

# Pollution Share Liability: A New Remedy for Plaintiffs Injured by Air Pollutants

## I. INTRODUCTION

The air pollution that pervades our environment has a strong adverse impact upon the public health.<sup>1</sup> Yet an individual who contracts a disease caused by air pollution<sup>2</sup> currently encounters great difficulty in collecting compensatory damages. Under the Clean Air Act, injunctive relief is available to a plaintiff who suffers from the emission of air pollutants, where such emission violates standards set pursuant to the statute.<sup>3</sup> The Clean Air Act does not

1. Although the evidence connecting air pollution with cancer and a variety of other diseases is not absolutely conclusive, there is strong medical support for the link. See Musser, *Medical-Legal Aspects of Environmental Disease*, 1976 MED. TRIAL TECH. Q. 89, 100-101; Rheingold, *Civil Cause of Action for Lung Damage Due to Pollution of Urban Atmosphere*, 33 BROOKLYN L. REV. 21 (1966); Thomas, *Lung Cancer and Ambient Air Pollution*, 8 ENVTL. L. 701, 702-03 (1978).

2. Establishing a causative link between a particular air pollutant and a disease can be an arduous task. The link is evident where, for example, an individual who works in a plant in which asbestos materials are used contracts asbestosis or mesothelioma, diseases specifically caused by asbestos. See, e.g., *Borel v. Fibreboard Paper Prods. Corp.*, 493 F.2d 1076 (5th Cir. 1973); *Insurance Co. of No. America v. Forty Eight Insulations, Inc.*, 451 F. Supp. 1230 (E.D. Mich. 1978). The causal connection is much more difficult to establish where the individual resides or works at a distance from the pollution-producing source, or where a number of sources emitted the pollutants that could have caused the disease.

In *Reynolds Metals Co. v. Yturbide*, 258 F.2d 321 (9th Cir.), cert. denied, 358 U.S. 840 (1958), plaintiffs who contracted fluorosis and toxic hepatitis resided between one and one half miles away from defendant's plant. An average of 2845 pounds of fluorides escaped daily from the plant for more than three years. The court stated that there was sufficient evidence for the jury to find a causal link between the diseases and the pollutants. *Id.* at 323-25. One medical expert had testified:

[I]n view, then, of this potential history of the exposure and in view of the fact that we were . . . faced with a rather bizarre group of symptoms . . . and it corresponds exactly to the description of public cases of fluorosis; furthermore, there is no other explanation. . . . One could make four or five diagnoses, but of course, that is always obviously a very poor thing to do. . . . There is a history of the potential exposure. We are unable to find any explanation after a careful search, and under those circumstances, one is justified, and not only justified, but you are forced to make the diagnosis of poisoning with fluorine.

*Id.* at 324-25 n.6.

3. Under § 304(a)(1) of the Clean Air Act, 42 U.S.C. § 7604(a)(1) (1976 & Supp. V 1981), an individual may bring an action for injunctive relief against any person who is violating an emission standard or limitation promulgated pursuant to § 109 and § 112 of the Act, 42 U.S.C. §§ 7409, 7412 (1976 & Supp. V 1981).

provide for monetary recovery, however. An individual who has sustained substantial physical and emotional injuries as a result of a disease caused by air pollution, and who seeks compensatory damages, might instead pursue a claim based on a theory of negligence.<sup>4</sup>

This Note examines the problems inherent in pursuing a negligence claim for injuries caused by air pollution when the particular sources that caused the injury cannot be identified. In Part I, the several elements of a negligence cause of action, as applied to a situation in which damage is caused by more than one polluter, are examined. Part II analyzes the various theories of liability that can be employed to establish causation, and the problems inherent in applying these theories to the multiple polluter fact situation. Finally, Part III suggests pollution share liability as an alternative theory of recovery where medical disorders have been caused by air pollution. This alternative theory has its own inherent difficulties, and is by no means held out as a final solution; rather, it is offered as a framework within which the problems of recovery for air pollution victims can be resolved.

To illustrate the nature of the issues presented, this Note will focus upon the following hypothetical fact situation:

Plaintiff has lived on the outskirts of a metropolitan industrial area in the United States for most of her life. Over the past year she has begun to suffer from a rare form of cancer that, she has

4. Trespass and nuisance are two other common law bases for liability in pollution cases. See, e.g., *Renken v. Harvey Aluminum*, 226 F. Supp. 169 (D. Or. 1963) (factory emitting continuous nuisance caused by fluorine emissions); *Martin v. Reynolds Metals Co.*, 221 Or. 86, 342 P.2d 790 (1959), cert. denied, 362 U.S. 918 (1960) (trespass of gas and particulate emissions from a manufacturing plant). However, damage to property is a necessary element of a cause of action for trespass and for nuisance. W. PROSSER, *LAW OF TORTS* 63, 76-79, 571-73 (4th ed. 1971). This Note is concerned with cases involving damage only to persons.

Strict liability would be an appropriate theory on which to base a cause of action in tort for personal injury caused by air pollution. This principle imposes legal responsibility on one who conducts an abnormally dangerous activity and causes harm thereby to people or property. *RESTATEMENT (SECOND) OF TORTS* § 519(1) (1965); W. PROSSER, *LAW OF TORTS* 494 (4th ed. 1971). In determining whether strict liability applies in a given situation, a court will consider the existence of a high degree of risk of injury to persons or property, the probability that the resulting harm will be great, the impossibility of eliminating the risk through reasonable care, the appropriateness of the activity to the area in which it is conducted and the extent to which the value of the activity to the community is outweighed by its hazardous qualities. *RESTATEMENT (SECOND) OF TORTS* § 520 (1965).

Due to the very hazardous nature of many pollutants, there is legal support for imposing strict liability on toxic sources. Causes of action against factories emitting smoke dust or noxious gases in the midst of a town have been sustained on strict liability grounds since the end of the nineteenth century. See, e.g., *Susquehanna Fertilizer Co. v. Malone*, 73 Md. 268, 20 A. 90 (1890); *Frost v. Berkeley Phosphate Co.*, 42 S.C. 402, 20 S.E. 280 (1894); *Holman v.*

learned, may be caused by the chemicals X, Y and/or Z.<sup>5</sup> Plaintiff discovers that out of 1,000 air-polluting enterprises in the city, 100 industries emit at least one of these three chemicals into the atmosphere. Plaintiff would like to recover for the pain, suffering and expenses she has and will experience because of the disease.

## II. NEGLIGENCE ACTIONS IN AIR POLLUTION CASES

### A. *Establishing a Negligence Cause of Action*

A negligence cause of action includes four main elements: a legal duty requiring the actor to follow a certain standard of conduct, a failure to conform to this standard, actual loss or damage to the interests of another and a proximate causal connection between the failure and the injury.<sup>6</sup> For purposes of this discussion, it is assumed that actual damage in air pollution disease cases can be readily established. The remaining elements are more problematic.

#### 1. Legal Duty and Breach of Standard of Care

Whether an industrial polluter has satisfied its legal duty to the public depends upon whether it has conformed to an appropriate standard of conduct in the emission of pollutants. Exactly what constitutes that standard is unclear, however. One commentator has suggested that the negligence standard for a particular pollutant should be equivalent to the primary ambient air standard<sup>7</sup> or

Athens Empire Laundry Co., 149 Ga. 345, 100 S.E. 207 (1919); Dutton v. Rocky Mtn. Phosphates, 151 Mont. 54, 438 P.2d 674 (1968). Environmental protection statutes, such as the Federal Water Pollution Control Act, 33 U.S.C. §§ 1251-1376 (1976 & Supp. V 1981), provide for imposition of strict liability where hazardous substances have been discharged. See *United States v. Tex-Tow, Inc.*, 589 F.2d 1310 (7th Cir. 1978).

However, a plaintiff seeking to recover monetary damages for a disease stemming from air pollution in a metropolitan area might have difficulty proving that the emission of hazardous toxins is inappropriate in a metropolitan center, that it would be impossible to eliminate the risk through reasonable care or that the hazardous qualities of the activity outweigh its value to the community. See *RESTATEMENT (SECOND) OF TORTS* § 520 (1965). Thus, the usefulness of a strict liability approach is limited.

