Toxic Torts: Workable Defenses Available to the Corporate Defendant

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**TOXIC TORTS: WORKABLE DEFENSES AVAILABLE TO THE CORPORATE DEFENDANT**

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TODAY, our courts are clogged with cases in which claimants allege injuries caused by exposure to a toxic substance. Cases of this nature have sometimes been referred to as toxic torts. In 1983 Villanova Law School presented a Symposium on Toxic Torts. At this Symposium, one of the authors of this article presented a summary of the legal arguments that have been effective in the defense of toxic tort cases. That presentation formed the basis for this paper.

The primary emphasis of this article will be the defenses available in asbestos litigation. The article focuses upon asbestos litigation for two reasons. First, while there has been toxic tort litigation prior to the onset of asbestos-related litigation, the recent deluge of asbestos-related injury claims, coupled with the subsequent downfall

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1. The term "toxic torts," for purposes of this article, refers to personal injury claims that arise out of exposure to a toxic substance and which affect thousands, perhaps even millions, of people. Even if one excludes the various occupational diseases contracted by industrial employees such as silicosis, anthrocosis, and asbestosis, there has still been considerable toxic tort litigation arising out of the sale and use of pharmaceuticals and chemicals. For example, over 500 lawsuits alleging injuries caused by the drug MER/29 were filed during the mid-1960's. See, e.g., Roginsky v. Richardson-Merrell, Inc., 378 F.2d 832 (2d Cir. 1967). More recently, there have been over 1000 suits filed claiming injuries due to in utero exposure to DES (diethylstilbestrol). See, e.g., Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132 (1980). There are potentially 50,000 plaintiffs who could become involved in the "agent orange" litigation. See In re "Agent Orange" Prod. Liab. Litig., 506 F. Supp. 762 (E.D.N.Y. 1980) (certifying all Vietnam War veterans, their families, and survivors as potential plaintiffs in the class action suit against manufacturers of "agent orange," a defoiant used in the Vietnam War). For a further discussion of the potential magnitude of toxic torts litigation, see Podgers, Toxic Time Bombs—Say Latent Disease Suits Will Be Key Battleground in '80s, 67 A.B.A. J. 139 (1981).

2. The authors have spent approximately five years in defending the Manville Corporation in Pennsylvania and federal courts. It is the authors' intention in this article to demonstrate those strategies and legal approaches that have been successful in the actual trial setting, rather than to provide an overall evaluation of the legal principles each side uses in its case. The fact that the authors have chosen to address toxic torts within this context does not suggest that they believe the litigation/tort context is the best or the only means of handling such claims. On the contrary, much research has been done which suggests that an administrative system, similar to the Workmen's Compensation scheme, would be the best system for resolving toxic tort claims. That topic is, however, beyond the scope of this paper, and has therefore not been discussed in any detail. For a discussion of the advantages of a legislative solution to the toxic tort problem, see Schwartz & Means, The Need For Federal Product Liability and Toxic Tort Legislation: A Current Assessment, 28 Vill. L. Rev. 1088 (1983).

3. The authors have focused on asbestos litigation for purposes of discussing the defense of toxic tort claims because they believe that the procedures and tactics developed for resolving asbestos claims may well be used to handle future toxic tort claims. See also Phillips, Asbestos Litigation: The Test of the Tort System, 36 Ark. L. Rev. 343 (1982).

4. Through 1980, a total of approximately 25,000 asbestos-related disease lawsuits had been filed in the United States, and that number is expected to grow. Podg-
of Johns-Manville Corporation,\(^5\) suggests that this area of litigation merits discussion. Secondly, the complexity and sheer volume of asbestos-related disease litigation provides practitioners with a fund of knowledge that can be readily applied to other types of toxic tort litigation.\(^6\) This article, therefore, attempts to apply the trial procedures and tactics of asbestos litigation to the field of toxic torts generally. To this end, the article will discuss the appropriateness and effectiveness of asbestos-related defenses vis-a-vis other toxic tort claims.

II. INTRODUCTION

The toxic tort decisional law is replete with references to esoteric defenses created, or at least recognized by, contemporary tort law.\(^7\) Without denigrating such imaginative defenses, the best approach for any trial lawyer is to determine at the outset which defenses will generally be successful and those which will not be successful. This approach is especially recommended in the toxic tort context, where hundreds of lawsuits may be filed and where a defendant must exercise some selectivity in deciding which cases to try. In making such determinations, the practitioner must keep in mind that many typical products liability defenses, while logically and legally sound, are generally ineffective in the toxic tort area because the jury either will fail

\(^5\) On August 26, 1982, Johns-Manville Corporation and its affiliated companies filed a petition for reorganization under Chapter 11 of the Bankruptcy Reform Act of 1978 in the United States Bankruptcy Court for the Southern District of New York. At the time it filed this petition, Johns-Manville was a defendant in approximately 16,000 asbestos-related disease suits. Since the filing of the petition, Johns-Manville has not been named in any additional asbestos-related disease lawsuits. \textit{See An Asbestos Bankruptcy, Newsweek}, Sept. 6, 1982, at 54; \textit{Manville's Bold Maneuver, Time}, Sept. 6, 1982, at 17.

\(^6\) During the course of this article, reference frequently will be made to Pennsylvania law. This has been done because of the authors' familiarity with Pennsylvania law and because Pennsylvania law amply demonstrates the practical and legal difficulties inherent in defending toxic tort claims. Moreover, the use of one jurisdiction's law in explaining the defense of toxic tort claims lends a thread of consistency to the discussion of the defenses available to a defendant in the toxic tort area.

\(^7\) The term "esoteric defenses," for the purposes of this article, means typical products liability defenses such as contributory negligence, assumption of the risk, and superseding cause. While these defenses still exist theoretically in toxic tort litigation, they have little value to the practitioner because of the way courts have interpreted these defenses when they are used in a toxic tort case. For additional discussion of these defenses in practice, see notes 9 & 179-97 and accompanying text \textit{infra}.
to understand their nuances or, more likely, will feel that the defense proffered is "technical lawyer talk."

Initially it must be observed that the defense of a personal injury case in any modern courtroom is difficult for a defendant, even given the best factual scenario. Today, a plaintiff finds himself with an ever-expanding number of liability theories and additional bases of recovery, while a defendant finds himself with disappearing or lim-

8. A plaintiff in a toxic tort case can utilize strict liability, concert of action, industry-wide liability, and market-share liability theories to press a claim for compensatory damages against a defendant for injuries from exposure to a toxic substance. For example, in the 1966 case of Webb v. Zern, the Pennsylvania Supreme Court adopted the doctrine of strict liability as set forth in the Second Restatement of Torts, §402A. Webb v. Zern, 422 Pa. 424, 220 A.2d 853 (1966). Section 402A of the Restatement reads as follows:

(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.


In 1979, the Court of Appeals of Michigan, in the case of Abel v. Eli Lilly & Co., allowed plaintiffs to recover for injuries caused by DES on a "concert of action" theory. Abel v. Eli Lilly & Co., 94 Mich. App. 59, 289 N.W.2d 20 (1979). In Abel, the plaintiffs were allowed to recover against all the manufacturers of DES, even though they were unable to identify the particular manufacturer whose product injured them. Id. at 72, 289 N.W.2d at 24. In reaching this conclusion, the court noted that "[i]t is well-established that if two or more persons engaged negligently in a concerted activity, and as a result plaintiff is injured, all are liable even though only one directly caused the injury." Id. The legal principle of a concert-of-action theory is articulated in §876 of the Second Restatement of Torts:

For harm resulting to a third person from the tortious conduct of another, one is subject to liability if he [a] does a tortious act in concert with the other or pursuant to a common design with him, or [b] knows the other's conduct constitutes a breach of duty and gives substantial assistance or encouragement to the other to so conduct himself, or [c] gives substantial assistance to the other in accomplishing a tortious result and his own conduct, separately considered, constitutes a breach of duty to the third person.


The industry-wide theory of liability was utilized in the 1972 case of Hall v. E.I. Du Pont de Nemours & Co. to permit a plaintiff to recover for injuries sustained when a
ined defenses.9 Furthermore, once a toxic tort defendant loses on the issue of liability, he is faced with methods of calculating damages that, as a practical matter, may double or triple the amount of a plaintiff's recovery.10 Additionally, in Pennsylvania, a defendant who has judgment entered against him for an amount that is more than 125% of the dollar amount that he offered prior to trial in settlement blasting cap exploded. Hall v. E.I. Du Pont de Nemours & Co., 345 F. Supp. 353 (E.D.N.Y. 1972). Under this theory, the plaintiff had to prove that there was a high probability that one of the named defendants caused his injury; that he was unable to identify the particular defendant; and that all defendants concertedly held to an unsafe or unreasonable safety standard in manufacturing the product which caused the injury. See id. For further discussion of the enterprise theory of liability, see notes 81-83 and accompanying text infra. See also Gillick, The Essence of Enterprise Liability, Or the True Meaning of "We're All in This Together," 16 FORUM 979, 980-83 (1981); LaMarca, supra, at 69-72; Mallor, Guilt by Industry: Industry-Wide Liability for Defective Products, 49 TENN. L. REV. 61, 72-77 (1981); Schoenfeld, Industry-Wide Joint Liability, 57 MARQ. L. REV. 675 (1974); Comment, DES and a Proposed Theory of Enterprise Liability, 46 FORDHAM L. REV. 963, 995-1007 (1978).

In 1980, in the case of Sindell v. Abbott Laboratories, the California Supreme Court adopted the theory of "market share" liability, under which the plaintiffs were permitted to recover damages for injuries caused by DES without identifying the particular defendant whose product caused their injuries. Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 143 (1980). The plaintiffs had to prove the difficulty of identifying the manufacturer; that each manufacturer had produced the identical product which caused the injury; and that the manufacturers joined represented a substantial portion of all producers in the plaintiffs' area at the time of exposure. Id. See generally Gillick, supra, at 986-87; LaMarca, supra, at 89-93; Mallor, supra, at 89-93; Comment, Market Share Liability: An Answer to the DES Causation Problem, 94 HARV. L. REV. 668 (1981).


In Rutter a divided Pennsylvania Supreme Court abolished the defense of assumption of the risk in negligence causes of action; the defense was held to be viable only where preserved by statute, in cases of express assumption of the risk, and in cases brought under a strict liability theory. Rutter, 496 Pa. at 613, 437 A.2d at 1209. The court was divided four to three, with at least two justices advocating retention of the defense which Justice Nix termed "a necessary and viable component of tort law." Id. at 617, 437 A.2d at 1212 (Nix, J., dissenting). For a further discussion of Rutter, see note 193 infra. Assumption of the risk is still a defense to a strict liability claim under Pennsylvania law, with the operative question being whether the plaintiff was in fact aware of the risk, not whether he reasonably should have been aware of it. Christner v. E.W. Bliss Co., 524 F. Supp. 1122 (M.D. Pa. 1981).

In Beshada, the New Jersey Supreme Court held that neither the defendant manufacturer's unawareness of the dangers of exposure to asbestos, nor the scientific unknowability of those dangers at the time of the plaintiff's exposure provided a defense to a strict liability claim for asbestos-related diseases. Beshada, 90 N.J. at 191, 447 A.2d at 539.

10. In addition to compensatory damages for personal injuries, other bases of recovery are now available to plaintiffs. In 1979, the Pennsylvania Supreme Court expanded liability for infliction of emotional distress. Sinn v. Burd, 486 Pa. 146, 404 A.2d 672 (1979). Once limited to those persons in the "zone of physical danger" the Sinn court expanded liability to permit recovery by a bystander who was not in physical danger, but whose mental distress was immediate and foreseeable. Id. See also

Pennsylvania also adopted § 908 of the Second Restatement of Torts regarding recovery of punitive damages. See Chambers v. Montgomery, 411 Pa. 339, 192 A.2d 355 (1963) (adopting the language of § 908 of the Second Restatement of Torts and holding that punitive damages were recoverable against a defendant in an assault and battery action if defendant's conduct were "malicious, wanton, reckless or oppressive"). Section 908 of the Second Restatement reads as follows:

(1) Punitive damages are damages, other than compensatory or nominal damages, awarded against a person to punish him for his outrageous conduct and to deter him and others like him from similar conduct in the future.
(2) Punitive damages may be awarded for conduct that is outrageous, because of the defendant's evil motive or his reckless indifference to the rights of others. In assessing punitive damages, the trier of fact can properly consider the character of the defendant's act, the nature and extent of the harm to the plaintiff that the defendant caused or intended to cause and the wealth of the defendant.

ReSTATEMENT (SECOND) OF TORTS § 908 (1979). In the context of toxic tort litigation, evaluation of the "outrageousness" of asbestos-manufacturers' conduct has focused on their alleged knowledge of the hazards associated with exposure to asbestos and their failure to warn workers of these dangers despite this knowledge. See, e.g., Neal v. Carey Canadian Mines, 548 F. Supp. 357, 374-78 (E.D. Pa. 1982). See also, Fulton, Punitive Damages in Product Liability Cases, 15 FORUM 117 (1979); Nelson, Punishment for Profit: An Examination of the Punitive Damage Award in Strict Liability, 18 FORUM 377 (1982); Parnell, Manufacturers of Toxic Substances: Tort Liability and Punitive Damages, 17 FORUM 947 (1981); Comment, Exemplary Damages in Products Liability Cases, 1980 DET. C.L. REV. 647.

In addition, some jurisdictions allow recovery for various types of economic losses incurred due to a defective product, including the following: damage to the defective product itself; costs of repairing the defective product; resulting costs of taking the product out of service to repair it; and the losses suffered because the defect renders the product worth less than its cost. See Cane, Physical Loss, Economic Loss and Products Liability, 95 LAW Q. REV. 117 (1979).

In the 1980 case of Kaczkowski v. Bolubasz, the Pennsylvania Supreme Court adopted the "total offset" method for calculating future damages. Kaczkowski v. Bolubasz, 491 Pa. 561, 421 A.2d 1027 (1980) (in awarding damages for lost earnings in a wrongful death action, future interest shall be presumed to offset future inflation totally and the practice of discounting future lost earnings is abandoned). Under the "total offset" formula, future interest rates are presumed to equal future inflation rates; thus the two factors offset one another in the calculation of damages. Id. at 583, 421 A.2d at 1038-39. Under this system, a damage award for lost earnings is not discounted to its present value so that the plaintiff's recovery is greater than it would have been under the discounting method.

11. See 42 PA. CONS. STAT. ANN. § 238 (Purdon 1983). Rule 238 of the Pennsylvania Rules of Civil Procedure reads in pertinent part as follows:

(a) Except as provided in subdivision (e), in an action seeking monetary relief for bodily injury, death or property damage, or any combination thereof, the court or the arbitrators appointed under the Arbitration Act of June 16, 1836, P.L. 715, as amended, 5 P.S. § 30 et seq., or the Health Care Services Malpractice Act of October 15, 1975, P.L. 390, 40 P.S. § 1301.101 et seq., shall:
(1) add to the amount of compensatory damages in the award of the arbitrators, in the verdict of a jury, or in the court's decision in a
In toxic tort/products liability litigation, the societal context in which the defense attorney must present his case frequently will also be inherently unfavorable. A defense attorney often will find himself portrayed as "representing" a Fortune 500 monolith in a contest which pits him against an individual plaintiff, presented as a hard-working, church-going family man, a loving husband and father. Moreover, in toxic tort cases, the plaintiff is often seriously injured or threatened with a catastrophic illness. Skillful plaintiffs' attorneys exploit this factual scenario to the fullest advantage. In fact, a clever plaintiffs' attorney will increase the jury's empathy for his client in direct proportion to a defendant's assent up the Fortune 500 ladder.

The defendant in a products liability or toxic tort contest will also find himself confronted on a regular basis with adverse publicity. For example, in asbestos litigation, nearly all jurors have been exposed to stories in the newspapers, news magazines, or to programs shown on television, suggesting that the asbestos industry knew of the dangers of asbestos since the 1930's, but failed to warn the public and even attempted to conceal the dangers. Even if a defendant is involved in a toxic tort case which has received little pre-trial publicity, he may still find himself facing a jury which has been tainted by general exposure to news articles about toxic substances. Consequently, many practicing defense attorneys take their most aggressive trial po-

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sition during jury selection because it is so important to weed out those jurors who have preconceived biases against corporate defendants. In toxic tort suits, jury selection—especially in multi-defendant cases—can easily require the same painstaking evaluation found in highly publicized criminal matters.13

Another major problem facing defense attorneys in toxic tort litigation is the pattern jury instructions given at the end of a trial. In these instructions, the manufacturer typically may be referred to as the guarantor of his products.14 Similarly, a jury instruction on strict liability usually states that the risk of loss is placed on the seller without regard to his fault.15 In other situations, a jury may be instructed that a product “lacking any element to make it safe” is defective.16 Or, a jury may be instructed that it may find liability if the defend-


14. See Salvador v. Atlantic Steel Boiler Co., 457 Pa. 24, 319 A.2d 903 (1974) (the lack of horizontal privity did not bar an employee’s suit for breach of warranty against a manufacturer of a steam boiler purchased by his employer). The Pennsylvania Supreme Court, in refusing to require horizontal privity between the consumer and manufacturer in order to sustain a breach of warranty cause of action, has held that, “a manufacturer by virtue of section 402A [of the Second Restatement of Torts] is effectively the guarantor of his products’ safety.” Id. at 32, 319 A.2d at 907. The court reasoned that “[b]ecause the manufacturer is now a guarantor, a ‘harsh and unjust result’ is worked on the plaintiff who may recover for his injury or loss if his complaint is in trespass, but on identical facts would be denied relief if the pleading is captioned ‘Complaint in Assumpsit.’” Id. For reasons of “public policy” and “legal symmetry,” the court allowed the plaintiff’s warranty claim, even though he was not in privity of contract with the manufacturer. Id. at 33, 319 A.2d at 908.

15. See Azzarello v. Black Bros. Co., 480 Pa. 547, 391 A.2d 1020 (1978). In Azzarello, the Pennsylvania Supreme Court held that the use of the phrase “unreasonably dangerous” in the charge to a jury on a strict liability claim was reversible error; the determination of whether or not a product was “unreasonably dangerous” within the meaning of § 402A of the Restatement was a question of law for the court, to be decided on the basis of policy factors involved in shifting the risk of loss to the manufacturer. See id. at 556-60, 391 A.2d at 1025-27. In outlining the policy rationale behind allowing strict liability in the first place, the court pointed to the need for consumer protection in this era of “giant corporate structures” and mass marketing. The court also observed that “[c]ourts have increasingly adopted the position that the risk of loss must be placed upon the supplier of the defective product without regard to fault or privity of contract.” Id. at 553, 391 A.2d at 1024 (footnote omitted). For a further discussion of Azzarello, see notes 16 & 103 infra.

