LONG-TERM LIABILITY FOR HAZARDOUS WASTE INDUCED INJURY IN MISSOURI: LATENT HARM SUFFERERS BEWARE

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I. INTRODUCTION

Many benefits and comforts are attributable to our present advanced technology. Yet, in addition to enjoying these benefits and comforts, our society also must assess and account for the harm that this technology causes. In recent years, technological change has created great risks to human health and to the environment.[1] Toxic substances pollution[2] is one product of this technological change.

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1. *See generally* S. EPSTEIN, THE POLITICS OF CANCER (1978) (concluding that the prevention of cancer requires a concerted national effort to control human exposure to toxic chemicals); THE SILENT BOMB (P. Faulkner ed. 1977) (outlining risks of nuclear power); TOXIC SUBSTANCES STRATEGY COMM., TOXIC CHEMICALS AND PUBLIC PROTECTION, A REPORT TO THE PRESIDENT 1-10 (1980) [hereinafter cited as PUBLIC PROTECTION] (discussing sources and health effects of toxic substances).

2. The Missouri Hazardous Waste Management Law defines hazardous waste as:

> [A]ny waste or combination of wastes which . . . because of its quantity, concentration, or physical, chemical or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness, or pose a present or potential threat to the health of humans or the environment.

MO. REV. STAT. § 260.360(8) (1978 & Supp. 1983). The Missouri Hazardous Waste Commission, the state hazardous waste regulatory body, classifies materials as "hazardous" using the following criteria: "toxicity, persistence, degradability [in nature], po-

Every day industries release toxic chemicals and hazardous wastes into the environment that will remain dangerous for decades or even centuries.[3] As a result, much of the nation's drinking water, food, and air contain an assortment of potentially harmful chemicals.[4] Human contact with these chemicals is virtually inescapable[5] and creates an accelerating health risk to society.[6] For example, studies have linked

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tential for accumulation in tissue [and other related factors such as] flammability, corrosiveness, and other hazardous characteristics." MO. REV. STAT. § 260.370(1)(a) (1978 & Supp. 1983). Toxic substances come in many forms: solids, powders, liquids, sludges, and gases. "Hazardous waste" is an umbrella term encompassing high-level or low-level radioactive material, components in solid waste, hazardous wastes, hazardous substances, polluted air and water, de-icing salts, polychlorinated biphenyls (PCBs), aflatoxin and other toxins, and oil spills. The term also includes toxic substances found in building materials (for example, asbestos), leachate from landfills and pesticides. SPEER'S DIGEST OF TOXIC SUBSTANCES STATE LAW: 1983-84 TRENDS, SUMMARIES AND FORECASTS 8 (R. Speer & G. Bulanowski ed. 1983) [hereinafter cited as SPEER'S DIGEST].

3. Milhollin, *Long-Term Liability for Environmental Harm*, 41 U. PITT. L. REV. 1, 1 (1979). Presently 60,000 different chemicals are produced in the United States and the figure is growing at a rapid pace. COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY 8 (1983). Ten to twenty percent of these chemicals present an environmental threat. 1A F. GRAD, TREATISE ON ENVIRONMENTAL LAW 4A-77 (1982). Industry generated 56,000,000 metric tons of waste nationwide in 1980. 45 Fed. Reg. 33,072 (1980). According to the Environmental Protection Agency (EPA) 90% of all wastes are disposed of improperly—in unsecured landfills, by improper incineration, or by midnight dumping. COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY 218 (1980). Hazardous waste generation is increasing at a rate of 3% a year. *Hazardous Waste Fact Sheet*, EPA JOURNAL, Feb. 1979, at 12.

4. PUBLIC PROTECTION, *supra* note 1, at 1-10.

5. "Human exposure to toxic substances may occur through air, water, and terrestrial pollution; through pesticides, foods and food additives, drugs, cosmetics, consumer products, workplace conditions, waste disposal and accidents." *Id.* at xiii.

6. In 1980, the Department of Health and Human Services concluded its report on the threat to public health caused by toxic chemicals as follows:

> In summary, we believe that toxic chemicals are adding to the disease burden of the United States in a significant, although as yet precisely undefined, way. In addition, we believe that this problem will become more important in the years ahead. It is our hope and belief that full implementation of recent environmental control legislation will sharply reduce marketing of toxic chemicals and consequently reduce the exposure of our people to such chemicals. However, through this decade we believe we will confront a series of environmental emergencies. We believe that the magnitude of the public health risk associated with toxic chemicals currently is increasing and will continue to do so until we are successful in identifying chemicals which are highly toxic and controlling the introduction of these chemicals into our environment.

ASSESSMENT OF THE THREAT TO PUBLIC HEALTH POSED BY TOXIC CHEMICALS IN THE UNITED STATES: A REPORT FROM THE DEPARTMENT OF HEALTH AND HUMAN SERVICES PUBLIC HEALTH SERVICE, *reprinted in* COMM. ON ENVTL. AND PUB.

latent chronic diseases such as cancer, respiratory ailments, and neurological impairments to several toxicants pervasive in the environment.[7] Despite this clear and growing threat to the nation's health, most courts and legislatures have not developed a fair and effective personal injury cause of action for persons harmed by exposure to hazardous substances pollution.[8]

This Note begins with a summary of the sources and potential health effects of hazardous substances pollution, concentrating primarily on dioxin contamination in Missouri. Part II analyzes the obstacles to recovering damages for toxic pollution related injuries. This section discusses party-related problems, statutes of limitation, and proof of causation. Parts III and IV explore Missouri's common law and statutory avenues of redress for personal injury caused by exposure to hazardous substances. Specifically, these sections focus on long-term liability for latent injuries caused by "toxic torts." These sections analyze the formidable barriers to recovery at common law and the limited protection the Missouri Hazardous Waste Management Law[9] affords those harmed by toxic waste pollution. Finally, Part V advocates the

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WORKS, 96th Cong., 2d Sess. HEALTH EFFECTS OF TOXIC POLLUTION: A REPORT FROM THE SURGEON GEN. 8 (Comm. Print 1980) [hereinafter cited as SURGEON GENERAL'S REPORT].

7 PUBLIC PROTECTION, *supra* note 1, at 7-10. Manifestations of latent injury generally do not develop until 20 or more years after the initial exposure. In a study of 725 asbestos insulation workers, persons that initially had been exposed less than 20 years before the study had normal x-rays. After 20 years had passed from the onset of exposure, most had abnormal x-rays. United States v. Reserve Mining Co., 380 F. Supp. 11, 40 (D. Minn. 1974) (study conducted by Dr. Irving Selikoff, one of the world's foremost experts on the health effects of asbestos fibers).

8. *See generally* Milhollin, *supra* note 3 (common law inadequate in compensating those harmed by toxic torts); SPEER'S DIGEST, *supra* note 2, at 23 (no state laws enacted relating to non-occupational chemical injury claims in 1983); Note, *Compensating Hazardous Waste Victims: RCRA Insurance Regulations and a Not so "Super" Fund Act*, 11 ENVTL. L. 689 (1981) (federal law inadequate in compensating those injured by toxic waste pollution).

Admittedly, many victims of toxic substances pollution will have health insurance, either privately secured or provided as part of an employment plan. This coverage may be adequate to provide for the victim's needs. Latent injuries and diseases often are quite serious, however, and coverage in these cases may be insufficient to provide care for the victim. For instance, if there is a large earnings loss, it is unlikely that those injured will have substantial disability insurance. Additionally, such policies rarely provide full reimbursement. Employer disability plans also are limited in coverage and governmental sources of compensation for such harms are virtually non-existent. Ginsberg & Weiss, *Common Law Liability for Toxic Torts: A Phantom Remedy*, 9 HOFSTRA L. REV. 859, 863 n.15 (1981).

9. MO. REV. STAT. §§ 260.350-.609 (1978 & Supp. 1983).

adoption of a state toxic tort statutory cause of action for hazardous waste pollution-induced personal injuries.[10]

II. THE HAZARDOUS WASTE PROBLEM IN MISSOURI

Today, over four hundred sites state-wide are suspected of containing hazardous wastes.[11] High levels[12] of the toxic chemical dioxin[13] exist in thirty-eight sites, the largest state-wide number of dioxin contaminated sites in the nation.[14]

The dioxin problem in Missouri is not new. State officials first discovered the highly toxic substance in Moscow Mills, Missouri, in 1971.[15] Until recently, however, the full extent of the contamination remained unknown. In 1983, national attention focused on the small town of Times Beach, Missouri, where extremely high levels of dioxin

10. Trauberman, *Statutory Reform of Toxic Torts: Relieving Legal, Scientific, and Economic Burdens on the Chemical Victim*, 7 HARV. ENVTL. L. REV. 177 (1983). A proposed hazardous waste model statute is included in the Trauberman article. *See id.* at 250-96. This Note incorporates into its proposal some of the provisions appearing in this model statute.

11. St. Louis Post-Dispatch, Feb. 6, 1984, at 13A, col. 2. Extremely high levels of dioxin contaminate as many as 50 sites in Missouri. SENATE COMM. ON ENVT. AND PUB. WORKS, 97TH CONG., 2D SESS., REPORT: INJURIES AND DAMAGES FROM HAZARDOUS WASTES—ANALYSIS AND IMPROVEMENT OF LEGAL REMEDIES PART II 3 (Comm. Print 1982) [hereinafter cited as INJURIES AND DAMAGES II].

12. Dioxin levels in Missouri are "so high as to alarm anyone with the most rudimentary acquaintance with modern technology." *PCB and Dioxin Cases: Hearings Before the Subcomm. on Oversight and Investigation of the House Comm. of Energy and Commerce*, 97th Cong., 2d Sess. 25 (1982) (testimony of Dr. Ellen Silbergeld) [hereinafter cited as Silbergeld's Testimony].

13. Tetracholorodibenzodioxin (TCDD) is dioxin's full chemical name. Yannacone, Kavenagh & Searcy, *Dioxin: Molecule of Death*, 17 TRIAL 30, 32 (Dec. 1981) [hereinafter cited as Yannacone].

14. St. Louis Post-Dispatch, Aug. 6, 1984, at 1A, col. 3.

15. In 1971, Russell Bliss, a waste hauler, sprayed 2,000 gallons of waste oil contaminated with dioxin as a dust suppressant on a horse arena's soil at Shenandoah Stables. Acute medical symptoms appeared in humans and animals within a few days. In the ensuing year, 197 horses, dogs, and cats became ill and many died. The stable owner's six year old daughter became ill and was hospitalized on August 22, 1971. Subsequently, the stable owners sued the waste oil company for damages. The parties settled and the plaintiffs collected $226,500 for damages to their property, medical costs, and exemplary damages for the gross negligence and willful and wanton misconduct of the polluters. SENATE COMM. ON ENVT. AND PUB. WORKS, 96TH CONG., 2D SESS., SIX CASE STUDIES OF COMPENSATION FOR TOXIC SUBSTANCES POLLUTION: ALABAMA, CALIFORNIA, MICHIGAN, MISSOURI, NEW JERSEY, AND TEXAS 35-36 (Comm. Print 1980) [hereinafter cited as SIX CASES].

were found.[16] Since then, state and federal officials have discovered numerous other dioxin sites, and more discoveries are likely to follow.

A. *Source of the Problem*

Although other hazardous substances threaten persons in Missouri, dioxin contamination represents the state's most pervasive toxic waste problem. Dioxin is an unwanted by-product of the manufacture of certain cleansers and herbicides, including Agent Orange, a defoliant used in the Vietnam War.[17] In the 1960s and 1970s, approximately thirty companies in Missouri manufactured dioxin-related chemicals. During this time, a small number of these manufacturers disposed of these substances improperly and, thus, created the toxics problem Missouri faces today.[18]

B. *Health Effects*

Dioxin is one of the most toxic of all man-made chemicals,[19] yet its long-term health effects remain unclear. Although acute effects from exposure to dioxin can be quite severe,[20] researchers have not yet fully

16. The streets of Times Beach were sprayed with dioxin-contaminated waste oil in the early 1970s. The federal government, beginning in 1983, began to buy out the town for $36.7 million because of fears of the health hazard to its residents. St. Louis Post-Dispatch, Aug. 6, 1984, at 1, col. 3.

17. Veterans exposed to Agent Orange during the Vietnam War recently settled out of court for $180 million in their class action damages suit against the principal wartime manufacturers of the herbicide.

18. Riverfront Times, Jan. 18-24, 1984, at 6, col. 1 (Comments of Fred Lasfer, Director of the Missouri Department of Natural Resources).

19. Ellen Silbergeld, an environmentalist, recently testified that "the acute and chronic toxicity of dioxin has been reviewed in several recent documents prepared by EPA. In all these documents, the potent toxicity of dioxin, as an acutely lethal agent and as one of the most potent carcinogens yet studied, is recognized and described." Silbergeld's Testimony, *supra* note 12, at 25. For a brief history of dioxin and an analysis of its toxicity, see Yannacone, *supra* note 13.

20. Acute effects of exposure to dioxin have been observed in a series of sudden occupational exposures since 1949. Normally, the symptoms resulting from an acute exposure begin with a burning sensation in the eyes, nose, and throat followed by headache, dizziness, nausea, and vomiting accompanied in some cases by abdominal pain and diarrhea. After exposure the onset of chloracne has been observed. Chloracne is characterized by inflamed nodules and pustules on the face, forearms, shoulders, neck, trunk, feet, and legs, accompanied by blackheads and cysts. The chloracne is generally, but not invariably, associated with a wide range of other symptoms of multi-system disease such as abnormalities in liver function and peripheral neuropathy. Yannacone, *supra* note 13, at 36-37. Emotional problems, including depression, anxiety, marked

documented its long-term consequences.[21] Some studies, however, provide "suggestive" evidence of increased incidents of stomach cancer, lung cancer, and soft tissue glaucomas in those occupationally exposed to dioxin.[22] Moreover, a recent Environmental Protection Agency (EPA) study of Missourians exposed to dioxin suggests that high level dioxin exposure may weaken the body's immune system.[23] This uncertainty surrounding the health effects of dioxin recently led an EPA pharmacologist to testify that there is no "safe" level of dioxin in the environment.[24]

III. Obstacles to Recovery in Missouri for Latent Harm Caused by Hazardous Waste Pollution

Persons that are exposed to a toxic substance such as dioxin and seek redress for resulting latent harm must contend with a variety of obstacles and sometimes absolute barriers to recovery. Such impediments to recovery are: a) Discovering the proper parties to an action; b) filing a timely claim; c) proving causation; and d) finding a viable theory to invoke to hold a particular defendant liable.

A. *Parties*

1. Defendants

a. *The Judgment-Proof Defendant*

In a personal injury case, a plaintiff needs to join all solvent defendants.[25] A plaintiff whose harm develops twenty years after an exposure to a toxic substance, however, faces special difficulties. The toxic waste

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personality change, difficulties with concentration and memory, and other neuro-psychiatric syndromes, also have been linked to dioxin exposure. *Id.* at 37.

21. Research on the long-term effects of dioxin is in its infant stages. The duration and follow-up of such testing has been too short to document fully the long-term effects of human exposure to dioxin. *Id.* at 37.