5. It is assumed here that X, Y and Z do not react synergistically. (Synergism is the simultaneous action of separate elements which, together, have greater total effect than the sum of their individual effects. Thus, chemicals combined in circulating air may have a different effect than chemicals acting independently; therefore, it may be impossible to determine precisely the effect of each chemical. See Gelpé & Tarlock, *The Uses of Scientific Information in Environmental Decisionmaking*, 48 S. CALIF. L. REV. 371, 410 (1974).)

6. PROSSER, *supra* note 4, at 63.

7. Section 109 of the Clean Air Act, 42 U.S.C. § 7409 (1976 & Supp. V 1981), requires the Environmental Protection Agency ("EPA") to publish proposed regulations suggesting na-

hazardous emission limitation<sup>8</sup> set for that pollutant by the Environmental Protection Agency ("EPA") under the Clean Air Act.<sup>9</sup> While this approach finds some support in the goals which Congress sought to achieve through the Clean Air Act,<sup>10</sup> there are several reasons why EPA's standards and limitations may be inappropriate as standards of reasonableness in negligence actions.

One reason is that not every pollutant capable of causing damage to human health is regulated by EPA. Another reason is that the EPA standards are simply inadequate, in certain instances, to protect the nation's health. Congress has found that the public health has been harmed, perhaps severely, in cases where emission levels did not exceed national standards.<sup>11</sup> Deaths due to toxins in the air have occurred in regions where pollution levels only slightly exceeded primary ambient air standards.<sup>12</sup>

Furthermore, the language of the Clean Air Act indicates that its standards were not meant to preempt common law standards. Congress specifically preempted only certain areas of state law, *e.g.*, motor vehicle pollution.<sup>13</sup> The statute does not address pre-

tional primary (health-related) and secondary (welfare-related) ambient air quality standards for each pollutant which may reasonably be anticipated to endanger public health or welfare. The determination of which pollutants should be included is to be based on the latest scientific knowledge. 42 U.S.C. § 7408(a)(2) (1976 & Supp. V 1981).

8. Section 112 of the Clean Air Act, 42 U.S.C. § 7412 (1976 & Supp. V 1981), empowers EPA to prescribe and periodically revise national emission standards for hazardous air pollutants, which include those pollutants for which no ambient air standard applies but which may cause an increase in mortality or serious irreversible or incapacitating reversible illness. Under this section the EPA Administrator must publish and periodically revise a list of hazardous air pollutants for which standards will be promulgated.

9. See *How to be a Reasonable Polluter . . . New Legal Standards for Industry*, in PRACTISING LAW INSTITUTE, LEGAL CONTROL OF THE ENVIRONMENT 243, 250 (1972). In questioning what the effect of EPA's maximum concentration levels will be in on the common law standards of reasonableness, the author points to the consequences on the common law standards set forth in the National Electric Safety Code. In many states, adherence to the code standards is considered to be proof of reasonableness, thus precluding a finding of negligence. *Id.* at 249.

10. The Act's national standards sought to provide maximum protection for the public health and welfare through the use of the best available technology, H.R. REP. NO. 294, 95th Cong., 1st Sess. 127, reprinted in 1977 U.S. CODE CONG. & AD. NEWS 1077, 1206 [hereinafter cited as H.R. REP. NO. 294], and the latest scientific knowledge, § 108(a)(2), 42 U.S.C. § 7408(a)(2) (1976 & Supp. V 1981).

11. H.R. REP. NO. 294, *supra* note 10, at 106.

12. *Id.* at 107.

13. Section 208(a), 42 U.S.C. § 7543(a) (1976 & Supp. V 1981). See *City of Chicago v. General Motors Corp.*, 332 F. Supp. 285, 290 (N.D. Ill. 1971).

emption of state common law negligence standards. Congress' omission implies that it did not intend to preempt those standards.<sup>14</sup>

If the standard by which the conduct of suspect polluters must be measured in order to establish negligence is not to be determined by reference to the ambient air standards and hazardous emission limitations set in the Clean Air Act, some other means of setting an appropriate standard of care must be found. This author suggests that courts should play a primary role in ascertaining that standard. A court hearing an action for recovery of damages caused by air pollution could first determine a level at which, within a certain region, the specific chemicals involved may reasonably be omitted.<sup>15</sup> The court could then determine which defendants emitted more pollutants than was reasonable for that region.<sup>16</sup> The court's decisions on these questions would be based on evidence brought in by the plaintiff: a list of all industries in the metropolitan area that emit the chemicals that might have caused her disease,<sup>17</sup> and the

14. Useful analogies may be drawn between the Federal Water Pollution Control Act ("FWPCA"), 33 U.S.C. §§ 1251-1376 (1976 & Supp. V 1981), and the Clean Air Act, 42 U.S.C. §§ 7401-7642 (1976 & Supp. V 1981), since the two statutes have many parallel provisions and similar purposes. Accordingly, it is interesting to observe the suggestion made in several recent cases to the effect that state common law standards of negligence are not preempted by the FWPCA when the state standards are more stringent than those set by the federal government. See *United States Steel v. Train*, 556 F.2d 822, 830 (7th Cir. 1977). In *Milwaukee v. Illinois*, 451 U.S. 304 (1981), the Supreme Court, holding that federal common law was preempted by the FWPCA, stated in dicta that state common law was not preempted. This opinion was followed in *Scott v. City of Hammond*, 519 F. Supp. 292 (N.D. Ill. 1981).

15. Section 107 of the Clean Air Act, 42 U.S.C. § 7407 (1976 & Supp. V 1981), may assist a court in calculating the emission levels. The Act recognizes the need for establishing different emission levels in different regions because the air is less polluted in some regions than in others. The Act thus requires each state to submit an implementation plan, following the guidelines set in § 110 of the Act, 42 U.S.C. § 7410, to specify the manner in which air quality standards will be achieved within each air quality region of the state. Section 107(a), 42 U.S.C. § 7404(a) (1976 & Supp. V 1981). A state implementation plan may thus serve as a guideline in determining reasonable emission limits in a multiple polluter negligence action.

16. It is not necessary that the court determine the exact limits of allowable emissions from each source. Such a task would be judicially unmanageable. For example, in *Reynolds Metals Co. v. Yturbide*, 258 F.2d 321 (9th Cir.), *cert. denied*, 358 U.S. 840 (1958), where approximately 2845 pounds of fluorines were emitted from one plant daily, the district court noted that there was no evidence as to what amounts and concentration of fluorines would cause fluorosis. However, the jury instructions on the question of negligence stated that ordinarily it would not be expected that people in the vicinity of the plant would be harmed from fluorine emissions. *Id.* at 329.

17. Lists of this nature are often available at state departments of environmental protection or conservation.

records from each of those sources indicating how much pollution was emitted.<sup>18</sup> Based on the records, the court could determine which defendants violated the standard of care and which did not. Reasonable emission levels would differ under this approach from one city to another, and would be subject to change within each city depending upon the number and types of industries present. Since the court's determination of reasonable emission levels for individual businesses would be subject to these variables, the question of negligence must be decided case by case. Although not in the interest of judicial economy, this type of approach is used in other areas of the law where judicial economy is compromised in order to provide for the greater interests of society.<sup>19</sup>

It is assumed, then, that our hypothetical plaintiff can prove that at least some of the 100 polluters emitting chemicals X, Y and/or Z did not conform to a reasonable standard of care. She need only prove a proximate causal relationship between the polluters' breach and her own injury in order to maintain a cause of action in negligence.

## 2. Proximate Cause

A defendant's action is considered a proximate cause of another's injury when it was a material element<sup>20</sup> or a substantial factor in causing the injury,<sup>21</sup> and when the connection between the action and the harm was foreseeable,<sup>22</sup> or if the defendant should have known or taken reasonable care to find out if harm would result from the action.

18. Under § 114(a) of the Clean Air Act, 42 U.S.C. § 7414(a) (1976 & Supp. V 1981), each source is required to keep records of all emissions. One purpose of this requirement is to determine which source is in violation of an ambient air or hazardous pollutant standard. These records are open for public inspection unless they necessarily reveal trade secrets. *Id.*

19. *See* Dillon v. Legg, 68 Cal. 2d 728, 736-39, 441 P.2d 912, 917-18, 69 Cal. Rptr. 72, 77-79 (1968) (false constructs and per se rules should not be substituted for a case-by-case analysis merely to avoid granting recovery on fraudulent claims, when such rules will also withhold relief from meritorious claims); State Rubbish Ass'n v. Siliznoff, 38 Cal. 2d 330, 338, 240 P.2d 282, 286 (1952) (although allowing claims for mental distress might cause a flood of litigation, the jury is in a position to determine whether the mental distress causes the physical injury in a particular case).