16. Azzarello v. Black Bros. Co., 480 Pa. 547, 559, 391 A.2d 1020, 1027 (1978). Once the court has made the determination that a shift in the risk of loss is appropriate, the Pennsylvania Supreme Court said that “the jury may find a defect where the product left the supplier’s control lacking any element necessary to make it safe for its intended use or possessing any feature that renders it unsafe for the intended use.” Id. (footnote omitted).
ant’s conduct was a “substantial factor in bringing about theplaintiff's injury.” As these example illustrate, the jury instructions themselves are worded in a manner designed to promote recovery.

Despite all of the difficulties which must be faced by defense counsel in toxic tort litigation, victories by the defense are obtained through a variety of legal and factual techniques. The remainder of this paper will set forth the legal defenses and procedural techniques that have provided the greatest success in the defense of asbestos-related disease cases.

III. THE OBVIOUS DEFENSES

A. Statute of Limitations

The one defense that has been most successful in asbestos litigation, perhaps because there are so few other defenses available, is the statute of limitations. Essentially, a statute of limitations sets forth a period of time within which an injured party must bring his

17. PENNSYLVANIA SUGGESTED STANDARD JURY INSTRUCTIONS (CIVIL) § 3.25 (1981). One such jury instruction reads as follows:

In order for the plaintiff to recover in this case, the defendant’s (negligent) (reckless) (intentional) conduct must have been a substantial factor in bringing about the accident. This is what the law recognizes as legal cause. A substantial factor is an actual, real factor, although the result may be unusual or unexpected, but it is not an imaginary or fanciful factor or a factor having no connection or only an insignificant connection with the accident.

Id.

See also id. § 6.30. Section 6.30 provides as follows:

The plaintiff is entitled to recover damages for all injuries which the defendant's negligence was a substantial factor in producing. The defendant's negligence need not be the sole cause of the injuries; other causes may have contributed to producing the final result. The fact that some other factor may have been a contributing cause of an injury does not relieve a defendant of liability, unless you find that such other cause would have produced the injury complained of independently of his negligence. [Even though prior conditions or concurrent causes may have contributed to an injury, if defendant's negligence was a substantial factor in producing the injury, defendant is liable for the full amount of damages sustained, without any apportionment or diminution for the other conditions or causes.]

Id.

18. For a discussion of defenses which have been limited or abolished in the products liability context, see note 9 and accompanying text supra.

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claim for damages. Almost every type of action at law has a statutory time beyond which an action may not be brought. In Pennsylvania, for example, the statute of limitations in an action for personal injury is two years from the date that the plaintiff was injured.\(^{20}\) In most actions for personal injuries, the statute of limitations is easy to apply since there is no dispute regarding the date of injury. One might consider the situation where a plaintiff, a Pennsylvania resident, is injured in an automobile accident in downtown Philadelphia on June 1, 1980. This plaintiff, however, does not file a personal injury action until July 1, 1982. Since more than two years have passed since the date of the accident causing plaintiff’s injuries, this plaintiff’s claim is barred by the Pennsylvania Statute of Limitations.

Fixing the date of injury in a toxic tort case may be more difficult, however. Generally, the plaintiff has not been injured traumatically, but rather has been exposed to one or more toxic substances over a long period of time. Moreover, the plaintiff’s injury may not have manifested itself until long after he has ceased being exposed to the toxic substance. For example, a worker may have worked at the Philadelphia Navy Yard from 1945 until 1955. Some years later, he is advised that he is suffering from an asbestos-related disease, and he brings an action against a number of asbestos manufacturers. He alleges that he was exposed to asbestos at the Navy Yard, that the expo-

\[^{20}\] 42 PA. CONS. STAT. ANN. §§ 5502(a), 5524 (Purdon 1981). Under Pennsylvania law, the time within which a cause of action must be brought is “computed . . . from the time the cause of action accrued, the criminal offense was committed, or the right of appeal arose.” \(Id.\) § 5502(a).

With regard to causes of action for personal injury, § 5524 provides as follows:

The following actions and proceedings must be commenced within two years:

(1) An action for assault, battery, false imprisonment, false arrest, malicious prosecution or malicious abuse of process.

(2) An action to recover damages for injuries to the person or for the death of an individual caused by the wrongful act or neglect or unlawful violence or negligence of another.

(3) An action for taking, detaining or injuring personal property, including actions for specific recovery thereof.

(4) An action for waste or trespass of real property.

(5) An action upon a statute for a civil penalty or forfeiture.

(6) An action against any officer of any government unit for the nonpayment of money or the nondelivery of property collected upon

on execution or otherwise in his possession.

(7) Any other action or proceeding to recover damages for injury to person or property which is founded on negligent, intentional, or otherwise tortious conduct or any other action or proceeding sounding in trespass, including deceit or fraud, except an action or proceeding subject to another limitation specified in this subchapter.

\(Id.\) § 5524.
sure caused his disease, and that the defendants supplied asbestos products to the Navy Yard during the time he worked there. The defendants would then probably file a motion for summary judgment, raising the statute of limitations.

At first glance, the court in this situation has a number of options. It may rule that the statute of limitations began to run either when the plaintiff was first exposed to asbestos, or when the plaintiff was last exposed to asbestos. Under either of these applications of

21. Under the Pennsylvania Rules of Civil Procedure, "any party may move for summary judgment on the pleadings and any depositions, answers to interrogatories, admissions on file and supporting affidavits." 42 PA. CONS. STAT. ANN. § 1035(b) (Purdon 1983). Summary judgment will be granted if the aforementioned documents reveal "that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law." Id. The bar of the statute of limitations is an affirmative defense and must be pleaded as such by the defendant. See Stein v. Richardson, 302 Pa. Super. 124, 448 A.2d 558 (1982). Where there is no genuine issue of material fact as to the applicability of the statute of limitations to the plaintiff’s case, and where the reasonableness of the plaintiff’s efforts to discover the operable facts of his cause of action is not a close question, the court may rule as a matter of law on when the statute commenced to run and may grant summary judgment for the defendants. See Bickell v. Stein, 291 Pa. Super. 145, 435 A.2d 610 (1981). Ordinarily, however, where there is a genuine issue of fact as to the plaintiff’s diligence in discovering his injury—therefore an issue of fact as to when the statute should commence to run—the defendant’s motion for summary judgment must be denied and the issue of fact submitted to the jury. See, e.g., Taylor v. Tukanowicz, 290 Pa. Super. 581, 435 A.2d 181 (1981).

22. See Birnbaum, First Breath’s Last Gasp: The Discovery Rule in Products Liability Cases, 13 FORUM 279 (1977) (articulating the policy rationale behind the discovery rule as opposed to the effects of the “first breath” rule, under which the cause of action accrues at the moment the toxic substance is introduced into the plaintiff’s body). See also Note, Asbestos-Related Diseases Trigger Insurer’s Duty to Defend and Indemnify When the Diseases Become Reasonably Capable of Diagnosis, 28 VILL. L. REV. 1335 (1983).

23. See, e.g., Schwartz v. Heydon Newport Chem. Corp., 12 N.Y.2d 212, 188 N.E.2d 142, 237 N.Y.S.2d 714 (1963) (the statute of limitations in the plaintiff’s negligence claim commenced to run at the time the defendant’s harmful product was introduced into the plaintiff’s body, not at the time the resulting harm was discovered). In the Schwartz case, defendant’s product, “Umbrathor,” was inserted into the plaintiff’s sinuses to facilitate the taking of x-rays in 1944. In 1957, the plaintiff discovered that he had cancer, allegedly as a result of his exposure to the defendant’s product which had remained in his body. In 1959, the plaintiff brought a cause of action in negligence. Id. at 215, 188 N.E.2d at 143, 237 N.Y.S.2d at 715. The New York Court of Appeals reasoned that the plaintiff’s injury commenced at the moment the harmful substance was introduced into his body. Since the injury occurred then, the cause of action also accrued at that time and the plaintiff’s claim in this case was barred by the three-year statute of limitations. Id. at 216-19, 188 N.E.2d at 144-45, 237 N.Y.S.2d at 717-19.

In reaching its decision in Schwartz, the court of appeals relied on an earlier New York case, Schmidt v. Merchants Despatch Transp. Co. See 270 N.Y. 287, 200 N.E. 824 (1936). In Schmidt, the New York Court of Appeals held that the “injury to the plaintiff was complete when the alleged negligence of the defendant [plaintiff’s employer] caused the plaintiff to inhale the deleterious dust” which resulted in the plaintiff’s developing pneumoconiosis some three years later. Id. at 301, 200 N.E. at 827. The Schmidt court thus held that the plaintiff’s cause of action accrued at the
the statute of limitations, a plaintiff who was exposed to asbestos from 1945 to 1955 would find that his action is time-barred. However, the court may also rule that the statute of limitations began to run on the date when the plaintiff first discovered that he had an asbestos-related condition and that his asbestos-related condition was caused by his exposure to asbestos. This latter formula for applying a statute of limitations has become known as the "discovery rule;" in one form or another, it is the law of most progressive jurisdictions, including Pennsylvania.24

In Pennsylvania, the discovery rule was first promulgated in the 1959 medical malpractice case, Ayers v. Morgan.25 In Ayers, the court ruled that the statute of limitations on the plaintiff's negligence claim did not begin to run until the plaintiff discovered that a sponge left inside his body by the defendant physician during a surgical procedure was the cause of his continuing difficulties.26 The court reasoned that the legislative intent of the statute of limitations could not

moment of his first exposure, even though the resulting disease did not develop until later. The court noted that the plaintiff could have brought a successful cause of action at the time of his first exposure and recovered damages "which he could show had resulted or would result" from his exposure. Id.

Generally, a long latency period is characteristic of asbestos-related and other toxic-tort diseases. See notes 29-31 and accompanying text infra. In most jurisdictions, a plaintiff is not legally injured, and thus has no cause of action, until he manifests some physically objective and demonstrable injury. See, e.g., Amader v. Johns-Manville Corp., 514 F. Supp. 1031 (E.D. Pa. 1981) (refusing to allow recovery for increased risk of cancer and accompanying emotional distress brought on by exposure to asbestos); Morrissy v. Eli Lilly & Co., 76 Ill. App. 3d 753, 394 N.E.2d 1369 (1979) (refusing to allow recovery for the increased possibility of developing cancer due to in utero exposure to DES). Thus, if a plaintiff were to bring an action immediately following his exposure to a toxic substance, but before that toxic substance had worked any demonstrable harm, it is unlikely that the plaintiff would be able to allege a sufficient present injury to sustain a cause of action. Yet, if he waits, his action may be barred by the statute of limitations because the statutory period frequently will be less than the latency period of the disease.


25. 397 Pa. 282, 154 A.2d 788 (1959) (the statute of limitations in a medical malpractice claim began to run at the time the plaintiff discovered the presence of the foreign substance in his body and its resulting harm, not the time the substance was left there by the defendant physician).

26. Id. at 285-90, 154 A.2d 789-92. The plaintiff in Ayers for nine years had experienced undiagnosed problems in the area of the previous surgery before the sponge was determined to be the cause. Id. at 283, 154 A.2d at 788-89. The plaintiff brought his action for professional negligence within the statutory period following his discovery of the cause of his discomfort. Id.
be construed so as to require a plaintiff to bring a cause of action before he became aware that he had been injured.\textsuperscript{27}

In the 1981 case of \textit{Anthony v. Koppers Co.},\textsuperscript{28} the Pennsylvania Superior Court ruled that the “discovery rule” was applicable in “creeping disease” cases—those cases in which a plaintiff had contracted his disease from continuous exposure to a hazardous substance, and in which the injury and its cause may have been difficult to discover.\textsuperscript{29}

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\textsuperscript{27} Id. at 284-85, 154 A.2d at 789-90. To allow a construction of the statute which would require the plaintiff to bring a cause of action before he was aware that he had one, or before he could successfully maintain one, would, according to the court, violate a principle of statutory construction that raises a presumption that “’the legislature does not intend a result that is absurd, impossible of execution, or unreasonable.’ ” Id. at 284-85, 154 A.2d at 789 (quoting The Statutory Construction Act of May 28, 1937, Pa. Laws 1019, Art. IV, § 52, 45 P.S. § 552). The court also noted that the plaintiff could not have brought his cause of action immediately following the surgery because the harm the sponge caused, the breakdown of healthy tissue, had not yet occurred. \textit{Id.} at 287, 154 A.2d at 790. The court concluded that the statute of limitations did not begin to run until the plaintiff’s cause of action accrued, and that the cause of action did not accrue until the plaintiff became aware of his condition and its cause. \textit{Id.} at 290, 154 A.2d at 792.

\textsuperscript{28} 284 Pa. Super. 81, 425 A.2d 428 (1980).

\textsuperscript{29} \textit{Id.} at 93, 425 A.2d at 434-35. In the \textit{Anthony} case, the administratrices of employees’ estates filed suit against the decedents’ employer and the manufacturers of coke ovens, claiming that prolonged continuous exposure to emissions from the ovens caused the lung cancer that resulted in the decedents’ deaths. \textit{Id.} at 85, 425 A.2d at 430. The defendants raised the statute of limitations defense, arguing that the last possible date from which the statute could have started to run was the day of the decedents’ deaths. \textit{Id.} at 86, 425 A.2d at 431. The court rejected the defendants’ argument, and held instead that the statute began to run on the date on which the plaintiff knew or reasonably should have known of the causal connection between the defendants’ conduct and the alleged injury. \textit{Id.} at 100, 425 A.2d at 438.

The court identified “creeping diseases” as those diseases for which “it is difficult to determine at what point the exposure caused the disease, and after the disease has been contracted, to discover its cause.” \textit{Id.} at 93, 425 A.2d at 434. In reaching its decision to apply the discovery rule to creeping disease cases, the Pennsylvania Superior Court in \textit{Anthony} relied upon the Pennsylvania Supreme Court’s earlier decision to apply this rule to a silicosis case. \textit{Id.} at 94, 425 A.2d at 435 (citing Ciabattoni v. Birdsboro Steel Foundry & Mach. Co., 386 Pa. 179, 125 A.2d 365 (1956)).

The court noted that a majority of courts which had addressed the question, including the Supreme Court of the United States, now apply the discovery rule to “creeping disease” cases. \textit{Id.}

Toxic tort injuries are, by nature, frequently "creeping diseases;" the alleged injury may not manifest itself until years, or even generations, after a person's exposure to the toxic substance. Therefore toxic tort injuries generally will be governed by the discovery rule.

Under the discovery rule in Pennsylvania, the statute of limitations will begin to run when a plaintiff knows, or has reason to know the following: 1) the existence of his injury; 2) the cause of his injury; and 3) the causal connection between the injury and the operative conduct. In the Pennsylvania asbestos cases, this rule has been interpreted to mean that in order for the statute of limitations to run,
the plaintiff had to know 1) that he had an asbestos-related disease, 2) that it was caused by exposure to asbestos, and 3) that this asbestos exposure occurred at his place of employment. In toxic tort cases involving work-related exposures to a toxic substance, the third element of the discovery rule is not difficult to ascertain. In cases of non-occupational exposure, however, it may be more difficult for the plaintiff to determine the source of his exposure. However, in either context, not until the plaintiff has discovered the causal connection between the source of his exposure to a toxic substance and his injury, does the statute of limitations begin to run.

Traditionally, the statute of limitations defense operated in an objective fashion. It would cut off a person’s right to bring a legal action on a certain date following the commission of a tort. To prevail under this defense, a defendant had to prove only that the date of the alleged tort fell outside the statutory period. In a toxic tort case, that date was generally the date of the injured party’s first or last exposure to the toxic substance. In contrast, under the discovery rule, the essential date the defendant must establish is the date on which the plaintiff knew or should have known of the injury; and (3) knowledge of the causative relationship between the injury and the operative conduct.”

Id. (emphasis in original).

33. Id. at 305. The court in Volpe stated as follows:
Applying the foregoing governing legal principles to the uncontroverted facts, we find that by December 1973, husband-plaintiff knew of his injury (asbestosis and related pulmonary conditions), the operative cause of his injury (inhalation of asbestos dust and asbestos fibers) and the causal connection between his injury and the asbestos to which he was exposed in his work environment.

Id. The court held that the statute of limitations commenced to run in December of 1973 and thus the plaintiff’s action was time-barred. Id. at 305-06.

34. See Daniels v. Beryllium Corp., 227 F. Supp. 591, 595 (E.D. Pa. 1964). The Daniels case involved a claim that the plaintiff’s “beryllium poisoning was caused by the contamination of the atmosphere by defendant’s operation of its manufacturing plant.” Id. at 592. The plaintiff first became ill in 1949; her illness was diagnosed as beryllium poisoning in 1953. She did not file suit though, until 1958. Id. The plaintiff claimed in her affidavits that she was unaware that her beryllium poisoning was caused by the defendant’s operations “until the time of filing suit.” Id. at 593. The court denied the defendant’s motion for summary judgment, holding that “the statute of limitations did not begin to run until plaintiffs, by the exercise of reasonable diligence, could have discovered that the wife’s condition was caused by defendant’s operations.” Id. at 595. The court preserved the “factual question of when plaintiffs knew or should have known that the illness was attributable to defendant’s activity” for the jury’s consideration.

35. See Anthony, 284 Pa. Super. at 97, 425 A.2d at 437. See also Mitchell v. United Elevator Co., 290 Pa. Super. 476, 434 A.2d 1243, 1248-49 (1981) (distinquishing between statutes of limitation—which bar a plaintiff’s right to a remedy after a period of time and must be pleaded as an affirmative defense—and statutes of repose—which abolish a plaintiff’s cause of action after a period of time and may be raised in a motion for nonsuit, directed verdict or judgment n.o.v.); See McGovern, supra note 19; Comment, supra note 31 at 1313 n.83.

36. See notes 22 & 23 and accompanying text supra.
which the plaintiff possessed the subjective knowledge of the causal connection between his injury and the source of his exposure. The person best able to demonstrate when the plaintiff knew that he was injured by a toxic substance is the plaintiff himself. Only an ill-prepared or benevolent plaintiff would consciously bar his own cause of action by readily admitting that he knew that he had been injured by a toxic substance at some time prior to the applicable limitations period. Consequently, a defendant's ability to utilize the statute of limitations to bar stale claims is limited under the discovery rule.

In asbestos litigation, defendants have been successful in utilizing medical records and disability claims to establish that a plaintiff knew that he had an asbestos-related disease as a result of exposure to asbestos at his employer's workplace. However, the availability of those documents to facilitate the use of the statute of limitations may be peculiar to asbestos litigation, since many asbestos workers had their only exposures to asbestos at government shipyards. Nevertheless, medical and employment records are often a fruitful area of inquiry in any toxic tort case, especially if a plaintiff alleges exposure to a toxic substance during the course of his employment. Deposing a plaintiff's family physician or treating physician may be another useful device for gathering evidence to show that the plaintiff's claim is time-barred under the discovery rule.

