series of owners of a mercury-processing plant were all liable for the pollution of an adjacent creek. The court found that "the conduct . . . was reasonable in light of the state of knowledge as it then existed" and that "[n]egligence as a basis for nuisance liability has not been demonstrated." However, the court determined that a public nuisance existed, and imposed liability based on a "determination that the manufacturor [sic] of products utilizing chemicals or other pollutants which may cause harm if they escape into the environment should subject the producer to strict liability, irrespective of reasonable care, if in fact environmental pollution occurs."

The court did not find it necessary to inquire into the locale's suitability, apply the factors suggested by the Restatement (Second), or analyze whether the activity was inherently dangerous. Its attention focused on underlying policy considerations, and its straightforward approach is illustrated by the following:

while the same activity undertaken in the midst of a city is. Arguably, this is merely another way of interjecting the foreseeability limitation into the analysis. No matter how intrinsically dangerous the activity, strict liability is not applied where the defendant could not foresee that physical injury or property damage would result.


251. Id. at 50.

252. Id. at 51.

253. Id. at 53.
As we become more sensitive to our environment and more aware of the impact of pollution upon the environment, we must demand that the unchecked development of products which release pollutants into our environment be controlled. It does not offend this Court's sensitivities nor infringe upon a manufacturing defendant's constitutional rights to impose strict liability upon a defendant who, during the course of a profit making venture, discharges into the environment a dangerous or hazardous pollutant, which results in damage or harm to the public, notwithstanding an absence of intent or negligence on the part of the defendant.254

Unfortunately, experience to date with strict liability indicates that notions of fault die hard.255 Notwithstanding the harms that may be caused by industrial activity, courts appear reluctant to "punish" a seemingly responsible enterprise by requiring it to pay for damage it might not have been able to prevent.256

OBSTACLES INHERENT IN HAZARDOUS WASTE LITIGATION

Regardless of the legal theory upon which they rely, many of those injured by toxic substances emanating from landfills will encounter procedural and practical difficulties inherent in the judicial system itself. These include the running of the statute of limitations, proof of causation, and the delay and expense normally accompanying litigation.

One of the major obstacles facing litigants will be the running of the statute of limitations in jurisdictions not employing a broad discovery rule.257 Many state courts hold that a personal injury

254. Id. at 54-55.
255. See Polelle, supra note 210, at 103-09.
256. Id. at 104-05. Polelle characterizes the policies underlying strict tort liability as falling into two broad categories: (1) The "incentive" theory, which seeks to encourage safer products and conduct; and (2) the "risk allocation" theory, which seeks to place the financial burden of injurious products or conduct on the party best able to spread the loss. His contention is that so long as the former continues to dominate judicial thought, subtle aspects of foreseeability will be retained in the common law approach to strict liability.
257. The statute of limitations will be an important issue in private suits arising out of the Love Canal situation. New York applies a discovery rule in tort cases involving fraud and foreign objects left inside the bodies of surgical patients. However, the New York Court of Appeals has consistently refused to extend a discovery rule to claims for personal injury due to exposure to toxic substances. See STATE OF NEW YORK, DEP'T OF ENVIRONMENTAL CONSERVATION, supra note 127, Appendix A at 78-83. The court's reluctance was illustrated most recently in Thornton v. Roosevelt Hosp., 47 N.Y.2d 780, 391 N.E.2d 1002, 417 N.Y.S.2d 920 (1979), a products liability case in which plaintiff's decedent was injected years earlier with a
claim accrues at the time of plaintiff's initial contact with the causative agent, not when the effect of such contact was or should have been discovered.\textsuperscript{258} Since many harmful substances remain latent in the body for prolonged periods or work insidiously over many years, symptoms of disease may not become apparent until well after the statutory period has been exhausted. Among states having a discovery rule, the definition of "discovery" varies.\textsuperscript{259}

At disposal sites, where toxic substances have entered the atmosphere or the ground or drinking water, the initial contact with contaminants may not produce any injurious effect. The onset of physical or mental illness may not occur until substantial quantities of contaminants have been ingested over time.\textsuperscript{260} Even after exposure to medically significant levels of contamination, symptoms of disease may develop slowly, and be difficult to identify at their early stages.\textsuperscript{261} Where the substances involved are odorless and tasteless, as in the case of radiation poisoning, for example, the causal connection between a dump site, possibly located miles away, and the symptoms experienced may not be made for a cancer-causing agent in order to facilitate the taking of X-rays. Despite a strong dissent by Judge Jacob D. Fuchsberg, the majority declined "the invitation to extend judicially the discovery rule," stating that "[s]uch matter is best reserved for the Legislature, and not the courts." \textsuperscript{47} N.Y.2d at 781-82, 391 N.E.2d at 1003, 417 N.Y.S.2d at 922 (citations omitted).

Efforts by New York legislators to enact a discovery rule applicable to the hazardous waste situation have, as of this writing, fallen prey to the cumbersome legislative process. A bill, A.8789, adding a two-year discovery rule to the existing three-year personal injury and property damage statute of limitations, was passed in the New York State Assembly on June 5, 1980. See \textit{N.Y. Times}, June 8, 1980, at 38, col. 1. In addition to providing a discovery rule option for harms arising from exposure to or contact with hazardous wastes, the bill revives expired claims for a period of one year. \textit{Id.} Its Senate counterpart, S.9642, introduced on Apr. 28, 1980, was still in committee at the close of the 1980 legislative session.


\textsuperscript{259} See Caron v. United States, 548 F.2d 366 (1st Cir. 1976) (applying Michigan law) (discovery occurred when cause of convulsions learned); Roman v. A.H. Rubins Co., 518 F.2d 970 (5th Cir. 1975) (applying Texas law) (discovery occurred when plaintiff learned of illness due to drug); Schenebeck v. Sterling Drug, Inc., 423 F.2d 919 (8th Cir. 1970) (applying Arkansas law) (discovery occurred when disease fully manifested, not at discovery of earliest symptom); Gilbert v. Jones, 523 S.W.2d 211 (Tenn. Ct. App. 1974) (discovery occurred when causal connection learned).