No absolute connection between cancer and those occupationally exposed to TCDD has been established. Studies are inconclusive, however, because the duration of the follow-up is too short. *Id.*

22. *Id.* at 37. One scientist speculated that dioxin could be behind the rise in suburban cancer rates, stating, "Now as we look among the people who live along heavily defoliated rights-of-way, and near highways with active chemical weed control programs, we are beginning to see the same panoply of multi-system disease that characterizes so many of the Vietnam combat veterans." *Id.*

23. St. Louis Post-Dispatch, Jan. 31, 1984, at 1A, col. 4.

24. N.Y. Times, Feb. 1, 1984, at A18, col. 1 (statement of Dr. D. Diane Courtney).

25. Potential defendants in a hazardous waste injury case are:

generators, transporters, or disposers potentially liable for the injury may be bankrupt or dissolved,[26] especially if the company in question previously lost or settled a toxic injury lawsuit. Thus, victims of toxics pollution may encounter judgment-proof defendants.

(i) the person who did a wrongful act, i.e., the dumper or disposer of waste, the person who by his wrongful or negligent act created the risk;
(ii) the person who, regardless of the wrongful or negligent disposal, now owns or leases the land on which a hazardous condition exists; or
(iii) the class or category of persons who may be regarded as collectively responsible for the creation of the hazard to the extent of each member's "market share" or against an entire class of enterprises, industry wide. (citation omitted).

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, 97TH CONG., 2D SESS., 301(e) REPORT: INJURIES AND DAMAGES FROM HAZARDOUS WASTES—ANALYSIS AND IMPROVEMENT OF LEGAL REMEDIES PART I 46 (Comm. Print 1982) [hereinafter cited as INJURIES AND DAMAGES I].

26. Generally, dissolved corporations are judgment-proof. The company that produced the dioxin found at most of Missouri's dioxin contaminated sites, Northeastern Pharmaceutical and Chemical Company (NEPACCO), disbanded in 1974. Recently, however, a district judge ruled that NEPACCO and several of its former officers must repay the government the funds it spent cleaning up a dioxin contaminated site in Missouri. The judge required this repayment because the company failed to dissolve properly in 1974 and was still incorporated. St. Louis Post-Dispatch, Jan. 31, 1984, at 1A, col. 5.

Large corporations often operate through subsidiaries. To limit liability these corporations can intentionally dissolve those subsidiaries if any wrongdoing is discovered. For example, Life Science Products Company, a subcontractor of Allied Chemical, discharged much of the pollution found in the James River. Shortly after the pollution was discovered, Life Science declared bankruptcy. N.Y. Times, Oct. 6, 1976, at 1, col. 1. When latent harm arises many years after the defendant's act, the use of such corporate forms may bar recovery. *See* Milhollin, *supra* note 3, at 9. Generally, no liability exists if the corporate defendant has been dissolved for a number of years and the liquidation period has elapsed. H. HENN, CORPORATIONS 721, 814-15 (2d ed. 1970). The same is generally true if the corporation has reorganized or has been sold by judicial sale. 19 AM. JUR. 2d *Corporations* § 1556.(1965). If a subsidiary caused the injury, to recover from the parent company, a claimant must show that the parent dominates the subsidiary's affairs. To make such a showing, the plaintiff should establish the following:

(1) the amount of subsidiary stock held by the parent;
(2) the presence in both corporations of the same officers;
(3) the amount of business conducted by the subsidiary with companies other than the parent;
(4) the extent to which the parent uses the assets of the subsidiary as its own;
(5) the purpose for which the subsidiary was formed; and
(6) the adequacy of the subsidiary's capital structure.

N. LATTIN, THE LAW OF CORPORATIONS §§ 24-25 (2d ed. 1971). Clearly, a plaintiff has a substantial burden of proof in this type of litigation. Thus, corporate counsel can readily defeat meritorious claims by manipulating the corporate form.

The Missouri Hazardous Waste Management Law attempts to remedy the problem of the judgment-proof defendant by requiring that hazardous waste facilities[27] and transporters[28] be "financially responsible" and adequately insured.[29] Liability insurance, however, inadequately protects claimants whose injuries become manifest decades after the exposure. First, the responsible party may be insolvent and no longer possess coverage.[30] Additionally, assuming that toxic pollution insurance is available,[31] no private insurer, trust fund, or surety bond can protect sufficiently against the risk and magnitude of liability

27. MO. REV. STAT. § 260.395.7(3) (1978 & Supp. 1983) provides:

7. Any person, before constructing, substantially altering or operating a hazardous waste facility in this state shall file an application for a permit which shall: . . . (3) Include, as specified by rules and regulations, demonstration of financial responsibility including, but not limited to, guarantees, liability insurance, posting of bond or any combination thereof, which shall be related to type and size of facility. . . .

Id.

28. *Id.* § 260.395.1(2) (provides for a substantially identical demonstration of financial responsibility when applying for a license to transport hazardous waste).

29. Transporters are required to be insured for $100,000 for injury or death per person. 10 MO. ADMIN. CODE § 25-6010 (1983). Financial responsibility requirements aim to guarantee a claimant a realistic chance of recovery even if the responsible party lacks the resources to compensate for the harm caused. This concern, however, goes beyond the injured party. Clean-up expenses incurred by federal and state governmental agencies also are at stake. In a broader sense, financial responsibility requirements help to assure compensation for these losses while preserving the financial health of the polluting industry. Insurance reduces the economic burden on the polluting business by spreading the costs among a large number of polluters over time. Pfenningstorf, *Insurance of Environmental Risks: Recent Developments*, in ENVIRONMENTAL LAW SYMPOSIUM 1982 58-59 (1982) [hereinafter cited as SYMPOSIUM]. For recent surveys regarding state liability insurance requirements, see Cohen & Derkins, *Financial Responsibility for Hazardous Wastes Sites*, 9 CAP. U.L. REV. 509, 526-44 (1980); Cohen, *New Developments in State Hazardous Waste Litigation*, 9 CAP. U.L. REV. 489 (1980).

30. Milhollin, *supra* note 3, at 15.

31. Private insurance companies are reluctant to provide coverage for harm caused by pollution for two reasons: 1) the lack of actuarial experience upon which to base premiums; and 2) the fact that the harm involved is not sudden and, therefore, not classifiable as an "accident." *Id. Cf.* SYMPOSIUM, *supra* note 29, at 69. Recently, though, some insurers have started to offer "environmental impairment liability" coverage. This coverage applies to claims for releases or exposures that, while not intended or expected by the insured, are continuous rather than sudden in nature. For details, see AIDA Pollution Insurance Bulletin, vol. 1 nos. 1 and 2, and vol. 2 no. 1 (published by the Working Party on Pollution and Insurance of the International Association for Insurance Law). In addition, insurers recently have formed a special insurance pool called the Pollution Liability Insurance Association, whose principal functions are to pool engineering expertise, underwriting capacity, and loss experience of the participating insurers. *See* Friedman, *Hazardous Waste Liability: EPA Ponders End to Third*

for latent harm—that is, harm, occurring after the site terminates operations.[32] Like insurance against nuclear accidents,[33] the government may have to subsidize toxic pollution insurance.[34] Unfortunately,

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Party Coverage (National Underwriter Property & Casualty Ins. Ed.) Oct. 9, 1981, at 4.79, *cited in* SYMPOSIUM, *supra* note 29, at 69.

32. SYMPOSIUM, *supra* note 29, at 67. Only the government can provide these long-term guarantees for harms that may occur years after a facility closes. To this end, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601-9657 (1982), also known as the Superfund Act, established the Post-Closure Liability Trust Fund in the Treasury of the United States. *Id.* § 9641. This fund, which is comprised of a tax imposed on hazardous wastes received by disposal facilities, assumes the liability that will otherwise fall on the facility's owner or operator provided that the owner or operator has complied with the statute's requirements concerning closure and post-closure care and there have been no hazardous waste discharges for five years. SYMPOSIUM, *supra* note 29, at 67-68. Before this transfer of liability can take place the owner or operator of the site presumably must maintain existing insurance coverage. *Id.* at 67 n.9. *See* 42 U.S.C. § 9607(k) (1982). This scheme, however, leaves unsolved the problems posed by the thousands of orphaned disposal sites abandoned before the Superfund Act or abandoned without complying with the Act's guidelines. In addition, numerous sites are exempted from the regulations because of the limited amount of materials handled by them. SYMPOSIUM, *supra* note 29, at 67-68; *see* 40 C.F.R. §§ 261.5(a), 261.4 (1984).

The Post-Closure Liability Fund differs from the state superfund provision advocated in this Note in one significant respect. Unlike the superfund provision proposed herein, the Post-Closure Fund provides no subrogation provision against facilities that cause latent harm. The availability of subrogation rights under the superfund will raise the standard of care of those covered by the provision because of the threat of residual liability. The Post-Closure Liability Fund omitted residual liability from its contours because it was thought that residual liability would encourage companies to abandon disposal sites or dissolve after closure to avoid financial responsibility. Note, *supra* note 8, at 704.

Despite its limitations, the Post-Closure Liability Fund does much to provide a source of compensation for victims of pollution from closed facilities. As mentioned above, this compensation is otherwise unavailable in the case when the defendant is insolvent, absent, or judgment-proof.

33. Milhollin, *supra* note 3, at 15. Under the Price-Anderson Act, the federal government subsidizes nuclear accident insurance. *See generally* Meek, *Nuclear Power and the Price-Anderson Act: Promotion Over Public Protection*, 30 STAN. L. REV. 393 (1978).

34. Milhollin, *supra* note 3, at 15. Under a consortium the State of Missouri would subsidize hazardous waste accident insurance. One commentator hypothesized an insurance program that the state government underwrites entirely, as it does unemployment compensation:

> Employers pay to the state premiums which are determined according to the risk of the employment and the past performance of the employer. The state administers all claims and payments. This device could be adapted to protect against long-term harm if state legislatures would accept the risk. Premiums, accumulating over long periods, could provide ample funds for claims and eventually decrease the state's obligation.

however, the analogous experience with nuclear accident insurance reveals that coverage would be inadequate in amount.[35] Consequently, insurance provides little protection to individuals that develop latent toxic pollution induced harm.

b. *Apportioning Damages Among Defendants*

To achieve full recovery against a single defendant at common law, a claimant must prove that the defendant's conduct was a substantial factor in causing the injury.[36] When several polluters contribute to the claimant's harm, the burden may be impossible to sustain.[37] In such a case, the problem of apportioning damages arises.

In tort, liability may be individual or joint and several,[38] a determination that often decides whether a claimant receives total,[39] partial,[40]

Id. This state-managed insurance plan would not, however, provide compensation for persons harmed by an insolvent or bankrupt corporation. Insurance lapses when the insured goes out of business. Moreover, as the commentator points out, states have little experience in calculating premiums, especially in areas such as nuclear power and hazardous pollution, which vary in the risks and hazards involved. *Id.* at 16. Thus, the state would be tempted to limit premiums to a fixed amount. Unfortunately, this could cause the industry to view the premium as a substitute for careful operations. *Id.* The commentator concluded: "The difficulties of premium setting, liability limits, payment procedures, and investment policy make it obvious that [a liability] fund . . . would be superior to insurance." *Id.*

35. *Id.* at 15. *See supra* note 31. Like nuclear accident insurance, pollution insurance for latent toxics-induced harm probably would be limited in amount if coverage were available through a consortium. *Id.* In a case litigating the constitutionality of the Price-Anderson Act, the parties stipulated that "homeowners cannot at any price buy insurance to cover the nuclear risk. . . ." Appellee's Response to Jurisdictional Statements at 19, Duke Power Co. v. Carolina Envtl. Study Group, Inc., 438 U.S. 59 (1978), *cited in* Milhollin, *supra* note 3, at 15 n.92. In *Duke Power*, the Supreme Court upheld the constitutionality of the Act. 438 U.S. at 84, 93.

36. P. KEETON, PROSSER AND KEETON ON TORTS § 41, at 267 (5th ed. 1984).

37. INJURIES AND DAMAGES I, *supra* note 25, at 53. The substantial factor test relieves parties from liability under a *de minimis* rationale, known in hazardous waste cases as the "one drum exception." Rodberg, *Apportionment of Damages in Hazardous Waste Litigation*, in PRACTICING LAW INSTITUTE, HAZARDOUS WASTE LITIGATION 183, 212 (Mott ed. 1981). The substantial factor test is retained in one of the personal injury causes of action proposed herein. *See infra* notes 214-16 and accompanying text.

38. W. PROSSER, TORTS §§ 46-52 (4th ed. 1971).

39. *See, e.g.*, Electrolytic Chlorine Co. v. Wallace & Turran Co., 328 Mo. 782, 791, 41 S.W.2d 1049, 1052 (1933) (each joint tortfeasor liable for whole damage).

40. *See, e.g.*, Sommerset Villa, Inc. v. City of Lee's Summit, 436 S.W.2d 658, 665 (Mo. 1968) (if damages are occasioned by independent acts, tortfeasor is only liable for damages that his share occasions, and must be sued separately).

or no compensation at all.[41] This determination is based on the applicability of joint liability theories and their burden shifting rules of apportionment.[42] In Missouri, joint liability commonly is applicable in cases involving "concert of action"[43] or cases in which the acts of several tortfeasors cause a single indivisible injury.[44] Both types of joint liability theories are potentially helpful to the toxic tort victim.[45]

41. This bar arose in products liability cases involving DES (diethylstilbestrol) induced cancer in daughters of women that took this drug. In these cases courts ruled that the inability to prove that a specific manufacturer produced the DES that the claimant's mother ingested must result in a summary judgment for the defendant. *See, e.g.*, Gray v. United States, 445 F. Supp. 337 (S.D. Tex. 1978); McCreery v. Eli Lilly & Co., 87 Cal. App. 3d 77, 150 Cal. Rptr. 730 (1978); Zafft v. Eli Lilly & Co., 676 S.W.2d 241 (Mo. 1984) (en banc); Namm v. Frosst, 178 N.J. Super. 19, 427 A.2d 1121 (App. Div. 1981). *Contra* Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132 (plaintiff's damages divided among the defendant companies in proportion to each company's share of the DES market at the time of the sale, even though the plaintiff could not prove that a specific manufacturer produced the drug that caused the harm), *cert. denied*, 449 U.S. 912 (1980).

42. Two widely accepted apportionment theories, concert of action and alternative liability, exist in tort law. These theories allow a plaintiff to join multiple defendants that in some way contributed to the plaintiff's harm. Two relatively new theories, market share liability and enterprise liability, also are available. All of these theories shift the burden of apportionment to the defendants if the plaintiff has a cause of action against each of them. An in-depth analysis of the apportionment theories is beyond the scope of this paper, although further discussion of the theory that best suits hazardous waste pollution litigation appears in the proposal section of this note. *See infra* note 216 and accompanying text. In addition, principles of apportionment, insofar as they affect the toxic tort victim, lose their significance when compensation is paid first out of a personal injury fund such as the one advocated in this Note. Questions of joint and several liability and apportionment then will arise only in the subrogation action in which the fund seeks to replenish itself through action against the responsible parties. INJURIES AND DAMAGES I, *supra* note 25, at 53. Thus, a personal injury fund shifts apportionment problems away from the victims and onto the state, which has the better resources of the two to collect from responsible parties.

43. *See, e.g.*, Stafford v. Muster, 582 S.W.2d 670, 677 (Mo. 1979) (en banc) (joint liability exists when the wrong is done by concert of action and common intent and purpose if the act of each person is an efficient cause contributing to the injury).

44. *See, e.g.*, Mails v. Kansas City Pub. Serv. Co., 51 F. Supp. 562, 564 (W.D. Mo. 1943) (a single indivisible injury such as death occasioned by the separate independent acts of several tortfeasors lays the foundation for a joint action against the tortfeasors). *But cf.* Warner v. St. Louis & M.R.R. Co., 178 Mo. 125, 134, 77 S.W. 67, 70 (1903). The *Warner* court stated:

> If the injury may have resulted from one of two causes, for one of which, and not the other, the defendant is liable, the plaintiff must show with reasonable certainty that the cause for which the defendant is liable produced the result; and, if the evidence leaves it to conjecture, the plaintiff must fail in his action.