Plaintiffs whose claims have been barred—even by the relatively liberal standards of the discovery rule—have consistently sought ways to keep alive their time-barred causes of action. Some plaintiffs have argued that the statute of limitations should not be activated until a plaintiff knows the specific identity of the manufacturer to whose products he has been exposed. See, e.g., Staiano v. Johns-Manville Corp., 304 Pa. Super. 280, 450 A.2d 681 (1982) (the statute of limitations in any products liability claim in which the discovery rule is applicable, begins to run at the time the plaintiff became aware of the nature and cause of his injuries and of a causal connection to some operative conduct). In the Staiano case, the Pennsylvania Superior Court held that plaintiffs claims in strict liability, negligence, breach of warranty, and fraud and conspiracy accrued, and the statute of limitations commenced to run, once the plaintiff became aware of "the salient facts concerning the occurrence of his injury and who or what caused it." Id. at 288, 450 A.2d at 685. Although the plaintiff must have sufficient information as to the possible source of his exposure to enable him to investigate further, he need not necessarily know that he has a cause of action, that someone is legally culpable, or that a particular defendant is responsible. Id. at 287, 450 A.2d at 684.

Other plaintiffs have argued that they have been continually wronged until a time within the statutory period. See, e.g., Daniels v. Beryllium Corp., 211 F. Supp. 452 (E.D. Pa. 1962) (the statute of limitations began to run on plaintiff's negligence claim at the time she became aware of the nature and cause of her injury and its relation to defendant's conduct and the statute was not tolled by defendant's continuing wrong). The plain-
wrongfully withheld knowledge from the public about the adverse health effects of their products, and therefore should be precluded from utilizing the statute of limitations since it was the defendant's conduct that caused the plaintiff to rest on his rights. These arguments have generally been unsuccessful.

Additional statute of limitations issues are caused by the peculiar nature of toxic torts. Toxic substances may give rise to a variety of injuries. For example, exposure to asbestos may cause asbestosis, lung cancer, or mesothelioma. Courts have generally held that a plaintiff's injuries are not divisible and that a party must bring all his claims for injuries in one lawsuit. A plaintiff who was exposed to asbestos and suffers from asbestosis might not, however, contract lung cancer until after his asbestosis claim is time-barred. Consequently, plaintiffs
with mild cases of asbestosis sometimes seek additional damages on the theory that they have an increased risk of developing lung cancer and mesothelioma. Whether plaintiffs have actually recovered for this increased risk is uncertain. In a number of cases where such an

filing for more than two years after becoming aware of defendant's negligence and could not claim complications arising from the injury as a new injury for purposes of the running of the statute of limitations. Shadle v. Pearce, 287 Pa. Super. 436, 430 A.2d 683 (1981). See also Carbonaro v. Johns-Manville Corp., 526 F. Supp. 260 (E.D. Pa. 1981), aff'd mem., 688 F.2d 819 (3d Cir. 1982). In Carbonaro, the plaintiff had filed a claim in state court which was barred by the statute of limitations. Almost immediately thereafter, he filed a federal court claim which was nearly identical to his state claim, except that in the latter action he sought recovery for cancer, as well as asbestosis. Id. at 261. In invoking the doctrine of res judicata, the court necessarily implied that the plaintiff's federal court action did not state a new claim, even though it included an additional allegation of a different sort of injury. The Carbonaro court decided that the plaintiff was attempting to relitigate the same claim because the subject-matter and injuries alleged in the second complaint arose out of the same transaction or occurrence as the subject-matter of the first litigation. Id. at 262.

But see Wilson v. Johns-Manville Sales Corp., 684 F.2d 11 (D.C. Cir. 1982). In Wilson, the court held that the statute of limitations on the plaintiff's decedent's claim for mesothelioma began to run in 1978, when he was diagnosed as having that disease, and not in 1973, when he was diagnosed as having mild asbestosis. Id. at 120-21. The court reasoned that mesothelioma was a separate, distinct disease, and that the discovery of mild asbestosis did not give the decedent notice that the consequence of mesothelioma was reasonably certain to follow since only 12-15% of asbestosis victims eventually develop mesothelioma. Id. at 119-20. Thus, the Wilson court concluded that the decedent could not have recovered anticipated future damages for mesothelioma at the time his asbestosis was diagnosed because it was too speculative a result. Id. Rather than deny recovery for the subsequent injury and thereby encourage litigation of all "mild asbestosis" claims, the court held that the injuries were sufficiently divisible to allow for separate claims, each accruing at the discovery of the disease in question. Id. at 120-21. See also Fearson v. Johns-Manville Sales Corp., 525 F. Supp. 671 (D.D.C. 1981) (holding that the statute of limitations on plaintiff's decedent's claim for bronchogenic carcinoma as a result of asbestos exposure commenced to run upon his discovery of the bronchogenic carcinoma, not at his earlier diagnosis of asbestosis; if the injuries were considered indivisible, plaintiffs would have to file suit at the slightest sign of trouble and seek speculative damages).

42. See, e.g., Amader v. Johns-Manville, 514 F. Supp. 1031 (E.D. Pa. 1981). The district court in Amader held that the plaintiff husband's increased risk of developing cancer was not a sufficient injury to sustain the plaintiff wife's claims for the resulting emotional distress. Id. at 1033. The court distinguished the injury of increased risk of cancer from other types of physical injuries to the husband for which the plaintiff wife could recover. Specifically, the court held that the injury giving rise to an emotional distress claim by a third party must be "sudden and violent," and have a "direct emotional impact on the plaintiff." Id. at 1032-33 (citing Sinn v. Burd, 486 Pa. 146, 170-73, 404 A.2d 672, 685-86 (1979)). See also Wilson v. Johns-Manville Sales Corp., 684 F.2d 111 (D.C. Cir. 1981).

In one case, the issue of whether the plaintiff had contracted an asbestos-related disease was severed and tried first. See Dorfman v. Johns-Manville Corp., C.P. Phila. Cty., Sept. Term, 1978, No. 88 (123), Case 19. The jury answered special interrogatories and determined that the plaintiff was not suffering from an asbestos-related disease. Id. Following the jury verdict, plaintiff's counsel advised defense counsel that the plaintiff would not appeal the jury's decision, but reserved the right to bring another action if the plaintiff later developed an asbestos-related disease.
argument was put forth, the juries did make substantial awards; in other cases employing the same argument, the juries gave very small awards, thus seeming to reject such claims.

A related issue is whether an injured party whose initial toxic tort claim is time-barred can maintain successfully a subsequent action when he develops a second asbestos-related disease which stemmed from the same exposure to asbestos. This issue has not yet been resolved conclusively.

Under the discovery rule, cases brought on behalf of a decedent must be commenced within two years of the decedent's death, assuming the decedent lacked the requisite awareness to trigger the statute during his lifetime. In other words, when an injured party has died, the statute of limitations is triggered by the objective event of death. If the decedent, prior to death, possessed the requisite awareness of his injury and its cause, then the statute would have begun to run at the time he discovered his injury and its cause.

B. Medical Causation

In order for a plaintiff to recover damages in a toxic tort case, he must prove that he has been injured and that the defendant's toxic substance caused his injury. Although there have been attempts to argue that exposure to an injurious agent constituted an "injury," as a general matter, mere exposure to a toxic substance is not regarded as an "injury." The plaintiff must demonstrate some physical dam-

43. See, e.g., McDonald v. Johns-Manville Corp., C.P. Phila. Cty., Sept. Term, 1978, No. 88 (123), Case 45 (jury award in excess of $1,000,000 in an asbestos-related injury case in which the plaintiff suffered from a minor case of pleural thickening and admitted that he was not disabled).


45. See note 41 supra.

46. Anthony, 284 Pa. at 101-09, 425 A.2d at 437-42.

47. Id.


49. See, e.g., Amader v. Johns-Manville, 514 F. Supp. 1031 (E.D. Pa. 1981) (fear of increased risk of cancer held insufficient injury to sustain a claim for emotional distress); Morrissy v. Eli Lilly & Co., 76 III. App. 3d 753, 394 N.E.2d 1369 (1979) (the nexus between exposure to DES in utero and the possibility of developing cancer in the future was not a sufficient basis upon which to recognize a present injury in a negligence or strict liability claim against DES manufacturers). But see Plummer v. United States, 580 F.2d 72 (3d Cir. 1978) (plaintiffs' exposure to, and infection from, active tubercle bacilli while imprisoned in a federal penitentiary was a sufficient injury to sustain their negligence claim under the Federal Tort Claims Act, regardless of whether the plaintiffs actually developed the disease of tuberculosis).
age that is ascertainable through medical examination. This requirement is especially important in the toxic tort context because a plaintiff may not manifest an objective, physically ascertainable injury until years after his exposure to the toxic substance has ceased.\footnote{50}

A further complication in a toxic tort case is that the alleged injury often can be attributed to factors other than the plaintiff's exposure to a toxic substance. Respiratory ailments, various forms of cancer, heart problems, and blood diseases are all conditions that have been linked to exposure to a toxic substance.\footnote{51} Since these health problems can also be attributed to other etiological causes, one wonders how close the causal nexus must be between exposure to a toxic substance and the subsequent development of a causally-related physical ailment. Moreover, the type of injury caused by exposure to a toxic substance generally cannot be attributed to a specific exposure or to exposure during a specific period of time. Depending upon the law of the jurisdiction as to burden of proof, these complications in toxic tort injuries can give rise to significant problems of proof for either the plaintiff or the defendant.

In Pennsylvania, plaintiff's burden of proof as to the causal nexus between both his exposure to a toxic substance and his subsequent development of disease has been simplified. Pennsylvania law provides that in order to recover in a negligence action, an injured party need only prove that the defendant's conduct was a "substantial factor" in bringing about his injury.\footnote{52} This rule of negligence can

\footnote{50. For a discussion of the latency periods of some representative toxic substances, see notes 30 & 31 supra.}

\footnote{51. See, e.g., Borel & Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1083-85 (5th Cir. 1973) (discussion of various diseases associated with exposure to asbestos, including asbestosis, and some forms of cancer), cert. denied, 419 U.S. 869 (1974); In re "Agent Orange" Product Liability Litigation, 506 F. Supp. 762, 769 (E.D.N.Y. 1980) (summary of claims asserted included personal injury claims of Vietnam veterans who were themselves exposed to the herbicide Agent Orange while in military service; claims of wives of Vietnam veterans whose miscarriages were allegedly caused by their husbands' exposure to Agent Orange; and claims of children of Vietnam veterans whose genetic injuries and birth defects were allegedly caused by their parents' exposure to Agent Orange). See generally I. SELIKOFF & D. LEE, ASBESTOS AND DISEASE (1978).}

\footnote{52. Whitner v. Lojeski, 437 Pa. 448, 457-58, 263 A.2d 889, 894 (1970) (adopting the language of § 431 of the Second Restatement of Torts and holding that an actor's negligent conduct is the legal cause of a plaintiff's harm if it is a substantial factor in bringing about the harm resulting from an automobile accident). Section 431 of the Second Restatement reads as follows:

The actor's negligent conduct is a legal cause of harm to another if

(a) his conduct is a substantial factor in bringing about the harm, and

(b) there is no rule of law relieving the actor from liability because of the manner in which his negligence has resulted in the harm.

RESTATEMENT (SECOND) OF TORTS § 431 (1965).}
be applicable in toxic tort cases.\textsuperscript{53} The law in Pennsylvania also recognizes that there may be more than one cause for a plaintiff's condition; the plaintiff need prove only that defendant's conduct was a substantial contributing factor, not that it was the sole cause of his injury.\textsuperscript{54} Thus, in a case where a defendant asserts that the plaintiff's lung cancer was primarily caused by a lifelong smoking habit, the plaintiff may counter successfully by contending that his exposure to defendant's toxic substance was a substantial contributing factor to his disease.

The defendant's position is particularly precarious under Pennsylvania law because once the plaintiff has established that the defendant's conduct is a contributing factor to his injury, the defendant will become liable for all harm which foreseeably flows from the plaintiff's condition.\textsuperscript{55} Thus, if the jury determines that the defendant's contribution was substantial, the defendant will be liable for all the damage unless he can show that the damage would have resulted notwithstanding his contribution.\textsuperscript{56} Under Pennsylvania law, the

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\textsuperscript{53} Although there is no specific toxic tort case approving of the use of the negligence "substantial factor" test, a practitioner can safely argue the applicability of this standard to toxic torts since it is the one commonly used in other non-toxic products liability cases brought in negligence. \textit{See}, \textit{e.g.}, Kendrick v. Piper Aircraft Corp., 265 F.2d 482, 486 (3rd Cir. 1959) (plaintiffs have burden of proving that the manufacturer's conduct in constructing an airplane was a substantial factor in causing the deaths of passengers killed in an airplane crash).
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\textsuperscript{54} \textit{See} \textit{PA. SUGGESTED STANDARD JURY INSTRUCTIONS (CIVIL)} § 3.27 (1981). One set of standard jury instructions in Pennsylvania allows the jury to be instructed that "[w]here the negligent conduct of a defendant combines with other circumstances and other forces to cause the harm suffered by the plaintiff, the defendant is responsible for the harm if his negligent conduct was a substantial contributive factor in bringing about the harm, even if the harm would have occurred without it." \textit{Id.} For examples of how the courts have dealt with the concept of "substantial contributive factors," see Hamil v. Bashline, 481 Pa. 256, 392 A.2d 1280 (1978) (reversible error to instruct the jury as in a medical malpractice case that the defendant's conduct could only be the proximate cause of the plaintiff's injury if it were the sole cause); Ford v. Jeffries, 474 Pa. 588, 379 A.2d 111 (1977) (question for the jury to decide whether defendant's negligence in maintaining his property was a substantial contributing factor to a fire on the property and thus the proximate cause of damages to the plaintiff's adjoining property).
\end{quote}

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\textsuperscript{55} The Second Restatement of Torts addresses this issue:

The negligent actor is subject to liability for harm to another although a physical condition of the other which is neither known nor should be known to the actor makes the injury greater than that which the actor as a reasonable man should have foreseen as a probable result of his conduct.

\textit{RESTATEMENT (SECOND) OF TORTS} § 461 (1965).
\end{quote}

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\textsuperscript{56} \textit{See}, \textit{e.g.}, Majors v. Brodhead Hotel, 416 Pa. 254, 205 A.2d 873 (1965) (where a defendant's conduct is a substantial factor in bringing about the plaintiff's harm, concurring causes do not relieve the defendant of liability in negligence unless the defendant shows that the concurring causes would have brought about the same harm independent of his negligent conduct); DeMaine v. Brillhart, 224 Pa. Super. 241, 303 A.2d 506 (1973) (a foreseeable intervening cause did not relieve a defendant

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Toxic Torts

The jury in a strict liability case is not permitted to reduce recovery by the amount the plaintiff contributed to his own harm, nor is the jury permitted to award damages only for the amount a particular defendant contributed to the plaintiff's harm.\(^\text{57}\) Neither the plaintiff's exposure to toxic substances other than those of the defendant nor the plaintiff's lifestyle are taken into account. This facet of the law is particularly threatening to toxic tort defendants since the types of injuries frequently alleged in toxic tort cases are often fairly common ailments in older Americans, ailments which may be the products of lifestyle and age, as well as toxic substances.\(^\text{58}\)

In one asbestos case, plaintiff's decedent, who had been a cigarette smoker, suffered from a serious emphysema condition which was undisputedly cigarette related. Plaintiff contended that his decedent also suffered from asbestosis.\(^\text{59}\) Defendants denied that plaintiff suffered from asbestosis. At trial, plaintiff contended that even a minor amount of asbestosis should make the defendants liable for his decedent's pulmonary condition since that minor amount of asbestosis when combined with decedent's underlying emphysema would be a "substantial factor" in decedent's disability and death. The jury rejected this contention, implicitly stating that it would be unfair to make the defendants responsible for decedent's pulmonary condition which was undeniably in large part self-inflicted.\(^\text{60}\)

In order to establish his case on the issue of medical causation, the plaintiff needs only an expert witness, usually a physician, to assert with a reasonable degree of medical certainty that the plaintiff's exposure to the defendant's toxic substance was a substantial contributing factor in bringing about the plaintiff's condition.\(^\text{61}\) The defend-
ant will counter plaintiff's contentions by presenting his expert witness who will testify to a reasonable degree of medical certainty that plaintiff either does not suffer from the condition that he alleges or that defendant's toxic substance was not a substantial contributing factor to plaintiff's condition. However, since all that plaintiff must

asbestos fibres, and that even a very limited exposure can produce this fatal lung disease. Id. at 1185. Since the defendant offered no evidence to contradict the testimony of the plaintiff's expert, the court affirmed the verdict for the plaintiff:

In sum, plaintiff introduced uncontroverted evidence that Mr. Migues died of mesothelioma, that asbestos fibres were present in his lungs at the time of death, that asbestos inhalation is the only known cause of mesothelioma, that Nicolet [the defendant] produced insulation products containing asbestos, and that Mr. Migues worked with Nicolet asbestos products during the course of his employment as an insulator. We find that there was more than sufficient circumstantial evidence to support the jury's conclusion that Nicolet's products were a producing cause of Mr. Migues' death.

Id. at 1185 (citing Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1094 (5th Cir. 1973)). See also Basko v. Sterling Drug, Inc., 416 F.2d 417 (2d Cir. 1969). In Basko, the plaintiff suffered from a rare eye disease allegedly caused by the defendant drug manufacturer's product. Id. at 419. Basko was brought under a strict liability theory. Id. At the trial in the lower court the plaintiff presented expert medical witnesses who testified that in their opinions, the plaintiff's condition was caused by the defendant's drug. Id. One of the witnesses, a chief ophthalmologist at a Connecticut hospital, stated, "I can't think of any other disease or drug that could do it." Id. When asked how certain he was he answered, "I'm about as certain as anyone can be about any condition in medicine." Id.

See also Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1094 (5th Cir. 1973) (plaintiff presented expert testimony to establish that his exposure to asbestos constituted probable cause in fact of his condition, and that the defendant's failure to warn was "a substantial factor in bringing it about"), cert. denied, 419 U.S. 869 (1974).

Noting that at trial the determination of causality is based on a preponderance of evidence rather than on absolute proof, one forensic medical specialist has set forth the following criteria to establish causation:

1. That a statistically significant association be established between exposure to the agent and subsequent development of specific disease(s).
2. That correspondence be sought between the extent of exposure and the appearance of essential elements of disease, i.e., that at least some degree of dose-response relationship be demonstrated. This may not hold for some asbestos-related cancers which may follow relatively little exposure (enough to initiate neoplastic growth at one site). This is particularly true of mesotheliomas.
3. That the agent be demonstrated in tissue and that its concentration in an exposed person is greater than in the nonexposed. This may not hold for some instances of chrysotile exposure, since this mineral can go into solution (slowly) in tissue fluids. (Many carcinogens, such as vinyl chloride or radiation, are not stored in tissue and therefore cannot be demonstrated to be present when malignant lesions occur.)
4. That the role of numerous attendant circumstances capable of influencing the appearance or manifestation of the disease initiated by the agent can be evaluated.