20. Anderson v. Minneapolis, St. P. & S. Ste. M. Ry., 146 Minn. 430, 439, 179 N.W. 45, 48 (1920).

21. PROSSER, *supra* note 4, at 240; RESTATEMENT (SECOND) OF TORTS §§ 431, 433 (1965).

22. PROSSER, *supra* note 4, at 250-70. Prosser discusses two conflicting views as to whether defendant has a legal duty to protect plaintiff from the unforeseeable consequences of

Proximate cause can be especially difficult to establish in air pollution cases. In a typical case arising in an urban area, there are likely to be several industrial air polluters, each of which, independently or in combination,<sup>23</sup> may have caused the plaintiff's disease. Also, the disease might have been affected by sources other than industrial emissions, such as cigarette smoking<sup>24</sup> or motor vehicle

defendant's acts. The first view holds that liability does not extend beyond foreseeable consequences, *id.* at 251-60, while the second view suggests that defendant may be liable for consequences resulting from his or her acts, regardless of whether or not they could have been foreseen. *Id.* at 260-63.

The concept of "direct causation" is a compromise between the two conflicting positions. This theory distinguishes between those consequences that "directly" result from the act of the defendant and those that occur "indirectly" through the intervention of other causes. Direct results are deemed proximate even if they were unforeseeable. *Id.* at 263-67. See *In re Arbitration Between Polemis and Furness, Withy & Co.*, 3 K.B. 560 (1921)

Ehrenzweig has suggested a different way to resolve the foreseeability conflict. He notes that where an actor is considered liable for the inevitable consequences of his or her dangerous activity because the harm was foreseeable, even though that activity had social value, liability for negligence is almost the same as strict liability. To distinguish between the two kinds of liability Ehrenzweig suggests substituting "typicality" for "foreseeability." Thus, all injuries typically resulting from the activities of a particular enterprise may be imputed to the business, even if the injuries are unavoidable. Ehrenzweig, *Negligence Without Fault*, 54 CALIF. L. REV. 1422, 1455-59 (1966).

23. See *Michie v. Great Lakes Steel Div.*, 495 F.2d 213 (6th Cir.), *cert. denied*, 419 U.S. 997 (1974), where three Michigan corporations were found to be jointly and severally liable for personal and property harm to 37 nearby residents caused by pollutants emitted by the three corporations. Although the cause of action was in nuisance, the court analogized the facts to situations in which the negligence of two or more individuals combine to cause a single, indivisible injury, and it imposed joint and several liability. *Id.* at 217. See also *Landers v. East Tex. Salt Water Disposal Co.*, 151 Tex. 251, 256-57, 248 S.W.2d 731, 734 (1952) (joint and several liability applied when two defendants negligently allowed oil and salt water to escape, resulting in pollution of plaintiff's lake).

An analogous situation is provided in the case of *Borel v. Fibreboard Paper Prods. Corp.*, 493 F.2d 1076 (5th Cir. 1973). The plaintiff in *Borel*, an independent contractor who used insulation material containing asbestos, contracted asbestosis, which can only be caused by exposure to asbestos. Plaintiff sued 10 manufacturers of the insulation materials, accusing them of failing to warn him of the dangers in handling the materials. *Id.* at 1081. The court held all the manufacturers strictly liable for causing plaintiff's injury. *Id.*

It is possible that several sources may emit air pollutants non-negligently, but injury may nevertheless be caused by virtue of the synergistic effect of the toxins in the circulating air. See *Oakwood Homeowners Ass'n v. Ford Motor Co.*, 77 Mich. App. 197, 221, 258 N.W.2d 475, 483 (1977); Gelpo & Tarlock, *supra* note 5.

A cause of action in negligence for the injury caused by pollution in such a case would probably be ineffective, since no standard of care could limit the occurrence of the synergism. A strict liability action might be a better way to deal with the problem. See *supra* note 4.

24. Cigarettes release hydrocarbons into the smoker's body. Musser, *supra* note 1, at 93. However, some studies have shown differences in lung cancer rate not attributable to cigarette smoking which may be related in part to air pollution or to the interaction of

exhaust,<sup>25</sup> making it difficult for the plaintiff to establish that an industrial source of air pollution proximately caused the disease.<sup>26</sup> Nevertheless, if it can be established that all of the defendants were negligent to some degree and that the injury resulted from the action of at least one member of the defendant group, the law will often impose liability on the several defendants, even though the specific cause of the injury is unknown.

## B. *Theories of Causation and Apportionment of Damages in Multiple Defendant Cases*

Because the plaintiff's burden of proof of causation is virtually impossible to meet in many negligence actions involving multiple defendants, courts have devised several doctrines which relax the burden so that the case is not initially dismissed for failure to state an actionable claim. This section will discuss those doctrines and the applicability of each of them to the hypothetical case under consideration here.

### 1. Concert of Action

Under the concert of action theory, all those who acted in concert with the tortfeasor are jointly and severally liable to the plaintiff for

various environmental factors, including pollution. See NATIONAL ACADEMY OF SCIENCES, SUMMARY OF PROCEEDINGS: CONFERENCE ON THE HEALTH EFFECTS OF AIR POLLUTION (1973); Greenberg, Burke, Caruana, Page & Ohlson, *Approaches and Initial Findings of a State-Sponsored Research Programme on Population Exposure to Toxic Substances*, 1 THE ENVIRONMENTALIST 53, 57 (1981).

At least two state courts have allowed recovery for cigarette-smoking plaintiffs who contracted lung cancer when the occupation plaintiffs had engaged in was found to have reasonably or probably been the cause of the cancer. *McAllister v. Workmen's Compensation Bd.*, 69 Cal.2d 408, 445 P.2d 313, 71 Cal. Rptr. 697 (1968); *Bolger v. Chris Anderson Roofing Co.*, 112 N.J. Super. 383, 271 A.2d 451 (Essex County Ct. 1970), *aff'd*, 117 N.J. Super. 497, 285 A.2d 228 (App. Div. 1971). See also Comment, *Judicial Attitudes Towards Legal and Scientific Proof of Cancer Causation*, 3 COLUM. J. ENVTL. L. 344, 355-62 (1977).

25. Musser, *supra* note 1, at 93 (gas powered motor vehicles are large contributors to the amount of hydrocarbons found in the environment).

26. See *id.* at 94. Where plaintiff has engaged in activity that contributed to the injury, e.g., smoking, defendant may escape liability by raising contributory negligence as a defense, in states where this defense is still available. PROSSER, *supra* note 4, at 416-27. In states with comparative negligence statutes, defendant may still be liable for the proportion of the harm it caused. *Id.* at 434-36.

Thomas, *supra* note 1, analyzes statistics published by the U.S. Department of Health, Education and Welfare ("HEW") which indicate that 5 to 10% of lung cancer cases may result from air pollution. *Id.* at 702-703. See NATIONAL INST. OF HEALTH, PUB. HEALTH SERV., DEP'T OF HEALTH EDUC. & WELFARE, PUB. NO. 78-526, PROGRESS AGAINST CANCER OF THE LUNG (1978). Thus, in states with comparative negligence laws, the industrial source



injury resulting from the conduct.<sup>27</sup> Action in concert may include any one of several forms of express or tacit understanding,<sup>28</sup> such as participation in the tortious act according to a common design, rendering substantial assistance or encouragement to the activity despite knowledge that the defendant is breaching a duty, or adoption of the tortfeasor's acts.<sup>29</sup> In other words, when the tortious action of the defendants constitutes a joint enterprise, each defendant is held liable for the entire amount of damages.<sup>30</sup>

It is unlikely that most polluters engage in concert of action. Even if they do, the plaintiff would still encounter great difficulty proving the requisite common design. And even if evidence of a common plan could be found, it would be extremely unlikely that all the negligent defendants were involved in the agreement. Application of the concert of action theory would thus allow negligent defendants who did not participate in the plan to escape liability. The concert of action theory also requires that all the defendants

might be liable for 5 to 10% of the damages resulting from plaintiff's disease. On the other hand, if under the comparative law statute defendant is liable only if he or she acted more tortiously than plaintiff, the polluter would probably be exempt from liability. PROSSER, *supra* note 4, at 436-39. See also Berg, *Comparative Contribution and its Alternatives: The Equitable Distribution of Accident Losses*, 43 INS. COUNS. J. 577 (1976).