Id.

45. Although concert of action and common intent are not present in most pollu-

The difficult apportionment case involves theoretically divisible but practically indivisible injury.[46] Damages caused by several toxic discharges are divisible at least theoretically because each party has discharged a certain portion of the pollution that caused the injury. Precise apportionment of the respective contributory responsibility of each defendant, however, is often "practically" impossible.[47] According to a report prepared for the Committee on Environment and Public Works, Missouri courts would hold that a party suffering theoretically divisible but practically indivisible injuries has the burden of allocating contributory responsibility among the polluters.[48] Several Missouri stream polluters decisions support this conclusion.[49] Presumably, this result also will obtain in hazardous waste cases unless Missouri courts adopt the apportionment concepts of market share liability or enterprise liability, a prospect that is unlikely.[50] The enactment, as part of a

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tion cases, they can be established when polluters knowingly engage in illegal disposal of toxicants—commonly known as "midnight dumping." Regarding the applicability of joint liability because of indivisible injury, one can argue that the injury is theoretically indivisible because of synergistic reactions among the discharged toxicants. Such reactions would make apportioning liability speculative. This argument, however, may prove too much because it reveals a weak causal connection between the various discharges and the harm.

46. *See* SIX CASES, *supra* note 15, at 491.

47. *Id.*

48. *Id.* at 492.

49. *See, e.g.*, Sommerset Villa, Inc. v. City of Lee's Summit, 436 S.W.2d 658, 665 (Mo. 1968) ("better to attempt some rough division than to hold one defendant for the wound inflicted by another"); Benson v. City of St. Louis, 219 S.W. 575, 578 (Mo. 1920) (the difficulty of measuring damages caused by the wrongful act of each contributor does not make one liable for the acts of others); Marlinowsky v. City of Hannibal, 35 Mo. App. 70, 77 (1899) ("if several persons drain their premises in the same ditch, the waters from which are discharged near the premises of another, and produce an injury to his person or his comfortable enjoyment, each of the persons so using the drain is liable, *in separate actions* for the damage occasioned to him") (emphasis in orginal).

50. These theories of apportionment, briefly explained at *supra* note 42, provide a basis for finding joint liability in cases when the damages are divisible only theoretically; i.e., when several defendants' actual contributory responsibility cannot be determined. In Zafft v. Eli Lilly & Co., 676 S.W.2d 241 (Mo. 1984), a DES case, the Missouri Supreme Court, sitting en banc, rejected the application of both of these theories. The court refused to apply industry-wide liability "because of the large number of drug manufacturers involved, the lack of evidence of delegation of responsibility for safety standards to a trade association, and the pervasive role of the FDA in setting industry-wide standards." *Id.* at 245. The court next issued a sweeping rejection of the market share liability theory, calling it "unfair, unworkable, and contrary to Missouri law as well as unsound public policy." *Id.* at 246. The court prefaced its analysis with the general proposition that "Missouri law does not guarantee relief to every deserving plaintiff,"

toxic tort victim's compensation scheme, of a statutory provision adopting a specific theory of apportionment,[51] can resolve this uncertainly about apportionment.

2. Plaintiffs

Many persons harmed by hazardous waste pollution fail to seek redress for their injuries. Informational deficiencies, the law's property-related bias, and cost factors often determine whether an action is ever instigated.

a. *Informational Deficiencies*

Public concern about the dangers of hazardous waste is growing.[52] Information concerning the nature and the effects of this problem, however, is not widespread.[53] The public is unaware of the serious long-term health effects of exposure to hazardous wastes because the research into these effects remains in its infancy.[54] The very nature of latent injury also can suppress toxics claims. Injury of this type, often invisible for twenty years or more, is far less likely to compel legal action than torts that cause immediate and tangible injury or property destruction.[55]

b. *Compensation Bias*

American compensatory law has a built-in "property-related bias."[56]

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and further noted insufficient justification to compel "abandonment" of tort law's fundamental requirement that "a plaintiff prove, at a minimum, some nexus between wrongdoing and injury." *Id.* at 246-47. The court found the market share theory ill-defined and speculated that it would "discourage desired pharmaceutical research and development while adding little incentive to production of safe products, for all companies face potential liability regardless of their efforts." *Id.* This refusal to adopt these apportionment theories led to summary judgment for the defendant DES producers.

51. *See infra* note 216 for the proposed statutory approach.

52. In a recent survey, 64% of those polled expressed "a great deal" of concern about hazardous waste disposal and 46% expressed "a great deal" of concern over toxic chemicals such as PCBs or pesticides in the environment. COUNCIL ON ENVIRONMENTAL QUALITY, *Public Opinion on Environmental Issues; Results of a National Public Opinion Survey* 28 (1980) [hereinafter cited as *Public Opinion*].

53. SIX CASES, *supra* note 15, at 496. In a 1980 survey, 65% of the people questioned were unaware of what had happened at Love Canal. *Public Opinion*, *supra* note 52, at 37.

54. SIX CASES, *supra* note 15, at 496.

55. *Id.* at 497.

56. *Id.* at 493. The Weiss Lake and Coosa River PCB contamination incident in

This bias appears in Missouri law both in its specific requisites for recovery in tort[57] and, in a broader sense, in its application of certain tort categories to certain types of harm.

In Missouri, recovery in nuisance and trespass is predicated on a claimant's ownership of land,[58] while both property owners and non-property owners can recover in strict liability.[59] Property owners, therefore, are favored with the extra protection that nuisance and trespass law can provide. In addition, in cases involving personal injury damages for pollution-caused harm, Missouri courts apply nuisance and trespass law to the virtual exclusion of the strict liability cause of action.[60] As a result, land owners also have a better chance to recover for personal injury caused by toxic pollutants. This is unfortunate because toxics-related harm sometimes is unconnected to property ownership.

The property-related bias also is apparent in the Missouri Hazardous Waste Management Law. The law's "Superfund"[61] currently does not provide money to redress toxics-induced personal injury. Rather, its sole purpose is to pay for property damages and property-related clean-up activities.[62]

c. *Cost*

Finally, the enormous cost associated with bringing a toxic tort ac-

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Alabama provides an example of this bias. Plaintiffs that owned property along the polluted water obtained compensation. Other plaintiffs that depended on the use of the river for their livelihood, but did not own waterfront property, did not obtain compensation. *Id.* at 59-87.

57. *See infra* notes 58-62 and accompanying text. As a general matter this holds true in most jurisdictions. *See supra* note 56 and *infra* notes 58-60 and accompanying text. For example, in Virginia property damage claims have a longer statute of limitations period than personal injury claims. SIX CASES, *supra* note 15, at 493.

58. *See infra* notes 101 & 117 and accompanying text.

59. *See infra* notes 173-84 and accompanying text.

60. *See infra* notes 131-33 and accompanying text.

61. MO. REV. STAT. § 260.480 (1978 & Supp. 1983) (establishes the "Hazardous Waste Remedial Fund").

62. *Id.* Section 260.480.2(6) states that the fund shall be used for: "financing the nonfederal share of the cost of cleanup and site remediation activities. . . ." *Id.* Additionally, § 260.420(3) provides that the State Hazardous Waste Commission can acquire "by purchase, donation, agreement, or condemnation any lands, or rights in lands, sites, objects, or facilities necessary to protect the health of humans and the environment. . . ." *Id.*

tion often precludes relatively small claims.[63] The expert witnesses, scientific evidence exhibits, and etiological research needed to prove a claim against a toxic tortfeasor all are quite costly. Consequently, the joinder of small claims often is crucial to the viability of modest toxic tort actions.[64] If joinder is unattainable, an out-of-court settlement, usually for a comparatively small amount,[65] is the best a claimant can hope for.

B. Statute of Limitations Problems

The tolling of the applicable statute of limitations can prevent recovery under both statutory and common law. In Missouri, the limitations period commences on the date the injury is capable of ascertainment.[66] After the injury is discoverable, the statute of limitations for a tort action is five years.[67]

Although Missouri has a more lenient statute of limitations than

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63. Most of this cost is incurred in attempting to prove the complicated issue of causation. *See infra* notes 73-92 and accompanying text.

64. Under federal law, a plaintiff can invoke procedural devices for voluntary joinder of parties, as under FED. R. CIV. P. 20(a):

> All persons may join in one action as plaintiffs if they assert any right to relief jointly, severally, or in the alternative in respect of or arising out of the same transaction, or occurrence, . . . and if any question of law or fact common to all these persons will arise in the action. . . .

Id. A plaintiff also can transfer and consolidate actions for joint trial of issues involving common questions of law or fact. This procedure was followed in *In re* Northern Dist. of Cal. "Dalkon Shield" IUD Products Liab. Litig., 521 F. Supp. 1188, 1194 (N.D. Cal. 1981). *See also* INJURIES AND DAMAGES I, *supra* note 25, at 68. In Missouri, MO. REV. STAT. § 507.040 (1978 & Supp. 1983), provides for permissive joinder of parties. It is virtually identical to FED. R. CIV. P. 20.

65. The obstacles inherent in any lawsuit, such as the uncertainty of success, costs, and delays, paired with the defendant's superior information and fact finding ability in this type of action, create unfair bargaining power for a defendant in settlement negotiations. Consequently, plaintiffs achieve small settlements.

66. At least 39 states have adopted this type of rule. INJURIES AND DAMAGES I, *supra* note 25, at 43. Missouri's statute of limitations for civil actions is determined by statute: "the cause of action shall not be deemed to accrue when the wrong is done or the technical breach of contract or duty occurs, but when the damage resulting therefrom is sustained and is capable of ascertainment." MO. REV. STAT. § 516.100 (1978 & Supp. 1983); *Cf.* Krug v. Sterling Drug, Inc., 416 S.W.2d 143, 149-50 (Mo. 1963) (action filed in 1963 to recover from drug manufacturers for damage allegedly caused to eyes from use of drug first used by claimant in 1953, not barred by statute of limitations, as hazardous side effects of drug were first described in medical journals in 1957 and the user was unaware of eye condition and its cause until 1961).

67. MO. REV. STAT. § 516.120 (1978 & Supp. 1983).

many other states,[68] the nature of latent injury[69] nevertheless can cause statute of limitations problems. For instance, when latent harm results from an exposure to a toxic chemical, minor symptoms of injury often go unnoticed. Thus, it is possible that a Missouri court will rule that an injury is "capable of ascertainment" before the plaintiff actually discovers the harm.[70] Moreover, even if the injury is discovered in time, a plaintiff must ascertain the cause of the injury before the statute tolls.[71] Thus, even Missouri's relatively lenient statute of limitations may defeat meritoriously latent injury claims.[72]

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68. A few jurisdictions still reject what has now become known as the "discovery rule." The trend is to adopt this type of statute of limitations. In 1982, five states—Idaho, New York, South Dakota, Virginia, and Wisconsin—and the Virgin Islands had statutes of limitations that run from the time that the wrong or the breach occurred. INJURIES AND DAMAGES I, *supra* note 25, at 45.

In hazardous waste litigation, a cause of action in those five states and the Virgin Islands accrues at the time of the exposure. Exposure to certain hazardous wastes may cause cancer or other types of injuries that have long latency periods, sometimes 20 years or more. Thus, a limitations period that begins to run at the time of exposure will toll before the injured party could possibly become aware of his injury. *Id.* at 43.

69. *See supra* note 7.

70. *See* SIX CASES, *supra* note 15, at 319-20.

71. This result will occur when the injured party is unaware of or forgets about the harmful exposure. Additionally, if the claimant is aware of the exposure, but fails to connect it to the harm, the statute of limitations may toll before the party makes the connection. INJURIES AND DAMAGES I, *supra* note 25, at 43. Thirteen states prevent this result by adopting a statute of limitations that begins to run at the time the injured party ascertains or should ascertain a casual connection between the injury and the harmful exposure. At least one federal court has adopted such a rule. *See* Insurance Co. of N. Am. v. Forty-Eight Insulations, 451 F. Supp. 1230, 1240 (E.D. Mich. 1978) (only when disease manifests itself, implicating a causal relationship to the manufactured product, does the statute of limitations begin to run).

Some states' limitation periods begin when the plaintiff actually discovers the particular disease or injury. Some states provide a special statute of limitations period for injuries that result from faulty products and exposure to toxic wastes. Generally these statutes provide for a longer limitation period. These lenient statute of limitations provisions reflect the uncertain state of medical and scientific expertise regarding environmental toxicology. *See* Note, *Hazardous Waste Liability and Compensation: Old Solutions, New Solutions, No Solutions*, 14 CONN. L. REV. 307, 321 (1982).

72. An example of how the Missouri statute of limitations can bar meritorious claims is instructive. Mr. and Mrs. X lived at Bad Times Beach before the discovery of hazardous wastes there. They moved to Florida and failed to receive news of the Bad Times Beach contamination. Twenty years later, Mr. X developed the same type of cancer that a highly disproportionate number of Bad Times Beach residents developed. Bereft of information concerning dioxin and its effects on the other residents of the ill-fated town, Mr. X, who is busy recovering from extensive treatment, fails to link his disease to its cause, the exposure in Bad Times Beach, until five years pass. Thus, he loses his cause of action.

C. *Causation*

The most substantial obstacle to recovery for hazardous waste induced injuries is proving causation[73]—tracing a direct relationship between the defendant's acts and the plaintiff's injury.[74] Regardless of the cause of action pursued—whether it is negligence, nuisance, trespass, or strict liability—the injured party must prove causation.[75]

In toxic tort cases, proof of causation involves several theoretical and practical difficulties that often defeat recovery. Missouri courts often are reluctant to allow recovery for latent harm[76] and rarely allow recovery based upon the possibility of future personal harm.[77] Difficulties in establishing causation often are responsible for these results. To show causation, the plaintiff must identify the chemical causing the harm,[78] trace the substance from its source to the victim,[79] and legally

73. Causation is the "paramount" legal issue in hazardous waste litigation. Soble, *A Proposal for the Administrative Compensation of Victims of Toxic Substance Pollution: A Model Act*, 14 HARV. J. ON LEGIS. 683, 706 (1977). *See also* SIX CASES, *supra* note 15, at 488 ("Clearly, the most difficult feature of any [hazardous waste personal injury case] would be proof of the causal connection between the defendant's wrongful acts and the injuries of which the plaintiffs complained."). *See generally* Comment, *Judicial Attitudes Towards Legal and Scientific Proof of Cancer Causation*, 3 COLUM. J. ENVTL. L. 344 (1977).

74. *See* RESTATEMENT (SECOND) OF TORTS §§ 430-53 (1965); P. KEETON, *supra* note 36, § 41.

75. RESTATEMENT (SECOND) OF TORTS § 430 (1976) (causation must be proved in strict liability).

76. *See, e.g.*, Elgin v. United States, 89 F. Supp. 195, 197 (W.D. Mo. 1950) (reversing judgment for plaintiff for failure to prove by preponderance of the evidence that injuries suffered caused resulting cancer); Berardino v. General Molding, Inc., 586 S.W.2d 365, 366 (Mo. Ct. App. 1979) (workman's compensation for alleged asbestos induced lung ailment denied because of testimony of employer's medical experts that an employee suffered from a lung condition caused by excessive smoking and from testimony of the company president that asbestos had not been used by the employer). *But see* Smith v. Cook Paint & Varnish, 561 S.W.2d 730, 732 (Mo. Ct. App. 1978) (an accident need not be the sole or direct cause of industrial injury to be compensable, as long as it is a concurring or contributory cause; a particular disability does not have to be directly traceable to a specific event).