62. See, e.g., Basko v. Sterling Drug, Inc., 416 F.2d 417 (2d Cir. 1969). In Basko, a strict products liability action, the plaintiff's expert witness contended that plaintiff's blindness was caused by the defendant's drug (chloroquine). Id. at 419. The
prove in order to recover fully is that defendant's toxic substance was one of several substantial contributing factors to his condition, the plaintiff will normally prevail if the case becomes simply a battle of the experts.\textsuperscript{63}

The trial of a toxic tort case, however, need not be merely a battle of the experts. Defense counsel may do a variety of things in order to weaken the position taken by plaintiff's expert or to strengthen the position of his own expert. First, defense counsel can contest the extent of plaintiff's exposure to the toxic substance.\textsuperscript{64} For example, defendant countered with a number of expert witnesses who stated that the disease originally suffered by the plaintiff—lupus erythematosus—for which she was administered the drug in question, was itself capable of producing blindness. \textit{Id.} at 430 n.17. On cross examination, one of the plaintiff's witnesses admitted that some studies had shown a significant incidence of the eye disease which had caused the plaintiff's blindness in patients suffering from lupus, regardless of chloroquine treatment. \textit{Id.}

The Second Circuit held that in light of this conflicting medical testimony, "the jury should have been instructed on the 'substantial factor' test of multiple causation." \textit{Id.} at 430. The Court then reversed and remanded for a new trial. \textit{Id.} at 431.

For further discussion of \textit{Basko}, see \textit{supra} and notes 63 & 91 \textit{infra}.

63. \textit{See Basko v. Sterling Drug, Inc.}, 416 F.2d 417, 428-29 (2d Cir. 1969) (in a strict liability action where the plaintiff's injury could have been caused by either or both products manufactured by different defendant drug suppliers, the plaintiff need only prove that each of the drugs was a "substantial factor in producing her injury"); \textit{Neal v. Carey Canadian Mines, Ltd.}, 548 F. Supp. 357, 370 (E.D. Pa. 1982) (since "[a] defendant's conduct is a proximate cause of any injury whenever it is a substantial factor in bringing about the harm," an asbestos supplier's failure to warn was a proximate cause despite intervening acts by others). \textit{But see Reyes v. Wyeth Laboratories}, 498 F.2d 1264, 1288-89 (5th Cir. 1974) (when there is a battle of the experts over the question of causation, the final determination is "within the jury's prerogative; expert witnesses appear to assist in the court's decision-making process, not to control it").

With regard to the "substantial factor" doctrine in negligence actions, section 432(2) of the Second Restatement states as follows:

If two forces are actively operating, one because of the actor's negligence, the other not because of any misconduct on his part, and each of itself is sufficient to bring about harm to another, the actor's negligence may be found to be a substantial factor in bringing it about.

\textsc{Restatement (Second) of Torts} § 432(2) (1965).

64. \textit{See}, e.g., \textit{Borel v. Fibreboard Paper Prods. Corp.}, 493 F.2d 1076 (5th Cir. 1973), \textit{cert. denied}, 419 U.S. 869 (1974). The \textit{Borel} court, in discussing the latency periods of asbestos diseases, noted that the length of the periods appears to be affected by the intensity, as well as the duration, of exposure to asbestos. \textit{Id.} at 1083. \textit{See also Migues v. Fibreboard Corp.}, 662 F.2d 1183 (5th Cir. 1981). In an action brought by a deceased insulator's spouse against manufacturers of insulation products, the defendant argued that the plaintiff had offered no substantial evidence of decedent's exposure to the defendant's insulation products. \textit{Id.} at 1184. The \textit{Migues} court disagreed, however, noting that three of the decedent's former coworkers had testified to his use of the defendant's product. \textit{Id.} at 1185. The \textit{Migues} court concluded that since the defendant had introduced no evidence contradicting that testimony, it was a proper question for the jury as to whether Mr. Migues was exposed to asbestos products manufactured by the defendant. \textit{Id.} For a further discussion of \textit{Migues}, see note 60 \textit{supra} and notes 87 & 120 \textit{infra}.
many of the litigants in the Philadelphia asbestos actions were employees of the Philadelphia Naval Shipyard. Some of these employees were former pipe coverers, plumbers, or electricians who spent most of their time working on board ships and whose exposure to asbestos was not seriously in dispute. A significantly large number of shipyard employees, however, did not work aboard ships, and thus were not subjected to daily asbestos exposure. Consequently, the extent of these employees’ exposure to asbestos is a matter of legitimate dispute. These workers may have spent most of their time working in locations where asbestos was generally not used, or they may not have started to work at the shipyard until after asbestos use was severely curtailed. Assuming that the plaintiff’s medical expert has relied upon a less than complete and accurate work history, the defense counsel may be able to show that the work history relied upon by plaintiff’s expert differs from the plaintiff’s actual work history. In this manner, the credibility of the plaintiff’s expert can be weakened.

Where possible, defense counsel should also try to demonstrate that the plaintiff has had a number of other significant exposures to toxic substances. Many of the asbestos-related disease plaintiffs were lifelong smokers. In a lung cancer case involving a smoker, it is especially helpful to produce evidence concerning the extent of a plaintiff’s smoking history. A plaintiff who smokes two packs of cigarettes a day for forty years will have smoked 584,000 cigarettes by the time he takes the witness stand. In a lung cancer case where a plaintiff who smokes alleges that his lung cancer was caused by exposure to a toxic substance, this statistic alone should give the jury some cause for hesitation. Nearly all jurors are well aware that smoking is a serious health hazard, and a plaintiff’s expert who attempts to disregard or underplay the importance of plaintiff’s smoking history will only weaken his own credibility in the eyes of the jury.

Similarly, many asbestos plaintiffs have worked in coal mines or other dust-related industries prior to their asbestos-related employment. If such a plaintiff claims his respiratory ailment was caused by...
asbestos exposure, defense counsel should demonstrate to the jurors the degree to which coal dust alone can seriously impair the function of one's lungs. If the jury is sufficiently alerted to the dangers of coal dust and is made sufficiently aware that plaintiff's exposure to coal dust is at least five times as great as plaintiff's exposure to asbestos, the jury might be willing to find that plaintiff's condition was in large measure caused by plaintiff's exposure to coal dust, and not by his exposure to asbestos.

Finally, in some cases involving toxic substances, defense counsel can demonstrate that the opinion of plaintiff's expert is based on incomplete symptomatology. For example, in many cases the plaintiff will claim he suffers from a shortness of breath. Often the plaintiff will claim that this shortness of breath indicates asbestosis. This symptom, however, can be attributed to a variety of factors, including obesity and smoking. In a case which involves an overweight plaintiff with a long history of smoking who claims he experiences shortness of breath, the defense counsel's expert should determine whether there

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66. Asbestosis is a nonmalignant scarring of the lungs caused by the accumulation and subsequent spreading of asbestos fibers in the lungs. See W. PARKS, OCCUPATIONAL LUNG DISORDERS 255-56 (2d ed. 1982). When asbestos fibers are inhaled, an inflammation of the lungs occurs which results in functioning lung tissue being replaced by scar tissue. As this process continues, the lungs are increasingly incapable of either diffusing oxygen to the blood or of releasing carbon dioxide. See Comment, The Causation Problem in Asbestos Litigation: Is There an Alternative Theory of Liability?, 15 IND. L. REV. 679, 679 n.5 (1982). Symptoms of asbestosis include the following: shortness of breath; rales (lung noises); coughing; restricted pulmonary lung function; clubbing or curvature of the fingers and toes; and deficient oxygenation of the blood that causes a bluish coloration of the skin and mucous membrane. Becklake, Asbestos-Related Diseases of the Lung and Other Organs.- Their Epidemiology and Implications for Clinical Practice, 114 AM. REV. OF RESPIRATORY DISEASE 187, 208 (1976).

Mesothelioma is a malignant tumor usually occurring in the chest, but can also arise in the stomach or heart. The cancer, once formed, spreads throughout the lining of the chest, abdomen, or heart. See Chahinian, Malignant Mesothelioma, in CANCER MEDICINE 1744 (J. Holland & E. Frie eds. 1972). Symptoms of pleural (chest) mesothelioma, the most common form of the disease, include the following: breathlessness; steadily increasing chest pain; and loss of appetite accompanied by loss of weight. Symptoms of peritoneal (stomach) mesothelioma include the following: abdominal discomfort; swelling; lethargy; and weakness. W. MORGAN & A. SEATON, OCCUPATIONAL LUNG DISEASES 363-64 (1974).

For a further discussion of the symptomatology of asbestosis and mesothelioma, see Comment, Asbestos Litigation: The Dust Has Yet to Settle, 7 FORDHAM URB. L.J. 55, 58 & n.21 (1978); Comment, Issues in Asbestos Litigation, 34 HASTINGS L.J. 871, 873-74 (1983).

Defense counsel, however, should be aware that in a recent case a federal district court appeared unperturbed by the generality of the plaintiff's allegations of lung damage. See Bertrand v. Johns-Manville Sales Corp., 529 F. Supp. 539 (D. Minn. 1982). The court merely observed in a footnote that "[i]t is unclear whether Bertrand claims to have either asbestosis or mesothelioma." Id. at 540 n.1.
exists other evidence that could support a diagnosis of asbestosis. Due to the unique way asbestos fibers interact with lung tissue, x-ray evidence may reveal changes of the lungs which would support a diagnosis of asbestosis. Absent such corroborating evidence, the defense may be able to demonstrate that the plaintiff's expert has based his diagnosis on insufficient evidence.

The same pattern of proof can be used in lung cancer cases. Lung cancer has many causes. In a case involving a worker who alleges his lung cancer resulted from his exposure to asbestos, the defense's expert must determine whether the plaintiff evidences any other physical symptoms which demonstrate that his cancer was caused by exposure to asbestos. Again, an x-ray or pulmonary study can help to demonstrate whether the cancer specifically arose from exposure to asbestos. Not all diseases caused by toxic substances, however, have such corroborating evidence. Nevertheless, in instances where such corroborating evidence should exist but is not present, defense counsel should highlight this absence to undermine the credibility of the plaintiff's expert.

In short, one of the best techniques that defense counsel can use in a toxic substance case is to show that there exists a tenuous relationship between the plaintiff's alleged injury and the defendant's product. The more successfully defense counsel demonstrates 1) that plaintiff's exposure to a toxic substance was limited, 2) that plaintiff's condition can be attributed to a variety of other causes, or 3) that plaintiff lacks corroborating evidence of the condition which he


68. See, e.g., Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076 (5th Cir. 1973), cert. denied, 419 U.S. 869 (1974). In Borel, the plaintiff had been x-rayed in 1964 and the doctors found that his lungs were "cloudy." Id. In 1969, a lung biopsy was performed on him and at this time his condition was positively diagnosed as pulmonary asbestosis. Id. X-rays cannot detect asbestosis in its early stages, but as the scar tissue accumulates, x-rays become relatively effective in detecting the disease. Becklake, supra note 66, at 208. Three pioneers in asbestos disease research performed an extensive study of x-ray changes in asbestos insulation workers. Selikoff, Churg & Hammond, The Occurrence of Asbestosis Among Industrial Insulation Workers, 132 ANN. N.Y. ACAD. SCI. 139 (1965). They found that x-rays of workers who had had exposure to asbestos 10 to 19 years before examination were only minimally useful in detecting asbestosis. Id. at 147. However, among those men x-rayed who had been exposed 20 years or more prior to examination, the large majority had x-ray evidence of pulmonary asbestosis. Id.

69. In asbestos-related lung cancer, the location of the cancer is in the lower lobes of the lung and is therefore more difficult to detect than other forms of lung cancer. 4A R. Gray, ATTORNEY'S TEXTBOOK OF MEDICINE ¶ 205c.71 (4th ed. 1981).
Toxic Torts

claims, the more likely it will be that a jury will discount the relationship between plaintiff's condition and his exposure to defendant's toxic substance. Although this evidence may not operate as a bar to recovery in states such as Pennsylvania which allow a plaintiff to recover if the defendant's product were a "substantial factor" in causing the plaintiff injury, it may serve to mitigate damages. A jury may be reluctant to impose a full measure of damages—even when instructed to do so—on a defendant whose toxic substance was only one factor contributing to the plaintiff's condition.

C. Product Identification

In any personal injury lawsuit, the plaintiff must prove that the defendant injured him. In a toxic tort lawsuit, the plaintiff must prove that it was the defendant's toxic substance that injured him. For a number of reasons, proving this will not always be an easy matter. First of all, the injuries associated with the toxic substances may not occur until long after the plaintiff had been exposed to the toxic substance and his memory may have faded. Second, it is likely that when the plaintiff was exposed to the toxic substance he was not aware of the toxicity of the substance, and therefore did not take particular notice of the manufacturer or producer of the substance. Moreover, the product may have been packaged and marketed in


71. For a discussion of the long latency periods that often characterize toxic tort injuries, see notes 30 & 31 and accompanying text supra.

72. Plaintiffs in DES cases face almost insurmountable difficulties in identifying the manufacturer or supplier of the pills which had been taken by their mothers as many as 30 years ago. The facts recited by the court in McCreery v. Eli Lilly & Co. are typical:

Discovery revealed that plaintiff did not know and could not ascertain the specific pharmaceutical compound taken by her mother or the identity of the manufacturer; that her mother was unable to remember the name, color, dosage or dosage frequency of the medicine taken; . . . that her mother's doctor could not recall the drug prescribed or whether he had preferred one manufacturer's drug over that of another; that the pharmacy that had filled the prescription had been sold upon the owner's retirement and that the records pertaining to the prescription had been destroyed; and that the only record relating to the prescription kept by the doctor . . . [did not refer to a brand name]. 87 Cal. App. 3d 77, 80, 150 Cal. Rptr. 730, 732 (1978). For a further discussion of the McCreery decision, see note 75 infra.
such a fashion that even if the plaintiff were aware of the toxicity of a particular substance, he would have had no way to know that the product he was using contained that toxic substance. Third, the toxic substance to which the plaintiff was exposed may have been manufactured and sold by a number of different manufacturers and suppliers. Finally, the plaintiff's exposure to the toxic substance may have occurred long after the product had been removed from its container, and the container may have been the only means of identifying the supplier/manufacturer of the product. Despite these difficulties, most jurisdictions still require a toxic tort plaintiff to prove the identity of the manufacturer or supplier of the toxic substance that he alleges caused his injury.

73. Toxic tort cases are often characterized by the presence of multiple defendants. For example, asbestos-related disease litigation typically involves multiple defendants. As one judge recently noted, of 27 asbestos-related lawsuits ready for trial in the Court of Common Pleas of Delaware County, Pennsylvania, every one had more than 10 defendants. The number of defendants generally varies between 10-20. In one action, the judge observed, there are 55 defendants. Surrick, Punitive Damages and Asbestos Litigation in Pennsylvania: Punishment or Annihilation? 87 DICK. L. REV. 265, 283 n.101 (1983).

In DES cases the problems of identification are particularly complicated. Aside from faded memories and lost records, DES had been manufactured or distributed as a generic drug by over 100 different companies. Often not even the dispensing pharmacists knew who manufactured the DES they sold, since the chain of distribution went from manufacturer to wholesaler to pharmacy. See McElhaney v. Eli Lilly & Co., 564 F. Supp. 265, 267-68 (D.S.D. 1983); Ryan v. Eli Lilly & Co., 514 F. Supp. 1004, 1007 (D.S.C. 1981).

74. See, e.g., Drayton v. Jiffsee Chem. Corp., 395 F. Supp. 1081 (N.D. Ohio 1975), modified and aff'd, 591 F.2d 352 (6th Cir. 1978). In Drayton, a child had been burned badly when a household solution used to unstop drains accidently spilled on her. Id. at 1085. The product's container had apparently been thrown away soon after the accident. Id. at 1086. The child's father sued the manufacturer of a product called "Liquid-Plumr." Id. To establish identification the plaintiff presented witnesses who testified that "Liquid-Plumr" was the product they had seen in the plaintiff's boarding house prior to the accident. Id. at 1086-87. The defendants argued that plaintiff's testimony as to the directions he followed in using the product conformed not to the directions on the package containing the defendant's product, but rather conformed to the directions on a product known as "Mister Plumber." Id. at 1086. The defendant also presented expert testimony to show that the rapidity with which the drain cleaner burned the child's shirt indicated a chemical formula different from the one for "Liquid-Plumr." Id. at 1087. The court, however, found that the plaintiff's witnesses provided sufficient proof of identification for the plaintiff to meet his burden. Id.

See also Glover v. Johns-Manville Corp., 525 F. Supp. 894, 905 (E.D. Va. 1979) (insulation workers using asbestos-containing products did not have the benefit of the manufacturers' warning labels once the products were taken from the boxes in which they had been packaged), aff'd in part, vacated in part, 662 F.2d 225 (4th Cir. 1981).

75. See, e.g., McCreery v. Eli Lilly & Co., 87 Cal. App. 3d 77, 150 Cal. Rptr. 730 (1978). The plaintiff in McCreery brought a products liability action in negligence and strict liability in tort against a single manufacturer of DES. She contended that the DES her mother had ingested while pregnant had caused the plaintiff's vaginal adenosis. Id. at 79-80, 150 Cal. Rptr. at 732. She admitted, however, that she could
Each toxic substance obviously presents its own problems with regard to product identification. It would seem, however, that plaintiffs whose exposure occurred in the workplace should have the easiest time identifying the manufacturers and suppliers of the toxic substance to which they were exposed. Employers may have kept records relating to the purchase of the toxic substance. Co-workers may recall the names of manufacturers or suppliers of materials. The employer’s purchasing agent may recall from whom he purchased the toxic substance. Absent such evidence, the degree of difficulty a plaintiff may experience in identifying the manufacturer of the toxic substance will be dictated to a large extent by the context in which he was exposed. For example, in asbestos litigation many plaintiffs were insulation workers who had worked daily with insulation products containing asbestos. Some of these workers are able to remember the specific types of asbestos products that they used and the names of the manufacturers of those products. Other workers, however, may be unable to recall the names of the products because their exposure to asbestos had occurred only occasionally, or had occurred only after

not identify the manufacturer who supplied the DES her mother had taken, and that, in fact, prior to the trial had assumed that Eli Lilly had been the only manufacturer of DES. Id. at 80-81, 150 Cal. Rptr. at 732-33. The lower court had granted the defendant’s motion for a summary judgment on the ground that the plaintiff had not met her burden of identification, and that decision was affirmed on appeal. Id. at 84, 150 Cal. Rptr. at 735. The court added that “[t]he establishment of the identity of the tortfeasor is not one of the onerous evidentiary burdens inherent in negligence actions that have been eliminated in strict products liability proceedings.” Id.

