Compensation for Victims of Hazardous Substance Exposure

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Abstract
Hazardous wastes, threatening environmental and human safety, are being generated at an alarming rate. In this Article, J. David Prince discusses the threats posed by hazardous wastes and the remedies that are available in Minnesota for dealing with those threats. Professor Prince analyzes a proposed compensation scheme for victims of hazardous waste exposure in Minnesota and suggests that a modification of that scheme be adopted by the Minnesota Legislature.

Keywords
Minnesota Environmental Response and Liability Act, MERLA, environmental law, torts, hazardous substance exposure, personal injury, toxic waste, hazardous waste site, toxic torts

Disciplines
Environmental Law | Torts
COMPENSATION FOR VICTIMS OF HAZARDOUS SUBSTANCE EXPOSURE

J. DAVID PRINCE†

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INTRODUCTION

Contact with hazardous wastes, the pernicious product of industrialization, has become almost inescapable. Approximately 750,000 hazardous waste generators in the United States produce nearly 150 million tons of hazardous by-products annually.\(^1\) In Minnesota alone, nearly 2000 hazardous

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\(^1\) See Office of Public Awareness, U.S. Environmental Protection Agency, Hazardous Waste—Fifteen Years and Still Counting 2 (OPA 98) (1980); 14 ENV'T REP.
waste generators operate to produce approximately 174,000 tons of hazardous waste per year. It is estimated that, nationally, ninety percent of hazardous waste has been handled in a manner which threatens human health and the environment. Environmental Protection Agency (EPA) figures show that approximately 1.2 million Americans are currently exposed to health hazards.

On May 10, 1983, in response to the increasing incidence of environmental contamination by hazardous substances, Governor Rudy Perpich signed the Minnesota Environmental Response and Liability Act (MERLA). This Act established a standard of strict and joint and several liability for the release of hazardous substances. It also established a fund to provide

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2. Minnesota Waste Management Board, Hazardous Waste Management Report IV-8, IV-14 (Dec. 1983) [hereinafter cited as WMR]. Approximately 45,000 tons of this amount (25.9%) has not been accounted for by hazardous waste management authorities. Id. at V-29. The Board estimates that 232,800 tons of waste will be generated in Minnesota in the year 2000. Id. at IV-27.


6. MERLA defines “release” as follows:

   “Release” means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment which occurred at a point in time or which continues to occur.

   “Release” does not include:

   (a) Emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, watercraft, or pipeline pumping station engine;

   (b) Release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954, under 42 United States Code section 2014, if the release is subject to requirements with respect to financial protection established by the Federal Nuclear Regulatory Commission under 42 United States Code section 2210;

   (c) Release of source, byproduct or special nuclear material from any processing site designated pursuant to the Uranium Mill Tailings Radiation Control Act of 1978, under 42 United States Code section 7912(a)(1) or 7942(a); or

   (d) Any release resulting from the application of fertilizer or agricultural or silvicultural chemicals, or disposal of emptied pesticide containers or residues from a pesticide as defined in section 18A.21, subdivision 25.

Minn. Stat. § 115B.02, subd. 15.

7. MERLA defines “hazardous substance” as follows:
for the cleanup of contaminated hazardous waste sites in Minnesota.\(^8\)

In addition to MERLA’s statutory strict liability remedy, victims of hazardous substance releases in Minnesota may also choose from a variety of existing remedies. These remedies include the traditional tort law theories of liability and damages, workers’ compensation, and private health and disability insurance plans.

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(a) Any commercial chemical designated pursuant to the Federal Water Pollution Control Act, under 33 United States Code section 1321(b)(2)(A);

(b) Any hazardous air pollutant listed pursuant to the Clean Air Act, under 42 United States Code section 7412; and

(c) Any hazardous waste.

"Hazardous substance" does not include natural gas, natural gas liquids, liquefied natural gas, synthetic gas usable for fuel, or mixtures of such synthetic gas and natural gas, nor does it include petroleum, including crude oil or any fraction thereof which is not otherwise a hazardous waste.

Id., subd. 8.

"Hazardous waste" is defined as follows:

(a) Any hazardous waste as defined in section 116.06, subdivision 13, and any substance identified as a hazardous waste pursuant to rules adopted by the agency under section 116.07; and

(b) Any hazardous waste as defined in the Resource Conservation and Recovery Act, under 42 United States Code section 6903, which is listed or has the characteristics identified under 42 United States Code section 6921, not including any hazardous waste the regulation of which has been suspended by act of Congress.

Id., subd. 9.

8. Id. §§ 115B.19-20. The Act required a legislative study regarding a victim compensation fund to compensate individuals injured by hazardous substances and not otherwise compensated.

By July 1, 1984, the Legislative Commission on Waste Management shall conduct a study and make recommendations to the legislature on the creation of a compensation fund to compensate persons who are injured as the result of a release of a hazardous substance and who would not otherwise be adequately compensated for their injuries. The study shall consider matters including the following:

(a) The appropriate scope of compensation which should be provided by the fund including the extent of any compensation which should be available for medical expenses, disability, loss of income, physical impairment, and death;

(b) Creation of a simple, speedy, and cost efficient claims procedure which provides an effective remedy for injured claimants;

(c) Methods by which compensation can be financed by those who create or contribute to the risk of injury from hazardous substance releases, including the manner by which the state may seek to recover amounts paid from the fund; and

(d) Whether the fund should be established and administered at the federal or state level and the appropriate degree of state and federal cooperation in providing compensation.

1983 Minn. Laws 341 (not codified in Minnesota Statutes). For a discussion of the study done pursuant to this legislative directive, see infra notes 301-27 and accompanying text.
While MERLA and other existing remedies provide some relief for victims of hazardous substance exposure, these remedies fall short of providing expedient, cost-efficient recovery of damages in all situations. Present laws and compensation mechanisms are simply inadequate to remedy all personal injuries caused by hazardous substances. Accordingly, these common law and statutory remedies must be supplemented by a no-fault administrative scheme to ensure adequate compensation to those injured by hazardous substance exposure.

Part I of this Article considers the evidence that personal injuries have been or are being caused by human exposure to hazardous substances and assesses the scope of the problem. Much of this discussion also concerns the problem of proving that a particular injury was caused by hazardous substance exposure. Part II explores whether existing systems of compensation, such as the tort law system and health insurance, adequately compensate these victims. Much of the discussion in this area analyzes the present tort law system: the plaintiff's burden of proof regarding causation of injury, the cost of litigation and, where new liability standards are established, questions of retroactive liability and the imposition of joint and several liability against defendants. This part also addresses the statutory remedy in MERLA designed to solve problems faced in traditional tort law actions by persons injured as a result of exposure to hazardous substances. Finally, Part III briefly discusses the alternative compensation system described in the study recently done by the Legislative Commission on Waste Management (LCWM) for the Minnesota Legislature.

I. Evidence of Injury and the Need for Compensation

An estimation of the number of victims of hazardous sub-

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9. The term "victim" is more difficult to define than hazardous substance. It generally does not include workplace or consumer product-related injuries, nor injuries due purely to emotional distress with no associated physical injury. In one sense anyone who feels less safe in their environment is a victim of hazardous substances. Even if there is no actual threat, the perceived risk is a serious matter which diminishes the enjoyment of life. However, compensation to the general populace to alter widespread feelings of insecurity is simply not feasible.

Physical injuries and monetary losses provide an alternative method for identifying victims of hazardous substances. These losses can be more easily quantified than those suffered by individuals who feel insecure in their environment. Individuals
stance exposure would be considerably easier if adequate data sources on such injuries were available. Unfortunately, public health reporting agencies have not generated comprehensive statistics of human injury from hazardous substances.

The creation of the Agency for Toxic Substances and Disease Registry (ATSDR) under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) is the first step at the national level toward collecting

with quantifiable personal injuries or property losses who do not receive adequate compensation for their losses constitute a more readily definable group of victims.

Other difficulties surround the identification of victims. For example, a person could be injured because of the combined reaction between a hazardous substance and something in his lifestyle, such as smoking. Some hazardous substances only increase the probability of an injury and it is sometimes impossible to trace a particular injury back to an exposure to a hazardous substance. See Trauberman, Statutory Reform of “Toxic Torts”: Relieving Legal, Scientific, and Economic Burdens on the Chemical Victim, 7 HARV. ENVTL. L. REV. 177, 181 & n.15 (1983) (citing Epstein, The Role of the Scientist in Toxic Tort Case Preparation, TRIAL, July 1981, at 38).

Usually those who face an increased risk of future injury, but no actual injury, as a result of hazardous substance exposure are not considered victims. With certain exceptions, employees injured at work are excluded because MERLA provides that there is no liability for injury to an employee for workplace exposure if the workers' compensation statute provides compensation. MINN. STAT. § 115B.05, subd. 3.

10. MERLA defines “hazardous substance”, in part, by reference to categories of chemicals which are designated by federal or state officials as hazardous. MINN. STAT. § 115B.02, subd. 8; see supra note 7 (definition of hazardous substance). Thus, the number of substances which are classified as hazardous is quite large, and several documents and regulations itemize the hazardous substances and the processes that produce them. See, e.g., EPA Designation of Hazardous Substances, 40 C.F.R. § 116.4 (1984).

A number of substances which may endanger human health and the environment are excluded from coverage under MERLA. MERLA specifically excludes natural gas and synthetic gas usable as fuel, and excludes petroleum and petroleum fractions if the substances are not in waste form. Waste petroleum, however, is considered a hazardous substance. MINN. STAT. § 115B.02, subd. 8. Nuclear source, special nuclear, or nuclear by-product materials, as defined by the Atomic Energy Act of 1954, are not defined as hazardous substances by MERLA. Releases of such materials are also explicitly excluded from the definition of releases of hazardous substances. Id., subd. 15(b).

Other substances which seem dangerous are not defined as hazardous if they reach the environment by “acceptable” methods. For example, the application of fertilizer, agricultural, or silvicultural chemicals and related disposal of empty pesticide containers or residues is not considered the “release” of hazardous substances. Id., subd. 15(d). If, however, such chemicals are spilled during manufacture or transport, or if the intent is to dispose of the chemical itself rather than an empty container with some residue, this would be the “release” of hazardous substances. The emission of chemicals that would normally be defined as hazardous, but that are released in consumer use or as the result of exhaust emissions, are not defined as hazardous. Id., subd. 15(a).

11. Comprehensive Environmental Response, Compensation, and Liability Act
pertinent information on the health effects of hazardous substances.

In Minnesota, no readily available data estimates the number of people who have been or may be injured by hazardous substances. The State Health Department does not gather health statistics on illness resulting from hazardous waste exposure and no other state agency is responsible for gathering this type of data. There is data, however, on potential exposure.

A. Current Data on Potential Exposure

One source of information often seen as a basis for estimation is the data on existing hazardous waste sites. Minnesota has a large number of contaminated hazardous waste sites. In 1981, the Minnesota Pollution Control Agency (MPCA) listed thirty-six such sites. In 1982, the list grew to forty-five and by early 1985 the list stood at the current total of eighty-seven. Approximately thirty-five more hazardous waste sites have been discovered and should be added to this list within the next two years. The MPCA’s eighty-seven hazardous waste sites contain a variety of hazardous substances including PCB, PCE, TCE, and PCP, as well as heavy metals, paint sludge, and solvents. Of the eighty-seven identified hazardous waste sites currently listed, thirty-four appear on the EPA’s National Priority List (NPL) of 418 sites. Twelve more sites have been proposed for addition to the NPL. As public awareness of the danger of hazardous wastes continues to grow, more hazardous waste sites may be reported.


12. Telephone interview with Dave Oray, Minnesota State Health Department (Apr. 4, 1984).

13. Telephone interview with Gary Pulford, Chief of the Site Response Section within the Division of Solid and Hazardous Wastes of the Minnesota Pollution Control Agency (Jan. 29, 1985); Gelbach, Toxic Shock—Minnesota’s tough new hazardous-waste law has business down in the dumps, CORP. REP., Sept. 1983, at 64, 69.

14. Telephone interview with Gary Pulford, Chief of the Site Response Section within the Division of Solid and Hazardous Wastes of the Minnesota Pollution Control Agency (March 20, 1985).


16. WMR, supra note 2, at III-34.

17. Three hundred potential hazardous waste sites have been identified through citizen participation in an MPCA program that allows public tips on suspected waste
In addition to sites which are technically defined as hazardous waste sites, solid waste disposal sites (sanitary landfills) are also grouped under a different heading by the MPCA. Five of these sanitary landfills are currently being considered for inclusion on the NPL.\(^\text{18}\) There are 130 permitted sanitary landfills in Minnesota which are potential hazardous waste sites.

Besides simply listing these sites, MPCA files also contain specific data on each site. For each hazardous waste site in Minnesota, the MPCA file describes the site, lists any action which has been taken on the site to date, and the action which needs to be taken in the future. The most complete data is available for those sites which are the most dangerous or are best known to the public. Data for these sites has been extensively analyzed and includes exposure routes, containment and waste characteristics, exposure target characteristics, and observed releases or injuries.\(^\text{19}\)

The data exists only for the sites which are listed on the NPL. The data was developed to implement a hazard ranking system (HRS) by which the EPA ranks the danger, to both people and the environment, of various sites around the nation.\(^\text{20}\) The necessary data has been compiled for all of the eighty-seven hazardous waste sites; data for thirty-four sites revealed hazards serious enough to be placed on the NPL. None of this data, however, estimates the potential number of injuries from sites. WMR, supra note 2, at III-35. More than 600 citizen complaints have been received on a hazardous waste hotline in Minnesota since 1981. \textit{Id.}

\(^\text{18}\) Telephone interview with Gary Pulford, Chief of the Site Response Section within the Division of Solid and Hazardous Wastes of the Minnesota Pollution Control Agency (May 30, 1984).

\(^\text{19}\) Minnesota Pollution Control Agency Files (available at Minnesota Pollution Control Agency, Roseville, Minnesota).

\(^\text{20}\) \textit{Id.}
a site, or the amount of compensation needed to restore injured parties to their economic position before the injury.

B. Assessing the Scope of the Injuries Problem and Proving Actual Injury

No accurate assessment of the number of personal injuries caused by hazardous substance exposure can be made by examining existing data on hazardous waste sites in Minnesota and combining that data with existing scientific methods of identifying a causal link between hazardous substances and injury or disease. This point deserves emphasis. It is not a matter of being imprecise; rather, it cannot be done. Even a general estimate of injury based directly on site data is impossible. The calculation of such an estimate involves many steps for which little or no crucial data is available. Consequently, this approach will not lead to supportable estimates. Furthermore, the difficulties in estimating the scope of the whole injury problem also present difficulties of proof in any given case of injury. Nevertheless, the scope of the whole problem can be roughly calculated by alternative methods.21 These alternative

21. 301(e) REPORT, supra note 4, pt. 1, at 31-32. The 301(e) Study Group did not conduct any original research to determine the number of potential injuries resulting from hazardous substances. Instead it gathered the existing data it could locate on this issue. The 1980 EPA estimate of 1.2 million Americans currently exposed to health hazards from hazardous dump sites is mentioned, but the Report emphasized that the estimate provides no indication of latent injuries and future claims. Id. at 32; see Leunet, Handling Hazardous Wastes, ENV'T, Oct. 1980, at 7.

A section of the Report discussing the quantification of injury states:

The discussion of legal issues relating to injuries from hazardous wastes must proceed in a setting of factual and scientific uncertainty because, at this time, in mid-1982, it is impossible to determine the number of persons who have been injured or who could be injured by exposure to such sites. 301(e) REPORT, supra note 4, pt. 1, at 21 (footnote omitted).

The Report described a general approach for determining the number of hazardous substance exposure victims. Initially, all dump sites would have to be located and their contents determined. Then the waste sites and surrounding areas would have to be examined to determine if the possibility of human exposure and injury existed. Despite the conceptual simplicity of this approach, the Report correctly points out the substantial obstacles to estimating potential victims. It was recognized then, as is true today, that "public identification of a significant problem is at an early stage." Id., pt. 2, at A-8. See also Grad, Hazardous Waste Victim Compensation: The Report of the § 301(e) Superfund Study Group: A Response to Theodore L. Garrett, 13 ENVTL. L. REP. 10, 234 (1983). Since the release of the 301(e) Report, no statistical studies on injuries or major health effects surveys have been published. Telephone interview with Frank P. Grad, Reporter for the 301(e) Study Group (March 19, 1985).

Other studies include the OMB's study to estimate the cost of a hazardous waste victim compensation program, telephone interview with Robert Wilmore, OMB offi-
methods are still rather limited in their accuracy because they are all indirect methods of estimating injury numbers.

1. Hazardous Waste Site Data

The most direct method of injury estimation would be made directly from data on the exposure of humans to hazardous waste sites. Unfortunately, this approach cannot currently be used to provide any reliable estimate of injury simply because the necessary data is not available. The most complete data on hazardous waste sites in Minnesota is in the MPCA files compiling the data and HRS scores for all eighty-seven hazardous waste sites.\(^{22}\)

Even with complete HRS data on a particular site, reliable conclusions cannot be drawn about the potential number of injuries resulting from that site. The HRS does not quantify either the probability or magnitude of harm that could result from a waste facility. Rather, it ranks facilities in terms of the potential threat they pose.

The steps necessary to estimate injuries from hazardous substance sites are:

1. The number of sites yet to be discovered or created must be estimated and added to existing known sites.\(^{23}\)

2. The specific substances in each site must be identified.
Even in some existing sites the substances have not been identified.\textsuperscript{24}

3. The physical pathways for a substance’s movement must be identified; this path varies with each site.\textsuperscript{25}

4. The concentrations of substances in these pathways through time and across geographic areas must be evaluated. These factors also vary with each site.\textsuperscript{26}

\textsuperscript{24} See Seltzer, \textit{Personal Injury Hazardous Waste Litigation: A Proposal For Tort Reform}, 10 B.C. ENVT. AFF. L. REV. 797, 819 (1983). At Woburn, Massachusetts, one of the most celebrated sites in the United States, no study has identified the precise number and volume of hazardous substances present. \textit{Id.}

Hazardous substances at many sites are buried in drums. No sampling method can accurately determine the contents of buried containers. 301(e) REPORT, supra note 4, pt. 2, at A-6 (quoting the DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, \textit{Report on the Potential Health Effects of Toxic Chemical Dumps, reprinted in Sen. Comm. on Environment and Public Works, Health Effects of Toxic Pollution: A Report from the Surgeon General and a Brief Review of Selected Environmental Contamination Incidents with a Potential for Health Effects}, 96TH CONG., 2D SESS. (Comm. Print 1980) at 27-35). Identification of chemicals at a site is complicated by the fact that the various sampling techniques available can cause an unintended release of the hazardous substances being tested. \textit{Id.} Furthermore, when different chemicals are combined at one site, the resulting chemical mixtures may be impossible to identify.