77. *See, e.g.*, Laswell v. Brown, 524 F. Supp. 847, 850 (W.D. Mo. 1981) (lawsuit for personal injury cannot be based upon the possibility of some future harm); Coffer v. Paris, 550 S.W.2d 915, 918 (Mo. Ct. App. 1977) (insufficient for the doctor to testify concerning the possibility of a certain result; his testimony should show that a specified result is reasonably certain to follow the plaintiff's injury); Hahn v. McDowell, 349 S.W.2d 479, 482 (Mo. Ct. App. 1961) (testimony of physicians that in their opinion the possibility of cancer developing at site of burn scar was incompetent and speculative).

78. Several obstacles makes this task difficult. One difficulty is synergism, or the interaction between two pollutants. Often chemicals in combination cause injury.

establish that the chemical caused the injury or disease.[80]

In Missouri, plaintiffs must establish the causal connection by a preponderance of the evidence.[81] Proof of causation in toxic tort cases is complex, necessitating expert testimony[82] in several disciplines. Supporting scientific data, including the results of epidemiological studies, also may be required. In addition to problems and uncertainties inher-

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Showing that combinations of chemicals cause the harm requires highly sophisticated, time consuming, and costly scientific analysis. *See* SURGEON GENERAL'S REPORT, *supra* note 6, at 133-38. Another complication arises in latent injury cases. The identity of a toxic substance may chemically and physically change during the time the latent injury was dormant. Thus, establishing the original composition of the substance may be a difficult task. *Id.*

79. This task becomes difficult when more than one source has contributed to the contamination. *Id.* at 5-6. For example, ground water contamination, especially in industrial areas, often can be attributed to several causes. The substance's path en route to a victim is subject to such factors as time, space, and rate of movement. Note, *supra* note 71, at 322 n.85.

> Some of the more mobile persistent pollutants (i.e., those that have high water solubility, high vapor pressure, etc.) may be transported over a considerable portion of the globe by natural geochemical processes and by movement through food chains. Accordingly, pathways between sources and potential targets may be long and complex and exposure levels of any particular location may reflect contributions from numerous widely dispersed sources.

SURGEON'S GENERAL'S REPORT, *supra* note 6, at 156, quoting SUBCOMM. ON SCIENCE, RESEARCH, AND TECHNOLOGY OF THE HOUSE COMM. ON SCIENCE AND TECHNOLOGY, 96TH CONG., 1ST SESS., AN OVERVIEW OF RESEARCH IN BIOGEOCHEMISTRY AND ENVIRONMENTAL HEALTH (1979).

80. A determination that a certain substance legally caused a certain disease is obscured by complications in the evolution of experimental data, the uncertain relevance of low-level exposure evaluations and results of animal testing to humans, and the complex nature of scientific statistical reports. *See* Note, *supra* note 8, at 714. The physical response that contaminants may evoke after human ingestion may vary "both temporally and in kind from individual to individual, making it difficult to attribute a particular illness to a particular chemical or combination of chemicals." Ginsberg & Weiss, *supra* note 8, at 922. Additionally, particularly in the case of long-term latent harm, intervening causes or contributory causes, such as working in a chemical plant or smoking, may add to the uncertainty. *Id.* at 922-23. For an analysis of the difficulty and expense of proving these links in the chain of causation, see *id.* at 921-24.

81. Elgin v. United States, 89 F. Supp. 195, 197 (W.D. Mo. 1950) (in a claim for special damages, the burden is on the plaintiff to establish by a preponderance of the evidence that cancerous growth was an actual result of injury sustained in accident).

82. Clevenger v. Labor & Indus. Rel. Comm., 600 S.W.2d 675, 676 (Mo. Ct. App. 1980) ("where a fact finder must determine medical causation that is not within common knowledge or experience, there must be scientific or medical evidence establishing the cause and effect relationship between the complained of condition and the asserted cause"). *See also* Griggs v. AB Chance Co., 503 S.W.2d 697, 703 (Mo. Ct. App. 1973) (plaintiff has burden of proof).

ent in utilizing scientific evidence, Missouri evidence law presents further difficulties. Missouri courts apply the *Frye* test,[83] which only admits evidence that is based upon a scientific principle or discovery generally accepted in its particular scientific field.[84] The *Frye* test creates two major difficulties for plaintiffs bringing toxic tort suits. First, to pass muster under the *Frye* test, a scientific theory must be in a "demonstrable" stage rather than in an "experimental" stage.[85] Unfortunately, proof of environmentally caused injuries almost always is based on information on the "cutting edge" of scientific knowledge.[86] As a result, toxicological or epidemiological theories that are essential to prove causation in a toxics-induced latent injury case may be inadmissible in court.[87] The rigorous proof required before a chain of cau-

83. Frye v. United States, 293 F. 1013 (D.C. Cir. 1923).

84. *Id.* at 1014.

> Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made *must be sufficiently established to have gained general acceptance in the particular field in which it belongs.*

Id., *quoted in* State v. Sager, 600 S.W.2d 541, 562 (Mo. Ct. App. 1980) (emphasis added). The rule has produced the following results: State v. Biddle, 599 S.W.2d 182, 191 (Mo. 1980) (polygraph tests conclusively inadmissible); State v. Sager, 600 S.W.2d 541, 573 (Mo. Ct. App. 1980) (bite-mark identification admissible); State v. Jackson, 566 S.W.2d 227, 227-28 (Mo. Ct. App. 1978) (neutron activation analysis results admissible generally).

The *Frye* standard has been criticized on the ground that it often results in the exclusion of relevant evidence. *See* C. MCCORMICK, EVIDENCE § 203, at 490-91 (2d ed. 1972). *See also* Giannelli, *The Admissibility of Novel Scientific Evidence:* Frye v. United States, *a Half Century Later*, 80 COLUM. L. REV. 1197, 1204-28 (1980) (stating the difficulties in applying the *Frye* test and the current status of the test). Some jurisdictions have rejected the *Frye* test for the more liberal *Williams* rule. The Maine Supreme Court developed this rule in State v. Williams, 388 A.2d 500 (Me. 1978). In cases when the proffered expert testimony rests on newly ascertained or applied scientific principles, the court utilizes a balancing test rather than a per se ban. The balancing test weighs the probative value, materiality, and reliability of the scientific evidence against its tendency to mislead or prejudice the jury. *Id.* at 504.

85. Frye v. United States, 293 F. 1013, 1013 (D.C. Cir. 1923).

86. Often, animal tests indicate multiple serious health effects of a chronic nature resulting from exposure to certain chemicals. The courts, however, have not accepted these tests as evidence of human health effects. SIX CASES, *supra* note 15, at 488-89.

87. *Id.* at 487-90. *See also* Ginsberg & Weiss, *supra* note 8, at 923 ("The net effect is to require that juries and judges evaluate information in fields far removed from their usual areas of competence, and make judgments based on conflicting and ambiguous data.").

sation becomes generally accepted in the scientific community poses a second problem for plaintiffs. Scientists may have to show that there is a ninety-five percent chance that a relationship is causal rather than chance before their findings will become generally accepted in the scientific community. In contrast, for a plaintiff to establish a causal relationship that does not rely on scientific evidence, he merely would have to show by a preponderance of the evidence that the causal relationship exists.[88]

These practical difficulties in proving causation often force victims to settle,[89] accounting for the relative absence of fully adjudicated toxic injury cases in Missouri.[90] One commentator concluded: "The common law, born in a less complicated era, shies away; victims of complex injuries of modern technological society need modern solutions."[91] Until the Missouri Legislature or courts shift some of the burden of proof regarding causation to defendants,[92] proof of causation problems will continue to plague those injured in Missouri by toxic wastes.

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88. SIX CASES, *supra* note 15, at 488.

> In law, causation is generally proved by demonstrating that it is more likely than not that X caused Y; in the sciences underlying toxic substances, most notably toxicology and epidemiology, causation is accepted when there is less than a five per cent chance that the association could be accidental. Thus, the rigor required of scientific proof may prevent the generation of information adequate to support legal recoveries.

Id.

89. *See id.* at 494-96. Several factors attributable to causation problems discourage the pursuit of legitimate claims. First, the difficulty of proving causation in a toxic tort case makes success unlikely or at least uncertain. Second, even if the plaintiffs can prove causation, the plaintiffs must establish it by using expert medical and scientific witnesses. These experts, as well as discovery procedures, are very costly. Thus, only injured persons with extremely large claims can afford to engage in full fledged litigation. Third, the massive amount of time required to prepare for and litigate a case often encourages settlement. Finally, the injured victim usually requires quick reparation due to medical costs. Delay postpones redress of injuries. *Id.* at 495. One way to eliminate at least one of these difficulties, excessive costs, is through joinder of parties. Several individuals in one location may be exposed to hazardous wastes, making joinder practicable. *See supra* note 64.

90. The only reported decision under the Missouri Hazardous Waste Management Law involves a declaratory judgment action challenging an order adopted by a county court to regulate landfills. *See* Browning-Ferris Indus. of Kansas City, Inc. v. Dance, 671 S.W.2d 801 (Mo. Ct. App. 1984). For an analysis of the Moscow Mills contamination case settlement, see SIX CASES, *supra* note 15, at 283-97.

91. Note, *supra* note 71, at 322-23.

92. *Id.* at 322. *See also* INJURIES AND DAMAGES I, *supra* note 25, at 198-215 (supports shifting some of the causation burden to the defendant).

IV. COMMON LAW THEORIES OF REDRESS FOR LATENT HAZARDOUS WASTE POLLUTION HARM IN MISSOURI

A. *Common Law Remedies*

The obstacles to proving causation noted above exist regardless of which common law theory is chosen, whether it is negligence, trespass, nuisance, or strict liability. The discussion below focuses on additional hindrances to personal recovery at common law in hazardous waste pollution cases.[93]

1. Negligence

Missouri courts have not yet established a cause of action for environmental negligence.[94] Thus, to successfully use a negligence theory, a plaintiff must show that the defendant failed to exercise "due care."[95] A claimant can demonstrate lack of due care by proving a specific environmental statutory violation.[96] Absent proof of such a violation, a

93. For a commentary on traditional tort law's effectiveness in compensating the victims of hazardous waste pollution, see generally TOXIC TORTS (P. Rheingold, N. Landau, M. Canavan ed. 1977) (published by Ass'n of Trial Lawyers of America); Milhollin, *supra* note 3; Pfennigstorf, *Environment, Damages, and Compensation*, 1979 A.B. FOUND. RESEARCH J. 349. These authors conclude that traditional tort law is inadequate to compensate those harmed by hazardous waste pollution. *But see Hazardous and Toxic Waste Disposal: Hearings on S. 1341 and S. 1480 Before the Subcomm. on Envtl. Protection and Resource Protection of the Senate Comm. on Env't and Pub. Works*, 96th Cong., 1st Sess. 349, 683 (1978) (testimony of Jackson Browning and Frank Friedman, stating that the state tort law is adequate to compensate hazardous waste pollution victims and that no federal toxic tort cause of action is necessary).

94. 1 THE MISSOURI BAR, MISSOURI TORT LAW § 17.9 (1978) [hereinafter cited as MISSOURI TORT LAW].

95. *See, e.g.*, Joyce v. Nash, 630 S.W.2d 219, 222 (Mo. Ct. App. 1982) (actionable negligence results from failure of a person under a duty of reasonable care to protect another from injury).

96. A statutory violation constitutes actionable negligence when it appears that there was a violation of the statute, that the injured party was within the class of persons intended to be protected by the statute, that the injury was of such character as the statute was designed to prevent, and that the statutory violation was the proximate cause of the injury. Hartenbach v. Johnson, 628 S.W.2d 684, 687 (Mo. Ct. App. 1982). Missouri environmental statutes that plaintiffs may implicate in a negligence per se claim in hazardous waste litigation are: The Missouri Hazardous Waste Law, MO. REV. STAT. §§ 260.350-.609 (1978 & Supp. 1983); the Missouri Pesticide Use Act, *id.* §§ 281.010-.115; the Missouri Pesticide Registration Act, *id.* §§ 263.269-.380; the Solid Waste Disposal Act, *id.* §§ 260.200-.245; the Missouri Clean Water Law, *id.* §§ 240.006-.141; the Missouri Air Conservation Law, *id.* §§ 230.010-.195; and the Radiation Control Law, *id.* §§ 192.400-.490. All of these statutes create statutory standards of conduct. Using proof of a statutory violation may ease the plaintiff's burden in show-

claimant may prove lack of due care by showing that the defendant breached a common law duty owed to him and, therefore, created a foreseeable and unreasonable risk of injury.[97] Demonstrating unreasonableness and foreseeability presents substantial difficulties in toxics litigation. A defendant can rebut an allegation of unreasonableness by showing that technical and economic factors at the time of the exposure made his actions reasonable under the circumstances.[98] Proving foreseeability presents similar difficulties. The uncertainties associated with toxic wastes, such as their effects on human health, make an unforeseeability defense a likely barrier to recovery.[99] Because of these obstacles to recovery, plaintiffs rarely seek recovery under a negligence theory in environmental pollution cases.[100]

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ing that the defendant's action constituted a foreseeable and unreasonable risk. A statutory violation, however, does not prove causation. SIX CASES, *supra* note 15, at 303.

97. Kelley v. National Lead Co., 240 Mo. App. 47, 210 S.W.2d 728, 734 (1948).

98. SIX CASES, *supra* note 15, at 298-99. In Kelley v. National Lead Co., 240 Mo. App. 47, 210 S.W.2d 728 (1948), noxious fumes from the defendant's chemical manufacturing plant escaped and caused personal and property damage to the plaintiff. The plaintiff alleged that the discharge constituted negligence because the factory failed to employ an available anti-pollution device that could have prevented the harmful discharge. The court disagreed, stating that because the device was not "on the market" and "required testing and experimentation," the defendant owed the plaintiff no duty to install the device. *Id.* at 734.

99. SIX CASES, *supra* note 15, at 299. Reserve Mining Co. v. EPA, 514 F.2d 492 (8th Cir. 1975), illustrates this point. The case concerned whether the defendant's dumping of asbestiform particulate waste into Lake Superior could be enjoined as a health hazard. A major factual issue at trial was whether asbestiform particules passing through the digestive tract were toxic. At the time of trial, only the asbestiform particles entering through the respiratory system were known to be toxic. The court concluded that it was impossible to know whether asbestiform particles in the digestive system could cause cancer, stating:

> On the record it cannot be forecast that the rates of cancer will increase from drinking Lake Superior water or breathing Silver Bay air. The best that can be said is that the existence of this asbestos contamination in air and water gives rise to a reasonable medical concern for the public health.

Id. at 520.

For additional information regarding *Reserve Mining*, see generally Note, Reserve Mining—*The Standard of Proof Required to Enjoin an Environmental Hazard to the Public Health*, 59 MINN. L. REV. 893 (1975). One commentator speculated about the long-term effects of Reserve Mining's dumping:

> A tort plaintiff twenty years from now, with a claim that Reserve did not use "due care," will be faced with the argument that the asbestos hazard was not apparent until years after Reserve began the emissions, and that even when it became apparent, the risk remained unknown.

Milhollin, *supra* note 3, at 6-7.