27. RESTATEMENT (SECOND) OF TORTS § 876 (1965); PROSSER, *supra* note 4, at 292.

28. There is no settled rule regarding the extent of communication necessary to constitute an understanding between defendants. One commentator has analogized tortious concert of action to antitrust cases based on § 1 of the Sherman Act, which requires that there be a contract or conspiracy in order to establish an antitrust cause of action. 15 U.S.C. § 1 (1982). See Comment, *DES and A Proposed Theory of Enterprise Liability*, 46 FORDHAM L. REV. 963, 983 (1978). The Supreme Court has found that there may be an unlawful "conspiracy" where there has been consciously parallel behavior without express agreement. *Interstate Circuit, Inc., v. United States*, 306 U.S. 208, 226-27 (1939). Many lower courts have required evidence of interdependence, in addition to merely parallel behavior, to support a finding of conspiracy. See AMERICAN BAR ASSOCIATION, *ANTITRUST LAW DEVELOPMENTS* 36-37 (1975).

29. RESTATEMENT (SECOND) OF TORTS § 876 (1965); PROSSER, *supra* note 4, at 292. A classic example of concert of action is an illegal automobile race on a public highway in which several racers participate. If one racer hits a bystander, each of the racers is liable for the damage. See *Bierczynski v. Rogers*, 239 A.2d 218 (Del. 1968).

Concert of action may be established by defendants' failure to engage in certain affirmative acts. For example, in *Sindell v. Abbott Laboratories*, 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132, *cert. denied*, 449 U.S. 912 (1980), several drug companies manufactured diethylstilbestrol ("DES"), which caused cancer in the daughters of women who took the drug while pregnant. The court stated that a tacit understanding or common plan among defendants not to conduct adequate tests or provide sufficient warning to pregnant women regarding the potential dangers of the drug would constitute concert of action, although no such common plan was found in that case. *Id.* at 605-06, 607 P.2d at 932-33, 163 Cal. Rptr. at 141. For a full discussion of *Sindell*, see *infra* notes 67-74 and accompanying text.

30. PROSSER, *supra* note 4, at 291.

who could have caused the injury be identified.<sup>31</sup> Often this identification is impossible in air pollution cases. For all these reasons, concert of action is not the most helpful theory to use in establishing causation in air pollution cases.

## 2. Alternative Liability

Under the theory of alternative liability, several defendants may be at fault for engaging in a tortious activity even though only one unidentifiable defendant has actually caused the injury. Since the individual actor who caused the injury cannot be determined, the law shifts the burden of proof to the culpable defendants, rather than forcing the innocent plaintiff to bear the burden.<sup>32</sup> If the defendants are unable or unwilling to identify the actual tortfeasor, damages will be jointly and severally apportioned.<sup>33</sup>

The illustrative case is *Summers v. Tice*.<sup>34</sup> In *Summers*, two hunters negligently shot at a quail; a pellet struck a third member of the hunting party in the eye.<sup>35</sup> The California Supreme Court shifted the burden of proof concerning causation onto the defendants and made each of them accountable for all of the damage, since both were equally likely to have caused the injury.<sup>36</sup> The court justified its holding on two policy grounds. First, since both of the defendants were negligent and the plaintiff was entirely innocent, the latter should not, as a matter of fairness, bear the burden of the hunters' tortious activity.<sup>37</sup> Second, negligent defendants often have better access to evidence which might establish causation than do innocent plaintiffs.<sup>38</sup>

31. This requirement is implicit in the notion that all those who acted in concert with the tortfeasor are jointly and severally liable. See PROSSER, *supra* note 4, at 292; 1 HARPER & JAMES, *THE LAW OF TORTS* 698 (1956); Comment, *supra* note 28, at 979-80.

32. See *Sindell v. Abbott Laboratories*, 26 Cal. 3d 588, 598, 607 P.2d 924, 928, 163 Cal. Rptr. 132, 136, *cert. denied*, 449 U.S. 912 (1980); *Summers v. Tice*, 33 Cal. 2d 80, 199 P.2d 1 (1948); PROSSER, *supra* note 4, at 923. See also *Ybarra v. Spangard*, 25 Cal. 2d 486, 154 P.2d 687 (1944) (alternative liability predicated on *res ipsa loquitur*).

33. See *Summers*, 33 Cal. 2d at 492, 199 P.2d at 5; *Ybarra*, 25 Cal. 2d at 492, 154 P.2d at 690; PROSSER, *supra* note 4, at 315.

34. 33 Cal. 2d 80, 199 P.2d 1 (1948).

35. *Id.* at 82, 199 P.2d at 2.

36. *Id.* at 84, 199 P.2d at 2-3.

37. *Id.* at 86-87, 199 P.2d at 4-5.

38. *Id.* See also RESTATEMENT (SECOND) OF TORTS § 433B(3) illustration 9 (1965).

The hypothetical case under consideration here is analogous, in several respects, to the *Summers* case. The polluting defendants emit disease-causing chemicals into the air breathed by an unwary community, just as the hunters in *Summers* shot in the direction of an unwary fellow hunter. And each of the polluters is violating a duty of maintaining clean air, just as each of the hunters in *Summers* violated the standard of reasonable care by shooting toward a third hunter.<sup>39</sup>

Nevertheless, applying the alternative liability theory to our hypothetical case would result in an unfair solution for the defendants. The alternative liability theory contemplates that all of the possible tortfeasors are defendants;<sup>40</sup> our plaintiff, however, may never be able to identify all of the polluters whose emissions contributed to her condition.<sup>41</sup> Furthermore, in *Summers*, each hunter was equally likely to have caused the injury; in our case, a defendant who emitted a greater amount of pollution or who had operated a plant for many years would be more likely to have caused the injury than one who emitted a lesser amount or one who had just commenced operation. Therefore, imposing liability on each defendant for all of the damages would be unfair to the smaller or newer polluters.<sup>42</sup>

In *Michie v. Great Lakes Steel Division*,<sup>43</sup> the U.S. Court of Appeals for the Sixth Circuit applied a theory of liability similar to that of alternative liability. In that case, thirty-seven residents of Ontario, Canada brought a diversity action in nuisance against three Michigan corporations. The plaintiffs alleged that the defendants emitted noxious pollutants which were carried by air currents and gases onto the plaintiffs' property, causing property damages and personal injuries.<sup>44</sup> The court held that if the plaintiffs' injuries

39. See Comment, *supra* note 28, at 987. The author compares the facts in *Summers* to a case in which multiple defendants had produced DES, but only one was responsible for manufacturing the particular drug that caused the injury.

40. See, e.g., *Namm v. Charles E. Frosst & Co.*, 178 N.J. Super. 19, 28-34, 427 A.2d 1121, 1125-28 (App. Div. 1981); *Abel v. Eli Lilly & Co.*, 94 Mich. App. 59, 67, 289 N.W.2d 20,22 (Ct. App. 1979).

41. See *supra* notes 23-26 and accompanying text.

42. See Note, *Sindell v. Abbott Laboratories: A Market Share Approach to DES Causation*, 69 CALIF. L. REV. 1179, 1183 (1981); Note, *Market Share Liability: An Answer to the DES Causation Problem*, 94 HARV. L. REV. 668, 672 (1981).

43. 495 F.2d 213 (6th Cir.), *cert. denied*, 419 U.S. 997 (1974).

44. PRACTISING LAW INSTITUTE, *supra* note 9, at 160-67.

were found to have been caused by the combined emissions, then all three defendants were jointly and severally liable, reasoning that the pollutants from the three sources were so well mixed in the air that it would be impossible to determine the independent effects of each pollutant.<sup>45</sup>

Although *Michie* was an action in nuisance, the court recognized “a close analogy” to negligence actions involving inseparable injuries and several defendants.<sup>46</sup> Thus, *Michie* suggests that a plaintiff injured as a result of air pollution may be able to maintain an action in negligence, even though the extent of each defendant’s liability cannot be established, provided the plaintiff has sustained a single, indivisible injury caused by the tortious acts of several defendants.