\textsuperscript{260} \textit{COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY—1979, at 194-230 (1979) (The Tenth Annual Report of the Council on Environmental Quality}).

\textsuperscript{261} \textit{Id.}
siderable period. This will be particularly true where instances of illness are not sufficiently numerous or similar to alert residents of an affected area to the need for expert investigation. As a result, plaintiffs with meritorious claims may be denied their day in court in jurisdictions not employing a discovery rule or those defining discovery narrowly, so to toll the statute before the causal connection has been recognized.

Proof of causation will also present difficulties which transcend the boundaries of any particular cause of action. As one writer in the field of compensation for environmental harms has concluded, "'[p]roducing the evidentiary showing required to sustain the substantive proof of legal causation is an undertaking of no small magnitude." To establish causation, the law requires the tracing of a linear cause-and-effect relationship between defendant's acts and plaintiff's injury. This relationship will often be attenuated where injurious materials from disposal sites are involved. The difficulty and expense of proving the initial links in the chain of causation—the presence of significant amounts of toxic substances, the manner in which exposure occurred, and the liability-forming conduct on the part of an identifiable waste generator, hauler, or site owner—have been dealt with above. In addition to these elements, the final link in the chain—that particular buried wastes are the cause in fact of plaintiff's illness—must be proved.

This task will be formidable because chemicals released into groundwater or the atmosphere may combine with one another to form new compounds, and may change their characteristics or become diluted when exposed to the elements. In addition, the responses which contaminants produce after human ingestion may vary both temporally and in kind from individual to individual, making it difficult to attribute a particular illness to a particular chemical or combination of chemicals. Consequently, where several potentially hazardous substances are present, plaintiffs may be unable to show that their injuries resulted from exposure to one whose source or hauler is before the court or one over which the defendant site owner exercised control. Particularly where disease

263. See RESTATEMENT (SECOND) OF TORTS §§ 430-453 (1965); W. PROSSER, supra note 59, § 43, at 263-64.
264. See text accompanying notes 117-148 supra.
265. See Soble, supra note 262, at 705 n.62.
becomes manifest only after a prolonged period, as in the case of carcinogens, the question of intervening or contributing causes may add to the uncertainty. The difficulty of establishing a direct causal link between one of several substances deposited in 1950 and symptoms of cancer first recognized in 1978 is apparent. If the affected plaintiff is also a tobacco user or worked in a chemical plant, the level of certainty required by the legal system may be impossible to attain.266 Proof of legal causation will necessitate expert testimony in several disciplines and extensive scientific data, including the results of epidemiological studies. Plaintiffs' evidence may be rebutted by evidence equally technical and complex. Some of the difficulties that may arise are illustrated by the incongruous results of health surveys conducted at the Love Canal by the New York State Health Department and Dr. Beverly Paigen.267 The net effect is to require that judges and juries evaluate information in fields far removed from their usual areas of competence, and make judgments based on conflicting and ambiguous data.268 Their inability to determine with meaningful certainty that the materials in

266. For a discussion of the difficulty of proving a direct causal connection between radiation exposure and leukemia or other forms of cancer, see Estep, Radiation Injuries and Statistics: The Need for a New Approach to Injury Litigation, 59 MICH. L. REV. 259, 268-80 (1960). The problem is no less acute with regard to toxic substances in general. Soble, supra note 262, at 737-42.

267. The Paigen study was labeled unworthy of being "taken seriously as a piece of sound epidemiologic research" by a five-member panel of renowned scientists appointed on June 4, 1980 by New York Governor Carey to evaluate the effects of hazardous waste exposure at the Love Canal. N.Y. Times, Oct. 11, 1980, at 25, col. 5. The panel also dismissed an EPA chromosomal study which revealed increased occurrence of rare chromosome abnormalities among the area's residents, as "inadequate" and damaging to "the credibility of science." Id. The Governor's panel concluded: "There has been no demonstration of acute health effects linked to exposure to hazardous wastes at the Love Canal site." Id. In Nov. 1980, Hooker published a public-relations pamphlet which uses excerpts from the panel's report to suggest that the characterization of the Love Canal as a public-health disaster is unsupported by sound scientific evidence and was merely an effort by the State to procure federal disaster funding. See Hooker Chemical Public Affairs Dep't, No Demonstrated Health Effects from Love Canal Chemicals, Says Medical Review Study (HOOKER, FACTLINE No. 12, Nov. 1980).

268. The inability of courts to resolve highly technical scientific issues is pointed out by David L. Bazelon, Chief Judge, United States Court of Appeals for the District of Columbia in his article, Bazelon, Risk and Responsibility, 205 SCIENCE 277, 277-80 (1979). For an example of judicial refusal to evaluate conflicting technical data, see Reserve Mining Co. v. EPA, 514 F.2d 492, 507 n.20 (8th Cir. 1975).
question were the cause of injury may result in denying plaintiffs' claims.  

Delay is yet another impediment to adequate recovery, a potent defense rarely appearing in the pleadings. Disposal sites are often situated near the manufacturing concerns they service, and residents of communities surrounding industrial areas tend to belong to a segment of society rarely able to accumulate significant financial reserves. Where such people incur medical expenses, suffer loss of income, or are forced to abandon their homes, their need for compensation is immediate and frequently desperate. Due to the backlog of court cases plaguing most jurisdictions, the delaying procedural devices available to defendants, and the complex, technical nature of the evidence presented at trial, a favorable decision—if one is forthcoming—may be years in the making. For plaintiffs who cannot pay for medical treatment or alternative housing, a legal remedy permeated with uncertainty and delay may be equivalent to no remedy at all, and the lure of a prompt settlement, however inadequate, may be irresistible.

Time also figures prominently in the problem of litigation costs. The injured plaintiff with a promising cause of action may find an attorney willing to take his or her case on a contingent fee basis. While such an arrangement will lessen plaintiff's immediate financial burden, the contingent fee can operate as an obstacle to optimum recovery. In the face of deferred and uncertain payment, counsel may be unwilling or unable to devote the considerable time and energy necessary to fully explore and develop all relevant issues, and may be unduly receptive to settlement opportunities.