100. SIX CASES, *supra* note 15, at 299. Recovery in negligence was awarded, how-

2. Trespass

Trespass involves a physical invasion of a claimant's possessory interest in land.[101] In Missouri, parties are liable for damages resulting from trespass, regardless of whether the parties were negligent.[102] This automatic liability is the major advantage trespass theory provides for victims of hazardous waste pollution in Missouri.[103]

In cases involving invasion of a claimant's property by a toxic substance, however, trespass theory also presents problems for claimants. For example, Missouri courts may insist upon a *tangible* physical invasion of property to find that a trespass has occurred. Most toxic substances, like dioxin and asbestos, are microscopic and, therefore, *intangible*.[104] Moreover, relatively no legal precedent exists in Mis-

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ever, in Faire v. Burke, 363 Mo. 562, 252 S.W.2d 289 (1952). The case involved the negligent spraying of a herbicide, which resulted in damage to the plaintiff's crops. The court stated that the defendant failed to use due care in making sure that weather conditions were acceptable for crop dusting. *Id.* at 564-66, 252 S.W.2d at 292-93. This case, while it does involve recovery for harm caused by a toxic substance, is based on straightforward, nonattenuated facts and, therefore, is of questionable precedential value in a modern toxic tort case.

101. *See, e.g.*, Looney v. Hindman, 649 S.W.2d 207, 212 (Mo. 1983) (discharge of surface waters onto another's property); Mawson v. Vess Beverage Co., 173 S.W.2d 606, 612-13 (Mo. Ct. App. 1943) (personal injury attributable to the defendant's metal advertising signs tacked up on the plaintiff's property).

102. *See, e.g.*, Baker v. Newcomb, 621 S.W.2d 535, 537 (Mo. Ct. App. 1981). This approach accounts for the lack of pollution cases brought and settled on a strict liability theory. *See infra* notes 130-33 and accompanying text. Most jurisdictions have repudiated common law strict liability in trespass. P. KEETON, *supra* note 36, § 13, at 69.

103. In most jurisdictions, the plaintiff must base a trespass action on intentional, negligent, or ultrahazardous activities. P. KEETON, *supra* note 36, § 13, at 67-76. Missouri courts, however, historically have rejected independent strict liability theory in pollution-related cases. This rejection may explain why the old common law rules of strict liability in trespass retain vitality in Missouri today.

104. Although the law is changing, some approaches require tangible or visible invasions to find trespass. *Id.* at 70. Missouri courts have not yet squarely ruled on this issue. MISSOURI TORT LAW, *supra* note 94, § 17.8. *Cf.* Summers v. Tavern Rock Sand Co., 315 S.W.2d 201, 203 (Mo. 1958) (couched in the language of trespass, strict liability was imposed on defendant conducting blasting operations).

The trend in jurisdictions granting a trespass cause of action for intangible invasions is to use a balancing test analogous to the test used in nuisance cases. *See, e.g.*, Martin v. Reynolds Metals Co., 221 Ore. 86, 98, 342 P.2d 790, 795 (two step balancing test adopted to determine when an invasion by intangible matter is a trespass), *cert. denied*, 362 U.S. 918 (1959). Therefore, the difficulties of prevailing on a balancing test also could apply in trespass. *See infra* notes 119-24 and accompanying text.

souri for pollution-related personal injury claims based on trespass.[105]

3. Nuisance

Nuisance is the backbone of modern environmental law.[106] The courts use this common law doctrine more than any other to address pollution-induced harm. This theory supplements the existing categories of liability for latent harm by offering the injunction to halt immediately the specified activity.[107] A plaintiff can allege either a private nuisance or a public nuisance. A private nuisance occurs when intentional activity on one party's property substantially interferes with the property, person, or health of others.[108] A public nuisance results when one party's activities unreasonably and substantially interfere with a right to which every citizen is entitled, such as the right to travel.[109] Missouri courts frequently invoke this theory to find nuisances in cases involving water pollution,[110] noise,[111] explosives,[112] well contamination,[113] and manufacturing plants.[114] Like trespass, a finding of a nuisance need not be based on the defendant's

105. *But see* Tavernaro v. Dunn, 563 S.W.2d 114, 116 (Mo. Ct. App. 1978) (trespass case involving dumping of trash and debris on the plaintiff's property).

106. Note, *supra* note 71, at 320.

107. *See* P. KEETON, *supra* note 36, §§ 88A, 89, 90, at 630-33, 637-52. *See also* Village of Wilsonville v. SCA Servs., Inc., 86 Ill. 2d 1, 426 N.E.2d 824 (1981). In *Wilsonville*, the Illinois Supreme Court affirmed the lower court's issuance of a permanent injunction against a hazardous waste disposal site on the grounds that the site constituted a current and prospective nuisance. The site held hazardous substances such as PCBs, solid cyanide, paint sludge, asbestos, pesticides, mercury, and arsenic. The court reached this result by noting the extreme hazards that the site produced: the potential explosive interaction of the chemicals deposited at the site, the threat of hazardous waste migration due to the permeable nature of the soil at the site, and the hazardous waste seepage into the groundwater due to soil subsidence of the earth, created a "dangerous probability" that the threatened injury would occur. The court reasoned that because this "dangerous probability" of harm existed, the lower court properly enjoined the site as a prospective nuiance. *Id.* at 25, 426 N.E.2d at 836.

108. Boller v. Texas E. Transmission Corp., 87 F. Supp. 603, 605 (E.D. Mo. 1949) (operation of a booster station on a natural gas pipeline not an actionable nuisance).

109. Biggs v. Griffith, 231 S.W.2d 875, 881 (Mo. Ct. App. 1950) (public address system did not substantially interfere with public right).

110. *See, e.g.*, Harrisonville v. Dickey Clay Mfg. Co., 289 U.S. 334 (1933); Barlett v. Hume-Sinclair Coal Mining Co., 351 S.W.2d 214 (Mo. Ct. App. 1961).

111. *See, e.g.*, Crutcher v. Taystee Bread Co. 174 S.W.2d 801 (Mo. 1943).

112. *See, e.g.*, St. Joseph Lead Co. v. Prather, 238 F.2d 301 (8th Cir. 1956); Schnitzer v. Excelsior Powder Mfg. Co., 160 S.W. 282 (Mo. Ct. App. 1912).

113. *See, e.g.*, Haynor v. Excelsior Springs Light, Power, Heat & Water Co., 129 Mo. App. 691, 108 S.W. 580 (1908).

negligence.[115]

Again, however, major limitations exist on the doctrine's utility. The substantial burden of proving causation[116] and the "property bias"[117] discussed in Part II obstruct recovery in nuisance. In addition, courts apply a balancing test in private nuisance actions to determine whether an invasion is "unreasonable."[118] This test weighs the utility of the defendant's action against the magnitude of the harm to the plaintiff.[119] The test necessarily introduces social and economic utility, technological infeasibility, and scientific uncertainties into the judicial calculus. Consequently, recovery becomes difficult.[120] This is true especially when the incident at issue occurred decades before trial. In addition, the character of the surrounding neighborhood often is a crucial factor in the nuisance balancing test.[121] As a result, hazardous polluting activities rarely are enjoined in industrialized—and unfortunately often heavily populated—areas.[122] Courts also apply this bal-

114. *See, e.g.*, Vaughn v. Missouri Power & Light Co., 89 S.W.2d 699 (Mo. Ct. App. 1936).

115. *See, e.g.*, Hawkins v. Burlington Northern, 514 S.W.2d 593, 602 (Mo. 1974).

116. *See supra* notes 65-83 and accompanying text. *See, e.g.*, Bellflower v. Pennise, 548 F.2d 776, 778 (8th Cir. 1977) (to constitute an actionable nuisance, maintenance of nuisance must be a natural and proximate cause of injury).

117. *See supra* notes 49-54 and accompanying text. *See, e.g.*, Rebel v. Big Tarkio Drainage Dist., 602 S.W.2d 787, 791 (Mo. Ct. App. 1980) (action for private nuisance rests upon tort liability for unreasonable interference with use and enjoyment of land).

118. *See* Rebel v. Big Tarkio Drainage Dist., 602 S.W.2d 787, 791 (Mo. Ct. App. 1980) (nuisance action based on the unreasonable interference with the use and enjoyment of land).

119. Clinic & Hosp. v. McConnell, 241 Mo. App. 223, 233, 236 S.W.2d 384, 391 (1951). The balance takes into account the following factors: the locality and character of the surrounding neighborhood, the nature, utility, and social value of the activity involved, and the nature, utility, and social value of the interest harmed. *Id.* at 233, 236 S.W.2d at 391.

120. SIX CASES, *supra* note 15, at 308-09. Even if a court rules that a nuisance exists, it still employs an additional balancing test to decide which remedy is appropriate. This balancing judgment often frustrates attempts to enjoin polluting activities. *See, e.g.*, United States v. Vertac Chemical Corp., 489 F. Supp. 870, 887-88 (E.D. Ark. 1980) (after balancing the benefits conferred and the hazards created by the plant, the court did not order the closure of an Agent Orange plant that it found to be a public nuisance).

121. *See, e.g.*, Fuchs v. Curran Carbonizing & Eng'g Co., 279 S.W.2d 211, 218 (Mo. Ct. App. 1955) (resident of area zoned "light industrial" cannot expect the same freedom from air pollution as that enjoyed by residents of residential districts).

122. *See, e.g.*, Chicago v. Commonwealth Edison Co., 24 Ill. App. 3d 624, 632, 321

ancing test prospectively in injunction proceedings.[123] This test, therefore, can preclude the plaintiff from thwarting possible future harm.[124]

If the nuisance is public, injured persons vested with interest in land may recover.[125] Although some Missouri statutes define what constitutes a public nuisance within their subject matter,[126] the Missouri Hazardous Waste Management Law offers no guidance.

Activity constitutes a public nuisance if it substantially interferes with a public right.[127] A private individual, however, may not bring suit unless his injury is "different in kind"—that is, more aggravated from that suffered by the general public.[128] Unfortunately, both requirements rarely will be met in toxics-induced personal injury cases.[129]

N.E.2d 412, 418 (1974) ("Courts . . . have traditionally been reluctant to enjoin an industrial operation unless it is clearly and satisfactorily proven to be a nuisance.").

123. *See, e.g.*, Village of Wilsonville v. SCA Servs., Inc., 86 Ill. 2d 1, 6, 426 N.E.2d 824, 836 (1981) (court must find that activity to be prospectively enjoined creates a "dangerous probability" that threatened injury will occur).

124. The "dangerous probability" standard may be too lenient in cases involving high risk hazardous waste sites. *See* Village of Wilsonville v. SCA Servs., Inc., 86 Ill. 2d 1, 38, 426 N.E.2d 824, 842 (1981) (Ryan, J., concurring) (hazardous waste site disposal operations entail "ultrahazardous activity" and, therefore, a lesser risk than inheres in the "dangerous probability" of harm standard can support prospective injunctive relief in nuisance). It is unclear at this time whether Missouri courts will adopt this more lenient approach in hazardous waste cases. One case suggested such an approach, using a "reasonable likelihood" of harm test. *See* Village of Claycomo v. City of Kansas City, 635 S.W.2d 365, 370 (Mo. Ct. App. 1982) (injunction case remanded to determine whether operation of a sanitary landfill would produce a reasonable likelihood of threatened injury).

125. RESTATEMENT (SECOND) OF TORTS § 821C (Tent. Draft Nov. 16, 1970).

126. *See, e.g.*, Missouri Clean Water Law, MO. REV. STAT. §§ 204.006-.141 (1978 & Supp. 1983) (statement of policy, *id.*, § 204.011, gives guidelines regarding public nuisance).

127. *See, e.g.*, Lademan v. Lamb Constr. Co., 297 S.W. 184, 186 (Mo. Ct. App. 1927) (operation of quarry does not interfere with a right held by the public).

128. *Id.*

129. For instance, the Shenandoah Stables contamination incident, *supra* note 15, probably was not a public nuisance. The contamination affected only a few people affiliated with the stables and, therefore, did not affect a right held in common by the public. Thus, even though the victims' injury was "different in kind" from that suffered by the general public, no private action in public nuisance could pertain. SIX CASES, *supra* note 15, at 307. If, however, the contaminated soil was dug up and used under a highway roadbed, it could create a public nuisance if the toxic waste escaped into the surrounding environment, thereby affecting the public's right to travel. Then the people of Shenandoah Stables could have brought a private action in public nuisance. *Id. See*

4. Strict Liability

Missouri courts extend liability without fault to certain activities "fraught with danger"[130] that result in harm to the plaintiff. Except in cases involving defective products, strict liability in Missouri is applied infrequently and inconsistently.[131] Missouri courts never have used the doctrine in a pollution-related case.[132] Instead, in these cases courts often employ strict liability principles within the better-developed common law actions of trespass or nuisance.[133] Missouri courts

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Town of East Troy v. Soo Line R.R. Co., 653 F.2d 1123, 1132-34 (7th Cir. 1980) (damages for public nuisance awarded to a town against a railroad company that negligently polluted the town's drinking water).

130. Carson v. Blodgett Constr. Co., 174 S.W. 447, 448 (Mo. Ct. App. 1915) ("It is well established that the use of high explosives in blasting . . . is so fraught with danger that the person using same . . . is held liable . . . without proof of negligence."). Neither Restatement formulation of strict liability has been expressly adopted in Missouri. *See* RESTATEMENT OF TORTS § 519 (1938) ("ultrahazardous activity"); RESTATEMENT (SECOND) OF TORTS § 519 (1976) ("abnormally dangerous activity").

131. Missouri courts have ruled that blasting operations give rise to strict liability. *See, e.g.*, Schaefer v. Frazier-Davis Constr. Co., 125 S.W.2d 897, 898 (Mo. Ct. App. 1939); Stocker v. Richmond Heights, 235 Mo. App. 277, 277-78, 132 S.W.2d 116, 117 (1939); Carson v. Blodgett Constr. Co., 174 S.W. 447, 448 (Mo. Ct. App. 1915). Many other decisions, however, base liability for blasting on nuisance or trespass. *See, e.g.*, Rotert v. Peabody Coal Co., 513 S.W.2d 667, 677-78 (Mo. Ct. App. 1974) (blasting operation a nuisance); Smith v. Aldridge, 356 S.W.2d 532, 534 (Mo. Ct. App. 1962) (blasting operation results in trespass).

132. MISSOURI TORT LAW, *supra* note 94, § 17.13.

133. *See* Comment, *The* Rylands v. Fletcher *Doctrine and its Standing in Missouri*, 18 MO. L. REV. 53, 56-60 (1953). Originally, Missouri courts rejected the doctrine of Rylands v. Fletcher, L.R. 3 Exch. 774 (1865), *aff'd*, L.R. 3 H.L. 330 (E. & I. App. 1868), the case upon which strict liability is generally founded. *See, e.g.*, Kelley v. National Lead Co., 240 Mo. App. 47, 58, 210 S.W.2d 728, 733 (1948) (liability cannot be imposed upon the owner or occupant of land for damages caused by substances from his premises except upon proof of negligence on his part). *Rylands* involved a defendant mill owner that employed engineers to build a reservoir upon his lands. The reservoir was built directly above an abandoned mine shaft. When the reservoir was filled with water, the mine shaft collapsed, causing water to flow onto and damage the adjoining property. In ruling for the adjoining property holder, the court stated that one who for his own purpose brings on his lands anything likely to do mischief if it escapes, must keep it at his peril, and is prima facie responsible for all damage that is the natural consequence of its escape. Fletcher v. Rylands, L.R. 3 Exch. 774 (1865). The appellate court affirmed and qualified the rule by extending it only to non-natural uses of land. Rylands v. Fletcher, L.R. 3 H.L. 330 (E. & I. App. 1868).