25. Telephone interview with Pulford, supra note 13; Telephone interview with Michael Kanner, Minnesota Pollution Control Agency Site Response Section—Unit Supervisor (Nov. 1, 1983).

A released hazardous substance follows a variety of pathways to enter the human body. These substances may be delivered via the atmosphere, food chains, ground or surface water, or contaminated soil. The prevalent pathway for the eighty-seven Minnesota hazardous waste sites is through ground or surface water. \textit{Id.}

Groundwater is the most common pathway for hazardous substances, but effective monitoring of groundwater concentrations is problematic for several reasons. 301(e) REPORT, supra note 4, pt. 1, at 28-29. There is no general agreement on drilling methods, sampling frequency, standard quality assurance procedures, or the adequate number of wells needed. The risk exists that drilling of monitoring wells could contaminate clean aquifers. \textit{Id.} at 29. Chemical concentrations are discoverable, if at all, only after continuing samples are taken. Such discovery does not provide much information regarding the duration and amount of concentrations before sampling procedures began.


The FMC site in Fridley is located on the Mississippi River approximately one quarter mile upstream from the drinking water intake for Minneapolis. The site contains trichloroethylene (TCE), a known human carcinogen. Trace amounts of TCE have been discovered in the Mississippi River and in Minneapolis drinking water. On June 8, 1983, FMC agreed to clean up the site by excavating 58,000 cubic yards of TCE-contaminated soil and placing the soil in an on-site containment facility. \textit{Id.} at 29. Chemical concentrations are discoverable, if at all, only after continuing samples are taken. Such discovery does not provide much information regarding the duration and amount of concentrations before sampling procedures began.

Although the FMC site is now being cleaned up according to the specifications of environmental agencies, the continuing effects of past practices at this site are
5. Given the concentrations of substances in the pathways, the durations and amounts of exposures to humans with different behavior patterns and with different levels of mobility must be examined.27

6. The durations and amounts of human exposures to potentially interactive environmental influences through time and across geographic areas must be determined.28

7. The toxic effects of both the hazardous substances and the interaction with environmental influences must be evaluated using indeterminate medical tests.29 The toxic effects often vary with individual characteristics such as race, age, and sex.30

The lack of reliable data needed to take many, if not all, of these steps combine to make reliable estimates of injury from existing hazardous waste site data impossible. This data deficiency can also make the proof of a given claim very difficult or impossible. Consequently, other bases for estimating injury must be considered.

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27. Cf Trauberman, supra note 9, at 181. Humans in the same location have very different behavior patterns which expose them differently to the same contaminated pathway. Different amounts of contaminated water may be ingested, due to exercise levels, cooking and eating patterns, or extensive dining away from home. These different behavior patterns create different exposures to different pathways, and the manner of entry may determine the concentration and manifestation of symptoms. Ingestion, inhalation, and direct skin contact comprise the methods of exposure to dangerous chemicals into the body from their environmental pathways. The affected population itself also changes as individuals move into or out of the contaminated pathways. Id.

28. Victims ingest different amounts of other interactive foods and chemical sources. Certain hazardous substances react in combination with these other environmental influences to create a danger that is more serious than either chemical by itself. See Hoover, Environmental Cancer in Public Control of Environmental Health Hazards 50 (E. Hammond & I. Selikoff eds. 1979) (other sources causing cancer include exposure to toxic chemicals, radiation, diet, drugs, and personal habits).

29. Although the health effects of relatively high concentrations of some chemicals are known, usually no causal link can be drawn from data concerning low to medium concentrations. See, e.g., Chronic Diseases Division and Clinical Chemistry Division, Center for Environmental Health, Center for Disease Control, Study Protocol: Poly-chlorinated Biphenyls (PCBs), Exposure at Superfund Waste Sites 23 (June 8, 1983).

30. 301(e) Report, supra note 4, pt. 1, at 31-32. The 301(e) Study Group noted that “[t]he scientific problem of estimating the number of victims is so great because the uncertainties multiply at each step of the process of determining the number of persons exposed and the causal link between exposure and injury.” Id.
2. Medical and Scientific Methodologies

There are five basic scientific methods of identifying a causal link between hazardous substances and injury from disease: case clusters,\(^{31}\) structural toxicology,\(^{32}\) laboratory study of simple test systems, animal bioassays,\(^{33}\) and epidemiology. The EPA relies on all of these methods in estimating the danger of hazardous substances to humans. To some extent, the weaknesses of one method are partially overcome by the strengths of another method in determining hazardous substance effects. But the use of these methods is costly and still results in significant uncertainty. The scientific methodologies mentioned above result at most in a finding of a probability of injury in humans. Case clusters, structural toxicology, and the study of simple systems do not provide probabilities which may be used with confidence. Ultimately, none of these scientific methods provides absolute evidence of cause and effect except under extreme exposure conditions. These methods are often inconclusive in tying a substance to a specific injury when exposures are not extreme in duration or concentration and when there are unknown combined effects with other unidentified environmental influences. In certain instances, a given chemical will cause different injuries in different persons, further complicating the task of estimating the total number of persons injured.

When these uncertainties are combined with the problems in assessing the potential for harm of any given hazardous substance site it is easy to understand why reliable estimation of total human injuries from hazardous substance exposure is so problematic. It also adds emphasis to the problem of proving any particular case.

In order to reliably estimate the total number of injuries, the hazardous substance concentration levels would have to be determined at each geographic point where, and over all periods when, exposure might take place. The total number of people with each relevant set of injury characteristics (consumption patterns, duration and intensity of exposure, age, exposure to synergistic agents, and so on) would have to be determined

\(^{31}\) See, e.g., Shear, Seale & Gottlieb, Evidence for Space-Time Clustering of Lung Cancer Deaths, 35 Archives of Env. Health 335 (1980).


\(^{33}\) See Seltzer, supra note 24, at 816.
and then multiplied by the probability of injury for people possessing those characteristics.

Even if the total number of injuries could be estimated, evaluation of the cost of adequate compensation would require knowledge of how these injuries accrue to different age groups and different occupations. Any evaluation of the economic losses to be compensated from loss of earnings and other damages associated with the injury could then be made.

3. The LCWM Study's Injury Estimate

Until the LCWM Study was done, no other study suggested possible methods for reliably estimating injuries. The United States Senate's 301(e) Report, for example, simply concluded that while no one knows the number of injuries, it is known that there are hazardous waste sites, that people are exposed to chemicals from these sites, and that there must therefore be injuries to be compensated. The LCWM Study used a number of methods to estimate the number of injuries and the number of people who are inadequately compensated for injuries from hazardous substance exposure.

The Study begins with the proposition that those persons in need of compensation for hazardous substance related injuries are likely to seek outside help. They may seek the assistance of a physician, an attorney, family and friends, or even the press. By surveying the number of contacts made to outside sources of help, the Study makes a rough estimate of the current number of injured parties.

A number of sources of data upon which an estimate could be based were considered. Physicians have the best skills for verifying the injury source, and most injured persons will seek some medical advice on their condition. Attorneys are also

34. See supra note 21.
35. Id.
36. A direct survey would be extraordinarily time consuming—if the number of injuries were small the survey sample would need to be unusually large. Even if such a survey were conducted, the information obtained from the respondents would be of doubtful quality since injured persons are unlikely to have the expertise to know the cause of their injuries. The possibility of skewed responses from hypochondriacs is also quite large.
37. A physician survey might be expected to pick up nearly all injured parties. Unfortunately, while all people injured by hazardous substances may go to a physician, this does not mean that a physician survey of such patient contacts will lead to reliable or approximate estimates of numbers injured because the possibility of mis-
fairly skilled at determining the source of an injury. Attorneys act as coordinators of medical or engineering evidence, or other evidence needed to verify that a hazardous substance was present, that the injured party was exposed to that substance, and that the exposure caused the injury. The press usually notes the more newsworthy instances of injury claimed to result from hazardous substances exposure, though there is no guarantee that those claims are accurate.

A physician survey was rejected as impractical primarily because most physicians’ diagnoses will not go beyond determining the nature of a patient’s disease or injury and actually attempt to determine the cause of the injury. Furthermore, the required sample from a physician survey would be quite large diagnosis is substantial when hazardous substances are involved. Cf. Seltzer, supra note 24, at 810 (the cause of injury may be a product of multiple contributing factors, making it virtually impossible to identify the precise cause of the injury).

In addition, while exposure to hazardous wastes causes acute and chronic health effects, a physician is more likely to see and diagnose the acute effects. “Even after exposure to medically dangerous levels of contamination, symptoms of disease may develop slowly and may be difficult to identify in their early stages.” Seltzer, supra note 24, at 811.

The average physician is not trained to diagnose chronic exposures, and chronic exposures are the greatest concern because they are more numerous than incidences of acute exposure. Since hazardous substance exposures, and particularly chronic exposures, are so difficult to diagnose, the accuracy of the data obtained by a physician survey is sufficiently suspect and an estimate of injuries based on that data is unreliable. Telephone interview with Dr. Vincent Garry, Director, Environmental Pathology Lab, University of Minnesota (Nov. 1983).

38. A survey of attorneys would determine the number of injured parties by determining the number of clients and potential clients who are injured from hazardous substances. As with the physician survey, the first step would be to select a sample of attorneys throughout the state. Attorneys would be contacted to determine if they had clients who had been injured as a result of exposure to any hazardous substances as defined by MERLA. The degree of impairment would be determined to estimate the potential economic loss which the client was suffering. A statewide estimate of hazardous substance victims would be extrapolated from the responses of the representative sample of attorneys.

A distinct advantage of the attorney survey is that many individuals who have already been adequately compensated by health insurance or other compensation schemes will not go to attorneys for further compensation through the tort system. The survey will not count these individuals as victims because they have already received adequate compensation.

For the results of a survey of Minnesota attorneys conducted to determine the number of individuals injured by hazardous waste, see J.D. Prince & P. Hamilton, A STUDY OF COMPENSATION FOR VICTIMS OF HAZARDOUS SUBSTANCE EXPOSURE, A REPORT OF THE LEGISLATIVE COMMISSION ON WASTE MANAGEMENT TO THE MINNESOTA LEGISLATURE, pt. I, at 23-25 (Dec. 1984) (132 individuals claiming injury or exposure to toxic substances) [hereinafter cited as WASTE MANAGEMENT COMMISSION REPORT].
and, if injuries number only in the tens of people, the survey may miss injured persons altogether.

A survey of the press coverage of hazardous substance-related stories showed an increasing amount of coverage, reflecting an increasing public interest in the subject, but provided no dependable information upon which an estimate could be based. 39

A survey of attorneys was made by the Study. 40 The sample was developed by compiling a list from the Minnesota Trial Lawyers Association (MTLA), from the MPCA, and from reference to news media reports of attorneys known to have dealt with some hazardous substance-related claims. Each of these attorneys was contacted to determine the number of clients which the attorney was aiding in hazardous substance litigation or negotiations, and also to obtain referrals to other attorneys practicing in hazardous substance litigation. After a number of attorneys were contacted and referrals added to the initial list, it was found that responses to the referral question provided names which were already on the list, indicating that all or nearly all attorneys with hazardous substance-related claims had been contacted.

The results of this survey showed that 132 people in Minnesota were claiming injury from hazardous substances. Most of the claims were for the costs of replacing a water supply but a few persons had alopecia or cancer. A few persons who contacted attorneys decided not to litigate because of costs. There did not seem to be an accelerating trend in the number of consultations or suits in the last five years.

Finally, California has implemented an administrative compensation scheme for personal injury victims of hazardous substance exposure. The limited claims experience under this scheme was examined. An effort was made to compare Cali-

39. The press is also likely to try to contact injured parties because such specific incidences of injury along with an interview of the injured party would be a newsworthy event.

A press survey will not be an accurate indicator of the number of claims which might arise under an administrative compensation system. However, the press survey will indicate the amount of public interest in the subject, and it will be of interest to compare the injuries indicated by the press with the injuries indicated by other methods. For a discussion of the survey of Minneapolis Star and Tribune articles as another method of estimating the number of people injured by hazardous wastes in Minnesota, see WASTE MANAGEMENT COMMISSION REPORT, supra note 38, at 25-26.

40. See WASTE MANAGEMENT COMMISSION REPORT, supra note 38, at 23-25.
fornia, a state with a fund of very limited accessibility and coverage and a much larger population, with Minnesota. The California study revealed that the number of persons filing claims for injuries in their persons or property is around ten per year and the number of inquiries about property damage claims is about 107 per year. The number of people with exclusively personal injuries is presumably smaller.\(^{41}\)

Based on all of this information the LCWM Study estimates that the number of persons injured in Minnesota each year as a result of exposure to hazardous substances numbers in the tens of persons. Obviously, that indirect estimate does not provide a precise figure. It is, however, an estimate based on the best information available and is the best estimate to date of the scope of the problem in Minnesota.

II. THE LIMITATIONS OF EXISTING REMEDIES AND COMPENSATION SYSTEMS FOR TOXIC TORT VICTIMS

Victims of hazardous substance releases in Minnesota may choose from various common law and statutory remedies. These include MERLA’s strict liability cause of action; traditional tort law theories of liability and damages, modified in part by statute; workers’ compensation if the injury arises out of the victim’s employment; private health and disability insurance plans; and public survivor, disability, and health insurance plans including Medicare and Medicaid. This section examines the effectiveness of these existing remedies in solving the problem of victim compensation.

A. MERLA’s Response to Traditional Legal Limitations to Recovery

1. Scope of Liability and Recovery Under MERLA

As the law of torts has developed, fault-based liability has been displaced by strict liability with respect to a number of activities, such as the manufacture and sale of defective consumer products. MERLA is part of this development in the law.\(^{42}\) Section 115B.05, subdivision 1 of MERLA provides a

\(^{41}\) Telephone interview with Gerald Jones, Program Coordinator for the Hazardous Substance Program, State Board of Control, California (March 22, 1985). This agency is not the only one available for victims of hazardous substance exposure in California. Other agencies may contain additional data that is not reflected in the data compiled by the California Hazardous Substance Program. \textit{Id.}

\(^{42}\) See \textit{Environmental Response and Liability Act}, ch. 121, 1983 Minn. Laws 310
statutory remedy for victims of hazardous substance releases:\textsuperscript{43} “[A]ny person\textsuperscript{44} who is responsible for the release\textsuperscript{45} of a hazardous substance from a facility\textsuperscript{46} is strictly liable . . . for . . . damages . . . .”\textsuperscript{47}

\section*{a. Liability Principle}

\subsection*{i. Strict liability}

At common law, a person injured or suffering property or other losses as a result of exposure to hazardous substances (a “toxic tort”) generally had to show that his injury or loss was the result of someone’s “fault,” that is, that someone had acted negligently or without care, causing the injury or loss. In some special cases, liability was “strict,” that is, imposed without proof of negligence.\textsuperscript{48} This strict liability approach has recently been expanded to include toxic torts. These injuries

\begin{quote}
(most sections of the act were effective July 1, 1983) (codified at Minn. Stat. § 115B (1984)).
\end{quote}

\begin{quote}
43. Section 115B.04, subd. 1 of MERLA also provides a remedy, but the damages available under that section are different in kind from the damages available under § 115B.05, subd. 1. Section 115B.04, subd. 1(a)-(c) allows the recovery of “[a]ll reasonable and necessary response costs incurred by . . . political subdivision[s] . . . [a]ll reasonable and necessary removal costs incurred by any person; and . . . [a]ll damages for any injury to . . . natural resources . . . .” Id. Section 115B.05, subd. 1(a), (b), on the other hand, allows recovery of damages of a more personal nature, including individual economic loss and health care costs. \textit{Id.}
\end{quote}

\begin{quote}
44. “Person” is defined as “any individual, partnership, association, public or private corporation or other entity including the United States government, any interstate body, the state and any agency, department or political subdivision of the state.” Minn. Stat. § 115B.02, subd. 12.
\end{quote}

\begin{quote}
45. See supra note 6 (definition of “release”).
\end{quote}

\begin{quote}
46. “Facility” is defined as:
\begin{enumerate}
\item Any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft;
\item Any watercraft of any description or other artificial contrivance used or capable of being used as a means of transportation on water; or
\item Any site or area where a hazardous substance, or a pollutant or contaminant, has been deposited, stored, disposed of, or placed, or otherwise came to be located.
\end{enumerate}
\end{quote}

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47. Id. § 115B.02, subd. 5(a)-(c).
\end{quote}

\begin{quote}
48. In Minnesota, strict liability for non-natural uses of land was adopted as early as 1871 in Cahill v. Eastman, 18 Minn. 324 (1871). For a discussion of the application in Minnesota of strict liability based on the doctrine of \textit{Rylands v. Fletcher}, see Mahowald v. Minnesota Gas Co., 344 N.W.2d 856, 860 (Minn. 1984); 11 WM. MITCHELL L. REV. 599 (1985) (Case Note on \textit{Mahowald}). For a discussion of the various common law strict liability theories, see infra notes 278-99 and accompanying text.
\end{quote}
and losses are an inevitable consequence of the generation, use, and disposal of hazardous substances in our society. It is considered inequitable to require those injured to bear the cost of toxic injury unless they can show someone was at fault. This view holds that losses caused by an enterprise or activity "ought to be borne by those persons who have some logical relationship with that enterprise or activity." 49 Those involved in the generation, transportation, and disposal of hazardous substances will begin to internalize the full costs of that process so that the costs of these injuries and losses are reflected in the prices of their goods and services. 50 The strict liability standard imposed by MERLA makes those involved with hazardous substances liable for resulting injuries or losses regardless of care or fault. 51

ii. Joint and Several Liability

Another difficulty encountered in applying traditional common law rules to toxic torts results from the fact that several parties can be involved in hazardous substance generation and disposal 52—the generator of the substance, the transporter, and the owners or operators of the disposal facility. When several parties play different and unconnected roles which lead to the eventual release of a hazardous substance from a facility, an injured party proceeding under the common law rules must establish a cause of action against each party. 53 These rules require that the plaintiff bear the burden of proving that it is more likely than not that the conduct of a defendant was a substantial factor in causing the release. When a number of parties contribute separately to the result, this burden may be impossible to sustain against any one of them. 54 This would mean, for example, that a generator and a disposer of the same hazardous substance are very unlikely to be jointly liable for an injury caused by that substance. MERLA solves this problem

51. See MINN. STAT. § 115B.05, subd. 1; cf. id., subds. 2-12 (defenses to strict liability).
52. See 301(e) REPORT, supra note 4, pt. 1, at 53.
53. Id., pt. 1, at 59.
54. See id., pt. 1, at 57-58.
by making all persons who are responsible for the release of a hazardous substance "jointly and severally" liable for the plaintiff's injury or loss.55

Where joint and several liability exists, an equity problem can arise when a defendant's causal connection with the release is too attenuated to justify making him liable for the entire damage award. Section 115B.09 of MERLA addresses this problem by limiting the individual liability of any single defendant. It specifies that where the percentage of fault attributable to a defendant is determined under the Comparative Fault Act,56 the liability of the defendant for damages shall be limited to two times that percentage of comparative fault.57 In

55. See Minn. Stat. § 115B.05, subd. 1. The meaning of joint liability is that two or more persons may be joined as defendants in the same action by an injured plaintiff where the action of those defendants has produced a single injury. The Minnesota Supreme Court has adopted joint liability for indivisible injuries in other contexts and holds that joint liability arises "whether the acts of those jointly liable were concerted, merely concurrent, or even successive in point of time." Tolbert v. Gerber Indus., 255 N.W.2d 362, 366 n.1 (Minn. 1977) (joint liability theory applied in product liability case).