Though payment of legal fees may not be an immediate concern, the scientific studies necessary to identify the harmful agent, trace it to its source, and prove that it entered plaintiff's body and caused harm will require a sizeable outlay which probably cannot be deferred. While multiple plaintiffs can share litigation costs in

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269. Estep likens such judgments to a "gambler's system of justice," in which some claimants recover and others do not, depending on a lucky turn of the roulette wheel or a fortunate lottery draw. Estep, supra note 266, at 280.


271. See generally Rabin, supra note 270, at 291, 295.
situations amenable to class actions, such costs may easily total close to a million dollars. Additionally, class actions may not be available unless "questions of . . . fact common to the members of the class predominate over any questions affecting only individual members . . . ." Although the creative use of class action suits in this type of situation has yet to be fully explored, it is possible that the highly individualized issue of causation will not lend itself to representative adjudication. Ultimately, the extraordinary expense involved in pursuing a judicially imposed remedy may result in abandoning claims or unsatisfactory settlements.

Plaintiffs' ability to gain compensation will also be hindered by circumstances over which the judicial system has no control. Due to passage of time, lack of records, and the covert, illicit practices of unscrupulous dumpers, there may be no identifiable party against whom claims can be pursued. A study conducted for the EPA indicated that many of the 1,200 to 2,000 imminently dangerous waste dump sites around the country are "abandoned" in that the original owner or dumper either cannot be identified or is not financially responsible. It is estimated that the cost of treating these sites before they develop into health hazards could be as high as 32.3 billion dollars. This figure not only suggests that the

272. See id.; note 163 supra.


275. In Wojciechowski v. Republic Steel Corp., 67 App. Div. 2d 830, 413 N.Y.S.2d 70 (4th Dep't 1979), class certification was denied in part because whether dust from the defendant's plant was the cause-in-fact of plaintiffs' property damage was held a question requiring individual determinations. Id. at 830, 413 N.Y.S.2d at 71. Similarly, in Rosenfeld v. A.H. Robins Co., 63 App. Div. 2d 11, 407 N.Y.S.2d 196 (2d Dep't), appeal dismissed, 46 N.Y.2d 731, 385 N.E.2d 1301, 413 N.Y.S.2d 374 (1978), class certification was denied in a strict products liability claim against the manufacturer of an intrauterine device (IUD) because whether the IUD was the cause-in-fact of plaintiffs' pelvic injuries was held a question requiring individual determinations. Id. at 20, 407 N.Y.S.2d at 201. If the predomination requirement can be satisfied only in cases where the cause-in-fact issue can be resolved on a classwide basis, those injured by hazardous wastes have little hope of pursuing their claims in a class action.

276. HART REPORT, supra note 20, at 9.

277. Id. at 37-B.
prospects for prompt nationwide clean-up are poor, but that many of those destined to be harmed will have to rely on the magnanimity of state and local governments for relief.

With distressing regularity, additional inactive, hazardous waste disposal sites are being discovered, but in most instances the generators of the materials and the parties responsible for their disposal remain unascertained. It was recently revealed that residents of several northern suburbs of Memphis, Tennessee are experiencing severe health problems, believed to stem from toxic substances buried beneath or adjacent to their homes.279 The EPA has been unable to pinpoint the location of the materials, and the identity of those responsible for their burial remains a matter of speculation and rumor.280 In Jackson Township, New Jersey, 96 families whose wells were polluted by toxic and carcinogenic chemicals are suing the township, charging mismanagement of a nearby landfill.281 The state license for the dump did not permit the landfill to accept hazardous wastes. The town’s attorney maintains, however, that this site, like others across the state, was used illegally by industrial concerns and haulers who either misinformed caretakers of the contents of proffered cargoes or dumped surreptitiously at night.282 In these and similar situations, where the identity of those responsible for the presence of injurious substances is unknown, the courts cannot effectuate remedies.

Moreover, even where a responsible party is identified and found liable, judicial remedies may be ineffective. Considering the magnitude of the sums potentially involved, it is possible that none of the culpable defendants will have sufficient financial assets or insurance coverage to respond fully in damages. Not all waste generators will be giant corporations in their own right or divisions or wholly owned subsidiaries of vast industrial complexes.283 The list of generators in Erie and Niagara Counties, New York, compiled by the Interagency Task Force on Hazardous Wastes, indicates that

280. Id.
281. Id., Feb. 7, 1980, § 2, at 1, col. 1; id. at 5, col. 2.
282. Id.
283. Even where generators are affiliates of huge industrial complexes, compensation may turn upon a highly discretionary “piercing the corporate veil” determination.
smaller, local firms may be involved. The Task Force Report also suggests that waste haulers are frequently relatively small enterprises, as 133 haulers of industrial wastes, excluding common carriers, were identified in the two counties alone. In addition, given the extended time lapse between waste disposal and subsequent harm, it is likely that a significant number of participants will be out of business and beyond the reach of the courts.

Site owners may be equally unsatisfactory as potential sources of compensation. In some instances, they may have purchased subsequent to the time of disposal and be unconnected with waste generation or disposal, or even unaware that their property contains toxic substances. Mere ownership of property, without conduct unreasonable under the circumstances, does not carry with it liability for pollution initiated by third parties. Even were such not the case, it is conceivable that the present owners of an inactive disposal site will be private residents or small businesses incapable of meeting substantial judgments. Where a public entity holds title to a former landfill, the complexities of timely notice of claim and sovereign immunity may impede recovery. If a municipality is forced to pay large judgments, those sums will be reflected in tax increases, the burden of which will fall, in part, on the injured victims.

284. The TASK FORCE REPORT, supra note 21, at III-1 to -148, describes the activities of 80 different hazardous waste generators, including private companies, power plants, and federal government facilities. Although many of the companies included in the Report bear internationally known names, e.g., Allied Chemical Corporation and E.I. duPont de Nemours & Co., at least 10 of the generators described are relatively small regional businesses unaffiliated with larger concerns. Id.