Kelley v. National Lead Co., 240 Mo. App. 47, 48, 210 S.W.2d 728, 733 (1948), expressly rejected the *Rylands* doctrine. The reluctance to apply strict liability persists. One commentator concluded that opposition to the doctrine in Missouri is based "to a great extent" on adherence to the earlier cases. *See* Comment, *supra*, at 55. These earlier cases apply strict liability theory within the trespass and nuisance actions. These

have not yet ruled as to whether any of these applications of strict liability theory apply to the generation, transportation, storage, or disposal of hazardous wastes.[134]

Missouri strict products liability law is relatively well developed.[135] Courts, however, may find the application of products liability doctrine to toxics-induced harm inconsistent with the doctrine's purpose as it has been developed in Missouri. Missouri decisions hold that products liability law imposes a duty on manufacturers to avoid introducing into commerce unreasonably dangerous products.[136] It is unlikely that Missouri courts, restrained in their application of strict liability in pollution-related cases, will define hazardous waste as a product. To do so, courts must re-define the term "product" to include the entire manufacturing process from raw materials to waste.[137] No Missouri cases

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actions were particularly suited for non-toxic pollutant cases, because the pollutant was tangible and the harm was immediate and apparent.

134. The case for applying strict liability for these activities is a good one. *See infra* notes 169-90 and accompanying text. This approach, however, has little precedent in Missouri. Courts decide most pollution related cases in Missouri using nuisance or trespass law. *See supra* notes 131-33 and accompanying text. *See also* Pecan Shoppe of Springfield Mo., Inc. v. Tri-State Motor Transit Co., 573 S.W.2d 431, 438-39 (Mo. Ct. App. 1978) (strict liability inapplicable to harm that results from the transport of explosives); Green v. Spinning, 48 S.W.2d 51, 61 (Mo. Ct. App. 1932) (rejecting strict liability for storage of gasoline at a filling station). *See infra* note 196 for further discussion of *Pecan Shoppe.*

135. Strict product liability under the RESTATEMENT (SECOND) OF TORTS is accepted doctrine in Missouri. *See, e.g.*, Keener v. Dayton Elec. Mfg. Co., 445 S.W.2d 362, 364 (Mo. 1969). Section 402A of the RESTATEMENT states:

> (1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if
> (a) the seller is engaged in the business of selling such a product, and
> (b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.
> (2) The rule stated in Subsection (1) applies although
> (a) the seller has exercised all possible care in the preparation and sale of his product, and
> (b) the user or consumer has not bought the product from or entered into any contractual relation with the seller.

RESTATEMENT (SECOND) TORTS § 402A (1965).

136. MISSOURI SUPREME COURT COMM. ON JURY INSTRUCTIONS, MISSOURI APPROVED JURY INSTRUCTIONS No. 25.05 (3d ed. 1981). *See, e.g.*, Racer v. Utterman, 629 S.W.2d 387, 392-93 (Mo. 1981) (producer of flammable surgical drape strictly liable for injuries caused by fire), *appeal dismissed and cert. denied*, 459 U.S. 803 (1982).

137. *See* Note, *supra* note 71, at 320. The author concluded: "Rather than redefining 'product' to mean the entire manufacturing process from raw material to waste, it might be better to develop a new doctrine of waste liability or strict toxic or hazardous

indicate acceptance of this approach.

B. *Summary*

Missouri law reflects the substantial obstacles to recovery for toxic tort victims. Difficulties in isolating the proper parties are inherent in toxics litigation, yet this problem is largely unaddressed in the Missouri Hazardous Waste Management Law.[138] Missouri's statute of limitations employs the "discoverable rule," which can bar some meritorious latent harm claims.[139] Finally, the common law remedies available to latent harm victims are outmoded and ineffective. In addition to their other inadequacies discussed above,[140] all the remedies place the heavy burden of proving legal causation[141] squarely on the plaintiff. This burden normally is too substantial for a party injured decades before the litigation to sustain.

The failure of common law remedies to compensate victims of hazardous waste pollution produces untoward consequences. One beneficial result of tort law, in addition to compensating victims for legal wrongs, is discouraging unsafe conduct by making tortfeasors pay for their transgressions.[142] This result will not be attained if toxics victims are redressed insufficiently for their injuries. Put simply, dangerous conduct that goes "unpunished" is dangerous conduct that will continue.[143]

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substance liability." *Id.* For a strong argument that contaminated waste oil used as a dust suppressant is a "product" under Missouri product liability law, see SIX CASES, *supra* note 15, at 314-17.

138. The Missouri Hazardous Waste Management Law, MO. REV. STAT. §§ 260.350-.609 (1978 & Supp. 1983), does not provide a personal injury compensation fund for victims that cannot locate the responsible parties or that encounter responsible parties that are insolvent. *Id.*

139. *See supra* notes 66-72 and accompanying text.

140. *See supra* notes 94-137 and accompanying text.

141. *See supra* notes 73-91 and accompanying text.

142. In theory, harmful behavior will discontinue or at least be made safer if the costs of the dangerous behavior, including the total injury compensation expense, are greater than the monetary benefits that the activity generates. *See* G. CALABRESI, THE COST OF ACCIDENTS 68-94 (1970).

143. The economics of tort law is beyond the scope of this Note. General principles, however, should be elucidated. An efficient tort liability scheme shifts costs to the party whose activity or product caused the harm. In theory, this cost-shifting, in addition to compensating the victim, should produce two results: 1) It should force the responsible party to pay the true aggregate cost of his activity; and 2) it should compel the responsible party to internalize this cost. For a defendant vendor, this cost shifting can produce varying results. The defendant that internalizes the cost of his activity and

Ideally, a hazardous waste management statute should remedy these common law inadequacies. Unfortunately, the Missouri Hazardous Waste Management Law does not. The statute fails to provide a personal cause of action for toxics victims and a fund from which they can recover, and, therefore, fails to provide the structure needed to compensate victims and deter unsafe conduct in this inherently dangerous activity.

V. MISSOURI'S STATUTORY RESPONSE TO THE HAZARDOUS WASTE PROBLEM

In 1977, the Missouri General Assembly enacted the Hazardous Waste Management Law.[144] This act was designed to regulate hazardous waste generation, transportation, and disposal in the state.[145] In 1983, responding to the pressing dioxin problem,[146] the legislature added the "Superfund"[147] provision to the statute. This amendment imposes an additional fee and tax on generators of hazardous waste.[148]

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increases the price of his good either will suffer or prosper. The result will depend on how well the market responds to a higher-priced product. Theoretically, the defendant will have to alter its risky practices to avoid compensation costs in order to remain competitive. *See* G. CALABRESI, *supra* note 142, at 69-75. For an overview of how tort law fails to produce economic incentives to reduce activities that pollute the environment, see Trauberman, *supra* note 10, at 184-90. For an argument that tort law should abandon the goal of safety enhancement, see Pierce, *Encouraging Safety: The Limits of Tort Law and Government Regulation*, 33 VAND. L. REV. 1281, 1290-1300 (1980).

144. MO. REV. STAT. §§ 260.350-.609 (1978 & Supp. 1983).

145. The law creates a four-member Hazardous Waste Commission. *Id.* § 260.365. In addition to being responsible for enforcing the Act, some of their duties and powers include:

> Establishing rules and regulations involving: the definition of "hazardous waste" under the Act [*id.* § 260.370-3(1)(a)]; the storage, treatment and disposal of hazardous wastes [*id.* § 260.370-3(1)(b)]; the transportation, containerization and labeling of hazardous waste [*id.* § 260.370-3(1)(c)]; the issuance of licenses and permits [*id.* § 260.370-3(1)(d)]; the standards for safe operation of hazardous waste facilities [*id.* § 260.370-3(1)(e)]; the standards for the reporting requirements [*id.* § 260.370-3(1)(g)]; and hearing requirements [*id.* §§ 260.370-3(2),(3)].

Id. § 260.370. Other provisions impose safety requirements for generators (*id.* § 260.380), transporters (*id.* § 260.385), and hazardous waste facility owners or operators (*id.* § 260.390).

146. *See supra* notes 12-23 and accompanying text.

147. MO. REV. STAT. § 260.480 (Supp. 1983).

148. *Id.* § 260.475. The amendment imposes a $25 per ton fee annually on all hazardous waste that is discharged, deposited, dumped, or placed into or on the soil as a final action, and a $2 per ton fee on all other hazardous waste transported off-site. *Id.* Additionally, another section imposes a quarterly tax on all Missouri employers regis-

The revenue obtained is used to conduct health studies, acquire contaminated property, pay for expanded hazardous waste clean-up, and respond to hazardous waste emergencies.[149] The amendment also establishes comprehensive information reporting requirements.[150]

The original law and its amendment, however, conspicuously lack both a statutory cause of action for personal injury caused by exposure to toxic waste and a fund from which victims can recover.[151] This omission is unjust in light of the breadth of the toxics problem,[152] the future harm it will cause,[153] and the inadequacy of Missouri's common law causes of action.[154] There is a corresponding lack of federal protection for toxic tort victims.[155] Thus, in the future, Missourians in-

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tered as hazardous waste generators, of $2 per covered worker. *Id.* § 260.478. A "generator" is any person who produces waste. *Id.* § 260.360(8) (1978 & Supp. 1983).

149. *See id.* § 260.480.

150. Section 260.440 establishes a registry of abandoned or uncontrolled waste sites; § 260.445 requires the Department of Natural Resources to submit a detailed report pertaining to these sites; § 260.450 requires the Hazardous Waste Commission to determine the relative priority of each site in Missouri. The Commission must make available all of this information to the public, subject to specified exceptions. *Id.* § 260.550. Trade secrets, however, are protected from disclosure. *Id.* § 260.430(1).

151. The House Committee Bill, however, did contain a cause of action for those injured by hazardous waste exposure and a provision for recovery from the fund. The House Committee Substitute for House Bill 528, § 260.485, stated: "The generation, transportation, disposal, and otherwise handling of hazardous waste shall be deemed an ultrahazardous activity and persons engaged in such activity shall be strictly, jointly, and severally liable in tort for injuries resulting therefrom." Mo. House Comm. Subst. for H.B. 528, § 260.485 (Feb. 9, 1983).

Several commentators have called for the creation of a specific statutory cause of action for hazardous waste induced injury. *See generally* Milhollin, *supra* note 3, at 16; Trauberman, *supra* note 10, at 258, 263; Note, *Strict Liability for Generators, Transporters and Disposers of Hazardous Wastes*, 64 MINN. L. REV. 949 (1980). Additionally, the Committee Bill advocated the use of the newly created Hazardous Waste Remedial Fund to compensate those injured by hazardous waste exposure. Mo. House Comm. Subst. for H.B. 528 § 260.480 (Feb. 9, 1983). Section 260.480 stated: "The Division of Health is authorized to approve reimbursement for health related expenditures limited to treatment for illnesses caused by exposure to hazardous waste. Such approval shall be submitted to the department for payment out of the hazardous waste remedial fund." *Id.* Finally, to guard against the Fund's depletion, the Bill provides that the Fund is subrogated to the compensated victim's claims against the party responsible for the victim's injury. *See id.* § 260.475(4).

152. *See supra* notes 11-16 and accompanying text.

153. *See supra* note 7 and accompanying text.

154. *See supra* notes 94-137 and accompanying text.

155 The much heralded Federal Superfund Act, 42 U.S.C. §§ 9601-9657 (1982), formally known as the Comprehensive Environmental Response, Compensation, and Liability Act, provides little compensation for personal injury caused by hazardous

jured by exposure to toxic substances will be without an effective legal remedy. The Superfund Amendment is a step in the right direction.[156] It fails, however, to go far enough in protecting Missouri citizens from the toxic waste problem. The Missouri General Assembly should amend the Hazardous Waste Management Law further to provide a statutory cause of action for those injured by toxics exposure.

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waste contamination. The statute imposes liability on responsible parties for the government's response costs, and for specified damages to natural resources. *Id.* § 9607. *But see supra* note 32 (post-closure liability fund).

In addition to the absence of an effective cause of action for victims of hazardous waste pollution, the federal agencies are failing in their attempts to control the hazardous waste problem. By early 1984, only 115 of the 8,000 active hazardous waste facilities in the nation had been inspected and granted an EPA operating permit. In addition, the EPA required only 3% of the manufacturers of the over 3,000 new chemicals that the agency screened to provide additional information. Fifty percent of the reports submitted contained no health data whatsoever and 80% of the reports contained no chronic disease risk information. Recently, the General Accounting Office found that 78% of the active hazardous waste facilities are ignoring the basic requirement to test and determine whether their operations contaminated groundwater. Eighty-two percent of 531 major sources of water pollution are breaking environmental laws. The Reagan Administration has cut funding deeply for the agencies responsible for implementing environmental law. These funding cuts are part of the reason for these dismal performance statistics. For instance, the EPA's protective program funds were cut by approximately 35%, even though EPA data showed that the recent toxic waste problem doubled the program's workload. St. Louis Post-Dispatch, Aug. 6, 1984, at 3B, col. 1. (Report by William Drayton, chairman of Environmental Safety, Washington, D.C.). Thus, state law remains the most important means for protecting against and redressing personal injury resulting from toxic substances pollution. For additional information on the Federal Superfund Act, see generally Note, *supra* note 8.

156. The amendment's recordkeeping and information requirements will aid victims in litigating their claims. For instance, the registry of abandoned hazardous waste sites required by § 260.440 can provide future plaintiffs, perhaps those that lived next to the site, with information concerning the exact type of waste existing there. MO. REV. STAT. § 260.440 (Supp. 1983). Additionally, the amendment requires that an annual report, which summarizes any significant environmental problems at or near the site, be given to the Governor each year. *Id.* § 260.445. This information can alert citizens that they have been harmed by toxic waste exposure and may avoid statute of limitations problems discussed earlier. *See supra* notes 66-72 and accompanying text. Finally, the information included in § 260.450 can be especially helpful to a plaintiff struggling to prove causation. This section requires the director to identify the following factors that are material to the issue of causation: 1) The site boundaries; 2) the time period for use for disposal of wastes; 3) the current and past owners of the site during the time period of use for disposal of hazardous waste; 4) the names of persons responsible for the generation and transportation of the hazardous waste disposal of; and 5) the type, quantity, and manner of hazardous waste disposed of. *Id.* § 260.450. Unfortunately, this information will be unavailable to the scores of people exposed to hazardous wastes in Missouri before the legislature promulgated these recordkeeping requirements.

A. *Overview of the Proposal*

This Note advocates the adoption of the statutory cause of action set forth in the Missouri "Superfund" Amendment House Committee Bill.[157] This bill provided for a strict liability cause of action: it labeled generation, transportation, and disposal of hazardous waste "ultra-hazardous activities."[158] Additionally, the bill called for joint and several liability for responsible defendants.[159] Finally, the bill allowed victims to bring personal injury claims against a Hazardous Waste Remedial Fund.[160] This Note also incorporates in its proposal additional recommendations that appear in a model statute on the subject, the Chemical Injury Liability Act—hereinafter referred to as the Model Statute.[161]

B. *Goals of New Statutory Scheme*

The goals of a new statutory cause of action should parallel the goals of traditional tort law: compensating victims of legal wrongs and discouraging unsafe behavior.[162]

C. *Specific Reforms*

1. Toxic Tort Statutes of Limitations

A statute of limitations is designed to prevent stale claims. Special considerations, however, exist in latent harm litigation. Missouri's statute of limitations for tort claims fails to address adequately the un-

157. Mo. House Comm. Subst. for H.B. 528 (Feb. 9, 1983). *See supra* note 137. This bill can be credited to the Missouri Public Interest Research Group (MoPIRG). In response to the revelation of the dioxin problem in Missouri, MoPIRG recommended the creation of a statutory state superfund provision. The MoPIRG proposal was based upon New York's superfund law, N.Y. ENVTL. CONSERV. LAW §§ 27-0701 to -1319 (McKinney Supp. 1982). Representative Bob Feigenbaum, a Democrat from Ferguson, sponsored this proposal.