Therefore, in our hypothetical case, the plaintiff would probably be able to employ the alternative liability theory even though she could not establish the extent to which each of the polluters in the city proximately caused her disease. Like the plaintiffs in *Michie*, she could argue that the chemicals of all the negligent defendants combined in the atmosphere, and that therefore her disease should be considered to have been caused by the pollution emitted from all the defendants. This argument, under the “single, indivisible injury producing joint and several liability” rule,<sup>47</sup> would shift the burden of proving causation to the defendants. Any defendant who could not meet the burden would be held liable for the entire amount of damages.

There are two major reasons, however, why a court might reject the application of the *Michie* model to plaintiff’s case. The first is that, as in *Michie*, all of the defendants who could have caused the injury were identifiable.<sup>48</sup> Furthermore, in that case there were only three defendants, whereas our plaintiff is suing a much larger number (100 minus those found not to have acted negligently).<sup>49</sup>

45. *Michie*, 495 F.2d at 216-18. Imposing joint and several liability when there is a single, indivisible injury caused by the cumulative negligent actions of a number of defendants is a common remedy in tort. See, e.g., *Azure v. City of Billings*, 596 P.2d 460 (Mont. 1979) (bar owners assaulted and injured plaintiff, police then arrested plaintiff and waited 16 hours before taking him to the hospital; plaintiff’s ultimate injury not held divisible); *Maddux v. Donaldson*, 362 Mich. 425, 108 N.W.2d 33 (1961) (two vehicles struck plaintiff’s car; plaintiff’s injury held not divisible).

46. 495 F.2d at 218.

47. *Id.*

48. See *supra* note 31 and accompanying text.

49. See *supra* notes 15-18 and accompanying text.

The fewer the defendants, the more clear the causal connection between the emission sources and the injury. Where there are many defendants, each emitting a different amount of pollutant into the air from a different location, it is much more difficult to pinpoint the source of the injury. Because the *Michie* approach does not take into account any of the differences in conduct among defendants, it may be an unfair means of determining liability when there are numerous defendants.

The alternative liability theory has been used in different fact patterns, as exemplified by *Summers*<sup>50</sup> and *Michie*.<sup>51</sup> Although the facts of *Summers* demonstrate many similarities to those in our hypothetical air pollution case, application of alternative liability under the *Summers* rationale would not be an equitable solution for the defendant polluters in our case. The *Michie* reasoning would be more useful for our plaintiff to employ under an alternative liability theory. However, even this rationale is deficient since not all of the defendants are identifiable, and there are many more defendants here than in *Michie*. Thus, neither the *Summers* nor the *Michie* approach provides an appropriate liability theory on which to base this air pollution action.

### 3. Industry-Wide Liability

A third method that courts have devised to resolve causation problems in negligence actions involving multiple, unidentifiable defendants is industry-wide or enterprise liability.<sup>52</sup> This doctrine is similar to concert of action in that both involve tortious conduct on

50. 33 Cal. 2d 80, 199 P.2d 1 (1948).

51. 495 F.2d 213 (6th Cir.), cert. denied, 419 U.S. 997 (1974).

52. A similar but more extensive "enterprise liability" theory, based upon the industry-wide liability theory as set forth in *Hall v. E.I. duPont de Nemours & Co.*, 345 F. Supp. 353 (E.D.N.Y. 1972), *infra* notes 60-66 and accompanying text, is suggested in Comment, *supra* note 28, at 985-1000. The author sets forth seven elements comprising enterprise liability: 1) plaintiff is not at fault for the inability to identify the specific cause; rather inability is due to the nature of defendant's activities; 2) all defendants manufactured a generally similar defective product; 3) plaintiff's injury was caused by the product defect; 4) defendants owed a duty to the class of which plaintiff was a member; 5) there is clear and convincing evidence that plaintiff's injury was caused by the product of one of the defendants; 6) there is an inadequate, industry-wide safety standard for the manufacturers of this product; and 7) all defendants were tortfeasors satisfying the requirements of negligence, warranty or strict liability. *Id.* at 995.

the part of several defendants in accordance with a tacit understanding.<sup>53</sup> Industry-wide liability, however, was designed to meet the more complex problems posed by a highly industrialized and integrated business world.<sup>54</sup> The theory is applicable in situations where a number of companies embrace an inadequate standard of care in product safety.<sup>55</sup> Each company's adherence to this standard perpetuates the production of unsafe goods, one of which injures the plaintiff. Each defendant thus becomes a contributing party to the injury merely by embracing the tortious standard.<sup>56</sup>

Industry-wide liability is also similar to alternative liability in that, under both theories, the defendant who was the actual cause of the injury cannot be identified.<sup>57</sup> The law resolves this problem by shifting the burden of proving lack of causation to the defendants once the plaintiff proves, by a preponderance of the evidence, that "some unknown one of the named defendants" manufactured the injury-causing product.<sup>58</sup> Any defendant who does not meet the burden is held jointly and severally liable for the injury.<sup>59</sup>

*Chance v. E.I. duPont de Nemours & Co.*,<sup>60</sup> decided by the U.S. District Court for the Eastern District of New York, is the key case in which industry-wide liability was applied. There, six manufacturers were named as defendants; all manufactured blasting caps according to a safety standard which was set by a trade association. Several of the blasting caps exploded while children were playing with them, causing injury. The court, denying the defendants'

53. The theory is described as concert of action in several places in the opinion in *Hall v. E.I. duPont de Nemours & Co.*, 345 F. Supp. 353 (E.D.N.Y. 1972), the key case on industry-wide liability. See *id.* at 378-80. See also Comment, *supra* note 28, at 981.

54. See Comment, *supra* note 28, at 981.

55. See *Hall v. E.I. duPont de Nemours & Co.*, 345 F. Supp. 353 (E.D.N.Y. 1972); *Sindell v. Abbott Laboratories*, 26 Cal. 3d 588, 609, 607 P.2d 924, 935, 163 Cal. Rptr. 132, 143, *cert. denied*, 449 U.S. 912 (1980).

56. See Comment, *supra* note 28, at 997.

57. Industry-wide liability has been viewed as an amalgamation of the concert of action and alternative liability theories. See *id.* at 995-1000.

58. See *Hall*, 345 F. Supp. at 378-80.

59. *Id.* at 379; *Bichler v. Eli Lilly & Co.*, 79 A.D. 2d 317, 329, 436 N.Y.S.2d 625, 633 (1st Dept. 1981). See Comment, *supra* note 28, at 999-1000. The author notes that under the contribution doctrine that exists in many jurisdictions, damages can be divided among tortfeasors. She further suggests that comparative contribution, *i.e.*, dividing the damages according to proportionate liability, is the most equitable means of distribution. *Id.*

60. This case was consolidated with and is properly cited as *Hall v. E.I. duPont de Nemours & Co.*, 345 F. Supp. 353 (E.D.N.Y. 1972).

motion to dismiss, determined that if the plaintiffs could successfully prove the manufacturers' joint awareness of the risk and their ability to affect it, joint liability could be imposed on all the defendants.<sup>61</sup>

If industry-wide liability is to be applicable to our hypothetical case, the plaintiff must demonstrate that all of the defendants adhered to an industry-wide emission standard, explicitly or implicitly agreed to.<sup>62</sup> Such a demonstration would establish the defendants' joint control over the risk. Plaintiff would also have to prove that all of the defendants emitted pollution, that all owed a duty to her class, that her injury was caused by some one of the named defendants and that it is impossible to identify the single responsible defendant.<sup>63</sup> The burden would then shift to the individual defendants who, unless they could prove that their emissions did not cause plaintiff's injury, would be jointly and severally liable for her damages.

The problems that would arise for plaintiff under this approach are the same as those she would encounter in applying the concert of action and alternative liability theories. First, it is highly improbable that all of the defendants in her case agreed to a common emission level for each pollutant.<sup>64</sup> The *Chance* court specifically stated that its holding should be limited to industries comprised of a small number of units,<sup>65</sup> and at least one court has refused to apply the industry-wide standard where numerous defendants are involved.<sup>66</sup> Finally, the joint and several liability which would be imposed under the industry-wide theory would not be an equitable solution for the defendants, at least some of whom probably contributed only minimally to plaintiff's disease.