The meaning of several liability is that each defendant may be sued individually and held completely liable for the injury even though others have also contributed to that injury. See W. Prosser, D. Dobbs, R. Keeton & D. Owen, Prosser and Keeton on the Law of Torts § 47, at 327-28 (5th ed. 1984) [hereinafter cited as Prosser & Keeton]. If liability is both joint and several, the plaintiff can sue one, or all, or any number of the responsible defendants. Kisch v. Skow, 305 Minn. 328, 331, 233 N.W.2d 732, 734 (1975). For any judgment awarded to the plaintiff, the defendants are jointly liable. They are also each liable for the full amount if other defendants have not been joined in the suit or are unable for any reason to help satisfy the plaintiff's judgment. The concept of joint and several liability transfers the burden of allocating and apportioning damages between or among defendants from the plaintiff to the defendants. See Prosser & Keeton, supra, § 47, at 327-28. This transfer is of critical importance to a plaintiff who seeks to recover the full amount of his damages.

56. Minn. Stat. § 604.01-.02.

57. Id. § 115B.09. A potential problem in meshing MERLA and the Comparative Fault Act arises from the use of the word "solely" in the first sentence of § 115B.05, subd. 6, and the language of subd. 1 of § 604.01 of the Minnesota Comparative Fault Act. Subdivision 6, clause (d) of § 115B.05 states that it is a defense to strict liability that the release was caused solely by an act or omission of the plaintiff. It could be interpreted by implication that if a plaintiff is found 90% liable and the defendant 10%, the plaintiff's greater liability will not be a defense; a plaintiff 90% at fault is not solely liable. Section 604.01, subd. 1 of the Comparative Fault Act, however, says that a plaintiff's contributory fault shall bar recovery if the plaintiff's contributory fault is greater than the fault of the person against whom recovery is sought. Since § 115B.05, subd. 6 is an explicit provision, it may control over the more general language of the Comparative Fault Act.

The statutory remedy provided by § 115B.05 may be incorporated into the strictures of the Comparative Fault Act. Section 604.01, subd. 1 essentially provides for
a situation where most of the persons responsible for a release are insolvent or unidentifiable, this provision will severely limit a plaintiff's recovery if the remaining solvent defendants bear a low percentage of fault.

MERLA creates a strict, joint and several liability principle which is designed to make recovery easier for those injured by exposure to hazardous substances by eliminating the need to show that someone was at fault or negligent in causing the injury or, where more than one person may have caused the injury, by eliminating the need to show that the defendants acted jointly.

b. Substances Covered

One of the most difficult problems in devising a toxic tort strict liability compensation scheme is deciding which substances should give rise to liability. The dangers associated with many of the chemicals in commerce are unknown. "New substances are continually produced and distributed, and new evidence frequently implicates as a potential hazard a substance previously thought to be safe." Additionally, substances which may not be dangerous alone may form a dangerous chemical compound when combined with other substances.

Some hazardous substances are extremely toxic, capable of causing death even in small amounts. Other substances are much less toxic, likely to cause nothing more than a modest skin rash in most persons. Any substance can be more toxic to some people than to others due to varying degrees of susceptibility among individuals.

Deciding which substances should give rise to liability is ultimately a question of policy. A special question arises regarding substances not known to be harmful when disposed of in

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58. Trauberman, supra note 9, at 220 (most difficult aspect of administering a regulatory program).
59. Id. (footnote omitted).
the past. There are a number of arguments for imposing liability for injuries caused by these substances. These arguments include placing the cost of injury on the party best able to spread the risk of loss, placing the loss on the party best able to prevent the creation of conditions giving rise to such injuries, and avoiding costly and confusing inquiries into complicated and speculative "state of the art" claims.\footnote{Beshada v. Johns-Manville Prods. Corp., 90 N.J. 191, 205-09, 447 A.2d 539, 547-49 (1982); see also O'Brien v. Muskin Corp., 94 N.J. 169, 179-80, 463 A.2d 298, 303 (1983) (allocation of risk upon manufacturers and others in stream of commerce).} It has also been argued that it is fair to impose liability on a party who does not know of latent risk in his conduct in those cases where the defendant creates a disproportionate, excessive risk of harm relative to the victim's conduct.\footnote{For an excellent discussion of the "reciprocal risk" notion and its application to a determination of tort liability, see Fletcher, \textit{Fairness and Utility in Tort Theory}, 85 \textit{Harv. L. Rev.} 537, 543-51 (1972).} Of course, it can also be argued that liability should not be imposed on those who did not know that the substances they were handling were dangerous. According to this view, only those substances known at the time of their generation and use to be hazardous should give rise to liability.

Although it is not entirely clear, MERLA seems to favor the former approach.\footnote{It is not clear whether MERLA fixes the category of substances which are "hazardous" for MERLA purposes as those substances which fall within the definition at the time of enactment, or whether the category expands or contracts as new substances are added to or deleted from the various federal and state law definitions to which MERLA refers. Any changes made in the definitions in the other laws to which MERLA refers would presumably be incorporated into MERLA as well. See \textit{Minn. Stat.} \textsection 645.31, subd. 2 (1984). Incorporation of the federal definitions, however, could be an unconstitutional delegation of state legislative authority, at least with respect to the tort law provisions which are not supplementary to or designed to achieve uniformity with a federal program. See Sheehy, \textit{Defenses and Limitations for Section 5 Claims Under MERLA in Hazardous Waste Regulation and Liability} 309, 323-24 (\textit{Advanced Legal Education}, Hamline University School of Law 1983).} It exposes responsible parties to liability for damages caused by the release of hazardous substances.\footnote{\textit{Minn. Stat.} \textsection 115B.05, subd. 1.} Hazardous substances include substances defined as hazardous under the federal Clean Water Act,\footnote{33 \textit{U.S.C.} \textsection 1321(b)(2)(A) (1982).} the Clean Air Act,\footnote{The legislative debate over foreseeability and the ultimate inclusion of a strict liability provision in the law certainly suggest that the legislature intended that substances not now known to be, but subsequently discovered to be, hazardous should fall within MERLA's coverage.} and...
Resource Conservation and Recovery Act,67 and under state law.68 Some of these substances were not known to be harmful when used or disposed of in the past. In addition, both the federal and state law definitions, including MERLA’s definition, are open-ended. That is, they allow substances to be added to or deleted from the list of those now defined as hazardous.

Even with this open-ended approach, some harmful chemicals may not fall within MERLA’s definition. Persons injured by releases of such substances obviously will not have the remedy that section 115B.05, subdivision 1 of MERLA provides. Though regulated for some purposes under MERLA,69 a “pollutant or contaminant” is not defined as a hazardous substance.70 Pollutants or contaminants would include such things as sewage sludge and certain types of nuclear waste.71 Natural and synthetic gases are not within the definition, nor is oil or any petroleum derivative, unless it has been defined or identified as a hazardous waste.72 In addition, some releases of potentially toxic substances, including pesticides and fertilizers, are not considered to be “releases”73 which give rise to liability under section 115B.05, subdivision 1. Finally, substances which may be hazardous under one major federal law, the Toxic Substances Control Act,74 are not within the MERLA definition unless they are coincidentally covered by one of the definitions which MERLA incorporates. While some substances subsequently discovered to be hazardous may be incorporated into MERLA’s definition and subject to MERLA’s provisions, other substances now known to be hazardous are excluded from MERLA’s coverage.

67. Id. §§ 6903(5), 6921.
68. See Minn. Stat. § 116.06, subd. 13 (hazardous waste defined).
69. See, e.g., id. § 115B.17 (state response to releases of pollutants or contaminants).
70. See id. § 115B.02, subd. 13. “There is no liability under this section for damages which result from the release of a pollutant or contaminant.” Id. § 115B.05, subd. 2.
71. See id. § 116.06, subd. 13. “Hazardous waste does not include source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended.” Id.
72. See id. § 115B.02, subd. 8.
73. See id., subd. 15(a)-(d).
74. 42 U.S.C. § 9601(14).
c. Persons Responsible

MERLA imposes its liability on "any person who is responsible for the release of a hazardous substance from a facility." 75 "Responsible persons" include owners or operators of facilities where hazardous substances are located, those who arrange for the disposal or treatment of such substances, and certain transporters of these substances. 76 Transporters are strictly liable only if they knew they were transporting a hazardous substance, and selected the facility to which it was transported or disposed of it in a manner contrary to law. 77

Owners of land from which a release occurs are liable only in limited circumstances. It may be impossible to trace some hazardous substances back to their manufacturers or transporters and some parties in the chain of responsibility may be insolvent. Thus, past and present owners of the land on which the release occurred may be the easiest persons to identify because their names are found in local land records. Under the common law, however, land ownership alone is not enough to create liability; other factors are necessary to create liability for the landowner. 78 According to the Second Restatement of Torts, a landowner who owned the land when the hazardous substance was located there is no longer liable once a subsequent purchaser of the land has discovered and abated the condition. 79 Recent court decisions, however, have found an exception to this general rule where the previous owner acted affirmatively to create a dangerous situation or nuisance. 80 Additionally, a subsequent purchaser of land is not liable until he has had a reasonable opportunity to discover the dangerous condition and abate it. 81 Furthermore, recent cases have limited liability of subsequent landowners unless they have in some way accepted or associated themselves with the creation or maintenance of the conditions that gave rise to the hazard-

75. MINN. STAT. § 115B.05, subd. 1.
76. Id. § 115B.03, subd. 1(a)-(c).
77. Id., subd. 1(c).
78. See 301(e) REPORT, supra note 4, pt. 1, at 47.
79. See RESTATEMENT (SECOND) OF TORTS §§ 373(2), 840A(2) (1979), noted in 301(e) REPORT, supra note 4, pt. 1, at 47.
81. RESTATEMENT, supra note 79, §§ 366, 839, noted in 301(e) REPORT, supra note 4, pt. 1, at 48-49.
ous substance’s release. Finally, because of the costs associated with abating the problems caused by the underground release of chemicals, courts are reluctant to impose liability on current owners.

MERLA provides that an owner of real property on which a hazardous substance was released is responsible if he is in the business of generating, transporting, storing, treating, or disposing of hazardous substances or knowingly permitted others to engage in such a business on that property, or if he knowingly permitted any person to use the facility for disposal of a hazardous substance or regular disposal of waste. He is also responsible if he knew or reasonably should have known that a hazardous substance was located on the property at the time he bought it and engaged in conduct by which he associated himself with the release. In addition, if he significantly contributed to the release after he knew or reasonably should have known that a hazardous substance was located in or on the property, the landowner can be held responsible.

Under MERLA, past owners who allowed disposal of wastes on their land during their tenure will remain liable even after a subsequent purchaser has had a reasonable opportunity to discover and abate the hazardous condition. The property purchasers, on the other hand, will not be held liable unless they affirmatively associated themselves in some way with the disposal or release. Operators of facilities will generally be responsible for their releases as will transporters who knew they were handling hazardous substances and who chose the disposal site.

d. Damages Recoverable

Releases of hazardous substances may result in injury to both persons and property. MERLA provides for recovery for both property loss and personal injury. Property loss includes

83. 301(e) REPORT, supra note 4, pt. 2, at C-7.
84. An “owner of real property” as defined by MERLA includes anyone who is in possession of or has the right to control the use of the property. MINN. STAT. § 115B.01, subd. 11. Persons holding leases which are financing devices or persons holding nonpossessory interests are excluded. Id., subd. 11(1).
85. Id. § 115B.03, subd. 3. It is not clear whether mere failure to remedy the hazardous condition upon discovery is to be considered “action which significantly contributed to the release.” Id., subd. 3(e).
damage to or destruction of real or personal property, including relocation costs, loss of use, and lost income or profits resulting from damage to or destruction of property.\footnote{86} Personal injury losses include death, personal injury, or disease, including medical expenses and rehabilitation costs, lost income or earning capacity, and pain and suffering.\footnote{87}

Certain types of damages are not expressly recoverable under section 115B.05. These damages include increased risk of injury or disease, emotional distress, and medical surveillance costs.\footnote{88} Nevertheless, section 115B.12 preserves all pre-existing legal remedies so that plaintiffs may argue that these sorts of damages are also recoverable\footnote{89} at least to the extent the law previously would have allowed their recovery.\footnote{90}

2. Limitations on Liability

MERLA's strict liability principle does not impose absolute liability on hazardous waste generators and handlers.\footnote{91} Instead, the Act places a number of limitations on its imposition of liability. Strong policy reasons dictated that hazardous sub-

\footnote{86} \textit{Id.} \S 115B.05, subd. 1(a).
\footnote{87} \textit{Id.}, subd. 1(b).

\footnote{89} The law allowed recovery for emotional distress as well as punitive damages in at least some circumstances. The law did not traditionally recognize increased risk of injury where there was no actual injury as a compensable event. Unless the plaintiff can show to a high degree of certainty that harm will occur in the future, there is little hope of recovery. Where there is no initial actual harm, the plaintiff must show that it is "highly probable" that harm will occur. \textit{See} Seltzer, \textit{supra} note 24, at 833. Nevertheless, scientists believe that mere exposure to hazardous substances can be a substantial harm in that such exposure can increase the risk of developing certain types of illness or disease in the future. The increased susceptibility to future injury is the harm. The process of evaluating the risks associated with exposure to a hazardous substance, a process called risk assessment, is based on probability theory. Probability theory quantifies the likelihood that a particular exposure will increase a person's chance of developing a disease in the future. \textit{See id.} at 817. Although some courts have modified the traditional approach to the concept of increased risk, \textit{see generally id.} at 833-35, it is still unlikely that this type of harm is compensable under MERLA unless the plaintiff can show that the increased probability of future harm is very high. \textit{But see Espel, The Minnesota Environmental Response and Liability Act}, at 39-40 (1984) (to be published in an upcoming volume of the Natural Resources Journal) (discussion of the availability of damages not specifically listed in MERLA).

\footnote{90} \textit{Cf.} Espel, \textit{supra} note 89, at 39-40 (on the availability of damages not specifically listed in MERLA).

\footnote{91} \textit{See} Note, \textit{Strict Liability for Generators, Transporters, and Disposers of Hazardous Wastes}, 64 MINN. L. REV. 949, 976 (1980).
stance generators should internalize the costs of producing such substances, but it could not be forgotten that a generator's actual causal relationship with the release may be attenuated. Such persons could not reasonably be required to pay damages for releases that are wholly and directly caused by outside factors. Other policies suggested further limitations on liability. Some of these limits are incorporated into MERLA in the form of defenses to liability. Thus, plaintiffs may be denied recovery under MERLA because of one or more defenses. In addition, policy reasons may dictate that a cap be placed on the amount of damages recoverable against certain parties. MERLA contains a number of these limitations as well.

a. In General

MERLA establishes a number of defenses to its strict liability cause of action in section 115B.05, subdivision 1. Certain releases of hazardous substances will not give rise to liability under section 115B.05. "It is a defense to liability under this section that the release . . . was caused solely by: (a) An act of God; (b) An act of war; (c) An act of vandalism or sabotage; or (d) An act or omission of a third party or the plaintiff." There are also limitations placed on the use of these defenses. First, acts of God do not include those phenomena the effects of which could have been prevented or avoided by the exercise of due care or foresight by the defendant. Second, "third party, for the purposes of clause (d) does not include an employee or agent of the defendant, or a person in the chain of responsibility for the [release] of the hazardous substance." Finally, "The defenses provided in clauses (c) and (d) apply only if the defendant establishes that he exercised due care with respect to the hazardous substance concerned . . . ."

Section 115B.05 provides a few other defenses when there

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92. Minn. Stat. § 115B.05, subds. 2-10; see also Note, supra note 91, at 976.
93. See supra notes 56-57 and accompanying text.
94. Minn. Stat. § 115B.05, subd. 6(a), (b).
95. See id. § 115B.02, subd. 2. An act of God is defined as "an unanticipated grave natural disaster or other natural phenomenon of an exceptional, inevitable, and irresistible character, the effects of which could not have been prevented or avoided by the exercise of due care or foresight." Id.
96. Id. § 115B.05, subd. 6.
97. Id.
are no intervening acts: (1) once a hazardous substance has been relocated in a different facility due to the intervening acts of a public agency, those persons responsible for the release of the substance from the old location are not responsible for any release of it from the new location; (2) responsible persons are relieved from liability for releases sanctioned by state or federal permits and standards; and (3) responsible persons are not liable if they cause releases while assisting public agencies in cleaning up or attempting to prevent releases of hazardous substances.\textsuperscript{98} Finally, an employee’s claim against his employer is limited to recovery under the workers’ compensation law if the claim is compensable under that law as an injury or disease arising out of or in the course of employment.\textsuperscript{99}

\textbf{b. Political Subdivisions}

A political subdivision might be held liable under MERLA if, for example, it operated a hazardous waste disposal facility or if it owned land and acquiesced in the deposit of hazardous substances on the land. In addition, a subdivision’s liability may result from its activities and obligations in supervising the disposal of hazardous wastes.\textsuperscript{100} The liability of political subdivisions in Minnesota is generally limited under the provisions of the Municipal Tort Liability Act.\textsuperscript{101} These limits are liberalized somewhat when claims arise out of a release of hazardous substances.\textsuperscript{102}

\textbf{c. Statute of Limitations}

MERLA establishes a six-year statute of limitations\textsuperscript{103} which requires a party to resolve his dispute while the evidence is still intact and witnesses’ memories are still fresh.\textsuperscript{104} The statute is designed to assure the fair and effective administration of justice in a timely fashion.\textsuperscript{105} In the case of toxic torts, however, the desire to settle disputes in a timely fashion may be out-

\begin{itemize}
\item \textsuperscript{98} Id., subds. 7-9.
\item \textsuperscript{99} Id., subd. 3.
\item \textsuperscript{100} Cf. Anderson, supra note 60, at 169 (states the same proposition with respect to the activities of the United States government).
\item \textsuperscript{101} Minn. Stat. § 115B.05, subd. 4.
\item \textsuperscript{102} Id. § 446.01-.15.
\item \textsuperscript{103} Id. § 115B.11.
\item \textsuperscript{104} Anderson, supra note 60, at 165.
\item \textsuperscript{105} Dalton v. Dow Chem. Co., 280 Minn. 147, 153 n.2, 158 N.W.2d 580, 584 n.2 (1968).
\end{itemize}
weighed by the policy of affording the plaintiff a fair opportunity to vindicate his rights. Because injuries caused by toxic torts have long latency periods, a plaintiff may suffer great hardship if his right to bring a claim is cut off prematurely. The degree to which a statute of limitations becomes a bar to recovery depends on when the time limit set forth in the statute begins to run.