See also Gray v. United States, 445 F. Supp. 337, 338 (S.D. Tex. 1978). In Gray, the court stated that “[i]t is a fundamental principle of products liability law that a plaintiff must prove, as an essential element of his case, that a defendant manufacturer actually made the particular product which caused injury”. Id. (citing Hursh & Bailey, American Law of Products Liability § 1:41 (2d ed. 1974).

In the toxic tort context, several jurisdictions have relaxed the requirement that the plaintiff identify that it was the defendant’s product which injured him. See, e.g., McElhaney v. Eli Lilly & Co., 564 F. Supp. 265 (D.S.D. 1983). In McElhaney, the plaintiff was suffering from vaginal cancer allegedly caused by DES. Id. at 266. She brought suit against several manufacturers of DES, but could not identify which, if any, of the defendants supplied the DES her mother had taken approximately 35 years prior to trial. Id. at 266. The court held that since all of the defendants had acted negligently in supplying DES, and since it was almost certain that one or more of the defendants had supplied the pharmacy which sold the DES to plaintiff’s mother, then the burden of proof was on the defendants to disprove identification. Id. at 269-71.

For a more detailed discussion of judicial doctrines which ease a plaintiff’s burden of proof on the product identification issue, see notes 81-85 and accompanying text infra.

76. See Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1102 (5th Cir. 1973), cert. denied, 419 U.S. 869 (1974). In Borel, the plaintiff, who had worked with asbestos products for 33 years, was able to present the names of many of the products manufactured by the defendants as well as the dates and locations where he had used them. Id.
the asbestos had been unpackaged. This latter factual scenario is especially common for plaintiffs who did not handle asbestos products themselves, but who worked in the same vicinity as pipe coverers or insulators who were using products containing asbestos. Since this kind of indirect exposure makes it almost impossible for those plaintiffs to identify personally either the manufacturers or the suppliers of the asbestos product to which they were exposed, they will often rely upon the testimony of co-workers who had direct contact with the products.77

It is interesting to note that because the number of witnesses who are able to identify the manufacturers and suppliers of asbestos products is limited, several plaintiffs’ law firms litigating asbestos cases have developed stables of “product identification” witnesses. These witnesses can identify products that were used, the general time period when those products were used, and in some cases they can even remember the specific products used on certain ships. Furthermore, through depositions generated by the mass of asbestos litigation, plaintiffs and defendants have learned the identities of most, if not all, manufacturers and suppliers of asbestos products.

It is highly unlikely that plaintiffs in toxic tort situations other than those involving asbestos will similarly have their burden of identifying the defendant eased. In DES cases, for example, plaintiffs have an especially burdensome task in identifying the manufacturers and suppliers of the DES which their mothers have ingested. Between 1947 and 1971, DES was administered to pregnant women in order to prevent miscarriages. In 1971, researchers alleged a causal relationship between in utero exposure to DES and certain rare forms of cancer. The cancer-stricken offspring of women who used DES during pregnancy may find it practically impossible to identify the manufacturer or supplier of the DES taken by their mothers because, in most instances, their mothers ingested the DES two or three decades prior to the cancer’s occurrence, and perhaps more importantly, DES was manufactured and sold as a generic drug in such fashion.

77. See Hardy v. Johns-Manville Sales Corp., 509 F. Supp. 1353 (E.D. Tex. 1981), rev’d on other grounds, 681 F.2d 334 (5th Cir. 1982). The Hardy court observed that “the Fifth Circuit has accepted testimony of the worker and/or his co-workers of use of a particular product as circumstantial evidence of producing cause such that liability may be imposed on the manufacturer.” Id. at 1358 (citations omitted). For a further discussion of Hardy, see note 70 supra and notes 84 & 105 infra.

Dr. Selikoff, the distinguished medical authority on asbestos-related diseases, estimates that perhaps only one in 500 workers in private or naval shipyards was an asbestos worker. He has pointed out, however, that because of the nature of shipyard work, there was opportunity for exposure of the many other trades employed, even though this might be only intermittent or indirect. Selikoff, Asbestos-Associated Disease, in Asbestos-Litigation 39 (W. Alcorn ed. 1982).
that even the dispensing pharmacist did not know what manufacturer produced the actual DES that he was selling. 78

Plaintiffs alleging environmental exposure to a toxic substance face even greater difficulties in identifying the supplier of the product. If their exposure occurred as a result of local industrial activity, they may be able to trace the injury-causing substance to a particular factory or landfill. This, however, does not necessarily alleviate the plaintiff's burden of identifying the original supplier of the toxic substance. Records may have been destroyed, memories may have lapsed, or there just may be too many potential toxic sources to permit positive identification of the original supplier of the specific toxic substance. The environmentally-exposed plaintiffs are thus likely to be in a far worse position than the occupationally-exposed plaintiffs when it comes to meeting their burden of identification.

In reaction to these problems of proof, some courts have developed theories of liability which ease the plaintiff's burden. One such theory is the doctrine of alternative liability which shifts the burden of proof on the question of causation to the defendants to exculpate themselves. The alternative liability theory was first recognized in the now famous case of Summers v. Tice. 79 In Summers, two hunters negligently and simultaneously fired a shot across a highway. The plaintiff was hit by one bullet but did not know from which one of the hunters' weapons. Since both defendants had fired their weapons, the court ruled that each defendant could exculpate himself only if he proved that it was not his bullet which had injured the plaintiff. 80 In so ruling, the Summers court relieved the plaintiff of his burden of identifying the particular defendant who caused his injury.

Another approach to easing the identification requirement is provided by the theory of enterprise liability. Under this theory, a plaintiff who is injured by exposure to, or by use of, a toxic substance, but who cannot identify the specific manufacturer of the toxic substance which injured him, can recover from the entire industry the damages that he has suffered. 81 All the plaintiff need prove under

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78. For a discussion of the identification problems inherent in DES lawsuits, see notes 73 & 75 and accompanying text supra. Although there does not seem to be any risk of cancer for DES-exposed sons, there have been a significant number of reports of noncancerous abnormalities in these male offspring. Roberts & Royster, DES and the Identification Problem, 16 AKRON L. REV. 447, 453 (1983).

79. 33 Cal. 2d 80, 199 P.2d 1 (1948).

80. Id. at 86, 199 P.2d at 4.

81. See Hall v. E.I. Du Pont de Nemours & Co., 345 F. Supp. 353 (E.D.N.Y. 1972). The plaintiffs in Hall were unable to identify the manufacturer of the allegedly unsafe blasting caps which caused their injuries because the caps had been obliterated by explosion. Id. at 359. The six defendants comprised virtually the entire
this theory is that the manufacturer of the injury-causing product cannot be specifically identified and that all manufacturers in the industry jointly controlled the risk associated with the product.\textsuperscript{82} Because of this "control" requirement, however, enterprise liability is applicable only to industries in which there is a small number of manufacturers.\textsuperscript{83}

A variation of enterprise liability is the concept of market share liability. Under the theory of market share liability, if a plaintiff alleges that he has been injured by a toxic product whose manufacturer cannot be identified, each manufacturer or supplier who marketed that toxic product will be held liable to the plaintiff in proportion to its share of the market for the toxic product unless that defendant can prove that it could not have been his product that caused plaintiff's


\textsuperscript{83} See id. ("[w]hat would be fair and feasible with regard to an industry of five or ten producers might be manifestly unreasonable if applied to a decentralized industry composed of thousands of small producers").
injuries. 84

Although alternative liability, enterprise liability, and market share liability have been recognized in some jurisdictions under certain circumstances, these concepts have not been applied in Pennsylvania to toxic tort cases; a plaintiff must still prove that the product of a particular defendant caused his injury. 85 Consequently,

84. See Sindell v. Abott Laboratories, 25 Cal. 3d 588, 607 P.2d 924, 163 Cal. Rptr. 132 (1980). The Sindell case was a class action brought by women against manufacturers of DES to recover damages for injuries they received, allegedly as a result of their mothers' ingestion of DES during pregnancy. Id. at 593-94, 607 P.2d at 925, 163 Cal. Rptr. at 143. Propounding its theory of market share liability, the Sindell court held that the plaintiffs did have a cause of action despite the fact that they could not identify which, if any, of the defendants had supplied the drug to their mothers. Id. at 610-11, 607 P.2d at 936, 163 Cal. Rptr. at 144. The court, relying in part on the reasoning of Summers v. Tice, held that “a modification of the rule of Summers is warranted.” Id. at 611, 607 P.2d at 936, 163 Cal. Rptr. at 144 (citing Summers, 33 Cal. 2d at 80, 199 P.2d at 1). In explaining the reasons why it had adopted the market share theory of liability, the Sindell court stated as follows:

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

Id. at 610, 607 P.2d at 936, 163 Cal. Rptr. at 144. For further discussion of the Sindell case, see notes 8 & 31 and accompanying text supra.

The market share theory of liability has also been utilized in an asbestos-related disease suit where the manufacturers of the asbestos products to which the workers were exposed could not be identified. See Hardy v. Johns-Manville Sales Corp., 509 F. Supp. 1353, 1358 (E.D. Tex. 1981), rev'd on other grounds, 681 F.2d 334 (5th Cir. 1982). It was the opinion of the Hardy court that “[m]arket share liability . . . results in apportionment [of damages] which bears some relationship to causative fault. Setting aside the policy reasons for shifting the burden from the plaintiff to the defendants, this is a compelling reason to apply a form of enterprise liability in the asbestos-related litigation.” Id. at 1358-59. For a further discussion of Hardy see notes 70 & 77 supra and note 105 infra.

Other courts, however, have flatly rejected the market share theory of liability. See, e.g., Ryan v. Eli Lilly & Co., 514 F. Supp. 1004, 1018-19 (D.S.C. 1981) (rejecting the market share theory of liability in DES suit by stating that application of this theory “would violate established public policy and fundamental principles of tort law”).

85. See Prelick v. Johns-Manville Corp., 531 F. Supp. 96 (W.D. Pa. 1982). In Prelick, the plaintiff brought a products liability action against numerous manufacturers and suppliers of asbestos products. Id. at 97. The plaintiff was able to identify some of the defendants' asbestos-containing products, but was unable to identify others. Id. In order to maintain a cause of action with regard to the unidentified products supplied by the named defendants, the plaintiff asserted that all of the defendants were proportionately liable under a theory of enterprise liability or market share liability. Id. The district court stated that it did not have to predict whether Pennsylvania would adopt Sindell since that theory was inappropriate to the circumstances of the case sub judice. Id. at 98. The Prelick court then concluded that “where, as here, the plaintiff is able to identify at least one manufacturer or supplier whose product caused plaintiff's injury, the 'Sindell' or 'enterprise' theory is inapplicable.” Id. Cf. In re Related Asbestos Cases, 543 F. Supp. 1152 (N.D. Cal. 1982) (market share theory of liability is inappropriate in a strict liability action where the plaintiffs
the product identification defense can be especially advantageous for a small supplier of a toxic substance whose name is not generally recognized. Unfortunately, this defense usually is unavailable to those suppliers whose names are more easily remembered or those who manufactured a variety of well-known products. For example, in asbestos cases almost every plaintiff seems to be able to recall the JM logo such that product identification poses few problems for the asbestos litigant.

Since most products liability cases provide for joint and several liability among the defendants, product identification can be as much a defendant's concern as it is a plaintiff's concern. Once a plaintiff establishes that one defendant was the supplier of a sufficient amount of a toxic substance to have been a substantial contributing factor to his injuries, that defendant is liable for any award that the jury makes. However, the original defendant will have contribution or indemnity rights against his co-defendants. For this reason, it is in the interest of any defendant in a toxic tort case who has been identified as a supplier of the toxic substance to aid in the identification of other defendant/suppliers—a situation that presents some interesting tactical considerations.

Asbestos litigation illustrates the tactical considerations which confront defense counsel when a defendant's product has been identified as a supplier of asbestos. Asbestos is able to identify at least some of the defendants who had manufactured the asbestos products that had allegedly caused injury.

86. See, e.g., W. PROSSER, LAW OF TORTS 291-323 (1971).

87. See, e.g., Migues v. Nicolet Indus., 493 F. Supp. 61 (E.D. Tex. 1980), rev'd in part sub nom. Migues v. Fibreboard Corp., 662 F.2d 1182 (5th Cir. 1981). Migues involved the issue of defendants' liability for damages stemming from a wrongful death action brought by the widow of an asbestos insulation worker. Id. at 61. The worker had allegedly contracted mesothelioma as a result of asbestos exposure. Id. The original action by the widow had been brought against 14 defendant-manufacturers. Id. In this action the defendants argued that each should be liable for only 1/14 of the damages that had been awarded. Id. at 64. The district court rejected this argument, finding that all were jointly and severally liable. See id. at 64-65. According to the Migues court, "[E]ach producer standing alone . . . [who] was found to be a producing cause of a plaintiff's injury is liable for the total extent of the harm. No statute or case authority exists for apportioning fault in this setting." Id. at 64. For additional discussion of Migues, see notes 61 & 65 supra and note 121 infra. See also Ward v. McDan Dav. Leasing Corp., 340 F. Supp. 86 (W.D. Pa. 1972), aff'd sub nom. Appeal of Balisteri, 485 F.2d 678 (3d Cir. 1973), and aff'd sub nom. Denny Leasing Co. v. McDan Dav. Leasing Corp., 485 F.2d 679 (3d Cir. 1973). Ward was a suit arising out of a multicasual accident which resulted in the death of the plaintiff's husband. The district court in Ward found all of the defendants involved in the accident to be jointly and severally liable. According to the court, the defendants were joint tortfeasors and each was "responsible to the plaintiffs for the whole amounts of their damages." Id. at 102. However, the court added that each defendant was entitled to contribution from the other to the extent that one is called upon to pay more than his proportionate share of the recovery. Id.
fied by the plaintiff. In an asbestos-related disease case, a plaintiff usually first introduces evidence that he has been exposed to the asbestos products of different defendants. The plaintiff then will present medical testimony demonstrating that his exposure to asbestos was a substantial contributing factor to his asbestos-related disease. This evidence establishes plaintiff's prima facie case on medical causation and product identification. The identified defendants are then faced with the quandry of whether to demonstrate that the products of other, non-identified parties could have contributed to plaintiff's injuries. If they fail to introduce such evidence, they will have to pay the plaintiff's entire recovery if the plaintiff prevails in the suit. However, if they do introduce such evidence, they incur the risk that the size of the plaintiff's recovery might increase, and the possibility that other available defenses—such as medical causation—might become obfuscated.

Given these possibilities, the named defendants might consider an alternative maneuver. Instead of implicating new defendants, the identified defendants could make an agreement with non-identified defendants to the effect that each of them will pay either a set percentage of the verdict or a specified dollar amount. This would enable those parties whose products have not been identified to pay a lower share of any verdict than they would be forced to pay if they were identified, while at the same time preventing the identified defendants from being saddled with the entire award. Furthermore, this arrangement allows the defendants to direct their attention to other defenses. If the defendants can present a strong medical causation defense, an agreement not to implicate another's products would allow the jury to focus its attention on the causation issue alone.

This kind of financial agreement also can be a factor in keeping down the size of the damages award. If, for example, it is shown

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88. Under a traditional products liability cause of action, a plaintiff must meet three essential requirements in order to establish his prima facie case. He must show the following: 1) that the product is defective; 2) that the defect is attributable to the defendant; and 3) that the defect caused his injury. See Note, Industry-Wide Liability 13 Suffolk U.L. Rev. 980, 997 (1979). In Flatt v. Johns-Manville Sales Corp., the court outlined the elements for which a plaintiff has the burden of proof in asbestos-related disease cases based on strict liability in tort. See 488 F. Supp. 836 (E.D. Tex. 1980). Using the example of a plaintiff claiming mesothelioma, the court stated that the plaintiff would have to prove the following: 1) the defendants manufactured or supplied products containing asbestos; 2) products containing asbestos are unreasonably dangerous; 3) asbestos dust can be a substantial contributing cause of mesothelioma; 4) plaintiff was exposed to defendant's product; 5) the exposure was sufficient to be a producing cause of mesothelioma; 6) plaintiff contracted mesothelioma; and 7) plaintiff suffered damages. Id. at 838 (citing RESTATEMENT (SECOND) OF TORTS § 402A(1) (1965)).

89. It is important to comprehend the costs involved in toxic tort litigation. In
that the plaintiff was exposed to a variety of toxic substances, but only one of these substances could be sufficiently identified for the purposes of his claim, the jury may take this factor into consideration in determining damages. That is, the jurors might be empathetic toward a lone defendant whose products are identified, if they believe that plaintiff's condition could have been caused in part by exposure to toxic substances produced by unidentified manufacturers. This tactical maneuver should be given consideration in any litigation involving exposure to asbestos.

III. THE PRODUCT-RELATED DEFENSES

The matters previously discussed in this article—the statute of limitations, medical causation, and product identification—are defenses to any toxic tort claim. The defenses discussed in the remainder of this paper are oriented toward toxic tort claims under the rubric of products liability. The availability of these defenses will vary according to the theory of liability alleged by a plaintiff. In a personal injury situation, plaintiff's causes of action will generally be framed in terms of breach of warranty, negligence, and strict liability. Of these, most plaintiffs normally proceed only in negligence and strict liability, even though they may include breach of warranty counts in their complaints. Because of the relative unimportance of

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1980, for example, Johns-Manville alone disposed of 402 asbestos-related claims paying an average of $23,000 per suit in either settlement costs or damages to the plaintiffs. Surrick, supra note 73, at 290-91. In 1981, this corporation disposed of 1,463 cases for a total of approximately $22,678,000, or an average cost of $15,433 per case. Id. Various estimates have been made as to the total amount of damages involved in asbestos litigation. All of these estimates range in the billions of dollars. An insurance company executive has suggested that present and future asbestos suits could exceed $100 billion in damage claims. See Podgers, supra note 1, at 139. Another commentator estimates that damages claimed in suits already filed exceed $24 billion. Schechter, Untangling the Asbestos Mess, 51 OCCUPATIONAL HEALTH & SAFETY 30, 31, 39 (Feb. 1982). Furthermore, estimates do not include insurance fees paid by manufacturers and suppliers.

As an example of the cost of defending these asbestos-related disease suits, between April 1, 1981 and January 11, 1982, Johns-Manville spent over $9 million in administrative and defense costs for products liability claims. Surrick, supra note 73, at 292. Since January of 1982, that corporation has paid an average of $1 million per month for these costs. Id. The Defense Research Institute has estimated that the total cost of the defense of asbestos cases now in litigation could exceed $300 million. ASB. LITIG. REP. 4041 (March 12, 1982) (Andrew Pub.).