61. *Id.* at 372-74. In analyzing the *Chance* court's imposition of joint and several liability, the court in *Bichler*, 79 A.D. 2d at 329-30, 436 N.Y.S.2d at 633, stated that when the identity of the direct cause cannot be established, "[t]he issue of causation then becomes distinctly secondary to the fact that the group engaged in joint hazardous conduct." Defendants' joint control over the risk is evidenced by their joint decision to delegate some functions of the trade association.

62. *See* 345 F. Supp. at 374.

63. *See* Comment, *supra* note 28, at 995.

64. *See supra* notes 40-41 and accompanying text.

65. *Hall*, 345 F. Supp. at 378. *See* Note, *Sindell v. Abbott Laboratories: A Market Share Approach to DES Causation*, 69 CALIF. L. REV. 1179, 1184-85 (1981).

66. *See* *Sindell v. Abbott Laboratories*, 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132, *cert. denied*, 449 U.S. 912 (1980).

#### 4. Market Share Liability

Market share liability applies where there are numerous negligent manufacturers of a product of a type which injured the plaintiff, where not all of the manufacturers can be joined and where it is not known whether any of the defendants that have been joined actually produced the product that caused the injury.<sup>67</sup> This theory of liability grew out of the case of *Sindell v. Abbott Laboratories*.<sup>68</sup> *Sindell* involved five pharmaceutical companies<sup>69</sup> which together had manufactured ninety percent of the diethylstilbesterol ("DES") marketed.<sup>70</sup> DES, a drug designed to prevent miscarriage, was administered to pregnant women from 1941 to 1971, at which time it was discovered to have carcinogenic effects.<sup>71</sup> The plaintiff in *Sindell*, who had been exposed to DES *in utero* and had developed cancer as a result, sued the five companies for negligently manufacturing, marketing and promoting the drug. Although she was able to establish that the defendants did act negligently by manufacturing, marketing and promoting DES without adequately testing the drug or warning users of its effects, the plaintiff did not know which company had produced the particular product that was prescribed to her mother.<sup>72</sup> Therefore, she could not establish the causative link necessary to obtain relief from any of the five defendants. The court, finding that the theories of concert of action, alternative liability and industry-wide liability were not applicable, fashioned a new remedy which it called market share liability. Under this theory, each defendant is liable for the proportion of the judgment represented by its share of the market, unless a defendant demonstrates that it could not have produced the product that

67. *See id.*

68. 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132, *cert. denied*, 449 U.S. 912 (1980). Although market share liability has so far been adopted only by California, some states have discussed the theory approvingly. *See, e.g.*, *Hardy v. Johns-Manville Sales*, 509 F. Supp. 1353, 1357-60 (E.D. Tex. 1981) (Texas courts likely to adopt "some form of *Sindell* liability in the asbestos related cases."). *Id.* at 1359. Still other courts have refused to apply the theory. *See, e.g.*, *Payton v. Abbott Laboratories*, 512 F. Supp. 1031 (D. Mass. 1981).

69. Ten defendants were named in the trial court action, but the action was dismissed or the appeal abandoned as to five of the defendants when the case reached the California Supreme Court. 26 Cal. 3d at 596-97, 597 n.4, 607 P.2d at 926-27, 927 n.4, 163 Cal. Rptr. at 134-35, 135 n.4.

70. 26 Cal. 3d at 612, 607 P.2d at 937, 163 Cal. Rptr. at 145.

71. *Id.* at 593, 607 P.2d at 925, 163 Cal. Rptr. at 133.

72. *Id.* at 595-97, 607 P.2d at 926, 163 Cal. Rptr. at 134-35.



caused the plaintiff's injury.<sup>73</sup> A particular defendant's liability is determined by the percentage of DES which that manufacturer sold.<sup>74</sup>

Market share liability seems to be a more appropriate theory for our hypothetical plaintiff to employ in attempting to establish causation than concert of action, alternative liability or industry-wide liability. Market share liability does not require any agreement among defendants to adopt or adhere to a common standard of care. The long time span between the act which originally caused the disease and the discovery of the disease does not bar a suit.<sup>75</sup> And the division of damages among the defendants is more equitable since each is responsible for an amount that, in theory, represents its share of responsibility for the harm caused.<sup>76</sup>

Market share liability, however, is especially designed to apply to cases where a defective product has caused the injury.<sup>77</sup> A defendant's liability is thus determined by the amount of the product sold by that defendant. A defendant cannot have a "market share" of pollution, however. Therefore, although market share liability is an attractive theory to use in establishing causation, it is inappropriate in multiple polluter situations as a means of determining each defendant's liability. Many factors which would have to be considered in ascertaining a defendant's share of pollution would not be of relevance in determining the market share of a product manufacturer. These factors include determining when the plaintiff contracted the disease and which defendants were emitting the disease-causing chemical at that time, the amount of pollutants emitted by each defendant, the geographical distance of each defendant from the place of injury, and the climatological and topographical conditions affecting dispersion of the pollutant. It is suggested that the causation theory established in market share liability be applied in

73. *Id.* at 612-13, 607 P.2d at 937, 163 Cal. Rptr. at 145.

74. *Id.*; Comment, *supra* note 28, at 995-1007.

75. See *Sindell*, 26 Cal. 3d at 613, 607 P.2d at 937, 163 Cal. Rptr. at 145.

76. See *id.* at 612-13, 607 P.2d at 937, 163 Cal. Rptr. at 145.

77. The necessary elements of a products liability action are an injury to plaintiff by defendant's product because the product was defective and the existence of the defect when the product left defendant's custody. See RESTATEMENT (SECOND) OF TORTS § 402A (1965); PROSSER, *supra* note 4, at 671-72; Kroll, *Intra-Industry Joint Liability: The Era of Absolute Products Liability*, 687 Ins. L.J. 185, 194 (1980).

air pollution actions such as our hypothetical case, but that the factors particular to pollution cases be considered in apportioning damages among defendants.

### III. PROPOSAL FOR A NEW THEORY OF LIABILITY AND APPORTIONMENT OF DAMAGES: POLLUTION SHARE LIABILITY

Pollution share liability, like market share liability, would shift the burden of proof of causation onto the defendants<sup>78</sup> when the plaintiff has joined as defendants persons responsible for a substantial share of the disease-causing pollution, and where all of these defendants violated a standard of care. Each of the numerous defendants, unless it demonstrates that it could not have caused the plaintiff's injury, would be liable for a proportion of the judgment equal to its share of the pollution, calculated by reference to several factors.

To begin with, the plaintiff would need to demonstrate that each defendant was emitting pollutants that may have caused or contributed to the plaintiff's injury at the time the plaintiff contracted the disease. The commencement of the injury may be very difficult to ascertain, since pollution-caused diseases may exist at undetectable levels for many years before being diagnosed.<sup>79</sup> Therefore, the "discovery rule" should be used to determine when a pollution-caused disease began. Under the discovery rule, a plaintiff's cause of action does not accrue until he or she discovers, or should have discovered, both the injury and the fact that it may have been caused by the conduct of the defendants.<sup>80</sup> Using this rule, the air pollution victim

78. The burden of proving causation may be shifted from plaintiffs to defendants when strong public policy favors recovery by an innocent plaintiff who cannot otherwise identify the source of his or her injury. See *Lyons v. Premo Pharmaceutical Laboratories*, 170 N.J. Super. 183, 192-93, 406 A.2d 185, 190 (App. Div.), cert. denied, 82 N.J. 267, 412 A.2d 774 (1979). Theories of alternative liability, industry-wide liability and market share liability thus allow the burden to be shifted to the several defendants to prove which of them caused the injury. Since pollution share liability cases share the same difficulty of identification, it is a necessary element of the theory that the burden shift to defendants.

79. See *Bellis & Wolf, Legal Approach to Industrial Pollution*, in *PRACTISING LAW INSTITUTE*, supra note 9, at 307, 313-14. Courts have noted the cumulative and unapportionable nature of diseases such as asbestosis or mesothelioma, caused from exposure to asbestos, in which determinations of the exact time of onset cannot be made. See *Borel v. Fibreboard Paper Prods. Corp.*, 493 F.2d 1076, 1094 (5th Cir. 1973); *Insurance Co. of No. America v. Forty Eight Insulations, Inc.*, 451 F. Supp. 1230, 1239 (E.D. Mich. 1978).