For determining when its statute of limitations begins to run, Minnesota has adopted the “discovery rule.” In Dalton v. Dow Chemical Co., the court held that the statute of limitations for negligence actions does not begin to run until damage has resulted from the alleged negligence. Personal injury damages do not “result” until physical impairment manifests itself. This means that the time limit does not begin to run until the plaintiff should reasonably have discovered his injury or disease.

MERLA’s statute of limitations does not specify a single event that begins the running of the statute, but instead lists certain factors that courts must consider. These include: "(a) When the plaintiff discovered the injury or loss; (b) Whether a personal injury or disease had sufficiently manifested itself; and (c) When the plaintiff discovered, or using due diligence should have discovered, a causal connection between the injury, disease, or loss and the release of a hazardous substance." The inclusion of this last factor indicates that courts should take a liberal view of when a person might

106. 301(e) REPORT, supra note 4, pt. 2, at B-1.
107. See id., at B-2.
108. Trauberman, supra note 9, at 217.
109. 280 Minn. 147, 158 N.W.2d 580 (1968) (involving personal injuries resulting from exposure to cleaning solvent produced by defendant); see also 301(e) REPORT, supra note 4, pt. 2, at B-4, B-25.
110. Id. at 153, 158 N.W.2d at 584.
111. Fink v. Cold Spring Granite Co., 262 Minn. 393, 405, 115 N.W.2d 22, 30 (1962), quoted in Dalton, 280 Minn. at 152, 158 N.W.2d at 584 (stating that the workers' compensation statute "does not commence to run against the victim until he has 'contracted' the disease and the process of contracting the disease does not cease until physical impairment manifests itself").
112. MINN. STAT. § 115B.11. It is not clear whether a personal injury claim which arises under MERLA but which was "discovered" more than six years before the enactment of the Act is barred by MERLA's statute of limitations. In Calder v. City of Crystal, 318 N.W.2d 838 (Minn. 1982), the court indicated that it would be unconstitutional for the legislature to pass a statute creating a substantive remedy but to make that remedy meaningless by barring access to it with a statute of limitations. Id. at 844.
reasonably "discover" an injury or loss that can become the basis of a claim under MERLA.

d. Other Time Limits: The "Retroactivity" Limits

MERLA contains additional limits affecting the availability of section 115B.05's strict liability action. First, section 115B.15 provides that no claim may be made if the release causing the loss occurred wholly before July 1, 1983. Apparently the plaintiff bears the burden of proving that his loss resulted from a release occurring on or after this date.113

Section 115B.06 also provides that if the hazardous substance "was placed or came to be located in or on the facility [from which the release occurred] wholly before January 1, 1960," then no claim may be made under section 115B.05.114 This provision appears to be an affirmative defense, so that a defendant would have the burden of proving that his deposits of substances at the facility occurred wholly before January 1, 1960.

Finally, if the hazardous substance "was placed or came to be located in or on the facility wholly before January 1, 1973," all persons responsible for the release have a defense against the action "if the defendant shows" that the substance was placed at the facility wholly before this date and "that the activity by which the substance was kept, placed, or came to be located in or on the facility was not an abnormally dangerous activity."115 The burden of proving both these factors is on

113. It is obvious that the person who deposits a hazardous substance at a facility (the defendant) is generally more likely to have the evidence regarding when that occurred than is a person injured by release of that substance (the plaintiff). Although not as clear, it seems that the defendant is also more likely to have the evidence regarding when a release occurs (especially if he is the transporter or facility operator) than is the plaintiff. Since the major factor in determining where to place the burden of proof on any issue is determining which party is more likely to be in possession of the best evidence, MERLA correctly puts the burden of proving when the deposit occurred on the defendant. See MINN. STAT. § 115B.06. That same consideration indicates that the burden of proving when the release occurred should also be on the defendant, but this is not expressly stated in § 115B.15.

114. See id. § 115B.06, subd. 1(b).

115. See id., subds. 1(a), 2. Note that this section allows all defendants responsible for releases of substances that came to be located in or on facilities between the years 1960-1973 to escape liability under § 115B.05 if they can show that the manner in which the substance was handled was not "abnormally dangerous". "Abnormally dangerous" is a term taken from § 520 of the Restatement (Second) of Torts. Section 520 sets up a multifactor test for determining whether a particular activity may be deemed "abnormally dangerous". RESTATEMENT, supra note 79, § 520.
the defendant.

These provisions of MERLA are, in effect, a statute of re­pose.\textsuperscript{116} Statutes of repose are a byproduct of the develop­ment of strict products liability law. Such statutes designate a period of time, following the manufacture or sale of a product or, in MERLA's case, following the deposit of substances at a facility, after which a strict liability action is prohibited.\textsuperscript{117} The policy reasons advanced for the introduction of statutes of re­pose focus on the benefits of encouraging progress in the processing of claims, eliminating potential abuses from old claims, and creating certainty.\textsuperscript{118}

The distinction between a statute of repose and a statute of limitations can be seen by the following example: A hazardous substance is deposited at a facility in 1959. A release began in 1970 and continues today. The plaintiff discovers an injury caused by this release and the causal relationship between his injury and the release in 1980. The plaintiff would not be prevented from bringing a claim by the six-year statute of limitations which began upon discovery in 1980. According to the statute of repose, however, he would not be able to successfully sustain the claim if the defendant showed that the deposit was made prior to 1960.

Section 115B.06 is intended to moderate the "retroactivity" of section 115B.05, which imposes liability on those who generated and transported waste before the Act's passage. Section 115B.15, which limits the applicability of section 115B.05's strict liability to releases occurring after the Act's effective date, also limits the Act's retroactivity.

In sum, the strict, joint and several liability rule of section 115B.05 is limited in its effect. Some provisions preclude liability altogether for certain acts. Others limit liability when a political subdivision is the defendant. Finally, a statute of limi-

\textsuperscript{116} "Although the term 'statute of repose' has traditionally been used to encompass statutes of limitation, in recent years it has been used to distinguish ordinary statutes of limitation from those that begin 'to run at a time unrelated to the traditional accrual of the cause of action.'" Bolick v. American Barmag Corp., 306 N.C. 364, 367-68, 293 S.E.2d 415, 417-18 (1982) (quoting McGovern, The Variety, Policy and Constitutionality of Product Liability Statutes of Repose, 30 AM. U.L. REV. 579, 584 (1981)).

\textsuperscript{117} Anderson, supra note 60, at 165.

\textsuperscript{118} See McGovern, supra note 116, at 588 (analyzing public policy of product liability statutes of repose).
tations requires a plaintiff to make his claim within six years of discovering the fact of his injury and its cause.

3. Proof of Causation

There are two major problems faced by those injured as a result of exposure to hazardous substances. First, they must demonstrate that their injury or loss was caused or significantly contributed to by exposure to a hazardous substance. Second, they must prove that the defendant is responsible for the substance causing the injury.

a. Proving That a Hazardous Substance Caused the Injury

In a toxic tort case, the plaintiff must demonstrate a causal connection between the loss or injury complained of and the environmental condition for which the defendant is allegedly responsible.\textsuperscript{119} Even if it can be demonstrated that a person's injury or loss is caused by exposure to a hazardous substance, he must also show that a particular exposure is the one which significantly contributed to his injury. The long latency period associated with injuries from hazardous substance exposure complicates this problem.\textsuperscript{120} Epidemiological studies indicate that cancer, for example, may take fifteen to twenty years to develop.\textsuperscript{121}

During the latency period the plaintiff may have moved to different locations, and may have exposed himself to a number of environmental hazards or toxic substances.\textsuperscript{122} As a result, his injury may have no single cause.\textsuperscript{123} Many chronic diseases result from multifactorial etiology—several factors interacting at the same time in complex ways to produce harm.\textsuperscript{124}

\begin{footnotesize}
\begin{enumerate}
\item\textsuperscript{119} 301(e) Report, supra note 4, pt. 1, at 70.
\item\textsuperscript{120} See id.
\item\textsuperscript{121} Seltzer, supra note 24, at 811. An individual may lead a normal, healthy life for years without any apparent symptoms and then suddenly experience visible effects from the chemical exposure. \textit{Id.} (citing S. Epstein, \textit{The Politics of Cancer} 2 (1978)).
\item\textsuperscript{122} 301(e) Report, supra note 4, pt. 1, at 70.
\item\textsuperscript{123} Seltzer, supra note 24, at 811 (citing Division of Laboratories and Epidemiology, New Jersey State Dept. of Health, \textit{An Epidemiologic Investigation of Clusters of Leukemia and Hodgkins Disease in Rutherford, New Jersey} 17 (1979)).
\item\textsuperscript{124} Trauberman, supra note 9, at 199; see also Seltzer, supra note 24, at 811-12 ("at each stage of a chemical's migratory pathway to the victim . . . chemical transformation, dilution, and recombination with other new compounds may occur").
\end{enumerate}
\end{footnotesize}
victim may be exposed to a wide variety of contaminants, preventing the identification of a single "responsible" substance. This becomes even more problematic in cases where a person's health may be affected by factors other than the exposure to a substance at a particular location. These factors may include "diet, smoking, genetic predispositions, age, and prior exposure to chemicals."125

Not all persons exposed to hazardous substances will contract disease. At present, there is no empirical method that can accurately predict which persons exposed to hazardous substances will develop diseases or other injuries. Moreover, scientists have been unable to determine an absolutely safe level of human exposure to hazardous substances.126

The problems of demonstrating cause and effect do not bode well for a plaintiff seeking to recover damages in a court of law. Both the common law and MERLA firmly place the burden of proving legal causation on the plaintiff.127 To prove legal causation, the plaintiff must show, by a preponderance of the evidence, that it is more probable than not that the defendant's conduct was a "substantial factor in causing the alleged injury."128 The causal connection between the defendant's release and the plaintiff's injury cannot be proven by showing "a 'mere possibility' of causation, even though such showing is scientifically supportable."129 Nor can it be met by showing that exposure to the hazardous substance increases the risk of

125. Seltzer, supra note 24, at 812.
126. Id. at 810.
127. Id. at 821.
128. Id.; see Flom v. Flom, 291 N.W.2d 914, 917 (Minn. 1980) ("proximate cause exists if negligence was a substantial factor in bringing about the injury"); see also Waite v. American Creosote Works, Inc., 295 Minn. 288, 291, 204 N.W.2d 410, 412 (1973) (in a strict products liability case a plaintiff must prove by a preponderance of the evidence that a defect caused the injury).

Case law provides examples of toxic tort plaintiffs unable to meet their burden of proof. See, e.g., Magnolia Petroleum Co. v. Williams, 222 Miss. 538, 76 So. 2d 365 (1954) (failure to prove direction taken by contaminants in the ground and between origin of contaminant and injury); Schlitchkrull v. Mellon-Pollock Oil Co., 301 Pa. 560, 152 A. 832 (1930) (failure to prove one of several chemicals caused the disease). See generally Whitehead & Christenson, Common Law Defenses in Hazardous Waste and Toxic Tort Cases after MERLA in HAZARDOUS WASTE REGULATION AND LIABILITY 261, 264-66 (Advanced Legal Education, Hamline University School of Law 1983).
129. Seltzer, supra note 24, at 821-22; see PROSSER & KEETON, supra note 55, § 41. According to Prosser and Keeton, "As a practical matter, legal responsibility must be limited to those causes which are so closely connected with the result and of such significance that the law is justified in imposing liability." Id. at 264.
harm in the future.130

Proof of causation in a hazardous substance personal injury case often requires large amounts of sophisticated, expensive medical and scientific evidence to demonstrate the causal connection between a disease and an environmental exposure.131 Evidence may be required which shows that the kind of exposure, its duration or frequency, and its intensity could add to or produce the kind of disease or injury suffered by the plaintiff.132 Even with the best possible evidence, however, "most plaintiffs can only show that it is statistically probable that the exposure caused his injury."133 A toxicologist appearing as an expert witness for the plaintiff may be able to state with assurance that exposure to a particular level of the hazardous substance is capable of causing an increase of disease in the exposed population. That witness, however, may not be able to testify that the individual plaintiff's disease was, more probably than not, caused by exposure to a particular hazardous substance release.134

MERLA attempts to mitigate the problems of demonstrating causal connection in claims for death, personal injury, or disease. Minnesota Statutes section 115B.07 states that a "court may not direct a verdict against the plaintiff on the issue of causation if the plaintiff produces evidence sufficient to enable a reasonable person to find that:

(a) the defendant is a person who is responsible for the release;
(b) the plaintiff was exposed to the hazardous substance;


To prove a causal link between the agents released from the hazardous waste site and the injury at issue, the plaintiff must fulfill four essential conditions of the traditional approach to legal causation. First, the plaintiff must substantiate the presence of significant amounts of the pollutant which is alleged to have caused the injury. Second, the plaintiff must reconstruct the manner in which the exposure occurred by tracing the path of contaminant migration from the waste site to the victim. Third, the plaintiff must identify the source of the contamination and show a breach of due care by the defendant. Fourth, the plaintiff must demonstrate the effect of the pollutant in question on the injured person.

Seltzer, supra note 24, at 821-22.

131. 301(e) REPORT, supra note 4, pt. 1, at 70-71.
132. See id.
133. Anderson, supra note 60, at 168.
134. Trauberman, supra note 9, at 200.
(c) the release could reasonably have resulted in plaintiff's exposure to the substance in the amount and duration experienced by the plaintiff; and

(d) the death, injury, or disease suffered by the plaintiff is caused or significantly contributed to by exposure to the hazardous substance in an amount and duration experienced by the plaintiff. 135

Cumulatively, clauses (a) through (d) amount to a substantial factor test. Clause (d) for instance, requires that the injury suffered by the plaintiff must be caused or significantly contributed to by exposure to the hazardous substance. The words "significantly contributed to" seem to be equivalent to a substantial factor test. In addition, section 115B.07 states: "Nothing in this section shall be construed to relieve the plaintiff of the burden of proving . . . the causal connection between the release of the hazardous substance . . . and the plaintiff's death, injury, or disease." 136 Note, however, that clause (d) says that the plaintiff need only show that his injury is significantly contributed to by exposure to the hazardous substance in an amount and duration experienced by the plaintiff, not that his exposure to the substance caused his injury.

Both the legislative debates on section 115B.07 and the fact that it is included in the Act indicate that the legislature intended to change some part of the common law on causation rather than simply codify it. Moreover, the apparent purpose of the change was to make it less difficult for injured persons to get over the causation hurdle. Until courts begin to construe and apply this section, it remains to be seen whether section 115B.07 achieves this purpose.

It is likely that this language will have no practical effect on the type of evidence considered on the causation issue or on the way courts instruct the trier of fact to assess that evidence. If the plaintiff produces sufficient evidence to enable a reasonable person to find the four factors listed in clauses (a) through (d), however, the court cannot direct a verdict against the plaintiff for failure to present enough evidence to sustain a showing of a causal connection. Even without this language in MERLA, it seems very unlikely that a court would direct a verdict against a plaintiff who had made the showings listed in

136. Id.
clauses (a) through (d), but would instead let the evidence go to the trier of fact. This provision in MERLA is therefore unlikely to mitigate the problems of demonstrating causal connection in cases of this kind, and proving causation remains a major roadblock to a plaintiff's success in this type of case.

Section 115B.07 also states, "Evidence to a reasonable medical certainty that exposure to the hazardous substance caused or significantly contributed to the death, injury or disease is not required for the issue of causation to be submitted to the trier of fact."137 This provision is not a significant departure from the common law position in Minnesota, but this language at least makes it clear that no such requirement exists.138

137. Id.
138. In cases of chemically induced diseases, it is often impossible for medical experts to testify with certainty that a particular disease resulted from a specific chemical. Nevertheless, evidence sufficient to establish legal causation will be present if a plaintiff can show that the disease more likely than not resulted from the exposure.

The difference between medical and legal causation is illustrated by Daly v. Bergstedt, 267 Minn. 244, 126 N.W.2d 242 (1964). In Daly, six physicians testified that there was no causal connection between a bruise to the plaintiff's breast and her breast cancer, while one doctor expressed the opinion that the cancer could develop from the bruise. The case was allowed to go to the jury, which found for the plaintiff. The defendants claimed that there was no factual basis in the record to establish a causal connection between the injury and the disease. The supreme court said:

The point raised by [defendants] is not new. It arises because of the difference in the medical and legal approach to the question of causation.

In the case before us, it seems that [defendants] refused to recognize that legal determination for responsibility may differ from medical findings as to the cause or source of a disease.

Id. at 249, 126 N.W.2d at 246 (emphasis added).

The Daly court held that the record was sufficient to present the question of causation to the jury. The court rejected the defendants' claim that it could not be medically established that a single trauma can cause cancer, and held that legal cause had been established. The court further noted that inferences could be drawn from the chain of events from the time of the accident to the time when the cancer developed, and that such inferences, "if rational and natural, which follow from a sequence of proved events, may be sufficient to establish causal connection without any supporting medical testimony." Id. at 250, 126 N.W.2d at 247.