285. Id. at IV-1.

286. The Task Force Report acknowledges that some of the haulers described may no longer be in operation. Id.

287. See note 108 supra and accompanying text.

288. N.Y. GEN. MUN. LAW § 50-e(1)(a) (McKinney 1977) provides that notice of tort claims against a public corporation must be served within 90 days after the claim arises. Section 50-e(5) provides that the court, in its discretion, may extend the time to serve a notice of claim. However, such extension cannot be for longer than the applicable statute of limitations, and the factors to be considered in determining whether to grant an extension do not include failure by the claimant to discover the fact of his or her injury within the 90 day period. Id.

Although some of the impediments to recovery can be eased by legislation mandating strict liability, a broad discovery rule, more liberal standards of proof on the issue of causation, and procedures designed to accelerate the judicial process, such reforms cannot create financial responsibility in otherwise impecunious defendants. In the last analysis, the efficacy of the legal system as a means of compensating victims of toxic wastes will be determined by a bottom line on a balance sheet. Too often this figure will prove inadequate to compensate fully a stricken community.

THE LEGISLATIVE ALTERNATIVE

As has been shown, a judicial remedy is usually unavailable or inadequate where harms from hazardous wastes are concerned. An alternative to judicial recourse must be created to compensate victims. It can be argued, of course, that existing sources of compensation are sufficient, and if they prove inadequate, the losses suffered are an unfortunate but inevitable consequence of living in an industrialized society. Most private losses are compensated through private insurance or tort litigation, rather than by public mechanisms.

Such an argument, however, assumes the availability of insurance or judicial recourse, a fallacious assumption where harms from hazardous wastes are concerned. It also ignores the distinction between isolated, random harms and community disasters such as the Love Canal.290 Our society has proven unwilling to permit citizens

290. See note 14 supra. Until 1978 when federal disaster aid was extended to victims of the Love Canal, the Disaster Relief Act, 42 U.S.C. §§ 5121-5189 (1976), was interpreted to apply only to destruction by the elements, such as floods, storms, and earthquakes. In Alabama in 1970, for example, victims of mercury contamination were held ineligible for aid. See CONGRESSIONAL RESEARCH SERVICE OF THE LIBRARY OF CONGRESS, FOR THE HOUSE COMM. ON PUBLIC WORKS AND TRANSPORTATION, 95TH CONG., 1ST SESS., COMPENSATION FOR VICTIMS OF WATER POLLUTION 225-29 (Comm. Print 1979). “Major disaster” is defined in 42 U.S.C. § 5122(2) (1976). The Disaster Relief Act lists examples of natural disasters and refers to “other catastroph[es which cause] damage of sufficient severity and magnitude.” Id. The Federal Emergency Management Agency (FEMA) was created in 1978 to supersede the Federal Disaster Assistance Administration. See Reorganization Plan No. 3 of 1978, 43 Fed. Reg. 41,943, 92 Stat. 3790. The change in nomenclature reflects the expanded interpretation of the act in recent years.

The Disaster Relief Act, however, is an inadequate solution to the problem of industrial hazardous waste since it is designed to mitigate the immediate hardships caused by the widespread destruction of natural disasters. It assumes that most of the property damage can be restored and that there will be few, if any, long term health effects. Under the Disaster Relief Act, the President is authorized to provide rent-free temporary housing and unemployment assistance, but these provisions expire
to die of starvation or disease because of lack of funds. Thus, in the absence of effective private remedies, the financial burden of providing for those injured by hazardous wastes will ultimately fall on the taxpayers. A key issue in compensating victims is how the financial burden will be allocated between the public and those industries that have been and will continue to be the source of harm. It would appear undesirable, unnecessary, and inequitable to burden the taxpayer for harms caused by the profit oriented manufacturing and disposal activities of particular industries.

In our view, a mechanism must be created to compensate the victims of hazardous wastes at the expense of industries that have created and are creating those wastes. Such an approach is in accordance with a “polluter pays” principle that has been supported by our government in an international forum. It is consistent with popular notions of fairness and equity. Such notions aside, this approach is desirable on economic grounds. If the full societal cost of manufacture is not incorporated in the price of the waste producing products, such products will have an unwarranted advantage in the marketplace. They will be artificially “cheap,” and will supersede more benign alternative products or prevent their introduction. In effect, the waste producing products will be subsidized by their unwitting and unwilling victims.

In order to shift the cost of compensation to the products whose manufacture causes the harm, a procedure must be created one year after the major disaster or emergency is declared. 42 U.S.C. §§ 5174, 5177 (1976). No reference is made to any long-term health effects.


292. Members of the public who testified in response to the Love Canal tragedy expressed an almost unanimous point of view: Hooker had harmed innocent persons and should pay for the harm. See, e.g., Love Canal Hearings, supra note 5, May 2, 1979, 2d Sess., at 103 (statement of Marshall Ausuebel); id. at 35-40 (statement of Lester Milbrath, Director, Environmental Studies Center, State University of New York at Buffalo); id., May, 1, 1979, 2d Sess., at 16 (statement of James Hoffman, Niagara County Environmental Council); id., 1st Sess., at 72 (statement of Joan Gipp, Councilwoman, Town of Lewistown, Niagara County).

293. This assumes, of course, that alternative products with similar characteristics are available. Even if not, some reduction in the volume of sales should occur, depending upon the elasticity of demand. Many products which are the source of hazardous wastes are, in turn, used in the production of other commodities (i.e. agricultural goods) or as component parts of other manufactured products (i.e. automobiles). If such materials cannot be replaced, or their volume reduced, the internalization of cost will result in an increased market price for the end products. The nature of such increases will depend on the ratio of the cost of the original waste producing materials to the total value of the end product.
which spreads the burden consistently among the affected industries (and their customers) and does not, as now, depend on the uncertainties of litigation. Such a procedure's primary goal would be compensating the injured, many of whose harms were caused by events predating the enactment of RCRA. Admittedly, spreading the cost of particular accidents on the waste generating industry as a whole, will not necessarily provide an incentive for safer disposal practices. However, the behavior modifying aspects of individual liability should be less necessary if the federal regulatory scheme imposed by RCRA is effective. That statute provides, inter alia, for the identification of hazardous wastes,\textsuperscript{294} minimum standards for generators, transporters, and owners and operators of hazardous waste facilities,\textsuperscript{295} and use of a manifest system to track hazardous wastes from "cradle to grave."\textsuperscript{296} Permits are required for hazardous wastes facilities,\textsuperscript{297} and state hazardous waste programs are authorized.\textsuperscript{298} As the regulations necessary to implement RCRA are promulgated and enforced,\textsuperscript{299} irresponsible conduct should be appreciably reduced.