With DES litigation, it has been estimated that the national total of claimed damages could reach $40 billion. At present, the minimum defense costs of each DES case is approximately $50,000. Roberts & Royster, DES and the Identification Problem, 16 AKRON L. REV. 447, 455 (1983).

90. For a more detailed description of these defenses, see notes 18-91 and accompanying text supra.
the warranty theory in toxic tort cases, this discussion will focus primarily on the negligence and strict liability theories of liability.

A. Defective or Unsafe Products

A plaintiff who brings a products liability/toxic tort action in negligence will have to prove that defendant breached a duty owed to him. In strict liability, the plaintiff must prove only that the product itself was defective and that the defect caused his injury. Under

91. A number of courts equate breach of implied warranty with strict liability in tort and have concluded that a separate instruction on implied warranty is unnecessary. See, e.g., Basko v. Sterling Drug, Inc., 416 F.2d 417, 427 (2d Cir. 1969) (the "defect' necessary for the imposition of strict liability is the equivalent of an implied warranty of merchantability"); Davis v. Wyeth Laboratories, Inc., 399 F.2d 121, 126 (9th Cir. 1968) (difference between strict liability in tort and implied warranty "is largely one of terminology"); Greeno v. Clark Equip. Co., 237 F. Supp. 427, 429 (N.D. Ind. 1965) (strict liability under § 402A "is hardly more than what exists under implied warranty" except for the latter's requirements of privity, notice, and absence of effective disclaimer); Cintrone v. Hertz Truck Leasing, 45 N.J. 434, 212 A.2d 769 (1965) (treating allegations in complaint with respect to implied warranty as sufficient to state a cause of action for strict liability in tort); Goldberg v. Kollsman Instrument Corp., 12 N.Y.2d 432, 240 N.Y.S.2d 592, 595, 191 N.E.2d 81, 83 (1963) (strict tort liability is "surely a more accurate phrase" than breach of implied warranty).

Most plaintiffs in asbestos-related suits have been unsuccessful in asserting causes of action under an implied warranty theory because in most instances there is no privity between suppliers and the plaintiffs, who are often employees of the purchasers. See, e.g., Starling v. Seaboard Coast Line R.R. Co., 533 F. Supp. 183, 191-92 (S.D. Ga. 1982); In re Johns-Manville Asbestosis Cases, 511 F. Supp. 1235, 1239-41 (N.D. Ill. 1981).

92. See Restatement (Second) of Torts § 328A (1965). Section 328A of the Second Restatement describes a plaintiff's burden of proof in a negligence action as follows:

In an action for negligence the plaintiff has the burden of proving

(a) facts which give rise to a legal duty on the part of the defendant to conform to the standard of conduct established by law for the protection of the plaintiff,

(b) failure of the defendant to conform to the standard of conduct,

(c) that such failure is a legal cause of the harm suffered by the plaintiff, and

(d) that the plaintiff has in fact suffered harm of a kind legally compensable by damages.

Id.

93. See Gonzales v. Caterpillar Tractor Co., 571 S.W.2d 867 (Tex. 1978). In Gonzales, the plaintiff had asserted theories of defective design based both in negligence and strict liability. In making its decision, the Texas Supreme Court discussed the difference between the two causes of action:

The care taken by the supplier of a product in its preparation, manufacture, or sale, is not a consideration in strict liability; this is, however, the ultimate question in a negligence action. Strict liability looks at the product itself and determines if it is defective. Negligence looks at the acts of the manufacturer and determines if it exercised ordinary care in design and production.

Id. at 871. For further discussion of Gonzales, see note 96 infra. See also Daly v. General Motors Corp., 20 Cal. 3d 725, 733, 575 P.2d 1162, 1166, 144 Cal. Rptr. 380, 384
either of these causes of action, the plaintiff will generally have three theories by which to establish the defendant’s liability. First, the plaintiff can allege that the product was improperly manufactured.\textsuperscript{94} An example of a manufacturing defect is a soda bottle which explodes in a plaintiff’s hands because, of a number of bottles, it alone had not been made to the proper thickness.\textsuperscript{95} Second, plaintiff can allege that the product’s design was unsafe.\textsuperscript{96} The Ford Pinto cases illustrate this issue.

\begin{footnotesize}


\textsuperscript{96} See Barker v. Lull Eng’g Co., 20 Cal. 3d 413, 573 P.2d 443, 143 Cal. Rptr. 225 (1978). In Barker, the Supreme Court of California noted the basic distinction between a manufacturing defect and a design defect:

\begin{quote}
[A] manufacturing or production defect is readily identifiable because a defective product is one that differs from the manufacturer’s intended result or from other ostensibly identical units of the same product line. . . . A design defect, by contrast, cannot be identified simply by comparing the injury-producing product with the manufacturer’s plans or with other units of the same product line, since by definition the plans and all such units will reflect the same design.
\end{quote}

\textit{Id.} at 429, 573 P.2d at 443, 143 Cal. Rptr. at 236.

For examples of cases alleging design defect in a product, see Pennsylvania Glass Sand Corp. v. Caterpillar Tractor Co., 652 F.2d 1165 (3d Cir. 1981) (under Pennsylvania law, a manufacturer can be held strictly liable for a design defect by failing to install a fire suppression device in a loading vehicle; the device would not have prevented the fire which caused the plaintiff harm, but it would have mitigated the damages); Heckman v. The Federal Press Co., 587 F.2d 612, 614 (3d Cir. 1978) (manufacturer’s failure to provide an adequate safety device on a machine press can constitute a design defect under § 402A). Cf. Gonzales v. Caterpillar Tractor Co., 571 S.W.2d 867 (Tex. 1978) (although mere lack of an anti-skid safety feature on a tractor step can be sufficient to find a defective design under § 402A, in negligence the plaintiff must show that defendants’ conduct in designing the tractor was culpable).

The malfunctioning product produces a hybrid of the manufacturing defect and design defect theories. When a product malfunctions and injury results, a plaintiff can argue that the harm occurred because the product must have been in some way defective—either through a manufacturer’s defect or a design defect. Thus, although the plaintiff may be unable to demonstrate the precise defect (usually because an accident has destroyed or severely damaged the product), he may contend that the accident itself creates a presumption of defect. See, e.g., MacDougall v. Ford Motor Co., 214 Pa. Super. 384, 257 A.2d 676 (1969) (when alleged malfunction in steering mechanism caused plaintiff’s car to go out of control, plaintiff’s testimony as to the difficulties in steering she had encountered just prior to the accident was sufficient to create a reasonable inference of a defective condition).
\end{footnotesize}
kind of claim. There, the plaintiffs alleged that although the automobile which caused their injuries had been properly manufactured, the design of the Pinto was unsafe. Finally, a plaintiff may allege that the manufacturer failed to warn of the product's limitations, thereby preventing the plaintiff from making an intelligent decision about the use of the product. Most asbestos cases are based on this theory.

Whether alleging manufacturing defect, design defect, or failure to warn, the plaintiff suing in negligence must prove that the manufacturer or supplier of the product knew or had reason to know that the product was likely to be dangerous, and that users of the product were unaware of the dangers. Thus, a plaintiff would argue that the manufacturer failed to exercise reasonable care because he had not detected the defect, he had not designed the product more safely, or because he had not advised the user of the potential danger.

In strict liability pursuant to section 402A of the Second Restatement of Torts, the plaintiff need only prove that the product was defective and therefore dangerous, and that this defect caused his


98. Id.

99. Breach of a duty to warn can arise in several ways. First, it may occur by a failure to warn of a known danger. See, e.g., Davis v. Wyeth Laboratories, Inc., 399 F.2d 121 (9th Cir. 1968) (polio vaccine supplier failed to warn consumer of the risk of contracting polio through the vaccine). Some courts will also find a breach where there is a failure to warn of an unknown danger. For a discussion of this issue, see note 108 and accompanying text infra. Finally, a supplier can be held liable for providing inadequate warnings or instructions. See, e.g., Sterling Drug, Inc. v. Yarrow, 408 F.2d 978 (8th Cir. 1969) (a general warning of harmful side effects of a drug is inadequate when a potentially severe side effect is not articulated).

100. RESTATEMENT (SECOND) OF TORTS § 388 (1965). According to § 388 of the Restatement,

One who supplies directly or through a third person a chattel for another to use is subject to liability to those whom the supplier should expect to use the chattel with the consent of the other or to be endangered by its probable use, for physical harm caused by the use of the chattel in the manner for which and by a person for whose use it is supplied, if the supplier

(a) knows or has reason to know that the chattel is likely to be dangerous for the use for which it is supplied, and

(b) has no reason to believe that those for whose use the chattel is supplied will realize its dangerous condition, and

(c) fails to exercise reasonable care to inform them of its dangerous condition or of the facts which make it likely to be dangerous.

Id. Section 388 is often referred to as the "inherently dangerous product provision." One court has distinguished inherently dangerous products from defective products as follows: "A product is inherently dangerous when the danger of injury stems from the product itself, and not from any defect in it." General Bronze Corp. v. Kostopulos, 203 Va. 66, 71, 122 S.E.2d 548, 551 (1961) (citations omitted).
injuries. Just as in negligence, a defect can be established because of the way in which the product was manufactured, because of its design, or because it did not contain adequate warnings or instructions for its use. Under strict liability, however, the supplier may be held liable even though he had exercised all possible care in the preparation and sale of his product.

101. Restatement (Second) of Torts § 402A (1965). For the text of § 402A, see note 8 supra.

102. In a negligence action for failure to warn, a defendant will often be able to escape liability by demonstrating that it exercised all reasonable care in relaying warnings of its product's risks. Thomas v. Arvon Prods. Co., 424 Pa. 365, 227 A.2d 897 (1967). In Thomas, the plaintiff sued the manufacturer of a varnish product for negligently failing to exercise reasonable care in informing consumers of the product's dangers. The plaintiff suffered blindness in one eye after he had applied a coat of varnish to his employer's storage room. Id. at 367, 227 A.2d at 898. In a lawsuit to recover damages for his injury, the plaintiff contended that the manufacturer had not taken every reasonable precaution to insure that no harm would result from the use of its products. See id. at 369-70, 227 A.2d at 899-900. The defendant responded with evidence showing that it had placed warnings on the containers of the varnish and that its representatives repeatedly had advised the plaintiff's employer of the need for adequate ventilation when the varnish was being applied. Id. at 368, 227 A.2d at 899. The trial court found for the defendant and the supreme court affirmed concluding that "every reasonable precaution that Arvon could take to insure no harm resulted from the use of its product was taken." Id. at 370, 227 A.2d at 900.

103. See Azzarello v. Black Bros. Co., 480 Pa. 547, 391 A.2d 1020 (1978). The plaintiff in Azzarello had suffered injuries to his hand while operating a coating machine manufactured by the defendant. Id. at 549, 391 A.2d at 1022. He brought suit against the manufacturer on the theory of strict liability under § 402A. Id. at 550, 391 A.2d at 1022. The trial judge had instructed the jury that in order to find the manufacturer liable under § 402A, it must be shown that the machine was "unreasonably dangerous." Id. at 551, 391 A.2d at 1022. On appeal, the Supreme Court of Pennsylvania held that the term "unreasonably dangerous" as used in § 402A has "no independent significance and merely represent[s] a label to be used where it is determined that the risk of loss should be placed upon the supplier." Id. at 556, 391 A.2d at 1025. Thus, the Pennsylvania Supreme Court concluded, a plaintiff who is injured by a product will have a cause of action under § 402A if he can show that "the product left the supplier's control lacking any element necessary to make it safe for its intended use or possessing any feature that renders it unsafe for the intended use." Id. at 559, 391 A.2d at 1027. For a further discussion of Azzarello, see notes 15 & 16 supra.

See also Berkebile v. Brantly Helicopter Corp., 462 Pa. 83, 337 A.2d 893 (1975). In Berkebile, the plaintiff's husband had been killed in a helicopter crash. She brought suit against the manufacturer of the helicopter under § 402A, arguing that the manufacturer should be liable for defective design, manufacturing defect and inadequate warning. Id. at 91-92, 337 A.2d at 897. The Pennsylvania Supreme Court took the opportunity in this case to clear up what appeared to it "a basic confusion concerning the principles of strict liability in tort" among the courts in Pennsylvania. Id. at 92, 337 A.2d at 898. Admonishing some courts for injecting concepts of reasonableness and due care in the trial of a § 402A action, the Pennsylvania Supreme Court stated, "Strict liability requires, in substance, only two elements of requisite proof: the need to prove that the product was defective, and the need to prove that the defect was a proximate cause of the plaintiff's injuries." Id. at 93-94, 337 A.2d at 898. The court then went on to state that in order for a product not to be in a defective condition, "[t]he seller must provide with the product every element necessary to make it safe for use." Id. at 100, 337 A.2d at 902. For the text of
Very few toxic tort cases involve manufacturing defects. A toxic substance may have harmful effects, but these effects are rarely caused by some error or fluke in the manufacturing process. A manufacturing defect case involving a toxic substance could, however, occur in a situation where a toxic substance is mistakenly mixed into another substance, such as processed food. If the lot of food were large enough, and the damage wrought extensive enough, a toxic tort case premised on a manufacturing defect could be brought.

Similarly, very few toxic tort cases are based on allegations of design defect. In design defect cases, the plaintiff must normally show that there were feasible alternative manufacturing processes that would render the product safer. Toxic substances such as benzine,

§ 402A of the Restatement, see note 8 supra. For additional discussion of Berkebile, see notes 132, 183 & 190 infra.

See Little v. PPG Indus., 92 Wash. 2d 118, 121-23, 594 P.2d 911, 913-14 (1979) (failure to warn in strict liability is distinguished from negligent failure to warn in that it is the inadequacy of the warning, not the conduct of the manufacturer, which establishes strict liability). See also McDougall v. Ford Motor Co., 214 Pa. Super. 384, 257 A.2d 676 (1969). McDougall was a case involving an alleged mechanical malfunction of an automobile. The court addressed itself to the difference between a products liability action in negligence and one in strict liability:

The evidentiary requirements of negligence law demand proof that injury is proximately caused by a specific defect in design or construction because liability hinges upon whether the accident could have been avoided by the exercise of reasonable care. In contrast, the concern of both § 402A and warranty law is with the fitness of the product, not the conduct of the producer as measured by due care. While proof of a mechanical malfunction does not support an inference of the absence of due care in the construction or design of equipment, it is circumstantial evidence of the unfitness of the equipment.

Id. at 391, 257 A.2d at 680.

104. See, e.g., Jacob E. Decker & Sons, Inc. v. Capps, 139 Tex. 609, 164 S.W.2d 828 (1942). In Decker, members of a family suffered serious illness, and in one instance death, from eating contaminated sausage manufactured by Decker & Sons. Id. at 610, 164 S.W.2d at 828. The plaintiff then brought an action in negligence against the manufacturer. Id. At trial it was determined that the sausage had been contaminated during the manufacturing process, and that this contamination was the proximate cause of the injuries suffered. Id. at 611, 164 S.W.2d at 828. In its review of this case, the Supreme Court of Texas held that a manufacturer should be liable for injuries of the kind sustained in this case. Id. at 612, 164 S.W.2d at 829. Noting that such liability was grounded in neither negligence nor breach of warranty, the court opined that this form of liability is based "on the broad principle of the public policy to protect human health and life." Id. According to the Decker court,

[W]here food products sold for human consumption are unfit for that purpose, there is such an utter failure of the purpose for which the food is sold, and the consequences of eating unsound food are so disastrous to human health and life, that the law imposes a warranty of purity in favor of the ultimate consumer as a matter of public policy.

Id. Cf. Athens Canning Co. v. Ballard, 365 S.W.2d 369 (Tex. Civ. App. 1963) (packager of canned peas found liable for damages sustained by consumer who bit into a burr which was allegedly in the peas).
asbestos, or DES are inherently toxic. In order to prove a design defect in products containing these substances, the plaintiff would have to show that the products could have been manufactured with a substitute element which would have made the product safer and at the same time maintained its effectiveness for its intended use.\textsuperscript{105}

Most toxic tort cases are brought under the products liability doctrine of failure to warn.\textsuperscript{106} Pennsylvania has adopted sections 388 and 402A of the Second Restatement of Torts.\textsuperscript{107} These sections provide that a supplier of a product has a duty to warn of any dangers posed by the product of which the user could not reasonably be expected to know. Any product, therefore, which has a danger not commonly known must be accompanied by a warning alerting the user to its potential hazards.\textsuperscript{108}

105. For example, the heat resistant property of asbestos is of great utility to industrial society, and it is difficult to find a suitable replacement that is as effective. In the United States alone, industry consumes one million tons of asbestos. Hardy v. Johns-Manville Sales Corp., 509 F. Supp. 1353, 1355 (E.D. Tex. 1981), rev'd, 681 F.2d 334 (5th Cir. 1982).


108. See, e.g., Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076 (5th Cir. 1973), \textit{cert. denied}, 419 U.S. 869 (1974). The Fifth Circuit in \textit{Borel} noted that the plaintiff "did not know that inhaling asbestos dust could cause serious illness until his doctors advised him in 1969 that he had asbestosis." \textit{Id.} at 1093. Because the defendant manufacturers had failed to warn the plaintiff/user of a danger not known to him, they were held liable for the plaintiff's injuries. \textit{Id.} Three of the \textit{Borel} defendants had, however, in the 1960's included warnings on their products stating that inhalation of asbestos "may be harmful." \textit{Id.} at 1104. The court found such warnings wholly inadequate since they failed to state both the kind of harm and the gravity of the harm that asbestos can cause. \textit{Id.}

A product that contains a hazard unknown to the user, must contain a warning on the product that is found by the court to be "adequate." For examples of warnings that courts have deemed inadequate, see Dougherty v. Hooker Chem. Corp., 540 F.2d 174 (3d Cir. 1976) (manufacturer's warning held inadequate because it did not specify the gravity of harm or the kind of harm posed by the product) (manufacturer could not rely on others to communicate sufficient warnings); Reyes v. Wyeth Laboratories, 498 F.2d 1264 (5th Cir. 1974) (where a supplier of polio vaccine could reasonably foresee that vaccinations would be administered through mass immunizations, a warning which was directed only to physicians held inadequate; the supplier had a duty to warn those vaccinated), \textit{cert. denied}, 419 U.S. 1096 (1974); Hubbard-Hall Chem. Co. v. Silverman, 340 F.2d 402 (1st Cir. 1965) (warning on an insecticide that did not contain symbolic characters to convey the poisonous nature of product held inadequate since manufacturer had reason to foresee insecticide's use
In a products liability action, proof on the issue of whether the defendant failed to warn the plaintiff adequately is straightforward. The litigants will focus on several questions. Did the product pose to its users potential health hazards which the manufacturer knew or should have known and which the user could not reasonably be expected to have known? Was the sale of the potential injurious product accompanied by a warning alerting the user to the product's potential danger? If so, was the warning adequate to alert the user of the product to the potential danger? Assuming that the manufacturer gave no warning as to the potential dangers or that the warning given was inadequate, liability could be imposed on the manufacturer because the product as sold was defective, or because the manufacturer, by selling the product absent a warning, had breached his duty of care.