The court also rejected defendants' contention that the verdict should be overturned because the proof was uncertain and speculative. In fact, there was no testimony which had been presented "to a medical certainty." The court quoted from its earlier decision in Weller v. Northwest Airlines, Inc., 239 Minn. 298, 303, 58 N.W.2d 739, 742 (1953) as follows:

It is well settled that a medical expert's opinion need not be free from doubt or capable of demonstration. It is only necessary that it be in his judgment true . . . . The use of the words 'the most likely diagnosis' does not make the testimony speculative or conjectural but merely indicates the problem of all experts that although the opinion be based upon tests and methods recognized and prescribed by the medical profession, nevertheless
b. Proving Responsibility for an Injury-Causing Hazardous Substance

Once a person has demonstrated that his injury or loss is caused by a particular release, he must show that the defendant is responsible for that release. Under MERLA, establishing responsibility may be relatively simple in some cases. In other cases, for example those involving generators and transporters of the hazardous substance,\(^{139}\) proof of responsibility may be a more painstaking task.\(^{140}\) Proof of responsibility in these cases would require demonstrating that the released substance was transported to the facility by the transporter and originally generated by the generator.

Once a site is identified as the facility from which the release occurred, analyzing its contents presents barriers because of the sampling process. Because there is danger of aggravating a substance release during sampling, only a limited number of samples can be taken. These samples may not reflect the contents of the entire site, and may not always prove accurate.\(^{141}\) In addition, the site may contain substances generated by a number of firms. These firms may have hired a number of different companies to transport their chemicals to the facility. As a result, the substances described at the facility may never be traced back to the firms that generated or transported them. Sites may have been abandoned, with no record of companies responsible for the wastes deposited there. At other sites, there may have been inadequate recording of deposits.

Normally, the plaintiff has the burden of proving causation by a preponderance of the evidence.\(^{142}\) This can be difficult

\(^{139}\) See Minn. Stat. § 115B.03., subd. 1(b), (c).


when there are many possible defendants and the problem is showing which one of them is responsible for the release that actually caused the plaintiff's harm. Some courts have begun to respond to this problem by easing or shifting the plaintiff's burden of apportionment and proof "by the use of presumptions or other legal mechanisms based upon what they perceive to be 'fair.'" 143 Several theories have been advanced, including concert of action, alternative liability, enterprise liability, and market share liability. 144 These theories shift the burden of apportionment or proof to the defendants if the plaintiff has established a cause of action against each of them but is unable to show the relative degree of responsibility among them or a causal relation between his injury and a specific defendant. 145 The theories vary in three important aspects: whether they shift the burden of apportionment or proof, 146 whether all possible defendants must be joined, and the degree to which defendants must have acted in concert or agreement. 147

Under the concert of action theory, a defendant is liable if he

143. Id.
144. Id.
145. 301(e) REPORT, supra note 4, pt. 1, at 55.
146. The concept of shifting the burden of apportionment and the concept of joint and several liability have been muddled by commentators. See, e.g., id. at 54. Joint and several liability is merely the result of shifting the burden of apportionment from the plaintiff to the defendant. The theories noted in the text ease the plaintiff's proof problems and allow such burden-shifting to occur. In addition, the concept of shifting the burden of apportionment should be distinguished from the concept of shifting the burden of proof. Shifting the burden of apportionment allows the plaintiff to establish liability against each defendant, without having to prove how much at fault each defendant was. The shifting of the burden of proof, if it does occur, will happen before the shifting of apportionment or the finding of joint and several liability. Once the plaintiff has established facts which allow the shifting of the burden of proof, it is incumbent upon the defendant to prove that his actions were not responsible for the plaintiff's injury. If the defendant fails in this attempt, joint and several liability will be established and he will have the burden of apportioning responsibility between himself and his co-tortfeasors.
147. See id. at 55. Most of the cases that have employed these theories involve diethylnisilbestrol (DES). DES is a synthetic estrogen which was prescribed for 1.5 to 3 million pregnant women from 1947 to 1971, and has been linked to cancer in the daughters of the mothers who ingested the drug. Id. pt. 2, at C-19. There are enough similarities between DES and toxic tort cases to make the DES cases analogous authority. See id. In both, the injury does not appear until a significant length of time has passed. Causation problems appear in both types of cases since physiological disorders are impossible to trace with complete certainty. Finally, the identification of defendants is difficult in both types of cases due to lapse of time and loss or disposal of records. See id. pt. 2, at C-19, C-20.
harms the plaintiff while committing a tortious act in concert with others or pursuant to a common design. Alternative liability, unlike concert of action, allows a plaintiff to shift the burden of proof to several independently acting tortfeasors.

148. *Id.* pt. 1, at 56; *see* Restatement, *supra* note 79, § 876(a). Parties act in concert when they act in accordance with an agreement to cooperate in a particular line of conduct or to accomplish a particular result. *Id.* § 876(a) comment on clause (a). The agreement need not be express; it may be implied and understood to exist from the conduct itself. *Id.* A concert of action under these circumstances is a true joint tort, and once the fact of a tortfeasor's liability is established he is jointly and severally liable for the entire award. Abel v. Eli Lilly & Co., 94 Mich. App. 59, 73, 289 N.W.2d 20, 25 (1979).

The concert of action theory found favor with courts in at least two DES cases. *See* Abel, 94 Mich. App. at 72-73, 289 N.W.2d at 24-25; Bichler v. Eli Lilly & Co., 79 A.D.2d 317, 436 N.Y.S.2d 625 (1981). The *Abel* court held that plaintiff's bare allegation in her pleadings that various drug manufacturing firms had engaged in tortious concerted action through the marketing of DES was sufficient to withstand a motion for summary judgment. *Abel*, 94 Mich. App. at 72, 289 N.W.2d at 25. The *Bichler* court held that the evidence supported a jury finding that the drug manufacturer had engaged in concerted actions with other drug manufacturers. *Bichler*, 79 A.D.2d at 330, 436 N.Y.S.2d at 633. The court pointed to the manufacturers' pooling of information, agreement on the same basic chemical formula, and the adoption of the defendant's literature as a model for package inserts for joint submission to the FDA. *See* *id*.

One problem associated with applying the concert of action theory to strict liability cases is the requirement that there be acts of a tortious character in carrying the common design or plan into execution. *See* Ryan v. Eli Lilly & Co., 514 F. Supp. 1004, 1015 (D.S.C. 1981); Restatement, *supra* note 79, § 876(a) comment on clause (b). The requirement of "tortious character" is most easily satisfied when the case involves an intentional or negligent tort. Cases involving strict liability present a problem. The Restatement, in fact, takes no position on whether the concert of action theory is applicable to actions involving strict liability. Restatement, *supra* note 79, § 876 caveat. The *Bichler* court solved this problem by applying the concert of action theory to non-negligent collective action on the part of a manufacturer. *See* *Bichler*, 79 A.D.2d at 328-30, 436 N.Y.S.2d at 632-33. Its justification for doing so was that passage of time and industry practice had resulted in the plaintiff being unable to identify the specific manufacturer responsible for her injury. *Id.* at 328-29, 436 N.Y.S.2d at 632. Other courts have not followed this approach. In *Lyons v. Premo Pharmaceutical Labs, Inc.*, the Supreme Court of New Jersey, Appellate Division, stated that "[t]he purpose of [concert of action] is not so much to solve problems of identification as to deter anti-social behavior." 170 N.J. Super. 183, 193, 406 A.2d 185, 190 (1979).

Another problem is that the theory may not apply if the plaintiff fails to establish the existence of an express or tacit agreement or a common plan among manufacturers. Parallel action alone may not suffice. *See* *Ryan*, 514 F. Supp. at 1016. Consequently, the concert of action theory may be difficult to apply in hazardous waste cases. There are more manufacturers and less interaction in the chemical disposal industry than there are in the drug industry. This makes it hard to prove the tacit understanding necessary for concert of action. *See* 301(e) REPORT, *supra* note 4, pt. 2, at C-22, C-23.

149. *See* *id.* at C-23.
Its elements are: (1) tortious conduct on the part of two or more actors; (2) harm caused to the plaintiff by at least one of them; and (3) uncertainty as to which one has caused the harm.\textsuperscript{150}

Enterprise liability combines features of the alternative liability and concert of action theories.\textsuperscript{151} It applies where multiple defendants exercise actual collective control over a

\textsuperscript{150} See Restatement, supra note 79, § 433B(3). The case that established alternative liability as a viable theory of tort law was Summers v. Tice, 33 Cal. 2d 80, 199 P.2d 1 (1948). The Restatement provides a concise summary of the facts in Summers:

A and B, independently hunting quail, both negligently shoot at the same time in the direction of C. C is struck in the face by a single shot, which could have come from either gun. In C's action against A and B, each of the defendants has the burden of proving that the shot did not come from his gun, and if he does not do so is subject to liability for the harm to C. Restatement, supra note 79, § 433B(3) illustration 9. The purpose of the theory is to prevent proven wrongdoers, some or all of whom have inflicted an injury upon an innocent plaintiff, to escape liability merely because the nature of their conduct has made it impossible or difficult to prove which one of them has caused the harm. Restatement, supra note 79, § 433B(3) comment on subsection (3)f.

In Abel v. Eli Lilly & Co., the court held that the facts of the case were in conformity with the requirements of the alternative liability theory. See 94 Mich. App. at 76-77, 289 N.W.2d at 26. The plaintiff alleged that all defendants had acted wrongfully in producing and manufacturing a defective product (DES), and that each plaintiff was injured by the product of one or the other defendant. See id. at 71, 289 N.W.2d at 24. The plaintiffs' complaint also alleged that all the defendants named constituted all of the known manufacturers of DES whose products were distributed in Michigan during the relevant time period. Id. at 67, 289 N.W.2d at 22.

The main roadblock to recovery under alternative liability is the requirement that the harm must have resulted from the conduct of some one of the defendants. See Restatement, supra note 79, § 433B(3) comment 9. In Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 602-03, 607 P.2d 924, 931, 163 Cal. Rptr. 132, 139 (1980), five companies had been joined as defendants, out of approximately 200 drug companies which make DES, any of which might have manufactured the injury-producing drug. The court noted that the possibility that any of the five defendants supplied the DES to plaintiff's mother was so remote that it would be unfair to require each defendant to exonerate itself. Id.

Sindell demonstrates the limits of the use of alternative liability in the case of hazardous waste releases. The plaintiff would have to join either all the generators and transporters who dumped chemicals at the facility or all the generators who manufacture toxic chemicals. In addition, he would have to show that all acted tortiously in some respect. If one of the polluters has gone out of business, alternative liability would not be applied. 301(e) Report, supra note 4, pt. 2, at C-26. The Restatement recognizes the possibility that the requirement of joining all possible defendants might be modified due to the fact that one of the actors involved is not or cannot be joined as a defendant, or because of the effect of lapse of time, or because of substantial differences in the conduct of the actors or the risks which they have created. Restatement, supra note 79, § 433B(3) comment on subsection (3)h.

\textsuperscript{151} 301(e) Report, supra note 4, pt. 2, at C-29.
particular risk-creating product or activity. The plaintiff must prove defendants' joint awareness of the risks and their joint capacity to reduce or affect those risks.

Market share liability is a modification of the alternative lia-
bility theory. Unlike enterprise liability, it does not require the plaintiff to join all of the actors who might have caused his injury. The plaintiff must, however, join the manufacturers of a substantial share of the product which injured the plaintiff. The burden of proof is then shifted to the defendants to demonstrate that they could not have made the substance which injured the plaintiff. If they do not succeed in overcoming this burden, they will each be liable for the proportion of the judgment represented by their share of the market.

Even as these theories become more accepted elsewhere, and decentralized and there is no delegation of standard-setting to a trade association.

154. See Sindell, 26 Cal. 3d at 610-12, 607 P.2d at 936-37, 163 Cal. Rptr. at 144-45.
155. See id. The market share liability doctrine was proposed by the California Supreme Court in Sindell. From a policy standpoint, the theory was imposed because "[the] defendants are better able to bear the cost of injury resulting from the manufacture of a defective product." Id. at 612, 607 P.2d at 936, 103 Cal. Rptr. at 144.
156. See id. at 612, 607 P.2d at 937, 163 Cal. Rptr. at 145.
157. See id. In Sindell the plaintiff, a victim of cancer due to her mother's ingestion of DES, was unable to name the specific manufacturer of the DES which her mother had taken. Id. at 595-96, 607 P.2d at 926, 163 Cal. Rptr. at 134. She therefore joined 11 of the major manufacturers of the drug and sued for relief. Id. at 593, 607 P.2d at 925, 163 Cal. Rptr. at 133. She alleged that the defendants failed to warn consumers of DES' potential dangers. Id. at 594, 607 P.2d at 926, 163 Cal. Rptr. at 134.

Extension of the market-share liability theory to hazardous waste cases presents some problems. It is unlikely that the plaintiff would be able to join a substantial number of the firms in the chemical manufacturing and transporting industries because the causal connection might be too remote. Joining a substantial number of the firms who had wastes deposited at the release site would seem to be a more plausible approach and there is some authority for this. Liability under § 9607 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. §§ 9601-9657 (1982), is joint and several where the defendants caused an indivisible harm. United States v. Chem-Dyne Corp., 572 F. Supp. 802 (S.D. Ohio 1983). Perhaps due to uncertainty over whether this section does allow joint and several liability, and perhaps realizing that the plaintiff has severe problems of proof, the EPA and Justice Department have sought to obtain participation by all known contributors in the cleanup of hazardous waste sites on a roughly pro-rata basis, taking into account primarily the volume, and also the toxicity of the wastes for which each party was alleged to be responsible. This approach, however, is distinguishable from the theory of market share liability in that it apportions cleanup cost after liability has been conclusively resolved; it does not merely shift the burden of proof.

Two courts have had negative reactions to market-share liability. The court in Ryan v. Eli Lilly & Co., 514 F. Supp. 1004 (D.S.C. 1981), stated that it was a total departure from all previous rules of causation and liability and that it would represent "a rejection of 'over one hundred years of tort law which required . . . a 'matching' of defendant's conduct and plaintiff's injury' " before liability would be imposed. Id. at 1018 (quoting Sindell, 26 Cal. 3d at 616, 607 P.2d at 939, 163 Cal. Rptr. at 147 (Richardson, J., dissenting)). The court in Morton v. Abbott Laboratories, 538 F. Supp. 593 (M.D. Fla. 1982) rejected market share liability for the same reason. Id. at
they may not be accepted in Minnesota. For example, *Summers v. Tice*,\textsuperscript{158} the California case that founded the doctrine of alternative liability, has been cited only once in a Minnesota Supreme Court case.\textsuperscript{159} Minnesota does, however, recognize the joint enterprise rule. Under this rule, when one participant in a joint enterprise negligently causes an injury, while acting within the scope of the enterprise, every participant in the enterprise is liable to the injured party.\textsuperscript{160} For a joint enterprise, however, both a mutual undertaking for a common purpose and a right to a voice in the direction and control of the means used to carry out the common purpose must exist.\textsuperscript{161}

In Minnesota, the plaintiff has the burden of proving that the injury resulted from the actions of the defendant rather than from some other cause. Proof of negligence does not automatically establish that such negligence was the cause of the injury. Negligence and causation are distinct elements of a tort and both elements must be pleaded and proved.\textsuperscript{162} Proof of causation is also a necessary element in proving strict products liability; the plaintiff must show that his injury was caused by a defect in the defendant's product.\textsuperscript{163} Since Minnesota requires joint participation and control, and a causal connection between each participant and the injury, there is no present indication that Minnesota will adopt any of these theories to ease the plaintiff's burden of proving causation.

c. Summary

Despite MERLA's provision of a strict, joint and several lia-

\textsuperscript{158} 33 Cal. 2d 80, 199 P.2d 1 (1948).

\textsuperscript{159} Mathews v. Mills, 288 Minn. 16, 20-21, 178 N.W.2d 841, 844 (1970). The Mathews court cited *Summers* following a discussion of the propriety of imposing joint and several liability where two or more persons acting independently and negligently cause an indivisible injury. In *Summers*, one defendant caused the injury but joint and several liability was imposed because the defendants' conduct made it impossible for the plaintiff to prove which defendant actually injured him. *Summers*, 33 Cal. 2d at 80, 199 P.2d at 1.


\textsuperscript{161} Delgado v. Lohmar, 289 N.W.2d 479, 482 (Minn. 1979).

\textsuperscript{162} See Lyons v. SCNEI, Inc., 262 N.W.2d 169, 170 (Minn. 1978); Vanderweyst v. Langford, 303 Minn. 575, 575, 228 N.W.2d 271, 272 (1975).

\textsuperscript{163} See Worden v. Gangelhoff, 308 Minn. 252, 254-55, 241 N.W.2d 650, 651 (1976).
bility rule, the proof of causation remains a very substantial hurdle for a MERLA plaintiff to overcome. Proof of causation under common law may be even more difficult because Minnesota has not adopted the legal theories sometimes used in other states to ease the plaintiff's burden of proof. Finally, though it may be desirable to compensate victims who cannot prove who caused their injury, the traditional tort law system may be an inappropriate mechanism to achieve this goal.\textsuperscript{164}

4. Other Practical Limitations

\textit{a. Cost and Delay}

In addition to the many limitations found in the theory and application of existing rules of law, there are significant practical limitations on a victim's access to compensation. As one commentator has noted, "'Small' individual claims cannot be handled economically in the tort litigation process."\textsuperscript{165} Due to the complexities involved in proving toxic tort cases,\textsuperscript{166} the litigation tends to be extremely expensive\textsuperscript{167} in terms of both time and money.\textsuperscript{168} To prove a case, the plaintiff must often rely on highly trained expert witnesses in both medicine and science. Expert witnesses often command a high hourly fee for preparing cases and testifying, and cannot be paid on a contingent fee basis. A victim will initiate legal action only if he believes that the damage award will exceed the time, effort, and actual expenses of bringing suit.\textsuperscript{169}

Given the current judicial backlog, the legal system may be unable to deal with a plethora of claims. A single event of exposure of a large number of people to a hazardous substance release, or a large number of people who discover their latent diseases at the same time, may flood the courts' calendars.\textsuperscript{170} Complex cases usually take several years to get to trial and, if


\textsuperscript{166} Id.

\textsuperscript{167} Roisman, \textit{supra} note 164, at 5.

\textsuperscript{168} Trauberman, \textit{supra} note 9, at 189; Roisman, \textit{supra} note 164, at 5.

\textsuperscript{169} Trauberman, \textit{supra} note 9, at 189-90 & n.54.

\textsuperscript{170} Anderson, \textit{supra} note 60, at 164.
appealed, take one or two more years to be finally resolved.\textsuperscript{171} As a result, victims may have to wait to be compensated until long, drawn-out legal proceedings have ended.