80. See *J. Reynolds Tobacco Co. v. Hudson*, 314 F.2d 776, 783 (5th Cir. 1963) (causal connection between cigarette smoking and respiratory and larynx diseases); *Insurance Co. of*

would join as defendants all those who, at the time of discovery, are emitting the pollutant that caused her injury.<sup>81</sup>

No. America v. Forty Eight Insulations, Inc., 451 F. Supp. 1230, 1240 (E.D. Mich. 1978) (between asbestos and asbestosis); Goodman v. Mead Johnson & Co., 388 F. Supp. 1070, 1074-75 (D.N.J. 1974), *modified*, 534 F.2d 566 (3d Cir. 1976) (between injury and birth control pills); Breaux v. Aetna Casualty & Sur. Co., 272 F. Supp. 668, 672 (E.D. La. 1967) (between drug and deafness); Raymond v. Eli Lilly & Co., 117 N.H. 164, 371 A.2d 170 (1977) (between oral contraceptives and legal blindness); Lopez v. Sawyer, 62 N.J. 267, 272, 300 A.2d 563, 565 (1973) (medical malpractice); G.D. Searle & Co. v. Superior Court, 49 Cal. App. 3d 22, 25, 122 Cal. Rptr. 218, 220 (Ct. App. 1975) (causal connection between oral contraceptives and pathological effects); Gilbert v. Jones, 523 S.W.2d 211 (Tenn. App. 1974) (between birth control pills and high blood pressure and heart damage).

In some states, however, the discovery rule applies as soon as plaintiff discovers or should have discovered the injury; the realization that the particular defendant may have been the cause is incidental. *See, e.g.*, Bonney v. Upjohn Co., 487 F. Supp. 486, 491 (W.D. Mich. 1980); Karjala v. Johns-Manville Prods., 523 F.2d 155, 160-61 (8th Cir. 1975).

81. The problem with this formulation is that the injury actually commences, albeit at an undetectable level, long before plaintiff discovers it. Thus some of the pollution sources that operated negligently at the time the disease began but that subsequently either have controlled their emission levels so as not to breach the standard of care or have ceased operating altogether would not be held liable.

There are several responses to this dilemma. First, the length of time it takes for the disease to manifest itself is dependent upon the individual, the pollutant and the concentrations of the pollutant to which plaintiff was exposed. Bellis & Wolf, *supra* note 79, at 313. In certain cases, a detailed medical history of plaintiff may be available as well as scientific information regarding the toxin and evidence as to the concentrations to which plaintiff was exposed. If in addition to this information, statistical data are available indicating the number of years needed for the specific chemicals to manifest themselves in a recognizable disease in the average human being, it may be possible to more accurately determine when the disease originated. Defendants who at that time negligently operated sources emitting the chemical in question would be liable.

This response raises yet another problem: if defendants did not keep records prior to 1970 and air studies of specific pollutants at specific locations were not executed, it would be very difficult to ascertain which defendants emitted pollutants in excess of the standard of care before 1970. The production schedules of each source could, however, be examined to determine the production capacity and method of production of the industrial source and from those findings to determine the quantity of each pollutant emitted. *See* Bellis & Wolf, *supra* note 79, at 310.

From a legal standpoint, the question is whether the most recent exposures, *i.e.*, those which caused the discovery to occur, were a substantial cause of plaintiff's disease. If so, causation is satisfied even if there were also earlier exposures, which took place before the disease was discovered. *See* Hagy v. Allied Chem. & Dye, 122 Cal. App. 2d 361, 370, 265 P.2d 86, 92 (1954); Bellis & Wolf, *supra* note 79, at 313-14; Juergensmeyer, *Control of Air Pollution Through the Assertion of Private Rights*, 1967 DUKE L. J. 1126, 1144-45.

It is useful to note the treatment given to this issue in the asbestos cases. In Insurance Co. of No. America v. Forty Eight Insulations, Inc., 451 F. Supp. 1230 (E.D. Mich. 1978), the court stated that, due to the indivisible and cumulative nature of asbestos injuries, a particular defendant may be held liable for all plaintiff's damages, even though some were caused after defendant ceased manufacturing asbestos products, and some were caused before plaintiff was exposed to defendant's asbestos. *Id.* at 1242-43.

Further complications in ascertaining which defendants are liable arise from the very nature of the business world. Every day new enterprises open their doors, while others close up shop. The manner of operation of a single plant may differ radically from one year to the next. Consequently, not all of the sources deemed negligent at the time of discovery would still be operating negligently when litigation commenced, and there would likely be new sources of pollution to add to the liability list. A formula that would take account of these complications would have to be developed to determine the liability of each source.

After deciding which defendants emitted pollutants in the time period corresponding to the onset of the plaintiff's disease, a court would have to consider three factors in ascertaining the extent of each defendant's liability. The first of these factors is the amount of excess pollution<sup>82</sup> emitted by each polluter. This amount can be determined either through the records that emission sources are required to keep under the Clean Air Act,<sup>83</sup> or through scientific air study tests.<sup>84</sup> Thus, if Source A emitted excess chemical W but not excess X, Y or Z, it would not be liable. Likewise, if Source A emitted only a very small amount of one of those chemicals, its liability would be proportionately minimal.<sup>85</sup>

A second consideration in the pollution share liability theory is the geographical distance of each defendant from the place of injury<sup>86</sup> and the relation of that distance to climatological conditions.<sup>87</sup> Common sense suggests that the closer a negligent defendant is to the injured plaintiff, the more likely it is that that defendant caused the disease. However, prevailing winds may carry pollutants from industrial sources to or from the plaintiff's residence. Inversions may be frequent and long-lasting, keeping the air

82. "Excess" is defined here as an amount greater than the "reasonable" standard set by the court in the particular case. See *supra* notes 15-19 and accompanying text.

83. See *supra* note 18.

84. Air studies are conducted with the use of a device similar to a vacuum cleaner, which samples the air quality at specific times and locations. The identity and quantity of pollution residue is determined through a spectrographic analysis. Bellis & Wolf, *supra* note 79, at 308-09.

85. This analysis assumes that all other factors remain constant. See *infra* notes 86-90 and accompanying text.

86. Assuming the air was static, the greatest concentrations of toxins would occur near pollution sources. See, e.g., *Reynolds Metals Co. v. Yturbide*, 258 F.2d 321 (9th Cir.), *cert. denied*, 358 U.S. 840 (1958).

87. Bellis & Wolf, *supra* note 79, at 309-10.

closest to the earth from rising and resulting in high concentrations of pollutants in the breathing zone.<sup>88</sup> Thus, if Source A and Source B both emitted chemical X, but Source A was located one-eighth mile from the plaintiff's home and emitted only minimal excess pollution, while Source B, operating 100 miles away, emitted a large amount of excess pollution and was in the path of winds which flowed in the direction of the plaintiff's residence, Source B might be liable for a greater percentage of the damage than Source A, despite the distance factor. Mathematical diffusion formulas could be used to extrapolate concentration figures to different geographic points.<sup>89</sup>

The final factor that must be considered is the effect of topographical conditions on the dispersion of pollutants. Air pollutants are maintained in high concentrations when they overlie valleys which are surrounded by unbroken hills. In contrast, pollutants disperse quickly over flat lands.<sup>90</sup> These circumstances may have strongly affected the respective impacts of different sources of pollution upon the plaintiff.

The pollution share liability theory, like the concert of action, alternative liability, industry-wide liability and market share liability theories discussed above, is supported by strong public policies. It is, first of all, a response to the need for a remedy to meet changing conditions in society. The *Sindell* court, for example, recognized that in our contemporary world, harmful goods may be manufactured which cannot be traced to a specific producer, and that to allow a resulting injury to go uncompensated would be manifestly unfair.<sup>91</sup> The rationale is no different in the air pollution context. The industrialization of our nation has been accompanied by a tremendous increase in the emission of disease-causing chemicals into our air. Although some remedies have been developed to improve this situation,<sup>92</sup> many aspects of the problem have not been

88. See *Hagy v. Allied Chem. & Dye*, 122 Cal. App. 2d 361, 363-64, 265 P.2d 86, 88 (1954); *Bellis & Wolf*, *supra* note 79, at 309.

89. *Bellis & Wolf*, *supra* note 79, at 309-10.