B. Duty to Warn/State of the Art

The term “state-of-the-art” refers to the skill, experience, and knowledge of a particular scientific or manufacturing community at a particular point in time. Knowledge, experience, and technology in any industry progresses over time and consequently, a “state-of-the-art” that existed decades ago, when measured by present understanding, may seem to be antiquated, out-dated, and perhaps, primitive. The state-of-the-art defense is based upon the proposition that any alleged defect in a product can be analyzed only on the basis of the knowledge, expertise, and technology available at the time of the product’s manufacture and, therefore, that a manufacturer is only obligated to warn of dangers that are known or knowable at the time of a product's manufacture and not those dangers that may become evident decades later.109

The state-of-the-art defense is especially important in toxic tort litigation because of the long latency periods associated with many toxic tort injuries. Mesothelioma, for example, has an average latency of 20 to 40 years.110

by illiterate or foreign-speaking laborers); Spruill v. Boyle-Midway, Inc., 308 F.2d 79 (4th Cir. 1962) (manufacturer held to anticipate the home environment in which the furniture polish would be used so as to determine of what risks or misuses should be warned) (product's warning, "harmful if swallowed, especially by children" was insufficient to alert the user to the product's lethal dangers).

109. See, e.g., Leibowitz v. Ortho Pharmaceutical Corp., 224 Pa. Super. 418, 307 A.2d 449 (1973) (since thrombophlebitic conditions were not known to be a side effect of the manufacturer's oral contraceptive at time of its manufacture, manufacturer could not be held liable for failure to warn of such a condition). For practical insights on use of state-of-the-art evidence by a litigating attorney, see Robb, A Practical Approach to Use of State of the Art Evidence in Strict Products Liability Cases, 77 NW. U.L. REV. 1 (1972); Spradley, Defensive Use of State of the Art Evidence in Strict Products Liability, 67 MINN. L. REV. 343 (1982).
tency period of approximately thirty to forty years. Asbestosis has a similarly long latency period. The defense is also important because a number of jurisdictions have carved discovery rule exceptions into their statutes of limitations. The discovery rule in this context means that a plaintiff who was exposed to asbestos in the 1940's, but did not develop symptoms of mesothelioma until 1980, can bring a cause of action against the manufacturer of the asbestos-containing product in 1982. Assume that this plaintiff has brought his suit within the limitations period and that his complaint is based on the defendant's failure to warn of the dangers associated with asbestos products. The state-of-the-art defense would permit the defendant to argue that when he sold the asbestos products, in the 1940's, he did not know, nor could he have known, that asbestos caused mesothelioma. If this defense were successful and plaintiff were unable to show that the manufacturer should have been aware of the product's dangers, liability would not be imposed upon the defendant.

Since the state-of-the-art defense is grounded only in the actual knowledge that the manufacturer should have had, this defense is clearly admissible in an action brought in negligence. In a negligence action brought under a failure to warn theory, the sole question is whether the defendant, by not warning the plaintiff of the hazards associated with the defendant's product, failed to exercise reasonable care. To answer this question, evidence must be presented on whether there was knowledge relating to the harmfulness of the defendant's product which was available to the industry at the time the product was manufactured.110

Courts have struggled, however, with the issue of the admissibility of the state-of-the-art defense in actions based on strict liability. Section 402A of the Second Restatement of Torts imposes liability on the manufacturer notwithstanding his exercise of "all possible care in the preparation and sale of the product."111 Comment j of section 402A, however, is similar to the negligence standard in its description of a failure to warn claim. It states that a seller is required to warn if


he knows or "by the application of reasonable, developed human skill and foresight" should have known of the product's dangerous propen-
sities. Furthermore, comment k of 402A acknowledges that there are certain products which, although potentially dangerous to a user, are both incapable of being made safer and are of great value to society. Thus, so long as such "unavoidably unsafe products" bear a proper warning as to their hazards, strict liability will not attach to the manufacturer for any harm caused by them. It would appear, then, that while section 402A imposes strict liability, comments j and k attempt to limit a manufacturer's liability in failure to warn cases to only those dangers about which he knew or could have known at the...
time the product was made. These two standards of liability are not easily reconciled, and therein lies the courts' struggle with the state-of-the-art defense.

Those courts which have rejected state-of-the-art as a defense to a strict liability action have done so on the basis of social policy. Preeminent among the policies articulated is the "deep pockets" rationalization of comment c of section 402A. This argument maintains that since manufacturers are in a better position to insure against liability and to pass the cost of damages on to the consuming public, strict liability should disregard any issues concerning a manufacturer's fault or knowledge.114 According to the courts that reject the state-of-the-art defense in strict liability actions, as between two innocent parties, the manufacturer is seen as having the better opportunity to discover and correct or warn of the defect; therefore, the manufacturer should pay the costs of the harm caused by its product.115 Those jurisdictions that do recognize the state-of-the-art defense in strict liability actions have based their rulings primarily upon comments j and k of

114. See RESTATEMENT (SECOND) OF TORTS § 402A comment c (1965). According to comment c of § 402A of the Second Restatement, one justification for strict liability is "that public policy demands that the burden of accidental injuries caused by products intended for consumption be placed upon those who market them, and be treated as a cost of production against which liability insurance can be obtained . . . ." Id.

115. See Beshada v. Johns-Manville Prods. Corp., 90 N.J. 191, 447 A.2d 539 (1982). In Beshada, the New Jersey Supreme Court stated that in strict liability "culpability is irrelevant. The product was unsafe. That it was unsafe because of the state of technology does not change the fact that it was unsafe." Id. at 204, 447 A.2d at 546.

The Beshada court rested its decision to strike the state-of-the-art defense in § 402A actions on three policy considerations. The first is that strict liability in tort is grounded in the concept of risk spreading which proposes that "manufacturers and distributors of defective products can best allocate the costs of the injuries resulting from those products." Id. at 205, 447 A.2d at 547. Second, the court stated that elimination of state-of-the-art evidence might provide manufacturers with a greater incentive to produce safer products. Id. at 207, 447 A.2d at 547-48. Finally, the Beshada court noted that analyses relating to scientific and technological knowledge tend to be so complicated as to create "vast confusion" in the judicial factfinding process. Id. at 207-208, 447 A.2d 458. For a further discussion of Beshada, see note 110 supra.

Although Beshada is a seemingly unequivocal rejection of the state-of-the-art defense in strict liability, the strength of that holding has been called into question in a recent decision by the New Jersey Superior Court. See Feldman v. Lederle Laboratories, 189 N.J. Super. 424, 460 A.2d 203 (1983). The Feldman court held that the Beshada approach is inapplicable to cases involving pharmaceuticals. Id. at 428-29, 460 A.2d at 205. The Feldman court stated as follows:

The underlying reason for special exemption of prescription drugs is the public policy concern that imposition of the strict liability or, perhaps more accurately stated, the almost absolute liability, principle of Beshada approach would chill if not smother the research, development, production and marketing of new or experimental drugs necessary to alleviate or cure the ills to which we are all subject.
section 402A and on the social policy underlying those comments.\textsuperscript{116} Positing the example of certain medical drugs whose potential dangers are unknowable or undetectable, these jurisdictions emphasize the overriding benefit that such drugs afford society. To impose liability on manufacturers for failing to warn of dangers about which they could not have known would be to deter future research and development of new and socially beneficial drugs, and consequently, would be in direct contravention of a public policy favoring medical and scientific progress.\textsuperscript{117}

It is submitted that comments j and k specifically provide for the use of the state-of-the-art defense in strict liability actions. Courts that disallow this defense have, for all practical purposes, disregarded these comments in interpreting section 402A, and have thus removed

\textsuperscript{116} See also Flatt v. Johns-Manville Sales Corp., 488 F. Supp. 836, 841 (E.D. Tex. 1980) (in a strict liability action brought against asbestos suppliers, defendants “are not entitled to and will not present” state-of-the-art evidence since it is “immaterial” to a strict liability proceeding).

\textsuperscript{117} See, e.g., Dalke v. Upjohn Co., 555 F.2d 245, 248 (9th Cir. 1977) (strict liability is grounded in the question of whether drug manufacturers disclosed in their warnings all the side effects “which they knew or should have known at the time these effects were discovered”).
a very important limitation on a manufacturer's liability. Furthermore, equitable, economic, and logical considerations mandate the application of the state-of-the-art defense—especially in toxic tort cases. The long latency periods associated with many toxic tort injuries, coupled with the discovery rule exception, leave a manufacturer wholly vulnerable to lawsuits absent a state-of-the-art defense. A manufacturer may find himself sued for acts or omissions he committed without fault decades ago and years before any jurisdiction even adopted section 402A. Because of the long latency period associated with many toxic tort injuries and the lack of an effective statute of repose, a defendant in a jurisdiction that does not permit the state-of-the-art defense may find himself being sued for actions that occurred decades ago, but precluded from defending on the basis that at the time the products were sold no one could know of any danger associated with the products. This patent unfairness was not within the contemplation of the American Law Institute when it drafted this section. The drafters, through comments j and k of section 402A, were careful to provide limits to a manufacturer's exposure for liability so as not to set forth a theory of absolute liability. Courts that adopt the position that state-of-the-art evidence is improper in a strict liability action endorse a legal principle that holds a defendant liable for failing to do today what is impossible to do today, tomorrow, or even a decade from now.

To appreciate the economic consequence of abolishing the state-of-the-art defense, one need only look to the area of asbestos litigation. Over 25,000 lawsuits already have been filed against asbestos producers, suppliers, and sellers. Three manufacturer/suppliers of asbestos-containing products have filed for Chapter 11 bankruptcy. Courts, overwhelmed by the enormity of the asbestos suits, have adopted special procedures for dealing with these cases, and legisla-

118. As of January 1982, Johns-Manville Corporation faced over 14,000 lawsuits with that number increasing at a rate of 530 per month. Nicolet, Inc., another manufacturer of asbestos products, was a defendant in 5,600 asbestos-related suits involving more than 8,000 plaintiffs by the beginning of 1982, while Raybestos-Manhattan, Inc. faced approximately 5,375 pending asbestos-related lawsuits in the beginning of 1981. See Surrick, supra note 72, at 289-90.

119. In addition to Johns-Manville's petition under Chapter 11 of the Bankruptcy Reform Act, Unarco Industries, and Amatex have also filed for reorganization under Chapter 11. Surrick, supra note 72, at 301. For additional discussion regarding the Chapter 11 petition of Johns-Manville, see note 5 supra.

120. For example, the Philadelphia Court of Common Pleas has initiated a special compulsory non-jury program for asbestos cases. Pittsburgh Corning Corp. v. Bradley, 499 Pa. 291, 293-94, 453 A.2d 314, 315 (1982). All such cases are first tried without a jury. See id. The parties then have an automatic right to appeal from the non-jury verdict and are entitled to a jury trial de novo. Id. at 295, 453 A.2d at 315. Various parties have objected to this system. The Pennsylvania Supreme Court sanc-
tures throughout the country are contemplating laws that would remove asbestos-related claims from the arena of general litigation altogether. These economic and judicial dislocations are only the tip of the iceberg; compared to the number of asbestos-related lawsuits that have already been disposed of, thousands more are awaiting disposition. Actions involving toxic substances other than asbestos pose equally ominous consequences to the economy and to the judicial system.

Even disregarding economic consequences and concerns over the unfairness to manufacturers resulting from the abrogation of this defense, an approach to strict liability for toxic torts that precludes the use of the state-of-the-art defense simply is not logical. Obviously, a product that is sold without proper warning of possible hazards or limitations may be defective. However, to require a manufacturer to draft warnings of all dangers known, unknown, and unknowable is to assure a host of meaningless, overbroad warnings that might not be heeded. Such warnings, if they were to include every imaginable potential danger, could not be specific. Moreover, these warnings would lack the immediacy of warnings that society has come to expect for products that are genuinely dangerous. As a result, plaintiffs who had been warned of a product’s known and potential dangers could contend that the warning was inadequate because it lacked immediacy: that is, the product bore so many warnings that the user was both overwhelmed and desensitized by their content. At the same time, a party who was injured as a result of a danger in the product that was unknown at the time of manufacture could argue—just as plaintiffs do now—that the broad warning referring to possible
hazards was inadequate because it lacked specificity. Thus, courts that seek to impose a duty upon a manufacturer to warn of things unknowable at the time of sale are invoking a legal fiction that not only flies in the face of our traditional system of jurisprudence, but also places defendants in a no-win situation.

Policy considerations regarding the state-of-the-art defense need to be examined closely. Strict liability is often justified on the grounds that a manufacturer is the party in the best situation to estimate the cost of its products liability exposure and to incorporate that cost into the price of its products. However, in cases involving unknown or unknowable dangers, that rationale has no application. Since the manufacturer does not know that its product is hazardous, it cannot estimate the scope of liability in order to obtain adequate insurance. This is especially true for a manufacturer who sells what may appear to be a relatively innocuous product with widespread use. To disallow the state-of-the-art defense, then, is not necessarily to assure future plaintiffs of compensation for their injuries.

The abrogation of the state-of-the-art defense in strict liability actions is also said to promote the production of safer goods, which should in turn reduce the number of product-related injuries. However, when a manufacturer is held liable for hazards that could not have been known at the time of the sale, he may simply withhold his products from sale altogether. Alternatively, he may engage in unnecessary testing that will significantly delay the product's introduction into the market. As Dean Prosser has noted, while encouraging manufacturers to withhold socially desirable products from the marketplace may result in fewer lawsuits, it may not be in the best interest of society as a whole.123

Courts disallowing state-of-the-art evidence in strict liability toxic tort actions often justify their holdings by arguing that to permit such evidence is tantamount to making strict liability the equivalent of negligence. They maintain that the state-of-the-art defense would permit a defendant to shift the jurors' attention from the product—the proper focus in a strict liability action—to the conduct of the de-

123. W. PROSSER, supra note 86, § 99, at 661. Addressing the issue of whether strict liability should be imposed upon manufacturers of unavoidably dangerous products, such as pharmaceutical drugs, Dean Prosser has stated that the argument that industries producing potentially dangerous products should make good the harm, distribute it by liability insurance, and add the cost to the price of the product, encounters reason for pause, when we consider that two of the greatest medical boons to the human race, penicillin and cortisone, both have their dangerous side effects, and that drug companies might well have been deterred from producing and selling them. Id'.
fendant, which is the proper subject of the jury’s focus in a negligence action. This reasoning, however, oversimplifies the concept of strict liability. One of the primary purposes for adopting strict liability as a theory of recovery was to make parties in the chain of distribution other than the manufacturer liable to a plaintiff. In negligence, a plaintiff has a nearly impossible burden of proof when he sues retailers, distributors, and sellers. Such distributors bear a very limited duty to a plaintiff since they usually are not in a position to inspect or because they lack the expertise to inspect the products they sell.\textsuperscript{124} Strict liability was intended to simplify a plaintiff’s burden of proof as to defendants who are retailers, distributors, and sellers; it was not intended to eliminate completely the plaintiff’s burden of proof as to the manufacturer.

More importantly, use of the state-of-the-art defense in strict liability actions does not convert this theory of liability into a form of negligence. The line between these two theories is not blurred by admitting state-of-the-art evidence because the two theories do not use the same standard for judging the liability of a manufacturer. For example, in negligence actions a manufacturer is held to the standard of a reasonable man or manufacturer.\textsuperscript{125} Consequently, a jury in a negligence action might determine that a manufacturer, although unaware of knowable hazards,\textsuperscript{126} was nevertheless reasonable and therefore not liable. By contrast, under a strict liability theory a manufacturer is held to the standard of an expert.\textsuperscript{127} In addition, in a

\begin{itemize}
\item \textsuperscript{124} See, e.g., Webb v. Zern, 422 Pa. 424, 220 A.2d 853 (1966) (distributor of a beer keg which exploded not liable in negligence action because it did not have exclusive control over the handling of the keg).
\item One commentator has described the limited duty that a dealer in chattels owes under a negligence standard:
\begin{quote}
In the absence of some special reason to suspect that something is wrong, it is clear that the obligation of the dealer does not extend to the opening of sealed containers, or to taking the goods apart, or to making mechanical or chemical tests; and it is entirely possible that reasonable precaution will require no inspection at all where the goods are purchased from a reputable manufacturer, there appears to be no occasion for it, and it would normally be regarded as unnecessary. Certainly much less is required of the dealer than of the manufacturer.
\end{quote}
\begin{flushleft}
W. PROSSER, supra note 86, § 95, at 633.
\end{flushleft}
\item \textsuperscript{125} See W. PROSSER, supra note 123, § 96, at 644. According to Dean Prosser, the standard of care that a seller or manufacturer must exercise is “the care of a reasonable man under the circumstances.” \textit{Id}.
\item \textsuperscript{126} See Keeton, \textit{Products Liability—Problems Pertaining to Proof of Negligence}, 19 Sw. L.J. 26 (1965). Under a negligence standard, there may be a variety of acceptable reasons why a particular manufacturer was unaware of its product’s hazards, including the fact that the manufacturer was not especially sophisticated. \textit{Id}. at 28-29.
\item \textsuperscript{127} See Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076 (5th Cir. 1973), \textit{cert. denied}, 419 U.S. 869 (1974). The Borel court, recognizing the state-of-the-art principle that strict liability because of failure to warn is based on a determination of
\end{itemize}
strict liability action, if any knowledge of a product's dangers existed at the time of the product's sale, such knowledge is imputed to the manufacturer who then would be held liable under a failure to warn theory. This knowledge also is imputed to all sellers and suppliers of the product. Because negligence and strict liability theories embody different standards, use of the state-of-the-art defense in both will not cause these theories to merge, as some courts have feared.

The state-of-the-art defense is invaluable to defendants in the toxic tort arena. For example, asbestos suits brought today often allege failure to warn of the hazards of asbestos three or four decades ago. In today's highly technological and interdependent social network, any number of substances, the toxicity of which is as yet unknown, can harm thousands of people over substantial periods of time. To hold manufacturers of such substances responsible for presently unknowable knowledge is to invite economic and legal havoc.

the manufacturer's knowledge, cautioned nevertheless that "the manufacturer is held to the knowledge and skill of an expert." Id. at 1089. This means, the court continued, "that at a minimum he must keep abreast of scientific knowledge, discoveries, and advances and is presumed to know what is imparted thereby." Id.