Plaintiffs with small claims or who are in need of money may be forced to settle out of court for an amount far below their actual damages.\textsuperscript{172} While settlements that conserve time and money are generally desirable for all concerned, settlement negotiations result in equitable solutions only if all parties are well informed about damages and the probability of success.\textsuperscript{173} For example, a victim of hazardous substances may be unaware of the chronic effects of the chemical and may consequently negotiate a settlement based only on the harm that has manifested itself to date.\textsuperscript{174} Both parties may overestimate their chances of success and be reluctant to concede any points of negotiation.

While well-informed parties may sometimes reach equitable negotiated solutions, there is still the problem of costly litigation when negotiations fail. Indeed, high litigation costs automatically bias negotiations against the financially weaker and more risk-averse litigant, usually the plaintiff. Litigation costs can be reduced by making it easier for persons with similar claims to join together in one action.\textsuperscript{175} This can be accomplished through the use of permissive joinder of parties under the Federal and Minnesota Rules of Civil Procedure.\textsuperscript{176} Permissive joinder is often appropriate for victims of hazardous substance releases. Hazardous substances in one location may affect several individuals. The similar or identical elements of exposure may result in different types of injuries.\textsuperscript{177}

Other methods of joining plaintiffs' claims include the institution of class actions\textsuperscript{178} and the offensive use of collateral estoppel, a legal doctrine that prevents relitigation of an issue.

\textsuperscript{171} Marzulla, supra note 165, at 6.
\textsuperscript{172} Trauberman, supra note 9, at 189-90.
\textsuperscript{173} See id. at 190.
\textsuperscript{174} Id. at 190-91.
\textsuperscript{175} 301(e) REPORT, supra note 4, pt. 1, at 67.
\textsuperscript{176} See generally Fed. R. Civ. P. 20(a); Minn. R. Civ. P. 20.01.
\textsuperscript{177} 301(e) REPORT, supra note 4, pt. 1, at 67-68.
\textsuperscript{178} Marzulla, supra note 165, at 3. "A class action is a suit brought by one or more plaintiffs on behalf of a large number of others similarly situated. The action requires that there be common issues of law and fact and that the parties be so numerous as to make it impractical to join them as individuals." \textit{Id.}
already decided between the same parties. There have also been some significant efforts at voluntary coordination of tort claims, as in the formation of the Dalkon Shield Group in 1974, the DES cases, actions against Chevrolet for motor mount failure, and the MER/29 drug cases.

MERLA attempts to ease the litigation costs of parties involved in toxic tort cases in section 115B.14. It states, "Upon motion of a party prevailing in an action under sections 115B.01 to 115B.15 the court may award costs, disbursements and reasonable attorney fees and witness fees to that party." Of course, this fee-shifting is only available after litigation and does little to help finance the costs of preparing for and conducting the litigation.

Toxic tort victims can alleviate problems of time and cost if they make use of permissive joinder and if they are awarded costs under section 115B.14. All plaintiffs, however, may not benefit. Some plaintiffs may not wish to join, preferring to rely on their own counsel for legal expertise. They may believe that they have a better chance of being fully compensated if they sue individually. Furthermore, in the case of latent injuries, injured parties may have moved from the area of the release, making it difficult for a plaintiff to locate prospective joint plaintiffs. In addition, two things must be remembered about section 115B.14: (1) it is discretionary—a court does not have to award costs; and (2) if the plaintiff loses, the court may award costs to the defendant. This could deter a plaintiff from bringing suit. In fact, such cost awards are rare, but section 115B.14’s language allows a court to award costs to one party even where the other party has not acted in bad faith. This represents an extension of the court’s preexisting power.

In sum, despite the mechanisms available to plaintiffs for sharing or recovering litigation costs, the cost problem re-
mains a substantial impediment to compensation for victims of hazardous substance exposure.

b. Insolvent Defendants

Another factor which must be considered is the system's possible effects on defendants. The costs of defending hazardous waste lawsuits are likely to be quite high due to the complexity of the subject matter, and the need for sophisticated scientific data and support by experts' testimony. In addition, once causation is established in a toxic tort case, defendants may face extremely high damage awards. In one asbestos-employee injury case, a $13 million single injury award was handed down against a relatively small company. The cases against Johns-Manville Corporation provide another example. Johns-Manville, the nation's largest asbestos manufacturer, declared bankruptcy in anticipation of a large number of lawsuits by Manville workers stemming from their handling of asbestos materials.

Few firms can handle this type of loss. One way to assure that victims will be compensated is to require financial responsibility for those who run hazardous waste disposal sites. The Resource Conservation and Recovery Act of 1976 (RCRA) requires the EPA to establish financial standards for owners and operators of hazardous waste treatment, storage, or disposal facilities. Acting under this authority, the EPA has issued regulations requiring owners or operators of such facilities to maintain liability insurance for injury or damage to third par-

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183. See Anderson, supra note 60, at 170-71.
184. See Trauberman, supra note 9, at 191 n.63; cf. Barsky, supra note 140, at 35-37.
185. See Trauberman, supra note 9, at 191 n.63 (noting Mehaffy, Asbestos-Related Lung Disease, 16 Forum 341, 348 (1980)).
186. Johns-Manville earned $60.3 million on its sales in 1981, enabling it to rank 181st on the Fortune 500 list of America's largest corporations. Anderson, supra note 60, at 167. Since 1968, Manville has been the defendant in 200,000 lawsuits and has paid out $50 million in claims. A consulting firm advised Manville that it could expect 50,000 more lawsuits. Manville estimated that each claim would cost $40,000 to handle and that the anticipated lawsuits would eventually cost the company over $2 billion. See id.; Trauberman, supra note 9, at 191 n.63.
Insurance for "sudden and accidental occurrences" must be maintained in the amount of at least $1 million per occurrence with a $2 million annual aggregate. In addition, owners or operators of facilities must maintain liability insurance for non-sudden occurrences in the amount of at least $3 million per occurrence with a $6 million annual aggregate, exclusive of legal defense costs. Furthermore, the Minnesota Pollution Control Agency has promulgated rules requiring liability coverage for owners or operators of hazardous waste treatment, disposal, or storage facilities.

A variety of insurance policies are available to cover personal and property damage caused by the release of pollutants or hazardous substances into the environment. Traditionally, companies have carried a Comprehensive General Liability (CGL) policy, which provides coverage for "sudden and accidental" pollution on an occurrence basis. While this type of coverage will apply to liability arising out of a spill or other similar event, problems arise when the effects are not known until years after the event, or where there is gradual seeping. Some courts have recently stretched the scope of sudden and accidental insurance coverage to include injuries which have not become apparent until long after the occurrence. These cases have prompted many insurers to stop writing pollution liability coverage on an occurrence basis. Instead, insurers are writing environmental insurance coverage on a claims-made basis. Under a claims-made policy, coverage extends to any claims made for injuries resulting from releases where the claims are presented to the insured during the period of coverage.

Insurance companies have recently begun offering high-limit

191. 40 C.F.R. §§ 264.147(a), (b) (1982); see Hall, supra note 142, at 615.
195. See Hall, supra note 142, at 618.
coverage for "nonsudden or gradual" pollution under Environmental/Impairment Liability (EIL) policies, which are also claims-made policies.\textsuperscript{196} These policies contain various liability limits\textsuperscript{197} which apply once to each pollution incident regardless of the number of separate claims from that incident.\textsuperscript{198} The Pollution Liability Insurance Association, a group of thirty-seven companies constituting a reinsurance pool, offers a new policy for companies offering coverage for sudden and non-sudden incidents under a single claims-made form. The basic coverage is available up to $5 million per site although higher express limits may be obtained.\textsuperscript{199}

These policies appear to be adequate to deal with common law liability for releases causing environmental damage. Large companies have obtained environmental claims-made insurance coverage that exceeds $100 million.\textsuperscript{200} Even this kind of insurance, however, may not be a complete panacea. Though the policy may allow coverage to be initiated from a retroactive date, it may not extend back to cover a release which occurred many years ago. The policy may contain other significant limitations. For example, the EIL form commonly states that coverage applies only to specifically named sites. Also frequently excluded from coverage are items such as damages caused by sudden and accidental happenings, liability due to genetic damage, damages assessed under the concept of joint and several liability, and damages due to releases from a closed or abandoned site.\textsuperscript{201} Finally, though the EPA may require owners and operators of facilities to obtain liability insurance,

\textsuperscript{196} Id.
\textsuperscript{197} See Stewart, \textit{Environmental Impairment Liability Insurance Availability and Cost in HAZARDOUS WASTE REGULATION AND LIABILITY} 351, 353 (Advanced Legal Education, Hamline University School of Law 1983). The premium cost for EIL varies widely depending upon the nature of the business, the size of the firm, the number of sites that contain toxic chemicals that the firm is responsible for, and the firm's past and present waste management practices. Premiums vary significantly between insurance companies due to the lack of actuarial data and the highly judgmental nature of most rate schemes that are used to establish premiums. \textit{Id.} at 355. "Environmental impairment" is defined as the "emission, discharge, dispersal, disposal, seepage, release or escape of any liquid, solid, gaseous or thermal irritant, contaminant or pollutant into or upon land, the atmosphere or any watercourse or body of water." \textit{Id.} at 355.
\textsuperscript{198} Id. at 356.
\textsuperscript{199} \textit{Hall}, supra note 142, at 618-19.
\textsuperscript{200} Id. at 619.
\textsuperscript{201} See Stewart, supra note 197, at 355-58.
there is no requirement that generators or transporters maintain the insurance.

The potentially enormous costs that may result to defendants from hazardous substance personal injury claims can exceed a defendant's ability to pay. The result is bankrupt defendants and uncompensated plaintiffs. Insurance can help alleviate this potential problem, but policy limitations may exclude some releases from coverage. Insolvency of defendants may thus continue to be a major problem for injured parties.

B. Alternatives to MERLA

Some plaintiffs will not sue under MERLA either because its statutory provisions foreclose their suit or because they feel a different remedy would be easier to obtain. For example, a plaintiff's suit may be precluded by MERLA's provisions limiting retroactive liability or recovery may be limited by MERLA's ceiling on joint and several liability. MERLA expressly allows toxic tort victims to seek other avenues of redress in section 115B.12. Those victims who do so will find that these other remedies are greatly limited in their usefulness.

1. Other Statutory Remedies

Several federal environmental statutes provide for civil or criminal actions for violations set forth in the statutes or regulations. However, statutory provisions for the recovery of damages by private plaintiffs are rare. Six federal statutes have a significant impact on hazardous waste disposal; none expressly provide for compensation to hazardous waste victims for personal injury or damage. Five of the statutes provide a private citizen with the right to sue for enforcement of the stat-

202. MINN. STAT. §§ 115B.06, .09; see Whitehead & Christenson, supra note 128, at 263.


204. See 301(e) REPORT, supra note 4, pt. 1, at 72.

utes' provisions. The Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) does provide a remedy for private citizens for certain property damages, but it has no mechanism to enable a private individual to trigger action by the EPA.

The Federal Tort Claims Act may provide the basis for claims against the federal government for tortious acts of its employees or agents. This may be useful where the federal government owns or operates a disposal site.

The Minnesota Environmental Rights Law provides a civil remedy for private citizens. It allows private citizens to bring civil actions in the name of the state for declaratory or equitable relief against any person for the protection of publicly or privately owned natural resources located within the state. However, it has no provision for the recovery of property or personal injury damages.

Minnesota also has a Tort Claims Act, which could provide the basis for tort claims against the state, and a Municipal Tort Liability Act, which provides for tort claims against local units of government. Of course some basis for the state or local unit's liability, such as negligent operation of a disposal facility, has to be found. As noted above, there is an upper

206. See Note, supra note 91, at 952.
208. See 42 U.S.C. §§ 9601-9657 (1982). Section 9607 of CERCLA does allow a private party who incurred cleanup or remedial costs to recover them from any responsible party. See id.
209. 28 U.S.C. §§ 1346(b), 1402, 2401, 2671-2680 (1982). There must be a negligent or wrongful act or omission. The FTCA compensates for injury or loss of property, or personal injury or death caused by the negligent or wrongful act or omission of any government employee acting within the scope of his office. Id. § 1346(b); see Allen v. United States, 588 F. Supp. 247, 337 (D. Utah 1984) (in action to recover for cancer and leukemia caused by emission of nuclear fallout in Atomic Energy Commission testing, the jurisdictional standard requires action by an employee which falls below the standard of "due care" in executing a statute or regulation). So it would appear that strict liability-based claims cannot be brought against the United States.
211. See id. § 116B.03.
212. Id. § 3.736.
213. Id. § 466.01-.15.
limit on the liability of local units of government under MERLA, but, there is no limit on the state’s liability.

2. Implied Private Remedies

Even if a statute does not explicitly create a private right of action for personal injury due to hazardous substance releases, a plaintiff may claim that a private right of action is implied.\(^{214}\) Over one hundred years of legal precedent support the concept of an implied right of private action arising out of a statutory provision.\(^ {215}\)

In the case of *Cort v. Ash*,\(^ {216}\) the Supreme Court listed the necessary criteria for a private cause of action to arise out of a federal statute.\(^ {217}\) The Court enumerated four factors relevant to determining whether a private right of action should be implied: whether the claimant is a member of the class protected by the statute; whether the act’s legislative history indicates an intention to either create or deny a private remedy; whether implying a private remedy is consistent with the act’s purpose; and whether the cause of action is one relegated to state law.\(^ {218}\)

Subsequent Supreme Court cases have narrowed the impact of *Cort*’s four factor test\(^ {219}\) and have declined to give equal weight to each of the four factors, making it more difficult to find a private right of action implied in federal statutes.

For example, in *California v. Sierra Club*\(^ {220}\) an environmental organization and two private citizens sought to enjoin the construction and operation of certain water diversion facilities which would allegedly degrade water quality in a delta, in violation of section 310 of the Rivers and Harbors Appropriations Act of 1899.\(^ {221}\) Section 310 prohibits “[t]he creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States . . .”\(^ {222}\) No provision was made, however, for private en-

\(^{214}\) See 301(e) REPORT, supra note 4, pt. 1, at 85.

\(^{215}\) See Comment, supra note 50, at 740.

\(^{216}\) 422 U.S. 66 (1975).

\(^{217}\) See id. at 78; 301(e) REPORT, supra note 4, pt. 1, at 86.

\(^{218}\) See Cort, 422 U.S. at 78.

\(^{219}\) See 301(e) REPORT, supra note 4, pt. 1, at 85-88.


\(^{221}\) 33 U.S.C. § 403 (1982); see Sierra Club, 451 U.S. at 290-92; see also 301(e) REPORT, supra note 4, pt. 1, at 86-87.

The Supreme Court said that "the ultimate issue is whether Congress intended to create a private right of action . . . ." The Court indicated that the four Cort factors were the criteria for determining this issue, but that they are not entitled to equal weight. The Court focused on congressional intent, saying that the inquiry is no longer "simply who would benefit from the Act, but whether Congress intended to confer federal rights upon those beneficiaries." This approach looks to the legislative history for indications of congressional intent to either create or deny a certain remedy. If there is neither evidence that Congress intended to benefit a particular class, nor evidence that it intended to create a private remedy, then no private right of action exists.

The legislative history of the Rivers and Harbors Act provided "no indication of congressional intent to either imply or deny a remedy for the private litigant." Silence in the legislative history may demonstrate congressional intent not to create the remedy, or it may demonstrate "congressional acquiescence" in the continuance of a private right of action that existed prior to the statute's enactment.

More recently, in Middlesex County Sewerage Authority v. National Sea Clammers Association, the Supreme Court again refused to recognize an implied right of action under an environmental statute. The National Sea Clammers Association brought an action for damages pursuant to the Federal Water Pollution Control Act and the Marine Protection and Sanctuaries Act, seeking recovery for the discharge of sew-

223. See id.
224. Sierra Club, 451 U.S. at 293.
225. See id. at 297.
226. Id. at 294.
227. See id. at 293-98; see also 301(e) REPORT, supra note 4, pt. 1, at 87.
228. Sierra Club, 451 U.S. at 294-98. The latter two Cort factors, consistency with the legislative scheme and relegation to state remedies, "are only of relevance if the first two factors give indication of congressional intent to create the remedy." Id. at 298.
229. See Comment, supra note 50, at 741.
230. Id. at 741-42 (citing Transamerica Mortgage Advisors, Inc. v. Lewis, 444 U.S. 11, 18 (1979)).
231. Id. at 742 (citing Canon v. University of Chicago, 441 U.S. 677, 702-03 (1979)).
233. Id. at 22; see also Comment, supra note 50, at 742.
235. Id. §§ 1401-1445 (1982).
age that had resulted in the destruction of an enormous amount of marine life.236 The Court held that the plaintiffs were not entitled to a private remedy under the acts, emphasizing the comprehensive enforcement provisions, including citizen suit provisions, contained within each act. In view of the acts' comprehensive enforcement provisions, the Court concluded that it could not assume that Congress intended that additional remedies be available to private litigants suing under the acts.237

Most recently, in Merrill Lynch, Pierce, Fenner & Smith v. Curran,238 the Supreme Court seemed to relax its analysis of congressional intent when determining whether a cause of action should be implied under a federal law. In this case, the Court held that private parties may maintain an action for damages caused by a violation of the Commodity Exchange Act.239 The Court reasoned that Congress intended to grant private litigants a remedy under the Commodity Exchange Act when it amended the statute in 1974.240 Its basis for finding intent was Congress' failure to indicate that the private remedy did not exist in the face of prior case law which held that an implied cause of action did exist under the Act.241 Previous case law had consistently recognized an implied cause of action.242 It did not matter that this interpretation was supplanted by later case law. In the Court's opinion, "it [was] abundantly clear that an implied cause of action existed under the [Act and] was a part of the 'contemporary legal context' in which Congress legislated in 1974."243 Thus, Congress intended to preserve the preexisting remedy.244 In the Court's opinion, this obviated the need to apply the four factor test for determining intent.245 Since Merrill Lynch, the Supreme Court has decided a number of additional implied cause of action cases in which the basic analytical approach appears to be the one used in Sea Clammers and Merrill Lynch: to determine whether Congress in

236. 453 U.S. at 4-5; see also Comment, supra note 50, at 742.
237. 301(e) REPORT, supra note 4, pt. 2, at F5-F7.
240. Merrill Lynch, 456 U.S. at 381-82.
241. See id.
242. Id. at 379.
243. Id. at 381.
244. Id. at 381-82.
245. See id. at 388.
passing a given act intended, by implication, that a private right of action be available. 246

Merrill Lynch might seem favorable for a claimant who seeks to establish an implied cause of action, but it should be noted that the Court's holding was limited to specific factual circumstances. Those factual circumstances are found where preexisting case law has determined that an implied right exists, and where Congress has reexamined and amended a statute without noting the existence of such case law.