A compensation system must obviate the need to identify a culpable party with resources sufficient to provide restitution, and eliminate the costs, delays, and evidentiary burdens associated with the judicial process. The creation of a fund against which those injured may present their claims, and which is administered to facilitate the validation of claims, is the best solution to the compensation dilemma. The fund must be at a federal level since individual states will be reluctant to create a climate hostile to industry by imposing costs not existing in friendlier jurisdictions.\textsuperscript{300}

The 96th Congress struggled with this issue for many months.\textsuperscript{301} The Administration introduced "Superfund" legislation

\begin{itemize}
\item \textsuperscript{294} 42 U.S.C. § 6921 (1976).
\item \textsuperscript{295} \textit{Id.} §§ 6922-6924.
\item \textsuperscript{296} \textit{Id.} § 6922(5).
\item \textsuperscript{297} \textit{Id.} § 6925.
\item \textsuperscript{298} \textit{Id.} § 6926.
\item \textsuperscript{299} See note 19 supra.
\item \textsuperscript{300} State inactivity to date is probably a reflection of this concern. See note 15 supra.
\end{itemize}
directed toward the financing of remedial action, but which ignored issues of victim compensation.\textsuperscript{302} A House bill emerged that followed the Administration's approach,\textsuperscript{303} while the Senate approved a comprehensive bill that included a compensation fund.\textsuperscript{304} In the waning days of the Carter presidency it was feared that the differences between the House and Senate versions of hazardous waste legislation would result in a stalemate, leaving the problem to the ministrations of the 97th Congress, a conclusion apparently favored by the Chemical Manufacturers Association.\textsuperscript{305} The Superfund was salvaged on November 24, 1980 when the Senate accepted the House bill. A "cleanup" fund was created at the price of sacrificing victim compensation as well as strict liability for waste generators.\textsuperscript{306}


\textsuperscript{305}Environmental Emergency Response Act, S.1480, 96th Cong., 2d Sess., 126 CONG. REC. S14,938-48 (daily ed. Nov. 24, 1980); the bill provided for strict liability for personal injury, including medical expenses and lost earnings, id. § 4(a), at S14,940, and permitted recovery for such damages from a federal fund, id. § 6(b)(3)(D), at S14,946.

\textsuperscript{306}See Save the Superfund, N.Y. Times, Nov. 22, 1980, at 22, col. 1. Robert Roland (President of the Chemical Manufacturer's Association) has repeatedly criticized federal efforts to frame legislation that requires the industrial polluters to pay most of the planned superfund. See, e.g., Panel Backs Fund for Waste Cleanup, N.Y. Times, June 19, 1980, at 16, col. 1. The Chemical Manufacturer's Association, in addition to its lobbying efforts in Washington, has undertaken a campaign to convince the public that the chemical industry is safeguarding the country's waterways. A recent advertisement in the New York Times, for example, portrayed the chemical industry as a promoter of cleaning up America's lakes and waterways. Chemical Manufacturer's Assoc., Protecting America's Water, N.Y. Times, June 24, 1980, § 1, at 15, col. 4.

While a federal hazardous waste compensation fund may be unlikely in the immediate future, the need for such legislation is certain to increase if injuries and property damage continue to occur. A federal compensation fund, when enacted, should contain certain basic elements, many of which were in the 1980 Senate proposal. The revenues for the fund must be adequate, and the revenue raising structure must be relatively simple to administer and enforce. Claimants must have access to an affordable forum which renders consistent decisions, and the remedies available to them must be adequate to meet their costs and losses. The following discussion identifies some of the essential components of a national compensation program for harms caused by hazardous wastes, and incorporates the authors' views on the shape such a program should take.\footnote{307}

**Structuring the Fund**

*Exclusive Remedy.*—The Fund should be the exclusive source of compensation for property damage or personal injury caused by exposure to hazardous wastes. As a political matter, industry can hardly be expected to support the equivalent of a mandatory insurance system if doing so does not insulate it from the costs of litigation.\footnote{308} Claimants should have no need to resort to the courts if

\footnote{307. The federal bills referred to, see note 301 supra, are not the first attempts to draft legislation on this issue. An ambitious model statute designed to compensate all victims of toxic substance pollution (not limited to those harmed by waste materials escaping from land disposal sites) is set forth in Soble, *supra* note 262, at 769. The authors acknowledge their debt to Mr. Soble for his excellent work based upon the Japanese system of compensating the victims of pollution-caused diseases. For a discussion of that approach, see Gresser, *The 1973 Japanese Law for the Compensation of Pollution-Related Health Damage: An Introductory Assessment*, 5 ENV'TL. L. REP. 50,229 (1975); Soble, *supra* note 262.}

\footnote{308. Historically, workers' compensation achieved support from industry because it provided an alternative to tort liability. De Leon, *Workers' Compensation: A Legal System in Jeopardy*, FIC Q., Summer 1979, at 337, 338. Professor Gresser compares the current state of compensation for environmental injuries to the period prior to workers' compensation:

In some ways our era resembles the state of the law of industrial accidents prior to the development of workmen's compensation. The law of pollution damage still views the problem as an *individual* struggle between polluters and victims. As a consequence, procedural barriers to class actions, the public nuisance doctrine, and difficulties in proving disease causation from multiple sources of pollution present powerful obstacles to relief, as did the defenses of contributory negligence, assumption of risk, and the fellow servant rule a half century ago. Since most United States courts have refused to disturb these barriers to victim recovery, the economic forces which impelled the American business community to seek a more certain, less expensive,
they have been made whole through administrative processes. If, as is our contention, the courts are an inefficient and unsatisfactory forum in which to redress the harms caused by hazardous waste disposal, the alternative mechanism should remove the issue from judicial cognizance.