90. *Id.* at 310.

91. 26 Cal. 3d at 610, 607 P.2d at 936, 163 Cal. Rptr. at 144. See also *Kroll*, *supra* note 77, at 186-87.

92. The purpose of the Clean Air Act is to protect the environment from the dangers caused by air pollution. Clean Air Act § 101(b)(1), 42 U.S.C. § 7401(b)(1) (1976 & Supp. V 1981). Common law remedies for pollution have been awarded in cases where plaintiff is able to prove exactly who caused the injury, or, as in *Michie v. Great Lakes Steel Div.*, 495 F.2d 213 (6th Cir.), *cert. denied*, 419 U.S. 997 (1974), where plaintiff can prove that several

adequately addressed,<sup>93</sup> and continue to have severe consequences for the public health and welfare.

A second argument in favor of a pollution share liability cause of action is that polluters are in a much better position than the general public to control pollution. Liability for harm from the pollution should therefore be placed on the polluters who could have prevented the negligent emissions.<sup>94</sup> Furthermore, imposing liability on the defendants would provide an incentive to all polluters to install anti-pollution equipment which could shield them from liability.<sup>95</sup>

A third consideration is that polluting defendants are generally better able to bear the costs of the injuries resulting from their actions than are plaintiffs.<sup>96</sup> This "deep pocket" policy is of special relevance when the defendant is in a position to distribute the financial loss to the public.<sup>97</sup> It is applicable in air pollution cases because the defendants are polluting in the course of conducting their businesses, and can pass on losses resulting from damage payments to the public, as a cost of doing business.

The final policy favoring the imposition of pollution share liability is one that lies at the heart of many joint and several liability cases:<sup>98</sup> as between an innocent plaintiff and negligent defendants, the latter should bear the cost of the injury.<sup>99</sup>

defendants caused the disease but cannot prove the extent of each one's liability. *See supra* notes 43-45 and accompanying text.

93. For example, § 304(a)(1) of the Clean Air Act only provides for injunctive relief, 42 U.S.C. § 7604(a)(1) (1976 & Supp. V 1981), and the statute is always vulnerable to alteration. Common law remedies provide no relief for plaintiffs who cannot prove which defendants caused their injury.

94. *See Sindell*, 26 Cal. 3d at 611, 607 P.2d at 936, 163 Cal. Rptr. at 144.

95. *See Esposito, Air and Water Pollution: What to do While Waiting for Washington*, 5 HARV. C.R.-C.L. L. REV. 32, 34-35 (1970). *See also Michelman, Pollution as a Tort: A Non-Accidental Perspective on Calabresi's Costs*, 80 YALE L.J. 647, 668-73 (1971).

96. *See* 26 Cal. 3d at 611, 607 P.2d at 936, 163 Cal. Rptr. at 144.

97. *See Escola v. Coca Cola Bottling Co.*, 24 Cal. 2d 453, 462, 150 P.2d 436, 441 (1944). In *Escola*, Chief Justice Traynor stated that "[t]he cost of an injury and the loss of time or health may be an overwhelming misfortune to the person injured, and a needless one, for the risk of injury can be insured by the manufacturer and distributed among the public as a cost of doing business." *See also Keeton, Conditional Fault in the Law of Torts*, 72 HARV. L. REV. 401, 441 (1959); Pfennigstorf, *Environment, Damages, and Compensation*, 1979 AM. B. FOUND. RESEARCH J. 347, 365-66.

98. *See, e.g., Summers v. Tice*, 33 Cal. 2d 80, 199 P.2d 1 (1948).

99. *See* 26 Cal. 3d at 610-11, 607 P.2d at 936, 163 Cal. Rptr. at 144.

Establishing causation through pollution share liability will be a complex process. In the best case for the plaintiff, all polluters could be sued and required to pay their respective shares of the damages. Taken together, these shares would total the plaintiff's costs.<sup>100</sup> In many cases, however, complete recovery may not be feasible: one or more polluters may be insolvent, or it may be impossible to locate and serve them.<sup>101</sup> In these cases, pollution share liability should borrow a market share liability concept which would allow a plaintiff to sue parties responsible for a substantial percentage of the pollution,<sup>102</sup> rather than all of those responsible.<sup>103</sup> The major disadvantage of suing only those responsible for a substantial percentage of the pollution is that the injured plaintiff will recover only the percentage of the pollution shares that those defendants represent. Nevertheless, a substantial share is better than no share at all, when no other means can be found to establish causation. This approach would at least reduce the likelihood that a major contributor of pollution would escape liability, and would also provide a means of damage apportionment.<sup>104</sup>

#### IV. CONCLUSION

As the law presently stands, plaintiffs injured by unidentifiable sources of air pollution have no effective remedy. Since our indus-

100. If defendants are required to pay 100% of the damages, then each defendant would pay for the total amount of pollution divided by the percentage of pollution it negligently emitted. Support for dividing the damages in this fashion may be found in three arguments: 1) plaintiff is innocent and defendants are not, so that plaintiff should be able to recover in full rather than carrying some of the financial burden alone; 2) since a substantial share of the relevant market is included in the litigation, *see infra* notes 102-103 and accompanying text, the disparity between market shares and damage shares is minimal; and 3) a greater incentive would be placed on defendants to implead other negligent polluters. *See Note, DES: Judicial Interest Balancing and Innovation*, 22 B.C.L. REV. 747, 777 (1981).

101. *See Berg, supra* note 26, at 586.

102. *See Sindell v. Abbott Laboratories*, 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132, cert. denied, 449 U.S. 912 (1980). The question of how much constitutes a "substantial share" has generated considerable discussion. The *Sindell* court refused to set a limit. *See Comment, supra* note 28 at 996; Note, *supra* note 65, at 199; Note, *California Expands Tort Liability Under the Novel "Market Share" Theory: Sindell v. Abbott Laboratories*, 8 PEPPERDINE L. REV. 1011, 1037 (1981).

103. This method would be more equitable for defendants; their liability would correspond to their responsibility for harm. *See Note, supra* note 100, at 778. Polluting defendants can protect themselves financially from damage suits by bonding, insurance plans or liability funds. *See Milhollin, Long-Term Liability for Environmental Harm*, 41 U. PITT. L. REV. 1, 12-25 (1979); Pfennigstorf, *supra* note 97, at 430-44.

104. *See Sindell*, 26 Cal. 3d at 612, 607 P.2d at 937, 163 Cal. Rptr. at 145; Note, *supra* note 100, at 1197-98.

trial world is constantly expanding, resulting in more air pollution, injuries due to such pollutants are increasing. Plaintiffs afflicted by such diseases should be compensated.

The common law, recognizing this problem, provides remedies when identifiable multiple defendants are involved, by apportioning damages through joint and several liability. Congress has also acknowledged the air pollution dilemma by enacting the Clean Air Act,<sup>105</sup> under which a plaintiff may obtain injunctive relief as one means of combatting the problem. Nevertheless, a plaintiff injured by unidentifiable sources of air pollution cannot obtain monetary compensation under existing common or statutory law.

This Note has suggested a new theory whereby plaintiffs injured by unidentifiable multiple polluters could obtain a remedy in damages. Under the pollution share liability approach, the causation burden would shift to the defendants once the plaintiff established that his or her injury was caused by one or more of the defendants, all of whom violated a duty of care. Defendants who could prove that they could not possibly have been liable would be dismissed. Each remaining polluter would be liable for the proportion of the judgment represented by its share of the pollution. After ascertaining the time period during which negligent defendants emitted the pollutants that may have caused or contributed to the disease, the court would consider three factors in determining the proportion of each defendant's share: the amount of excess pollution emitted by each polluter, the geographical distance of each defendant from the place of injury and the relation of that distance to climatological and topographical conditions.

The pollution share liability theory recognizes and attempts to ameliorate some of the problems resulting from pollution in the atmosphere. It provides the framework for arriving at a fair remedy for injured plaintiffs by imposing liability on the parties who could have prevented the negligent action, who are better able to bear the cost of the injury and who acted tortiously as compared to innocent plaintiffs. At the same time, it provides an equitable solution for defendants, since each defendant need only pay its proportional share of the damages.

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105. Pub. L. No. 88-206, 77 Stat. 392 (1963) (current version at 42 U.S.C. §§ 7401-7642 (1976 & Supp. V 1981)).