Many federal environmental statutes contain comprehensive enforcement provisions which are often supplemented by provisions for citizen suits. In the wake of the Sea Clammers case and in view of the narrow scope of the reasoning in Merrill Lynch, plaintiffs seeking private relief for the violation of federal environmental statutes are not likely to prevail on an implied cause of action theory. 247 The Resource Conservation and Recovery Act, for example, contains a provision for citizen suits against the government for failure to perform a non-discretionary duty under the Act, or against a private party for violation of the Act. 248 This language strongly suggests that the citizen's suit is limited to declaratory or injunctive relief, and does not provide the basis for a private action for damages. 249 In addition, language in the Act suggests that it was enacted to provide for the health and environment of the nation in general, rather than a particular class of people. 250

CERCLA may or may not present a different story. Like other environmental statutes, the Act provides for elaborate enforcement mechanisms. 251 These enforcement mechanisms, however, are currently available only to the government. 252 Also, unlike other statutes, CERCLA has no mechanisms to enable the private individual to trigger action by the EPA. 253 One commentator has suggested that CERCLA addresses vic-

247. 301(e) REPORT, supra note 4, pt. 2, at F6-F7.
249. Id.
251. See Comment, supra note 50, at 744.
253. See Comment, supra note 50, at 744.
tims exposed to hazardous substances as a class.\textsuperscript{254} Then again, the Act's provisions taken as a whole suggest that they are intended to protect the national health and environment.\textsuperscript{255} Thus, the possibility of an implied remedy existing under CERCLA is uncertain.

The availability of implied remedies under Minnesota regulatory statutes is also uncertain. The Minnesota Environmental Rights Law may influence the result. In deciding whether to imply a private remedy for violation of legislative enactments, the Minnesota courts would initially seek to ascertain legislative intent. If no specific legislative intent is ascertained, the court would usually examine the policy underlying the statute or the legislature's purpose in enacting it.\textsuperscript{256} Minnesota's express provision of a civil suit mechanism in section 116B.03 of the Environmental Rights Law is perhaps an indication that the legislature intended that no implied causes of action under other statutes be available. The express purpose of the statute, however, is to protect the natural resources of the state; not to protect the private citizen from the health effects of hazardous substance releases.\textsuperscript{257} That in turn indicates that the Environmental Rights Law is not meant to preclude the availability of any personal injury or damages cause of action, either express or implied.

3. Common Law Remedies
   \textit{a. Trespass}

Trespass is defined as unlawful, negligent, or intentional interference with another's possessory interest in land.\textsuperscript{258} It is not, therefore, a theory of liability which anticipates personal injury claims. Trespass may result from invasion by escaping waters and other substances onto adjoining lands.\textsuperscript{259} The trespass cause of action has been used in a few cases in other juris-

\textsuperscript{254} See \textit{id.} at 743-44.
\textsuperscript{256} \textit{301(e) REPORT}, \textit{supra} note 4, pt. 2, at F-9.
\textsuperscript{257} See \textit{MINN. STAT.} § 116B.01.
\textsuperscript{258} See All American Foods, Inc. v. County of Aitkin, 266 N.W.2d 704, 705 (Minn. 1978).
\textsuperscript{259} See Wilson v. Ramacher, 352 N.W.2d 389 (Minn. 1984); Bridgeman-Russell Co. v. City of Duluth, 158 Minn. 509, 510, 512, 197 N.W. 971, 972 (1924) (overruling of demurrer to complaint upheld on appeal where municipality was sued for property damages caused by water escaping through 20-inch water main which extended through center of city).
dictions where the released substance was hazardous and caused injury.\textsuperscript{260}

Other than in these few cases, trespass has rarely been used as a cause of action for property damage caused by pollutants\textsuperscript{261} due to a number of obstacles to recovery encountered with this cause of action.\textsuperscript{262} In practice many courts treat the trespass cause of action as either negligence or strict liability,\textsuperscript{263} thus exposing plaintiffs to the limitations of those causes of action.\textsuperscript{264} In addition, while a defendant may be able to claim contribution from a co-trespasser,\textsuperscript{265} such co-trespassers would often not include generators of hazardous substances due to the fact that the generators' acts would be too remote from the actual trespass.\textsuperscript{266} Finally, while the Minnesota statute of limitations for trespass is six years,\textsuperscript{267} judging from the language of the statute, it probably begins to run when the acts constituting the trespass occur rather than upon discovery of the trespass.\textsuperscript{268}

b. Nuisance

A nuisance is an unreasonable interference with the plaintiff's use and enjoyment of his property.\textsuperscript{269} The elements of nuisance are threefold: (1) significant harm must result from


\textsuperscript{261} See infra notes 267-72 and accompanying text.

\textsuperscript{262} See supra note 4, pt. 2, at I-1.

\textsuperscript{263} See 301(e) REPORT, supra note 4, pt. 2, at I-3.

\textsuperscript{264} See infra text accompanying notes 273-99.

\textsuperscript{265} See Restatement, supra note 79, § 165.


\textsuperscript{267} See MINN. STAT. § 541.05(3) (1984).

\textsuperscript{268} See id.

\textsuperscript{269} MINN. STAT. § 561.01 defines as a nuisance:

Anything which is injurious to health, or indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property, is a nuisance. An action may be brought by any person whose property is injuriously affected or whose personal enjoyment is lessened by the nuisance, and by the judgment the nuisance may be enjoined or abated, as well as damages recovered.

\textit{Id.} § 561.01 (1984).
an invasion of the plaintiff's legal interest in preserving his health and free use of his property; (2) the defendant's conduct must be the cause of the plaintiff's injury; and (3) the invasion of the plaintiff's rights must be intentional and unreasonable or unintentional and otherwise actionable. The maintenance of a contaminated hazardous waste site may fit the description of a nuisance because the threat of personal discomfort or disease interferes with use and enjoyment of property. It has been held that contamination of ground-water used for industrial purposes is a nuisance. The Minnesota Supreme Court has also held that the drainage of creamery and other wastes onto another's land is a nuisance. This cause of action, however, has several limitations.

Only persons with an interest in real property can recover except in those very limited circumstances in which a private party can sue for a public nuisance. The resolution of nuisance cases requires a balancing of the equities: a weighing of the plaintiff's interest against the social and economic utility of the defendant's activities that cause the interference. The production of goods or services which generate hazardous wastes may or may not be socially desirable. In some cases, those goods or services meet a substantial need, and the interference with a plaintiff's use and enjoyment of property caused by the resulting hazardous wastes may not be considered unreasonable, thus adding to the difficulty of a nuisance claim. The very substantial and growing concern about hazardous substances and the growing belief that land disposal of these substances may be unnecessary, however, could mean that a hazardous waste disposal site may not be considered as having a very high utility. When balanced against the interference with a plaintiff's interest, particularly his interest in protecting his health, hazardous substance disposal could be considered a nuisance.

In Minnesota, defendants causing an indivisible injury through their negligence are jointly and severally liable for the

270. See Randall v. City of Excelsior, 258 Minn. 81, 103 N.W.2d 131 (1960).
271. See 301(e) REPORT, supra note 4, pt. 1, at 90; see Highview N. Apartments v. County of Ramsey, 323 N.W.2d 65, 71 (Minn. 1982).
272. See Berger v. Minneapolis Gaslight Co., 60 Minn. 296, 62 N.W. 336 (1895).
273. See Herrmann v. Larson, 214 Minn. 46, 7 N.W.2d 330 (1943).
274. 301(e) REPORT, supra note 4, pt. 1, at 106.
entire award, even if they did not act in concert.\textsuperscript{275} Thus, if several generators independently dispose of hazardous substances at a single site, causing a single indivisible injury, liability for resulting injuries would be joint and several.

c. Negligence

A cause of action for negligence could arise out of the improper disposal of hazardous wastes, improper transportation of such wastes, negligent spills, the negligent causation of hazardous waste surface runoff, or the negligent contamination of subsurface water. Negligence, however, deals with conduct, not with conditions. The defendant must be at fault, that is, charged with having done some act or failing to do some act which he had a duty to undertake, in a manner which violates a standard of care.\textsuperscript{276}

The use of negligence as a cause of action may be difficult where the improper act of disposal took place many years ago, because evidence may be difficult to produce. It may be difficult to prove that there was a known risk and that the disposer was aware of the risk. In order to demonstrate proximate cause, the plaintiff will have to produce evidence of a faulty instrumentality or an inadequate method of disposal, and evidence of a defendant's control of the instrumentality or method employed.\textsuperscript{277}

d. Common Law Strict Liability

When using a strict liability cause of action, a plaintiff will have to demonstrate something inherent in the nature of the defendant's injury-producing activity that justifies the placement of liability without fault upon the defendant for damages caused by the activity. There are differing standards as to what characteristics make an activity a candidate for strict liability. These standards include a non-natural use of land, an ultrahazardous activity, an abnormally dangerous activity, and strict products liability. Indeed, it is probably more accurate to view the various liability tests as separate theories of liability.

Strict liability for a non-natural use of land found its begin-

\textsuperscript{275} Ruberg v. Skelly Oil Co., 297 N.W.2d 746, 752 (Minn. 1980); Matthews v. Mills, 288 Minn. 16, 22-23, 178 N.W.2d 841, 845-46 (1970).

\textsuperscript{276} 301(e) REPORT, supra note 4, pt. 1, at 97.

\textsuperscript{277} Id. at 99.
nings in the English case of *Rylands v. Fletcher*. Under this principle, courts determine whether an activity is "natural" by considering its appropriateness in its location. Specific criteria that courts look to are the character of the thing or activity, the place and manner in which it is maintained, and its relation to its surroundings. The doctrine of strict liability for engaging in an ultrahazardous activity is taken from section 520 of the first Restatement of Torts. The standard of "abnormally dangerous" is taken from sections 519 and 520 of the Second Restatement of Torts and strict products liability theory is founded on section 402A.

The *Rylands v. Fletcher* test and the "abnormally dangerous" test of the Second Restatement are both balancing tests. They consider the appropriateness of the activity in the particular surroundings and involve a weighing of competing interests. The "ultrahazardous activity" test, however, does not balance opposing interests; it focuses mainly on the inherent dangerousness of the activity itself. Multifactor balancing tests like those of *Rylands* and section 520 of the Second Restatement encourage courts to approach the question of strict liability on a case-by-case basis, thereby complicating and prolonging litigation. The use of balancing also encourages courts to inject notions of due care or fault into the analysis, making strict liability seem more like negligence. This mode of analysis subjects strict liability plaintiffs to the same types of problems encountered by negligence plaintiffs. Thus, the "ultrahazardous activity" test is the test most favorable to toxic tort plaintiffs.

The difficulty of showing that any one activity is abnormally dangerous was shown in the case of *Ferguson v. Northern States Power Co.* In *Ferguson*, the Minnesota Supreme Court declined to hold that the transmission of high-voltage electricity

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279. 301(e) REPORT, supra note 4, pt. 1, at 114.
280. Id. at 115.
281. RESTATEMENT OF TORTS § 520 (1938).
282. RESTATEMENT, supra note 79, § 520.
283. Id. § 402A.
284. 301(e) REPORT, supra note 4, pt. 1, at 115, 119.
285. Id. at 116-17.
286. Id. at 120-21.
287. 307 Minn. 26, 239 N.W.2d 190 (1976).
was an abnormally dangerous activity, even though recognizing that the activity was highly dangerous and presented the risk of unusually serious harm.\textsuperscript{288} The court was persuaded by the severe economic consequences which could be sustained by small electric utilities through the imposition of strict liability.\textsuperscript{289} Like the transmission of electricity, the generation, transportation, and disposal of hazardous substances presents danger and the risk of serious harm. Imposing strict liability on generators, transporters, and disposers could subject such actors to severe economic consequences, like bankruptcy, due to the possibility of high damage awards. Thus, the Minnesota Supreme Court may refuse to impose strict liability for the same reasons mentioned in \textit{Ferguson}.

Quite recently, in a somewhat similar case, the court refused to impose strict liability on a natural gas company for damages resulting from a leak in a gas main located in a public street and a consequent explosion. The court recognized that the risk from escaping natural gas is great and that this risk is highly dangerous to persons and property. The court nevertheless refused to impose strict liability, primarily because the gas lines were not under the exclusive control of the gas company.\textsuperscript{290}

Personal injury caused by exposure to a hazardous substance in a defective consumer product would presumably be the basis for a traditional \textsection{402A} products liability claim.\textsuperscript{291} However, injury caused by release of such a substance from a hazardous waste site is unlikely to fit within the products liability theory. A person injured in this way is not a product user or consumer and the manufacturer or seller of the hazardous substance could not generally anticipate such harm from the manufacture or sale of his product. This would be particularly true where, as would often be the case, the product undergoes substantial change by the time it is disposed of as waste.

It is not at all clear which, if any, of the strict liability theories the Minnesota Supreme Court has adopted. The court specifi-

\textsuperscript{288} \textit{Id.} at 31-32, 239 N.W.2d at 193-94.
\textsuperscript{289} See \textit{id}.
cally mentioned the "abnormally dangerous" test to the exclusion of the other tests in three recent cases\(^{292}\) and has discussed and analyzed the "ultrahazardous" test only once.\(^{293}\) In its most recent discussion of strict liability theory, however, the court appeared to reject the "abnormally dangerous" test.\(^{294}\) In response to plaintiff's argument for application of that test, the court concluded that "our attention [has not] been directed to any . . . case where we did apply" the abnormally dangerous test.\(^{295}\) The court discussed but did not apply the *Rylands v. Fletcher* test.\(^{296}\)

In the first case tried in which claims based on MERLA arose, however, the district court found as a matter of law that both the *Rylands v. Fletcher* and abnormally dangerous activity theories were applicable.\(^{297}\) The court also considered, but did not submit to the jury, an "environmental tort" theory of liability: a doctrine imposing strict liability for injury or harm resulting from the manufacture, storage, or disposal of hazardous or toxic chemical wastes. Though this case did not involve any personal injury claims, the court's rationale, set out in a lengthy and thorough set of findings, conclusions, and a memorandum, would apply as readily in such a case.\(^{298}\)

The apparent confusion on the part of the Minnesota Supreme Court as to the circumstances giving rise to strict liability makes the availability of any of these common law causes of action to toxic substance victims rather speculative. Of course, MERLA establishes strict liability as the basis of its cause of action but in cases where MERLA does not apply, the availability of strict liability as a matter of common law is an open question. Section 115B.06 of MERLA, which amounts to a limitation on MERLA's strict liability cause of action, provides that if the defendant can show that the plaintiff's damages were caused by the release of a hazardous substance that was placed in a facility "wholly before January 1, 1973," it is a


\(^{293}\) See *Cairl v. City of St. Paul*, 268 N.W.2d 908 (Minn. 1978).

\(^{294}\) *Mahowald*, 344 N.W.2d 856.

\(^{295}\) Id. at 861.

\(^{296}\) Id.

\(^{297}\) See *State ex rel Boise Cascade Corp. v. Onan Corp.*, No. B-46882, Anoka County Dist. Ct. (Hon. Daniel M. Kammeyer).

\(^{298}\) See id.
defense to liability under section 115B.05 that the activity by which the hazardous substance came to be located in the place from which it was released "was not an abnormally dangerous activity." This language suggests that the legislature believes that the proper test for strict liability arising, not under MERLA's provision (§ 115B.05) but as a matter of common law, is the abnormally dangerous test from section 520 of the Second Restatement of Torts. On the other hand, this language in section 115B.06(2) may be viewed as a separate statutory cause of action for injuries caused by a certain category of hazardous substance releases (those occurring wholly before January 1, 1973) which incorporates the abnormally dangerous standard and leaves to the court the determination of whether the activity giving rise to injury in the case at hand was abnormally dangerous. Many hazardous substance releases seem more like the classic Rylands case of escape of a dangerous instrumentality than does transmission of electricity, which was the act involved in Ferguson. Perhaps this greater similarity could persuade the Minnesota Supreme Court to make that strict liability cause of action available as a matter of common law in circumstances where the MERLA cause of action is not available. Finally, the environmental tort theory of liability recognized by one district court could be adopted by the Supreme Court as well.

4. Non-law Remedies: Insurance

A non-law remedy worth brief mention is the availability of insurance coverage for injury and damages occurring as a result of hazardous substance exposure. This coverage basically falls into two categories, direct and indirect coverage. Direct coverage refers to the situation in which the injured or damaged party is the named insured beneficiary of some insurance policy. This policy may be private insurance provided by the injured party himself, his family or his employer, or may be public insurance such as Social Security Disability or Medicare or Medicaid coverage. A person insured in this way may be compensated for personal injuries suffered as a result of exposure to hazardous substances up to the limits of the policy's coverage. Indirect insurance refers to the situation in which the party causing the injury is insured and the person suffering the injury obtains some right or agreement to compensation from the insured party, which compensation is then paid by the
insurer. 299

Regardless of the source of insurance coverage, for those persons injured or suffering damage as a result of exposure to hazardous substances there will be many variations in the availability of insurance coverage. Even for those that are insured, there are many variations in the extent of insurance coverage both with respect to the types of injuries or damages covered and dollar limitations in the forms of deductible amounts or maximum liability limits in the insurance policy. Even for those persons who may be covered for health effects damages resulting from hazardous substance exposure, there is little likelihood that their insurance would cover property damage problems such as the provision of a new drinking water supply.

It is perhaps effectively impossible to determine precisely which Minnesotans are covered by insurance of some kind either directly or indirectly and, if covered, what compensation limitations that insurance coverage may entail. A recent study indicates that between eight and nine percent of adult Americans are uninsured. 300 It is certain, however, that the many variations in both the availability and extent of insurance coverage do not represent an effective existing compensation mechanism for a person suffering personal injury or other losses due to exposure to hazardous substances.

C. Summary

The common law remedies that predated the passage of MERLA in 1983 are collectively an inefficient and ineffective mechanism for responding to injuries and losses occurring as a result of exposure to hazardous substances. The problems with these causes of action make recovery for toxics-injured victims especially difficult. Some of these common law theories may not even be available to a toxics-injured victim. Indeed, the creation of a statutory strict liability cause of action in MERLA is a legislative confirmation of the inadequacies of common law rights and remedies.

Implied private rights of action under the various federal hazardous substance regulatory programs are very unlikely to be available in light of the United States Supreme Court’s recent analysis and conclusions on the implied rights question.