Charges.—A critical aspect of any compensation strategy is the manner in which revenues are raised. Ease of administration, while an important consideration, is not the sole criterion for the revenue raising structure. The economic effect of the charge on industry, and the consequences in the marketplace are primary concerns. Charges could be levied on the raw materials whose processing results in the creation of most of the more hazardous wastes, or, in the alternative, could be imposed on the waste materials themselves.

A “front end” charge on raw materials is easier to administer than a charge on waste, as records are more likely to be available and reliable for the former. This is the approach adopted by the Superfund legislation. A tax is levied on crude petroleum delivered to United States refineries and on imported petroleum products. A tax is also imposed on specified “chemicals,” particularly solvents and heavy metals. If the costs are imposed on the front end of the manufacturing process as a charge on certain raw materials, the increased expense will be an incentive to use such materials more efficiently. This could result in a reduction in the volume of waste

vehicle for compensating workers have not yet been unleashed in the pollution field.

Gresser, supra note 307, at 50, 230-31 (emphasis in original) (footnotes omitted).

309. In addition, the behavior-modifying aspects of the imposition of liability on polluters should be less necessary if the federal regulatory scheme imposed by RCRA is effective. The regulations necessary to implement RCRA are slowly being promulgated. See notes 19, 294-299 supra and accompanying text.

310. Purchases of raw materials are reflected on the books of the seller as well as the buyer, whereas records showing the volume and nature of waste are in the sole control of the generator. Even when the manifest system required by RCRA, 42 U.S.C. § 6922(5) (1976), is fully implemented, opportunities for evasion will include the falsification of the volume or nature of wastes and “informal” disposal along roadways at night or in municipal sewer systems. See note 89 supra.

By contrast, an attempt by a manufacturer to understate raw material purchases could work to his detriment at income tax time. The false reduction in costs would result in a painful inflation of taxable profit. If the volume of raw material purchases were understated, it would be difficult to reconcile the quantity of raw materials consumed with the quantity of end product.


312. Id. § 4661, 94 Stat. 2768.
produced, but not necessarily its hazardous nature. However, a reduction will occur only if the investment in equipment and systems which will increase efficiency, together with any related increases in operating costs, does not exceed the savings obtained from the reduced use of raw materials.

A tariff on the wastes themselves would provide an incentive to reduce their toxicity and volume, and would appear to be the most direct approach. For maximum impact, a "waste charge" should be based on quantity and concentration in order to reflect the hazards posed by individual substances or classes of substances. This risk assessment might prove difficult in practice, but would encourage industry to minimize the production of hazardous materials. A variant of the waste charge imposed on the generator of the material would be one imposed on the owners or operators of waste disposal facilities. This approach has serious drawbacks. By increasing the cost of legitimate disposal, it acts as an incentive to illegal "midnight dumping," a practice which enhances the risk of public exposure to the wastes. Also, even assuming that the manifest system mandated by RCRA is in effect, it may be more difficult to trace wastes to their final resting places and measure their quantity and toxicity accurately, than to monitor the nature and volume of raw materials initially consumed by manufacturers.

313. Toxicity and persistency are known for some substances, but are a matter of speculation for others. Weighing the risks posed by toxicity against those of flammability or explosiveness would require the wisdom of a Solomon. Some substances are, however, known to pose much greater risks than others. The evaluation of relative risks has been required for the implementation of federal statutes such as the Toxic Substances Control Act, 15 U.S.C. §§ 2601-2629 (1976); Clean Air Act, 42 U.S.C. §§ 1857-1858e (1976).

314. This funding strategy was adopted by S.1325, 96th Cong., 1st Sess. (1979). The bill proposed that the Secretary of the Treasury "set and collect from the operator of a hazardous waste management facility an annual nationally uniform premium based upon the amount of hazardous wastes received for storage, treatment, transporting, or disposal in the hazardous waste management facility... ." Id. § 4(c)(1).

315. See note 89 supra. A federal fund already exists for remedial work at hazardous waste sites—CERCLA, Pub. L. No. 96-510, 94 Stat. 2797 (Dec. 11, 1980) (126 Cong. Rec. S14,988-15,002 (daily ed. Nov. 24, 1980)). We are suggesting that such a fund include provisions for victim compensation. A third purpose of the fund could be the subsidization of disposal facilities to reduce disposal costs. Such an approach would be unnecessary, however, if the regulatory scheme created by the RCRA is effective. See notes 294-299 supra and accompanying text.

316. RCRA, 42 U.S.C. § 6922(5) (1976), imposes a "cradle-to-grave" manifest system for tracking hazardous waste and requires record keeping necessary to accomplish this objective.

317. See note 310 supra. It might also be argued that manufacturing firms are
Size of the Fund.—Since it is impossible to estimate the eventual costs of remedial measures at waste disposal sites and compensation for individuals who are harmed by hazardous wastes, the Fund will be constantly depleted and must be replenished. Site cleanup and victim compensation are related issues. If dangerous sites are identified and remedial measures taken promptly, the need for compensating victims may be reduced. Experience to date, however, indicates that in many instances substantial injuries occur before the hazard posed by a site is discovered.

The size of the Fund must reflect the nature of the remedies that will be available. The need for a substantial sum has been recognized, but demand on the assets will fluctuate as new sites are discovered and injuries are demonstrated. Industry charges to support the Fund will require adjustment as needs become apparent.

Scope of Remedies.—Victims and their families should be compensated for all ascertainable actual losses. To do otherwise, would be to perpetuate the situation in which the consumers of the products generating the wastes are involuntarily subsidized by the victims. Medical expenses reasonably related to the toxic exposure should be paid to the extent that they are not covered by

more likely to keep accurate business records than the operators of waste disposal facilities. It has been alleged that organized crime is involved in waste disposal. N.Y. Times, Dec. 17, 1980, § 2, at 1, col. 5; Newsday, May 23, 1980, at 7, col. 1. Such allegations are, thus far, unproven.