158. Mo. House Comm. Subst. for H.B. 528, § 260.485 (Feb. 9, 1983).

159. *Id.*

160. *Id.* § 260.480. This Note advocates the creation of a separate fund for personal injury claims. *See infra* notes 222-34 and accompanying text.

161. The proposed Model Statute is set forth in Trauberman, *supra* note 10, at 250-96 [hereinafter cited as the Model Statute]. The Model Statute creates a personal injury fund, funded by hazardous waste disposers. Aggrieved parties can hold the fund strictly liable for hazardous waste injury. The Model Statute also provides presumptions, expanded evidentiary rules, and a liberal statute of limitations to aid victims of hazardous waste pollution in recovery. *See id.*

162. *See supra* notes 142-43 and accompanying text.

certainties inherent in toxics litigation.[163] The Model Statute's limitations period allows a toxic tort victim to file a claim within two years after the disease[164] becomes apparent and such individual "by the exercise of due care, could have established, with reasonable likelihood, that [a specified party] caused or was a substantial factor in causing such disease."[165] The rule's objective standard[166] prevents the unfairness of barring an injured party's claim merely because he does not link his injury to its cause in a timely manner.[167] Missouri should adopt this statute of limitations to avert this harsh result.[168]

2. Generating, Transporting, and Disposing of Hazardous Waste as "Ultrahazardous Activities"

The original *Restatement of Torts'* "ultrahazardous activity" doctrine[169] is the most logical strict liability theory to apply to hazardous

163. *See supra* notes 66-72 and accompanying text. *Cf.* Note, *Statutes of Limitations and the Discovery Rule in Latent Injury Claims: An Exception or the Law?*, 43 U. PITT. L. REV. 501, 523 (1982) (examining different rules and concluding that the "discovery rule" is the most consistent with basic principles of tort recovery).

164. Under the Model Statute, a covered disease is "any medically verifiable chronic or progressive disease or condition such as cancer, genetic mutation, behavioral abnormalities, physiological malfunction (including malfunction in reproduction) and physical deformation in humans or their offspring, or death." Trauberman, *supra* note 10, § 102(h), at 252. The Model Statute focuses on chronic injury caused by toxic waste pollution because this type of harm presents the most difficulties in proving causation of trial.

165. Trauberman, *supra* note 10, § 217(2), at 285.

166. The objective standard allows the jury to determine when the victim should have discovered the nexus between the exposure and harm. *Id.* at 218.

167. "It would be inappropriate simply to run the limitations period from the date of manifestation, because a toxics victim might be unable to determine that the injury was caused by chemical exposure." *Id.*

168. This type of limitations period has been recommended by a number of authorities. *See* INJURIES AND DAMAGES I, *supra* note 25, at 240-41; Note, *Statutes of Limitations and Pollutant Injuries: The Need for a Contemporary Legal Response to Contemporary Technological Failure*, 9 HOFSTRA L. REV. 1525, 1568-73 (1981) (Proposed Uniform Toxic Substances Statute of Limitations). In addition, this limitations period already is incorporated into a number of federal and state laws. *See* Ritts, *Occupational Cancer and Statutes of Limitations in Occupational Disease Claims*, WORKMAN'S COMPENSATION L. REV. 70, 96-99, 106-17 (1981).

169. RESTATEMENT OF TORTS § 519 (1938) states:

> One who carries on an ultrahazardous activity is liable to another whose person, land or chattels the actor should recognize as likely to be harmed by the unpreventable miscarriage of the activity for harm resulting thereto from that which makes the activity ultrahazardous, although the utmost care is exercised to prevent the harm.

waste-related activities. This formulation of strict liability does not scrutinize the "naturalness"[170] or the "appropriateness"[171] to the location where the activity is conducted. These considerations are inappropriate when activity capable of causing serious and widespread harm is involved.[172]

Section 520 of the original *Restatement* defines an ultrahazardous activity as one that "(a) necessarily involves a risk of serious harm to the person, land or chattels of others which cannot be eliminated by the exercise of utmost care, and (b) is not a matter of common usage."[173] After Love Canal, Times Beach and other similar disasters, it is clear that toxic wastes produce a risk of serious harm despite utmost care. It is equally indisputable that the generation, transportation, and disposal of potentially deadly toxic substances capable of causing catastrophic harm through groundwater or food chain contamination is not a matter of common usage: potential victims of harmful hazardous waste exposure, in other words, can do little to protect themselves from this danger.

The application of strict liability to hazardous waste related endeavors is consistent with case law. Generally, courts invoke this doctrine when the activity presents unusual and unavoidable risks such as blasting,[174] drilling for oil,[175] storing of large amounts of dynamite,[176] keep-

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Id.

170. *See* Rylands v. Fletcher, L.R. 3 H.L. 330 (1868) (imposing strict liability for escape of substances likely to cause harm and for a dangerous nonnatural use of land).

171. *See* RESTATEMENT (SECOND) OF TORTS § 520 (1976). This formulation of strict liability expressly includes in its analysis the "inappropriateness of the activity to the place where it is carried on." *Id.* § 520(e).

172. Small amounts of toxic chemicals can result in serious health risks. For example, a release of a toxic chemical can result in contamination of groundwater or, more serious, enter into the food chain. Thus, the location of the activity has little relevance because potential harm can be so far-reaching. *See supra* notes 4-6 and accompanying text. This rationale only holds true, however, for toxic wastes capable of causing widespread harm. The ultrahazardous activity doctrine, therefore, should be limited to activities that involve such toxic wastes. Transporting "wet dynamite" should not be deemed an ultrahazardous activity.

173. RESTATEMENT OF TORTS § 520 (1938).

174. *See, e.g.*, Carson v. Blodgett Constr. Co., 189 Mo. App. 120, 126, 174 S.W. 447, 448 (1915) (blasting is a strict liability offense).

175. *See, e.g.*, Green v. General Petroleum Corp., 205 Cal. 328, 331-32, 270 P. 952, 955 (1928) (strict liability imposed for damage resulting from oil well blow out).

176. *See, e.g.*, Scalpiro v. Smith, 154 Mo. App. 524, 534-35, 135 S.W. 1000, 1003 (1911) (strict liability for storage of dynamite couched in public nuisance language). *See* RESTATEMENT OF TORTS § 520, comment 3 (1938).

ing of wild animals,[177] flying airplanes,[178] and crop dusting.[179] Similarly, activities involving hazardous waste may result in serious harm despite precautions. In addition, like victims of exploding dynamite or crashing airplanes, victims of hazardous waste pollution generally are unable to guard against injury.[180]

Missouri case law arguably supports the application of strict liability principles to hazardous waste activities. Missouri courts have extended strict liability under nuisance law to cases involving damages from explosion of stored explosives,[181] from blasting operations,[182] from flooding,[183] and from gasoline storage.[184] These decisions clearly show support for strict liability principles.[185] The extra danger presented by activities involving hazardous waste justifies placing these endeavors in a separate strict liability category.[186] This approach will ameliorate the property-related bias present in current Missouri environmental law.[187] Additionally, it will avert the overuse of trespass and nuisance in personal injury actions[188] and concomitantly provide a

177. *See, e.g.*, Copley v. Wills, 152 S.W. 830, 831 (Tex. Civ. App. 1913) (monkeys).

178. *See, e.g.*, United States v. Kesinger, 190 F.2d 529, 532 (10th Cir. 1951) (government liable for damages caused by Army Air Force airplane crash).

179. *See, e.g.*, Chapman Chem. Co. v. Taylor, 215 Ark. 630, 643-44, 222 S.W.2d 820, 827 (1949) (chemical manufacturer liable for damages that crop dusting caused to surrounding property owners).

180. *See* Note, *supra* note 151, at 974.

181. *See, e.g.*, Liggett v. Excelsior Powder Mfg. Co., 173 Mo. App. 220, 158 S.W. 723 (1913).

182. *See, e.g.*, Blackford v. Herman Constr. Co., 132 Mo. App. 157, 112 S.W. 287 (1908).

183. *See, e.g.*, Hawkins v. Burlington N., Inc., 514 S.W.2d 593 (Mo. 1974) (en banc).

184. *See, e.g.*, City of Spickardsville v. Terry, 274 S.W.2d 21, 23 (Mo. Ct. App. 1954).

185. In French v. Center Creek Power Mfg. Co., 173 Mo. App. 220, 158 S.W. 723 (1913), a case involving explosives storage, the court stated:

> [T]he storer of [a] dangerous substance must answer for the damages directly flowing and occasioned thereby; [t]his brings into play the principle that, where a wrong is done and one of two persons must suffer loss, law and natural justice shall see to it, if possible, that he who made it possible for the damage to be done should bear the loss.

Id. at 226-27, 158 S.W. at 726.

186. *See supra* notes 174-79 and accompanying text.

187. *See supra* notes 56-62 and accompanying text.

188. One commentator, after analyzing Missouri strict liability law, concluded:

> Many times it is not necessary to apply liability without negligence for the factual situation will often contain the elements of trespass or nuisance. There are other

clear-cut rule concerning what actions will make a party liable absent negligence.[189]

Other states have developed statutory actions for toxics-induced personal injuries similar to this approach. Both North Dakota[190] and Rhode Island[191] have statutes that reflect a negligence per se approach. Alaska,[192] North Carolina,[193] and Minnesota[194] have statutory provi-

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times, however, when the courts have felt it desirable to apply strict liability, yet the true elements of common law trespass or nuisance were not present. This is when the word "trespass" or "nuisance" is used in a manner which is contrary to normal historical usage. It would seem . . . in these cases then, for the sake of symmetry, understandability and a fair application of strict liability, a rule such as set forth in [*Rylands*] and reiterated in the [RESTATEMENT OF TORTS § 520 (1938)] should be recognized.

See Comment, *supra* note 133, at 60.

189. *Id.*

190. *See* N.D. CENT. CODE § 32-40-11 (1976), which provides a cause of action for statutory violations. The section provides that a court may grant relief specified in the environmental statute alleged to have been violated, or pursuant to which the regulation alleged to have been violated was promulgated, *id.* § 32-40-11(1), including damages, *id.* § 32-40-11(3).

191. *See* R.I. GEN. LAWS § 23-19.1-22 (1984 Supp.). The section provides:

(a) Any person who shall violate the provisions of this chapter through the disposal of hazardous waste in a manner or location not authorized by this chapter or the rules and regulations promulgated pursuant hereto, or who shall have caused such unauthorized disposal of hazardous wastes shall be absolutely liable for the cost of containment, cleanup, restoration and removal of the hazardous wastes for all damages, losses or injuries, including environmental, which result directly or indirectly from such discharge.

Id. § 23-19.1-22(a).

192. *See* ALASKA STAT. § 46.03.822 (1982). This section provides:

To the extent not otherwise preempted by federal law, a person owning or having control over a hazardous substance which enters in or upon the waters, surface or subsurface lands of the state is strictly liable, without regard to fault, for the damages to persons or property, public or private, caused by entry.

Id.

193. *See* N.C. GEN. STAT. § 143.215.83 (1983). This section provides:

Unlawful Discharges.—It shall be unlawful . . . for any person to discharge, or cause to be discharged oil or other hazardous substances into or upon any waters, tidal flats, beaches or lands within this state, or into any sewer, surface water drain or other waters that drain into the waters of this State, regardless of fault of the person having control over the oil or hazardous substances, or regardless of accident or other cause.

Id.

194. *See* MINN. STAT. § 115B.05, subd. 1 (1983). This section provides:

Except as otherwise provided in subdivisions 2 to 10, and notwithstanding any other provision or rule of law, any person who is responsible for the release of a hazardous substance from a facility is strictly liable, jointly and severally, for the

sions that impose strict liability for varying types of hazardous waste induced injury. Finally, in California, proven victims of toxic torts that are unable to find the party responsible for the harm can obtain administrative compensation for their personal injuries.[195] Provisions such as these reflect the states' growing concern regarding the extreme dangers posed by hazardous wastes.

The Missouri General Assembly should follow the example provided by these states. Activities involving hazardous wastes are properly termed "ultrahazardous activities." As a result, the legislature should excuse victims from proving the defendant's negligence in hazardous waste cases.[196]

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following damages which result from the release or to which the release significantly contributes:

(a) All damages for actual economic loss including:
  (1) Any injury to, destruction of, or loss of any real or personal property, including relocation costs;
  (2) Any loss of real or personal property;
  (3) Any loss of past or future income or profits resulting from injury to, destruction of, or loss of real or personal property, without regard to the ownership of the property; and

(b) All damages for death, personal injury, or disease including:
  (1) Any medical expenses, rehabilitation costs or burial expenses;
  (2) Any loss of past or future income, or loss of earning capacity; and
  (3) Damages for pain and suffering, including physical impairment.

Id.

195. *See* CAL. HEALTH & SAFETY CODE § 25372 (Deering 1981). Victims that cannot find a solvent party from whom to collect also are eligible for administrative compensation. *Id.* Injury compensation under this scheme is restricted to full, uninsured medical expenses and 80% of all uninsured loss of income (up to $15,000 per year for three years) proximately caused by injury to the victim's property or person. *Id.* § 25375.

196. RESTATEMENT OF TORTS § 521 (1938) exempts from the ultrahazardous doctrine's reach, activity that involves a public duty or is undertaken by a common carrier. Some jurisdictions reject this exception. *See* Comment, *Common Carriers and Risk Distribution: Absolute Liability for Transporting Hazardous Materials*, 67 KY. L.J. 441, 442-43 (1978-79). Missouri courts apply the "public duty" doctrine, but it now appears to be in jeopardy of being overturned. *See* Pecan Shoppe of Springfield Mo., Inc. v. Tri-State Motor Transit Co., 573 S.W.2d 432 (Mo. Ct. App. 1978). In *Pecan Shoppe*, the court refused to apply strict liability to a motor carrier engaged in transporting explosives for damage caused when a striking employee of the carrier fired shots into a truck carrying explosives, causing an explosion. The court also ruled as it did because an intentional act of a third party had caused the harm. *Id.* at 437. The court seemingly rejected the "public duty" doctrine. *See id.* at 437-38.

3. Use of Presumptions, Expanded Evidentiary Rules, and Apportionment Principles

As discussed above, proving causation is the major obstacle to recovery for toxics induced harm.[197] Even under a strict liability theory plaintiffs must sustain this burden of proof. The Model Statute employs evidentiary presumptions[198] and expands evidentiary rules to ease this burden.

Presumptions allow a party to shift the burden of production or proof after establishing certain basic facts.[199] Typically, in hazardous waste statutes these basic facts concern the characteristics of the chemical, the circumstances of exposure, and the harm alleged.[200] If the presumption is rebuttable, the defendant must meet the shifted burden of producing evidence[201] or must convince the jury that the "basic facts" initially proven are false,[202] depending on whether the presumption shifts the burden of production or persuasion. The party that establishes the basic facts wins if the defendant is unable to sustain the applicable burden. If the presumption is irrebuttable, the defendant loses once the plaintiff makes a showing of the basic facts.[203]

The establishment of the basic facts that create the presumption must lead to a high probability that the reflecting presumption is correct.[204] Although irrebuttable presumptions appear in laws protecting

197. *See supra* notes 73-92 and accompanying text.