299. See supra text accompanying notes 177-91.
No existing statutory remedies, except section 115B.05 of MERLA, are designed to respond to the personal injury problem.

Private and public insurance are no guarantee of adequate compensation, especially for the most needy who are least able to afford health and life insurance.

MERLA’s strict liability cause of action was created essentially as a response to these inadequacies. MERLA’s response is clearly a step in the right direction. By making it clear that liability is strict, the large and potentially insurmountable hurdle of having to show a defendant’s fault, especially for past actions where evidence of the defendant’s conduct may no longer exist and the applicable standard of care may have been much lower than it would now be, is eliminated. The causation provision demonstrates the legislature’s concern about this difficult barrier to recovery for injured persons but the provision is unlikely to alleviate that problem.

Even under MERLA, however, a number of potential problems for the victims of hazardous substance exposure remain. To begin with, not all toxic and hazardous substances which might cause human injury are covered by MERLA nor are all releases of those substances subject to MERLA’s liability provisions. Not all damages which may result from hazardous substance exposure may be recoverable under MERLA because of the limits on joint and several and retroactive liability. There may be a cap on recovery of damages, such as the liability limit of political subdivisions or the liability limit for any jointly liable defendant who can apportion his liability under the Comparative Fault Act. A further important limitation is the retroactivity limit in MERLA. For releases occurring wholly before July 1, 1983, or deposits wholly before 1960, MERLA’s strict liability is not available. These limitations may be perfectly sensible for private lawsuit purposes. Indeed, they are in the Act as the result of a considerable amount of legislative consideration. But they restrict the availability of full compensation for all victims.

More importantly, while MERLA may somewhat reduce the single most substantial hurdle faced by victims of hazardous substance exposure—to prove, in a costly and complicated lawsuit, the specific cause of their injury—proof of causation
remains a substantial hurdle. The substantial costs of litigation remain unchanged by the creation of MERLA's cause of action.

When all available legal remedies are assessed, it is clear that a person injured by exposure to a hazardous substance can, for many reasons, be barred from access to any of those remedies. No non-legal compensation mechanism reliably fills the gap represented by those who remain uncompensated or undercompensated. One must therefore conclude that existing remedies and compensation systems are inadequate and, when combined with the potential number of persons who may be injured in this way, further conclude that something needs to be done as a matter of sound public policy.

III. A Victim Compensation Program for Minnesota

All of the significant studies\(^\text{301}\) which have addressed the problem of personal injury due to hazardous substance exposure have reached essentially the same conclusion: present laws and other compensation mechanisms are an inadequate response to personal injuries in the hazardous substances context. Of course, the only study that specifically addresses the problem of compensating personal injury victims of hazardous substance exposure in Minnesota is the LCWM's 1984 Study.

After assessing the need for compensation and available mechanisms, including tort claims, for providing such compensation, the Study concludes that persons injured by exposure to hazardous substances may, for a number of reasons, not be compensated fully or at all for their injuries.\(^\text{302}\) With respect to the issue of creating some kind of administrative victim compensation fund system, the Study concludes that in light of the assessed needs and the many other important problems currently before the legislature, no victim compensation fund should now be established.\(^\text{303}\) However, in anticipation that new information or changed legislative priorities may lead to the creation of such a system, the Study analyzes a whole series of issues that arise in structuring and financing such a fund and

\(^{301}\) See, e.g., 301(e) REPORT, supra note 4; Trauberman, supra note 9; LEGISLATIVE COMMISSION ON WASTE MANAGEMENT, A STUDY OF COMPENSATION FOR VICTIMS OF HAZARDOUS SUBSTANCE EXPOSURE (P. Hamilton & J.D. Prince 1984) [hereinafter cited as LCWM STUDY].

\(^{302}\) See LCWM STUDY, supra note 301, pt. III, at 90.

\(^{303}\) See generally id. at 162.
makes recommendations to the legislature respecting such issues.\footnote{See id. at 106-60.} This section summarizes the LCWM recommendations and focuses briefly on some of them.

\section{The LCWM Recommendations}

The LCWM Study recommends that, if a state fund is established, it be administered by an appointed, three-member board housed in or identical with the existing Crime Victims Reparation Board, the name of which would be changed to the Victims Compensation Board. The full board would hear and decide each claim. It would be authorized to advertise or otherwise notify potential claimants of their option of claiming against the fund.\footnote{See id. at 162.}

All parties affected by covered diseases and injuries would be eligible to file a claim, subject to a time limitation of a few years between the date of filing and the date the injury could reasonably have been tied to the exposure. Covered diseases and injuries would not include those arising as a result of workplace and consumer product exposures, but otherwise there would be no restrictions placed on eligibility to claim. Injured parties could either make a claim to the fund or pursue existing tort remedies. Use of one system would not prevent access to the other, but double recovery would be prohibited.

The information required in the claim would include proof of exposure to a hazardous substance, proof of a covered injury or disease which has resulted in economic loss, and proof that it is more likely than not that the exposure caused or significantly contributed to the disease or injury.

Compensation to injured parties would include eighty to ninety percent of all medical expenses up to a predetermined level, and 100\% of all medical expenses thereafter.\footnote{Id. at 163.} Compensation would include lost wages, lost household labor, and lost profits, the sum of which could not exceed a fixed percentage of the average wages in the county where the injury arose. This compensation would also apply if the injured party died, except it would be paid to dependents in the amounts they would receive as dependents after the decedent’s consumption was subtracted. Property damages would be covered in full, if
they were not otherwise compensated by other sources. Pain and suffering and other non-pecuniary losses would not be covered.

An overall ceiling of $250,000 is recommended to avoid bankrupting the fund and to encourage the use of the tort system for very large damages. To lower the burden on the fund, a small minimum claim amount is also recommended, and any collateral sources of funds such as insurance would also be deducted.

Appeal would be allowed only if constitutional rights require it. This prevents duplicative transaction costs and decisions by a judge less informed and skilled on the issues than the Board.

Finally, the Study recommends that the fund should be financed by general revenues “to avoid placing an additional burden on Minnesota businesses at a time when efforts are being made to improve the state’s business climate.”307 Whenever a claim was paid, a right of subrogation would be acquired by the fund. The Study recommends that this subrogation right be used whenever cost effective in large claims or particularly egregious actions.

In light of the concerns raised earlier about the existing system for compensation, a few of these recommendations call for comment.

B. Claimant Eligibility

The LCWM Study discusses various approaches to the coverage issue, including limiting eligibility to victims of “orphan” sites (for which no responsible party now exists) or insolvent defendants (determined only after a judgment is obtained in a lawsuit but cannot be wholly satisfied). It concludes that all injured parties should be allowed to make claims regardless of whether they could be compensated under the tort system, but that the fund would not cover “diseases or injuries that result from workplace exposure or exposure to a consumer product.”308 While it would be fairly easy to distinguish workplace injuries simply by reference to workers’ compensation law, determining which injuries are due to “exposure to a consumer product” would not be so easy.

307. Id.
308. Id. at 126.
A determination that an injury was not workplace-related can be made under the existing body of workers' compensation law on that issue. Whatever the decision, the injury would either be covered by workers' compensation insurance or represent an eligible claim to the victims compensation fund.

Plaintiffs injured due to exposure to a consumer product would not be eligible to claim against the fund, presumably because of the view that consumer product liability law is adequately developed to respond to such injuries. The Study does not discuss how one is to determine whether such an injury is so caused. In some cases that determination might be easy; in others it would not. For example, what about an injury due to exposure to a product originally sold in the consumer marketplace but found discarded in a landfill at the time of exposure? Is that an injury "due to exposure to a consumer product"? The statutory provisions defining eligible claims would need to address this issue specifically and with as much clarity as possible.

C. Access to Both Administrative Compensation and Tort Systems

The Study discusses the degree to which a new administrative compensation fund should complement or substitute for the existing tort system. It discusses compulsory use of the fund, an approach similar to that taken by a workers' compensation system for work-related injuries; binding election between a tort and an administrative claim, an approach in which an injured party would choose one system or the other and be bound by that choice; and finally recommends access to both systems with provisions to prevent double recovery. This is essentially the approach recommended by the 301(e) Report and has the same faults.

The essential argument for this approach is that it would allow needy claimants to seek immediate compensation from the fund without giving up their "rights" to later seek a larger recovery in a tort action. One disadvantage to this scheme is that the fund recovery can be used to finance a tort suit that might otherwise not be brought. If the purpose of the fund award is to make the injured claimant whole, it should not be used to

309. Cf. Trauberman, supra note 9, at 221 (Model Statute focuses coverage on injuries least adequately covered by traditional tort and compensation systems).
310. See LCWM STUDY, supra note 301, pt. III, at 127.
gamble on a tort recovery. More importantly, in light of the earlier discussion of the very high transaction costs associated with tort litigation, this scheme could result in duplicative transaction costs. The claimant cannot recover twice, and if first the fund is used and then a tort suit is commenced, the costs of making the compensation transaction become unacceptably high.

It would be much better to adopt either a binding election or compulsory use of the fund approach. The choice between these two approaches depends on a number of factors including the compensation limits set on awards from the fund, the source of financing for the fund, and one's views about the appropriate balance between full compensation and efficiency in the compensation system.\(^{311}\)

Requiring compulsory use of the administrative compensation remedy would preclude use of the existing tort system altogether. This approach has some attractive aspects. Compulsory use of the fund would create the largest reduction in evidentiary costs and free the judicial system from potential overloading and congestion.\(^{312}\) It would also diminish the possibility that toxic tort defendants would incur crippling financial losses from many damage awards. Understandably, this approach is favored by the defense bar.\(^{313}\) So long as compensation limits are not set too low, claimants would be adequately compensated and the social costs of compensation would be greatly reduced.

Eliminating the tort system, however, overlooks some worthwhile benefits of that system. A tort system remedy may allow plaintiffs the opportunity to receive larger measures of damages, such as pain and suffering, that an administrative system may not provide.\(^{314}\) Tort suits also assess liability in direct relationship to responsibility for injury and, though there is no good evidence that they do, are alleged to encourage reasonable care and discourage carelessness.\(^{315}\) Finally, with respect

\(^{311}\) See \textit{id.}

\(^{312}\) See \textit{id.} at 129; 301(e) Report, \textit{supra} note 4, pt. 1, at 185.

\(^{313}\) LCWM Study, \textit{supra} note 301, at 129 (footnote omitted) (citing \textit{California Hazardous Waste Management Council, Statutory and Common Law Liability for Injury and Damage Caused by Releases of Hazardous Waste} 265 (1983)).

\(^{314}\) LCWM Study, \textit{supra} note 301, at 129 (citing 301(e) Report, \textit{supra} note 4, pt. 1, at 185).

\(^{315}\) See \textit{supra} note 314.
to actually legislating such a system into existence, foreclosure of access to the tort system would likely generate heated opposition from the plaintiff's bar.

By requiring a toxic tort victim to make a binding election between tort and administrative remedies, the claimant must choose one system and is then foreclosed from later using the other. This approach has some advantages. First, it retains the existing tort system for those who cannot bear to see it go. If the fund is designed so as to provide adequate compensation, victims would generally be satisfied with their recoveries and feel no need to go to the tort system. Second, it avoids the duplication of costs problem raised by the approach recommended in the Study.316

If the fund is financed wholly or largely by special revenues generated by taxing the hazardous substance industry, binding election is the worst of all possible worlds to defendants. They would not only pay to finance the fund's payment of most claims but would obtain no protection from the extraordinarily large claims which are likely to be made the subject of a tort suit. Furthermore, if the primary goal of the fund is to provide adequate compensation to victims at the lowest social cost, there is no need to offer plaintiffs the option of tort actions and their attendant high costs in addition to a well-designed fund.317

D. The Decisionmaking Process

The Study proposes a claim decisionmaking process that is essentially non-adversarial in nature by arguing that there is no sense in shifting the problems associated with the adversarial, private tort law claim resolution process into an administrative context. The decisionmaking board should act not so much as a defendant but rather as a neutral, expert decisionmaker with respect to these claims. In keeping with this concept, the system should avoid the need for expensive evidence gathering and presentation, and lengthy oral proceedings. The criteria established for compensation must be designed to facilitate the compensation of only meritorious claims. To serve this goal, the Study recommends the adoption of thresholds which, if

316. LCWM STUDY, supra note 301, pt. III, at 129.
317. Id. at 130.
satisfied, would result in a decision to compensate.³¹⁸

The thresholds which the claimant's information and evidence must satisfy in order to be compensated are: (1) the claimant must suffer or have suffered death, injury or disease which has caused a compensable loss (which would be defined by statute); and (2) the claimant must have been exposed to a hazardous substance in an amount and duration sufficient to cause or significantly contribute to death or an injury or disease of the type suffered by the claimant.³¹⁹ If the board believes, on the basis of the information before it, that it is more likely than not that each of these thresholds is satisfied, it would compensate the claimant.

In many cases, the claim could be determined largely or even exclusively on the basis of medical reports and other documentary evidence submitted by the claimant, as is generally done in social security disability determinations. Some claims could no doubt be made and decided without the assistance of a lawyer. These features would tend to keep down the costs of the compensation transaction. As final emphasis to the low-cost, non-adversarial theme, the Study recommends a limitation on appeals of awards made by the fund since appeals interfere with prompt final resolution and should therefore be allowed only when necessary to ensure constitutional fairness.³²⁰

The requisite fairness would be satisfied by observance of constitutional due process requirements. The administrative board would be bound to fully compensate victims, within the compensation limits, and the collegial nature of the decision-making process would ensure that no one individual's mistakes will adversely affect claimants.

Many seem to feel that the more often the same matter is decided, the more likely it is that the last decision on the matter will be correct. This belief may be based on a perception that a fact or opinion on some matter exists independently of some human decisionmaker's perception. But that is obviously not the case. There is no reason to think that a judge's decision on a compensation matter is any more likely to be correct than the administrative expert's initial determination on the

³¹⁸ Id. at 134.
³¹⁹ Id.
³²⁰ Id. at 163.
same matter (assuming both have access to the same information). Indeed, there is better reason to think that the judge and his decision on appeal may be wrong and the initial expert decision right in these circumstances. Of course, one must assume that the decisionmaking process is fair. Adherence to constitutional due process requirements assures that fairness. Such constitutional issues should therefore be appealable. On all other issues appeal should be precluded.\textsuperscript{321}

\textbf{E. Compensating Property and Non-Pecuniary Losses}

The Study recommends compensation subject to some ceilings; co-insurance payment requirements of ten to twenty percent to stimulate the patient's interest in reducing health care costs; and collateral source deductions of medical expenses, lost income, and death benefits. All of these make perfect sense in an administrative system designed to compensate personal injury victims. However, it also recommends compensation for property damages and it recommends against compensation for pain and suffering and other non-pecuniary losses.

While there is no question that one may suffer property damage as well as personal injury due to hazardous substance exposure, any administrative scheme designed to respond to the personal injury compensation problem ought to deal exclusively with that problem. While in theory it is as important to compensate for property injuries as for personal injuries, there are important practical reasons for limiting compensation from the fund to personal injuries. Very simply, payment for property losses could bankrupt or seriously dilute the resources of the fund so that it would not be possible to respond adequately to personal injury claims.\textsuperscript{322} Further, Minnesota already has a property damages fund of sorts in MELRA, the state superfund. If more extensive property loss compensation is needed, it makes more sense to expand the superfund rather than to cover such losses in a new fund designed principally to aid personal injury victims.

Neither the LCWM nor any of the other major studies recommend inclusion of pain and suffering as an element of com-

\textsuperscript{321} \textit{Id.} at 148-50.

\textsuperscript{322} \textit{Id.} at 163.
Pension in an administrative scheme.\(^{323}\) Pain and suffering compensation is an integral part of the tort system and many attorneys feel that such awards are essential to making the injured party whole. This is particularly true when pain and suffering is large and the pecuniary award is small. However, many arguments can be raised against allowing damages for pain and suffering. Parties have differing pain thresholds and pain and suffering is difficult to quantify. It is an element of compensation in which awards typically vary a great deal. Furthermore, individuals generally do not insure themselves against pain and suffering.\(^{324}\) Because such damages are so speculative and decisionmakers so susceptible to emotional influence on the issue, neither pain and suffering nor other non-pecuniary losses, such as fear and trauma, should be compensated by an administrative fund.

\(\text{F. Fund Subrogation Rights}\)

The Study points out that the question of whether the fund should obtain, upon payment of compensation to a victim, a subrogation right to pursue a recovery against the injury-causing party is a complex one that is closely tied to the source of fund financing.\(^ {325}\) If a victim compensation fund were financed exclusively by special revenues derived in appropriate proportions from all whose actions contribute to hazardous substance personal injuries, then rights of subrogation and actions based on those rights against injury-causing parties are inappropriate because those parties are already paying for the costs of their activities. Furthermore, they already have the economic incentive to reduce the risk posed by their activities because doing so will reduce their taxes. Subrogation actions in these circumstances result in making parties against whom such claims are successful pay twice and, in theory, generate more revenues than needed by the fund. Another disadvantage of subrogation rights is that they create the prospect of litigation and all of its problems that the fund is designed to avoid.

Because the Study recommends general revenue financing exclusively, it recommends that the fund obtain subrogation

\(^{323}\) Id. at 142.

\(^{324}\) See id.

\(^{325}\) See id. at 156.
rights to be exercised at the discretion of the board. Subro­
gation rights are most likely to be pursued where the recovery from the fund has been relatively large, so that the costs of pursuing the claim are more likely to be outweighed by the recovery, or where the injury-causing act has been particularly egregious rather than purely accidental. Successful use of this right will help avoid depletion of the fund's resources, though subrogation recoveries are unlikely to represent a very significant portion of the fund. Furthermore, if only large claims are pursued, the number of subrogation actions is unlikely to be large so the goal of avoiding the costs of private tort actions is not significantly compromised.

CONCLUSION

The problem of assuring adequate compensation to those injured as a result of exposure to hazardous substances has been and continues to be a matter of much debate. The legislature has shown a continuing interest in this problem and has responded by creating a statutory cause of action in MERLA. The limitations of that remedy combined with the limitations associated with other existing remedies justify serious consider­ation of an administrative compensation program. The LCWM Study represents the most current examination of the complex and interrelated issues raised by the prospect of an administrative compensation program. While the LCWM recommenda­tions are generally sensible, some are inconsistent with the goal of a fair and efficient personal injury compensation program. These faults can, however, be cured in the crea­tion of any legislation which may result from that Study.

326. See id. at 163.
327. See id. at 156-57.