320. Such was the case at the Love Canal. See text accompanying notes 40-43 supra. The same occurred at Memphis, Tenn. N.Y. Times, Mar. 30, 1980, at 26, col. 5; see note 69 supra.
321. Claims for damages resulting from the Love Canal are in excess of two billion dollars. See Mervak v. City of Niagara Falls, 101 Misc. 2d 68, 69, 420 N.Y.S.2d 687, 689 (Sup. Ct., Niagara County 1979). It may be assumed, however, that these claims are somewhat inflated for purposes of litigation.
323. The proposed fund should avoid the sad history of workers' compensation in this respect. Limitations on recovery under state workers' compensation statutes have been described as "inadequate and inequitable." De Leon, supra note 334, at 343; Soble, supra note 262, at 717-18 n.111 (both citing Staff of Senate Comm. on Labor and Public Welfare, 94th Cong., 2d Sess., Report on S.2018, at 38 (Comm. Print, 1976)).
324. See text accompanying notes 147-151 supra; text accompanying notes 330-332 infra.
existing private or public health insurance programs. From a logical point of view, it could be argued that all medical expenses should be reimbursed even if other coverage exists, since maximum internalization of cost will thereby be achieved. An additional rationale for such an approach is that the victim has paid the premiums for other health coverage. If the Fund paid all medical expenses, the additional "windfall" payment from private or group health insurance would be in lieu of a return of premiums. As a practical matter, however, such a policy might have an adverse impact on private premium rates. Other policyholders would be subsidizing the victim's double recovery. The question would resolve itself within a short period of time in any event, since full medical reimbursement by the Fund would probably result in excluding from private policy coverage injuries caused by exposure to hazardous wastes. This would have the desired effect of shifting such costs from private plans to the Fund and, eventually, to the consumers of products manufactured by contributors to the Fund.

Actual loss of income should be compensable by the Fund, again, only to the extent that the victim is not paid by Workers' Compensation or other public or private substitutes for earnings.\textsuperscript{325} Those injured should receive payment at a rate equal to income which they earned prior to the injury.\textsuperscript{326} Injured minors should not be compensated for future lost earnings until they reach their majority.\textsuperscript{327} If the victim at the time disability occurs is a non-earning adult, married or single, compensation should be based on average regional earnings.

No death benefits should be paid, other than a lump sum sufficient to cover funeral and related expenses. However, if the decedent was a wage earner or receiving compensation for lost earnings, the decedent's spouse and minor children should continue to receive an amount equal to the decedent's former earnings (as ad-

\textsuperscript{325} As with medical expenses, it can be argued that in order to achieve accurate cost internalization, all losses should be reimbursed even if double recovery results.

\textsuperscript{326} Consideration might be given to an upper limit for lost earnings compensation. Any such cut-off should, however, be at a relatively high level. The victim and the victim's family should not suffer a major diminution of their standard of living because of the profit-oriented activities of the waste-creating industry. The Fund should not discriminate among those injured based on their prior economic capacities. To do so would result in the victim's subsidizing the waste generator's customers.

\textsuperscript{327} If, however, a minor was working at the time the disability occurred, compensation for lost earnings should follow.
justed by the consumer price index) until the decedent’s spouse reaches 65 years of age or remarries. The overall objective is to compensate a victim of hazardous waste exposure for lost earnings and for the services of a non-earning spouse if the spouse is disabled or dies prior to age 65.

Claims against the Fund for damages such as pain and suffering or loss of consortium should not be permitted. They are too speculative in nature and would open the door to unlimited demands on the Fund’s resources. Compensation for such harms cannot be quantified in a meaningful way on a consistent basis, and can be analogous to punitive damages in effect.

The Fund should, of course, compensate for property loss. This is relatively easy to compute if a home or business property has been rendered uninhabitable or unusable. In such circumstances, the Fund should take title to the property, and the owner should be paid the appraised value as if uncontaminated. More difficult issues arise, however, with respect to real estate which is not contaminated, but which is substantially diminished in value because of its proximity to the waste disposal site. Value is a matter of perception, and if property is believed to be contaminated, the marketplace reflects that perception. Attitudes change with time, however. If remedial action is taken at the site, nearby uncontaminated property may eventually regain a substantial part of its normal market value. Short-term fluctuations in value are difficult to measure. The Fund should not attempt compensation for partial losses of value, but should offer to buy any real property within a given distance from the nearest contamination at its appraised value as if uncontaminated. Many residents will choose not to sell and disrupt their lives if they are assured by health authorities that their homes are safe. Many of the properties that the Fund does purchase will, in time, become marketable, and can be resold.329

328. If the decedent had no spouse, but left minor children, lost earnings compensation should be paid to the minor children or to their guardian, until they reach their majority. If the decedent’s spouse were already receiving compensation from the Fund at the time of the decedent’s death, the surviving spouse should continue to receive such compensation or the decedent’s former earnings, whichever was greater.

329. Since title to the properties will be held by a federal agency, they will be immune from local real property taxation. United States v. Allegheny, 322 U.S. 174 (1944); Van Brocklin v. Tennessee, 117 U.S. 151 (1886); McCulloch v. Maryland, 17 U.S. (4 Wheat.) 316 (1819).
Procedures.—While a federally created fund will resolve the obstacles to recovery posed by the lack of an identifiable and financially responsible defendant, it will provide limited satisfaction to plaintiffs unless traditional standards of proof are modified.330 A two-step process should be created in order to substantiate claims against the Fund. First, the claimant should be required to show an injury which could have been caused by exposure to toxic wastes, as well as a possible source of exposure. It should not be necessary to identify the particular substance or substances causing the injury. Statistical evidence could be used to show an increase in the incidence of the injury or disease in the immediate geographic area in which the claimant was exposed. While a possible pathway should be shown whereby the toxic substance or substances could have traveled from the waste source to the injured party, definitive proof of the route should not be required. In short, a presumption of causation would arise if the claimant makes a prima facie showing that exposure to a toxic waste could have been a substantial factor in the causation of an injury or disease.331

330. One way in which proof of causation may be modified is demonstrated by Professor Gresser, who analyzes the Japanese statute, Kōgai Kenkō Higai Hoshō Hō, Law No. 111 (Oct. 5, 1973), as follows:

Under the Act victims are relieved of the burden of proving disease causation . . . .