198. For a discussion of the benefits and difficulties involved in the use of presumptions to simplify the problems of proof facing victims of occupational disease, see generally Note, *Compensating Victims of Occupational Disease*, 93 HARV. L. REV. 916 (1980).

199. *See* Trauberman, *supra* note 10, at 227.

200. *Id.* Pennsylvania's solid waste management statute establishes a rebuttable presumption of causation for harm that occurs "within 2,500 feet of the perimeter of the area where the hazardous waste activities have been carried out." PA. STAT. ANN. tit. 35, § 6018.611 (Purdon Supp. 1982).

201. Under this approach, the party invoking the presumption still bears the ultimate burden of convincing the jury that the presumed fact is true. *See* Trauberman, *supra* note 10, at 227 n.308.

202. In this case, the opponent bears the burden of establishing that the nonexistence of the presumed fact is more probable than its existence. *Id.* at 228 n.309.

203. *Id.* at 227.

204. *See* INJURIES AND DAMAGES I, *supra* note 25, at 300 (remarks of Charles D. Breitel, Superfund Study Group Member). Mr. Breitel disagreed with the notion that the more difficult it is to prove causation, the stronger the presumption. He stated: "This can lead to the *reductio ad absurdum* that if causation is not provable at all, then there must be a claim saving presumption." *Id.* at 299-300.

the public health and the environment,[205] the Model Statute adopts a rebuttable presumption because its operation can better take into account the exigencies of the particular case at hand.[206] Missouri law does not currently offer toxics victims the benefit of a legal presumption.

Under the Model Statute a claimant has two possible defendants:[207] a personal injury compensation fund[208] and a private party defendant.[209] The plaintiff's choice of defendants determines whether a presumption may be invoked. In claims against the Fund, a rebuttable presumption that shifts the burden of persuasion is available.[210] The plaintiff triggers this presumption by proving the presence of a covered injury,[211] exposure to a certain chemical, and the likelihood that the exposure was a substantial factor in causing the injury.[212] The Fund can rebut the presumption by showing that the exposure was not a substantial factor in causing the illness or that the plaintiff "assumed the risk" of the resulting harm.[213]

In contrast, if the plaintiff brings a claim against a private party, no presumption is available. A plaintiff must prove that a private defendant's actions were a "substantial factor" in causing the covered injury.[214] The Model Statute allows these plaintiffs to use expanded evidentiary rules[215] and liberal rules addressing the problem of appor-

205. *See* Black Lung Benefits Reform Act, 30 U.S.C. § 921(c)(3) (1982).

206. *See* Trauberman, *supra* note 10, at 227. Irrebuttable presumptions are rare because they provide the court with little room for discretion and lead to many erroneous decisions. *Id.* at 227 n.303.

207. The Model Statute allows a claimant to proceed against the liability fund or against the private party allegedly responsible for the harm under the Model Statute or state law. Trauberman, *supra* note 10, at 263.

208. *See id.* § 205(a), at 263.

209. *Id.* § 201, at 258.

210. *See id.* § 205(d), at 263. Because juries are not used in proceedings against the Fund, shifting the burden of *production* would have little or no effect on the outcome of the case. *See* Trauberman, *supra* note 10, at 228.

211. *Id.* § 205(c), at 263.

212. *Id.* § 205(d), at 264. If the defendant fails to rebut the plaintiff's initial causal showing, the plaintiff prevails. *Id.*

213. *Id.* § 202(b), at 259.

214. *Id.* § 201, at 258.

215. *Id.* § 204, at 262-63. The Model Statute's treatment of relevant evidence constitutes a departure from Missouri evidence law, which follows the *Frye* rule. *See supra* notes 83-88 and accompanying text. The statute is mindful, however, of the rationale

tioning harm and damages among multiple causes.[216]

These alternative causes of action in the Model Statute reflect different magnitudes and likelihoods of recovery. Against the Fund, a plaintiff can recover only pecuniary losses,[217] while in a claim against a private defendant, the plaintiff can recover for "pain and suffering."[218] Therefore, recovery under the Fund normally will be smaller. Using a presumption when recovering against the Fund is equitable. The Fund, in effect, spreads the recovery costs among all of its contributors. These parties can absorb the cost and are responsible collectively for the risk that caused the harm. Alternatively, use of presumptions against individual defendants, especially when multiple parties are involved, could unfairly result in an entire claim being levied against a few innocent defendants.

Use of the strict liability theory, presumptions, expanded evidentiary rules, and liberalized apportionment principles substantially lighten a

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behind the *Frye* rule, and specifically excludes evidence that would "inflame the trier of fact." The following evidence, however, is deemed admissible:

> (1) Epidemological data; (2) results of animal or human laboratory or toxicological studies; (3) test data on microorganisms and tissue samples; (4) information on the correlations between the structure of chemical substances or mixtures and their potential to cause or contribute to a covered disease in an individual; and (5) studies of the effects of exposure to two or more covered disease substances or mixtures.

Trauberman, *supra* note 10, § 204, at 262-63.

216. The problem of apportioning harm is the primary focus of the Model Statute in the case of private lawsuits, because it is extremely burdensome for victims of toxic waste pollution to establish the contribution of each of several multiple independent causes to their injuries. The Model Statute provides that any party whose actions are proven to be a substantial factor in causing the harm may be held liable for the "full extent" of the plaintiff's damages. *See* Trauberman, *supra* note 10, § 201, at 258. The defendant can limit its liability thereafter by establishing the existence of other contributing causes. *Id.* § 202(a), at 258-59. When the court determines that responsibility for the plaintiff's injuries cannot be determined, however, the statute allows each defendant to be held liable only for the "proportionate share of the risks such defendant caused to the harmed plaintiff, based upon the contribution of all persons in the risk-creating group." *Id.* § 202b, at 260. *See also* Note, *Unearthing Defendants in Toxic Waste Litigation: Problems of Liability and Identification*, 19 SAN DIEGO L. REV. 891, 898-905 (1982) (discussing apportionment of liability in toxic cases). *Cf.* Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 610-13, 607 P.2d 924, 936-38, 163 Cal. Rptr. 132, 144-46 ("market share" liability in which each defendant liable for its share of defective product's market), *cert. denied*, 449 U.S. 912 (1980).

217. Trauberman, *supra* note 10, § 206, at 265.

218. *Id.* § 201, at 258. The Model Statute's author points out that if a presumption were used against private defendants when non-pecuniary damages were available, this would "completely alter the common law principles governing damage awards." *See id.* at 229.

plaintiff's heavy burden of proving causation. These proposed rules will make litigation more viable and less costly for the injured plaintiff. These rules also shift the expense of hazardous waste pollution onto the responsible parties that profit at the cost of the resulting harm. Generally, these parties are in the best position to insure against the harm, and to spread these costs among society.[219] Additionally, this new theory of liability will be an incentive for parties to engage in safer procedures, and thus, behave more responsibly. Also, the new theory of liability will encourage parties involved in the transportation, generation, and disposal of hazardous waste to develop new technology that eliminates the hazardous waste problem.[220]

4. The Liability Fund

The Missouri Hazardous Waste Management Law fund provides compensation for property damage only. The Missouri Legislature, like Congress, lets the common law resolve toxic tort personal injury claims.[221]

A personal injury compensation fund has two purposes: 1) to com-

219. *See* Escola v. Coca Cola Bottling Co., 24 Cal. 2d 453, 461-468, 150 P.2d 436, 441 (1944) (Traynor, J., concurring). The imposition of strict liability furthers the policy of spreading the costs of injury to the manufacturers that can insure against risk or pass the higher costs on to their customers. *Id. Escola* was a products liability case. For a useful application of products liability theory to hazardous waste pollution, see Note, *supra* note 151, at 977-85.

220. Justice Traynor also stated that forcing even non-negligent manufacturers to take steps to prevent future harm was one of the policies of strict liability. Justice Traynor's other two policies included fixing responsibility on the party that introduced the risk and that is most likely to have evidence to evaluate the product's safety, and placing responsibility on those that induce reliance on their reputations. Note, *supra* note 151, at 977-85.

221. This judgment is consistent with the "property-related bias," which hinders recovery for hazardous waste-induced injury at common law. *See supra* notes 56-62 and accompanying text. Regarding the United States Senate's decision to apply federal "Superfund" money only to property related damage, Senator George Mitchell stated: "In the bill, we are telling the people of this country that under our value system a property interest is worth compensating but a human life is not." 126 CONG. REC. S30,941 (daily ed. Nov. 24, 1980) (remarks of Sen. Mitchell).

California recently enacted the Hazardous Substances Account Act, which addresses the victim's compensation problem. *See* CAL. HEALTH & SAFETY CODE §§ 25300-611 (Deering Supp. 1984). The Act provides for administrative compensation for proven toxics victims that are unable to identify the source of polluting activity or the party responsible for it. *Id.* § 25372(a). Victims that are unable to find a solvent party from whom to collect are eligible for administrative compensation as well. *Id.* § 25372(b). Compensation for personal injuries under this scheme is restricted to full, uninsured medical expenses and 80% of all uninsured loss of income (up to $15,000 per year for

pensate victims of hazardous waste pollution when recovery is otherwise impossible;[222] and 2) to impose collective responsibility on fund contributors by requiring them to make payments in proportion to the risk of harm they create.[223] As provided in the Missouri Hazardous Waste Management Law, the new fund should be subrogated to the rights of claimants that choose to recover from it.[224] This guards against the Fund's depletion.

Establishing and structuring a personal injury compensation fund involves a policy choice within the special competence of the legislature. In establishing a fund, the following issues arise:

a) Which activities should trigger contribution to the fund?
b) How much should each entity contribute?
c) How large should be the total amount of the fund?[225]

a. *Activities That Should Trigger Contribution*

The current Missouri Hazardous Waste Remedial Fund is capitalized by fees and taxes levied on hazardous waste generators, transporters, and disposers. The Personal Injury Compensation Fund should follow this structure. Legislators, of course, must structure this fund to avoid federal Superfund preemption.[226]

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three years), proximately caused by injury to the victim's property or person. *Id.* § 25375(a)-(b).

222. *See* Trauberman, *supra* note 10, at 237.

223. *Id.*

224. As a practical matter, this guards against depleting the Fund. In addition, however, subrogation distinguishes funds from insurance plans, which provide little incentive to be careful. Knowing that the fund is subrogated to the victim's claims provides the Fund's contributors with an incentive to act carefully.

225. *See* Milhollin, *supra* note 3, at 16.

226. The federal Superfund law does not preempt states from creating additional funds and its coinciding liability provisions. *See* CERCLA, 42 U.S.C. §§ 9614(a)-9614(c) (1982). The Act, however, expressly prohibits double recovery, *id.* § 9614(b), and provides that "no person may be required to contribute to any fund, the purpose of which is to pay compensation for claims for costs of response or damages or claims which may be compensated [under the federal Superfund Act]." *Id.* § 9614(c).

One purpose of the state fund proposed in this Note is to compensate all provable hazardous waste-induced personal injury. The Superfund's Post-Closure Liability Trust Fund has a similar, albeit more narrow purpose. *See supra* note 32. Thus, the Missouri Legislature, to avoid preemption, must ensure that the new state fund works in conjunction with, rather than in conflict to, the federal post-closure funding provision.

See also Exxon Corp. v. Hunt, 190 N.J. Super. 131, 134-39, 462 A.2d 193, 195-97 (App. Div.) (Matthews, J., concurring) (under CERCLA, state can tax local industries to support fund dedicated to purpose of compensating claims and costs not actually

The range of activities that subject an entity to participating in the victim's compensation fund, however, should be more narrow than those of the Remedial Fund scheme. For instance, the legislature could impose a fee on those that engage in "toxics-related activity that poses a great danger to human health."[227] Legislators could define this activity according to its nature or the type of hazardous substance involved.[228] In addition, such a statutory scheme could further divide such risky activity into "long-term" and "short-term" categories[229] to encourage planning and early remedial action.

b. *The Amount of Contribution*

The degree of known risk that the activity poses[230] should determine the amount of contribution.[231] The Missouri Hazardous Waste Commission is competent to make this determination,[232] based on information available to it under the Hazardous Waste Management Law's information reporting provisions.

c. *The Amount of the Fund*

By considering the risk of harm that toxic waste pollution produces, the solvency of the industries responsible for the problem, and the administrative costs involved in collecting fees for the fund, the General Assembly can determine an adequate amount for the personal injury compensation fund.[233]

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paid for by superfund), *aff'd*, 97 N.J. 526, 481 A.2d 271 (1984). Spill Compensation and Control Act, N.J. STAT. ANN. § 58:10 23.11(g) (West 1982).

227. A Florida statute concerning oil spills focuses on hazards that present future "threats of potentially catastrophic proportions. . . ." FLA. STAT. ANN. § 376.021 (West 1974).

228. Texas has classified numerous wastes into categories according to the risk they pose. Substances such as Aldrin, asbestos, DDT, mercury, and PCBs have been classified as hazardous under published formulas and testing criteria. Texas Water Quality Board, Technical Guidelines No. 1, Attachment A (May 3, 1976).

229. *See* Milhollin, *supra* note 3, at 18-19.

230. *Id.*

231. Generally, a tax or fee levied for a hazardous waste fund consists of a certain monetary amount per ton. *See, e.g.*, WIS. STAT. ANN. § 144.441(3) (West Supp. 1979). Missouri's Fund, however, is funded by an employee "head tax," which is a tax of two dollars per covered employee of generators of hazardous waste in Missouri. MO. ANN. STAT. § 260.478 (Vernon Supp. 1984). Generators now are challenging the constitutionality of this provision in court. St. Louis Post-Dispatch, Feb. 6, 1984, at 13A, col. 2.

232. *See supra* notes 148, 150 and accompanying text.

233. Milhollin, *supra* note 3, at 24.

d. *The Benefits of a Personal Injury Compensation Fund*

Liability funds can substantially remove many of the barriers that block recovery at common law. A state-administered fund can outlive any individual or corporate defendant.[234] A claimant can hold a fund strictly liable and benefit from favorable evidentiary presumptions. These features can permit relatively quick administrative relief to claimants that have small claims or are unable to locate the responsible party. Finally, by helping apportion costs among parties responsible for injuries, a liability fund can aid the legal system in encouraging safe conduct by those engaged in hazardous waste generation, transportation, and disposal.

VI. CONCLUSION

In terms of personal injury and hardship, the true extent of Missouri's hazardous waste problem will become more apparent ten to twenty years from now. In the meantime, manifestations of latent harm caused by toxics exposure will become more common. Persons that suffer harm will find little possibility of compensation in current Missouri common law remedies. Traversing the treacherous path to private recovery requires avoiding a statute of limitations bar, finding a responsible defendant, proving causation, and satisfying the sometimes anachronous requirements of the common law theories available. Private recovery in tort for latent toxics harm resembles a lottery more than a system that makes the victim's compensation its objective.

Regrettably, the Missouri General Assembly has failed to respond to the state toxics problem by providing an adequate statutory cause of action. It is now essential that the legislature act, for such a cause of action is necessary to provide fair compensation for victims of a growing problem and to ensure the long-term health of Missouri citizens.

234. *Id.* at 16. *See supra* notes 25-26 and accompanying text.