Causation is handled in part as a statistical question. When a "significant" correlation between disease and pollution is identified, causation is inferred. Epidemiological analysis plays a crucial role in such determinations. Clinical and experimental data, as well as mortality and morbidity statistics are also carefully considered.

Gresser, supra note 307, at 50, 239 (footnotes omitted).

331. This presumption of causation is analogous to Soble's requirement of evidence necessary to raise a "rebuttable presumption" of causation. Soble, supra note 262, at 796. Soble's proposal, based on the Japanese experience, is addressed to the compensation of harms resulting from currently generated pollution. Thus, he requires a claimant to show, inter alia, "that any manufacturer is currently or has been engaging in any toxic substance pollution . . . ." Id. Such a showing is not applicable to our concerns since, as has been discussed, the generator of wastes deposited in a landfill will frequently be unknown. See text accompanying notes 152-59 supra. Soble would also require a showing that the pollution "(1) traveled through an indicated pathway from the point of manufacture to the injured or diseased person; and (2) resulted in the etiology of the injury or disease claimed . . . ." Soble, supra, at 797 (emphasis in original). This latter requirement is, in our view, impractical. Cf. S.1480, 96th Cong., 1st Sess. (1979). That bill proposed, with respect to the recovery of medical expenses, that:

The inability of the claimant to demonstrate (1) the particular identity of the substance which caused the injury or disease, (2) the particular source of such substance, (3) the pathway of such substance en route to the injured
In many instances information from health or environmental agencies may be available to support this presumption.\textsuperscript{332}

The initial showing by the claimant would trigger an investigation by the Fund if sufficient information to substantiate the exposure to hazardous wastes had not already been developed by state or local agencies. Information would be sought to determine whether the claimant was exposed to a toxic substance or substances, the location of the substances, and the likelihood that they contributed to the disease or injury. If the investigation by the Fund showed that the claimant did have an injury or disease and was exposed to a toxic substance or substances that could have caused or substantially contributed to the injury or disease, the full range of compensation would follow. If, as a result of the investigation, the Fund denied compensation, its report should be available to the public and subject to limited judicial review. No adverse determination would be final. A procedure should be created to reopen a claim upon the development of additional information. The purpose of this procedure would be to administer the Fund as an investigative agency, using its resources and expertise (or contracting for studies) to ascertain whether the alleged hazard existed, and to relieve the claimant of the traditional burden of proof.

As already discussed, the statute of limitations can present an insurmountable obstacle to those injured by exposure to hazardous wastes.\textsuperscript{333} A compensation fund, as a continuing entity, obviates the need for a statute of limitations, except, perhaps, to require those who have suffered injury or disease to present their claims within a reasonable period of time after the injury or disease and exposure to a possible causative agent have been or should have been discovered.\textsuperscript{334}

\begin{itemize}
\item party, or (4) an explanation of the etiology of the substance in the injured party, shall not bar recovery.
\end{itemize}

\textit{Id.} \textsuperscript{332} \textsuperscript{\textsuperscript{332}} § 4(c).

\textsuperscript{332} The President is authorized to use the Fund created by the CERCLA to pay:

(4) the costs of epidemiologic studies, development and maintenance of a registry of persons exposed to hazardous substances to allow long-term health effect studies, and diagnostic services not otherwise available to determine whether persons in populations exposed to hazardous substances in connection with a release or a suspected release are suffering from long-latency diseases . . . .


\textsuperscript{333} \textit{See} text accompanying notes 257-262 \textit{supra}.

\textsuperscript{334} Claims for damages against the Fund proposed by S.1480, 96th Cong. 2d
The administrative mechanism proposed eliminates many of the traditional safeguards against compensating those who may not merit compensation. While limiting proof to a showing of exposure and injury may result in compensating claimants whose injuries have other causes, it can be assumed that many of those injured by hazardous wastes will not make claims because they will be unaware of their exposure. It is, of course, impossible to estimate the number of unknowing victims, just as it is impossible to estimate the number who will be compensated for injuries resulting from other causes. It is clear, however, that to require a high degree of certainty in the compensatory process will defeat many legitimate claims, a result which the authors feel is unequitable and undesirable.

CONCLUSION

The volume of hazardous wastes generated by industry and the problems associated with their disposal suggest that the Love Canal tragedy will not be an isolated or unique occurrence. Even if the thousands of existing sites that pose immediate threats to public health or the environment receive remedial attention, future threats to human health and the environment remain. Only the most dedicated optimist could believe that the regulatory scheme imposed by RCRA to manage the 50 to 60 million tons of hazardous wastes generated each year will prevent further incidents. RCRA presumes continued land burial on the assumption that accidental discharges will not occur. Despite the naivete of this assumption, no mechanism exists, other than the vagaries of tort litigation, to provide redress for the substantial harms likely to result.

The courts are an unsatisfactory source of relief when a defendant cannot be identified or is financially unable to respond in damages. Even if a responsible defendant can be found, it is difficult to prove that the cause of a disease is an unseen substance unknowingly ingested at an indeterminate time. If proof of the defendant's negligence in disposing of the substance is also required, the likelihood of recovery will be slight. Strict liability, as it is currently applied by a majority of courts, will not appreciably reduce the injured party's evidentiary burden. At best, litigation arising out of hazardous waste "events" will be lengthy, expensive, and fraught with uncertainty.

Sess. (1980), were required to be presented "within six years from the date of the discovery of the loss." Id. § 6(b)(3)(E) (126 Cong. Rec. S14,938-48 (daily ed. Nov. 24, 1980)).
A method of compensation is needed to obviate the need for a culpable and financially responsible defendant, supersede traditional tort doctrines, and avoid the complexities of proof required by the litigation process. The creation of such a compensatory mechanism is justified by the likelihood that serious injury will be suffered by large numbers of people having no other satisfactory source of relief. If the mechanism takes the form of a fund maintained by a tax on waste generating industry, two objectives can be achieved simultaneously: The swift and certain compensation of those harmed by the byproducts of industrial activity and realistic pricing of the end products of that activity, through cost internalization.