128. According to comment f of § 402A, strict liability is applicable to any person engaged in the business of selling products for use or consumption. It therefore applies to any manufacturer of such a product, to any wholesale or retail dealer or distributor, and to the operator of a restaurant. It is not necessary that the seller be engaged solely in the business of selling such products.

RESTATEMENT (SECOND) OF TORTS § 402A comment f (1965). Comment j of § 402A imputes knowledge to the seller of a product if he should have known of a product's dangers. Id. § 402A comment j. Consequently, these two provisions read together indicate that sellers and suppliers as well as manufacturers will have knowledge of a product's defects imputed to them if they should have known of the product's defect. See, e.g., Shoppers World v. Villarreal, 518 S.W.2d 913 (Tex. Civ. App. 1975) (although defendant retailer not liable in negligence for injuries caused by leaky container since he had no duty to inspect it, defendant is liable under § 402A because there was a defect which caused injury). It should be noted, however, that § 402A applies only to "ordinary sellers" of a product, not to occasional or one-time sellers. See RESTATEMENT (SECOND) OF TORTS § 402A comment f (1965). See also McKenna v. Art Pearl Works, Inc., 225 Pa. Super. 362, 366, 310 A.2d 677, 680 (1973) (since defendant was not in the business of selling the machinery which caused plaintiff's injury, liability under § 402A does not attach).

129. See Woodill v. Parke Davis & Co., 79 Ill. 2d 26, 402 N.E.2d 194 (1980). In Woodill, the plaintiff was suing in strict liability the manufacturer of a drug, Pitocin, for failing to warn of the drug's hazards. Id. at 29, 402 N.E.2d at 195. The plaintiff had been injected with the drug in order to induce labor. Id. Subsequently her child was born with quadriplegia, blindness, and brain damage. Id. The Illinois Supreme Court remanded the case after presenting a lengthy dissertation in favor of allowing state-of-the-art evidence in strict liability actions. The Woodill court stated as follows: [R]equiring a plaintiff to plead and prove that the defendant manufacturer knew or should have known of the danger that caused the injury, and that the defendant manufacturer failed to warn plaintiff of that danger, is a reasonable requirement, and one which focuses on the nature of the product and on the adequacy of the warning, rather than on the conduct of the
Because the availability of the state-of-the-art defense has not been conclusively resolved in most jurisdictions, it is an issue that should be raised at the outset, and preserved for appellate review, in any trial involving toxic substances.

C. Proximate Cause

In any personal injury suit, a plaintiff must prove that the defendant’s actions were the proximate cause of his injuries. To a large extent this involves questions of medical causation. However, where a plaintiff brings a products liability action in either negligence or strict liability, he must prove not just that the defendant’s products caused his injuries, but that the specifically alleged defect in the product caused them. \textsuperscript{130} For example, a plaintiff was exposed to asbestos manufacturer. The inquiry becomes whether the manufacturer, because of the “present state of human knowledge,” knew or should have known of the danger presented by the use or consumption of a product. Once it is established that knowledge existed in the industry of the dangerous propensity of the manufacturer’s product, then the plaintiff must establish that the defendant did not warn, in an adequate manner, of the danger.

\textit{Id.} at 35, 402 N.E.2d at 198.

The \textit{Woodill} court further stated,

\textit{Id.} at 37, 402 N.E.2d at 199 (citations omitted).

\textite{130.} See \textit{W. PROSSER, supra}, note 86, \$ 103, at 671-72. As Dean Prosser has observed, in negligence, warranty or strict liability actions the plaintiff must prove three things. \textit{Id.} \$ 103, at 671. First, the plaintiff must prove he was injured by the product. \textit{Id.} Second, he must prove that the injury occurred because the product was defective or unreasonably unsafe. \textit{Id.} \$ 103, at 672. And third, the plaintiff must prove that the defect existed when it left the hands of the defendant. \textit{Id.}
while working at the Philadelphia Naval Yard from 1940 until 1945. In 1980 he is diagnosed as suffering from asbestosis and brings a lawsuit against the shipyard's suppliers of asbestos-containing products, alleging a failure to warn. In a negligence or strict liability action, the fact that asbestos caused his asbestosis will not be sufficient to warrant the imposition of liability. The jury must also find that the asbestos products sold by the defendants were defective. Defectiveness, as this article discussed earlier, can be found if the products were manufactured improperly, were designed improperly, or if, when sold, they were not accompanied by adequate warnings. The plaintiff typically will contend that the asbestos products were defective because they did not bear a warning that would have alerted him either to the danger of working with those products, or to the need for taking precautions while working with them.

The plaintiff in this hypothetical also has been smoking cigarettes for thirty-five years. He admits that he has read the warnings on cigarette packages since 1966, and that he knows that cigarette smoking is hazardous to his health, but nevertheless has continued to smoke. At trial, evidence shows that the plaintiff is afflicted with hypertension, a condition exacerbated by high sodium intake. Yet despite his doctor's advice to avoid salt, the plaintiff admits to being a heavy salt user. Given this evidence, the defendant can argue that the suppliers' failure to warn was not the proximate cause of plaintiff's injuries. Even if there had been proper warnings, the defendant can point out, the plaintiff would have disregarded them just as he has disregarded the warnings on cigarette packages and those of his doctor. This kind of argument is premised on the principle that in a failure to warn case, a plaintiff must prove that had he been properly alerted, he would have taken steps to avoid the product's potential dangers.131 If the jury finds that he would not have taken such steps, the defendant will prevail.

131. See Greiner v. Volkswagenwerk Aktiengesellschaft, 429 F. Supp. 495 (E.D. Pa. 1977) (defendant manufacturer's warning of car's propensity to overturn if swerved would not have been heeded anyway in situation where plaintiff was swerving to avoid imminent collision); Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1093 (5th Cir. 1973) ("the jury found that the unreasonably dangerous condition of the defendants' product was the proximate cause of Borel's injury. This necessarily included a finding that, had adequate warnings been provided, Borel would have chosen to avoid the danger."); cert. denied, 419 U.S. 869 (1974); Neal v. Carey Canadian Mines, Ltd., 548 F. Supp. 357, 370 (E.D. Pa. 1982) (trial testimony was sufficient to show that communication of a warning by supplier to employees in an asbestos insulation plant would have resulted in protective actions by both employees and employer); Technical Chem. Co. v. Jacobs, 480 S.W.2d 602 (Tex. 1972) (defendant manufacturers found not liable in suit by plaintiff who was injured when can of freon exploded in his hand; since plaintiff admitted that he had not read the direc-
A variation on this "would-it-have-made-a-difference" defense can be used in asbestos cases in which the plaintiff suffers from lung cancer. If the plaintiff is a cigarette smoker, the defendant should argue that the plaintiff, by his refusal to stop smoking, has to some extent voluntarily proceeded to encounter the risk that he would develop lung cancer. Defense counsel should also point out that the alleged defect—the failure to warn—was not the proximate cause of the lung cancer. Although the defense is not a sympathetic one, especially where a plaintiff is suffering from so catastrophic a disease as cancer, it may be effective if presented properly.

Where a plaintiff's toxic tort claim does not arise in a products liability context, his contention that he should have been warned and, if warned, he would have acted differently, may not be so persuasive. Another way of looking at a failure to warn claim is that it usually arises in a situation where the plaintiff also alleges that the product was defectively marketed. Where the toxic substance or product involved was not marketed, as in the illegal dumping of a toxic substance in a local landfill, the legal duty to warn owed to the plaintiff may be different than it would be in a products liability context. The idea that an individual who illegally dumps toxic substances in a local landfill has a legal duty to provide an adequate warning of the hazards seems slightly absurd. Similarly absurd would be the requirement that a plaintiff who is injured by such illegal dumping prove that if warned, he would have attempted to avoid the danger—meaning, perhaps, moving away from his home. Theories of liability other than the failure to warn theory would clearly be more appropriate under these circumstances.

The inquiry regarding whether the plaintiff would have acted differently had he known about a product's dangers is speculative in nature. Some courts have employed plaintiff-oriented tests for determining whether the properly alerted plaintiff would have acted differently. The Fifth Circuit used the following method in *Reyes v. Wyeth Laboratories*:

> Where a consumer, whose injury the manufacturer should have reasonably foreseen, is injured by a product sold without a required warning, a rebuttable presumption will arise that the consumer would have read any warning provided by the manufacturer, and acted so as to minimize the risks. In the absence of evidence rebutting the presumption, a jury finding that the defendant's product was the producing cause of the plaintiff's injury would be sufficient to hold him liable.

D. Product Specification Defense

Under the products liability law of most states, a manufacturer or supplier has a non-delegable duty to provide a safe product. Nevertheless, a number of jurisdictions recognize an exception to this general rule when a purchaser, with equal or superior knowledge than the manufacturer, provides the specifications for a given product and requires that the manufacturer comply with those specifications in making the product. In those jurisdictions, a manufacturer's compliance with such specifications will insulate him from liability to the ultimate user of the product so long as the plans are not so obviously dangerous that they should not reasonably be followed.

Courts are divided over the applicability of this defense. Some jurisdictions permit it in negligence actions, but refuse to permit it in strict liability actions where there is a societal policy of imposing liability upon a manufacturer of a defective product despite the exercise of all due care in the preparation and sale of that product.


133. See Orion Ins. Co. v. United Technologies Corp., 502 F. Supp. 173 (E.D. Pa. 1980) (in finding defendant manufacturer not liable in strict liability, it was significant that the manufacturer had less knowledge in the field than did the purchaser).

134. See, e.g., Spangler v. Kranco, Inc., 481 F.2d 373 (4th Cir. 1973). In Spangler, the Fourth Circuit held that a manufacturer who had built a crane according to a customer's specifications could not be held liable for injuries sustained by that customer's employee since the specifications had not called for a warning device that indicated when the crane was in motion. Id. at 374. In rejecting the plaintiff's strict liability claim, the court noted that "the products liability rule holding a manufacturer liable does not apply where the product has been manufactured in accordance with the plans and specifications of the purchaser except when such plans are so obviously dangerous that they should not reasonably be followed." Id. at 375 (citing Littlehale v. E.I. du Pont de Nemours & Co., 268 F. Supp. 791, 802 n.16 (S.D.N.Y. 1966), aff'd, 380 F.2d 274 (2d Cir. 1967)).

135. See also Orion Ins. Co. v. United Technologies Corp., 502 F. Supp. 173 (E.D. Pa. 1980). In Orion, a helicopter crashed due to the breaking of a component part that had been weakened by "fatigue cracks." Id. at 174. The Orion court found that the manufacturer had reasonably relied upon the specifications of a third party with superior knowledge in producing that part, and therefore concluded that the manufacturer was not liable. Id. at 176.

136. See, e.g., Maryland Casualty Co. v. Independent Metal Prods. Co., 99 F. Supp. 862, 868 (D. Neb. 1951) (where purchaser determined the design and specification of a product and also the mode of manufacture, manufacturer could not be held liable for failure to exercise reasonable care in adopting a formula that would make the product safe for use), aff'd, 203 F.2d 838 (8th Cir. 1953).

Pennsylvania there have been somewhat conflicting decisions regarding the use of this defense—the Pennsylvania Supreme Court ruling that the duty to provide a safe product is non-delegable, and the District Court for the Eastern District of Pennsylvania concluding that if a product is made to another's specifications, the party providing the specifications should be liable for a defect in those specifications.

F. The Government Specifications Defense

The government specifications defense is a branch of the product specification defense. This defense may become more relevant in future toxic tort cases due to the government's increasing involvement in public and private affairs. This defense is also important because of its interaction with the government's traditional defense of sovereign immunity.

The government specification or contract defense shields a manufacturer or supplier from liability for any design defect in a product built pursuant to a government contract and in strict compliance with the specifications in that contract. This defense was traditionally available to suppliers of equipment made pursuant to government contracts.

district court first acknowledged that under a negligence theory of recovery, "[i]t is logical to absolve a manufacturer from liability for a negligently designed defective product when the manufacturer is not the designer and plaintiff's theory of recovery is negligence." Id. at 174. However, the Lenherr court then concluded that the Kansas Supreme Court would hold a manufacturer liable under a theory of strict liability because of the ultimate consumer's right to rely on a seller standing behind his product and also due to the propriety of cost spreading. Id. at 174-75.

138. See Salvador v. Atlantic Steel Boiler Co., 457 Pa. 24, 319 A.2d 903 (1974). In Salvador, the Pennsylvania Supreme Court noted that "a manufacturer by marketing and advertising his product implicitly represents that it is safe for its intended use. We have decided that no current societal interest is served by permitting the manufacturer to place a defective article in the stream of commerce and then to avoid responsibility for damages caused by the defect." Id. at 32, 319 A.2d at 907.

139. See Orion Ins. Co., Ltd. v. United Technologies Corp., 502 F. Supp. 173, 175 (E.D. Pa. 1980) (if design defect is present, it arose from party providing the specifications placing the part in the helicopter, not from the manufacturer following the specification).

140. See Dolphin Gardens, Inc. v. United States, 243 F. Supp. 824 (D. Conn. 1965). In Dolphin Gardens, the district court held that the United States was immune from tort liability for consequences of acts in performance of discretionary functions. Id. at 826. The court further found that the private contractor doing government contract work was entitled to share this immunity. Id. at 827. See also 28 U.S.C. § 2680(a) (1976) ("discretionary function" exception to liability under the Federal Tort Claims Act).

ment specifications,^{142} but in light of the expanding application and development of strict liability, the continuing viability of this defense has been subject to serious question. Recently, however, the United States District Court for the Eastern District of New York, in In Re Agent Orange Product Liability Litigation,^{143} specifically permitted the use of this defense. The court, in upholding this defense in Agent Orange I, acknowledged that considerations of fairness and public policy underlie this defense.\(^{144}\) First, the court noted that tort principles traditionally attempt to impose liability on the wrongdoer, “not on the otherwise innocent contractor whose only role in causing the injury was the proper performance of a plan supplied by the government.”\(^{145}\) Second, the court observed that imposing liability on the contractor would force increases in contract prices to cover the manu-

142. See, e.g., Ryan v. Feeney & Sheehan Bldg. Co., 239 N.Y. 43, 145 N.E. 321 (1924). In Ryan, the manufacturer defendant constructed a building and canopy in compliance with United States government specifications. Id. at 44, 145 N.E. at 321. Because the specifications provided for improper support, the canopy collapsed shortly after construction, killing the plaintiff’s decedent. Id. at 47, 145 N.E. at 322. In affirming a judgment in favor of the manufacturer, the Court of Appeals of New York stated the general rule regarding the government specification defense:

There was nothing to show that the plans and specifications were so obviously defective that a contractor of average skill and ordinary prudence would not have attempted the construction according to plans. This is the rule to be applied. A builder or contractor is justified in relying upon the plans and specifications which he has contracted to follow unless they are so apparently defective that an ordinary builder of ordinary prudence would be put upon notice that the work was dangerous and likely to cause injury.

Such was not the case here. Id. at 46, 145 S.E. at 321-22. See also Yearsley v. Ross Constr. Co., 309 U.S. 18, 20-21 (1940) (“if [the] authority to carry out the project was validly conferred . . . there is no liability on the part of the contractor for executing [the government’s] will”); Myers v. United States, 323 F.2d 580, 583 (9th Cir. 1963) (“to the extent that the work performed by [the contractor] was done under its contract with the [government], and in conformity with the terms of said contract, no liability can be imposed upon it for any damages claimed to have been suffered by [plaintiffs]”); Valley Forge Gardens, Inc. v. James D. Morrissey, Inc., 385 Pa. 477, 480, 123 A.2d 888, 891 (1956) (“if the contractor, in privity with the State or its instrumentality, performs the contract work which the State is privileged to have done, the privilege operates to relieve the contractor from liability to third persons except for negligence or willful tort in performance of work”).

143. 506 F. Supp. 762 (E.D.N.Y. 1980) [hereinafter referred to as Agent Orange I], reh’g denied, 534 F. Supp. 1046 (E.D.N.Y. 1982) [hereinafter referred to as Agent Orange II]. In both Agent Orange cases, Vietnam war veterans and members of their families sued the United States Government and various chemical manufacturers for damage suffered as a result of the veterans’ exposure to herbicides in Vietnam. 506 F. Supp. at 768. Defendant manufacturers asserted, inter alia, that the government contract defense precluded liability. Id. at 792.

144. 506 F. Supp. at 793.

145. Id. According to the court in Agent Orange I, “The imposition of tort liability on a wrongdoer can have a strong prophylactic effect; tortfeasors held liable for damages that flow from their wrongdoing have a strong incentive to prevent the occurrence of future harm.” Id.
facturer's increased risk of loss and that the increased cost would have an adverse effect on the public's tax burden.\textsuperscript{146}

After sustaining the legal sufficiency of the government specification defense, Judge Pratt in \textit{Agent Orange II}\textsuperscript{147} set forth the elements of the defense: A defendant manufacturer must prove 1) that the government established specifications for the alleged defective product; 2) that the product manufactured by the defendant met the government specifications in all material respects; and 3) that the government knew as much or more than the defendant did about the hazards associated with the product.\textsuperscript{148}

Since \textit{Agent Orange II}, several other courts, including courts in Pennsylvania, have given firm support to the use of the government specification defense.\textsuperscript{149}

It should be noted, however, that the government specification defense is only applicable in cases where a plaintiff alleges that the product has a design defect or that the manufacturer failed to warn of the product's hazards. In cases where the plaintiff contends that the product in question failed to comply with the government's specifications...

\textsuperscript{146} \textit{Id.} at 794. The court also noted that such considerations take on increased significance during war time. \textit{Id.}


\textsuperscript{148} \textit{Id.} at 1055.

\textsuperscript{149} \textit{See, e.g.}, Brown v. Caterpillar Tractor Co., 696 F.2d 246 (3d Cir. 1982) (upholding government specification defense in a strict liability action). In \textit{Brown}, the Third Circuit rejected plaintiffs' contention that the government specification defense should not be available to a defendant manufacturer unless it can show it had no discretion in the design of a product supplied by the government and was compelled to build it in the manner specified by the government. \textit{Id.} at 253-54.

The plaintiff in \textit{Brown} had also contended that this defense was not available if the manufacturer "had been able to suggest modifications, in or additions to, the bulldozer's design at anytime before final delivery." \textit{Id.} Applying Pennsylvania law, the Third Circuit concluded that a defendant manufacturer must establish that it strictly complied with government specifications, but stressed that it was not necessary for the defendant to prove that it was under a compulsion to manufacture the product according to the government's specifications. \textit{Id.} at 254.

The Third Circuit, however, did note that

[i]f we were writing on a clean slate, or were ourselves fashioning the law of Pennsylvania, we might be persuaded that a contractor must prove some degree of compulsion in order to successfully raise the government contractor defense. We are, however, constrained by existing Pennsylvania law, and it would be inappropriate at this juncture for us to include a compulsion element on such a speculative basis.

\textit{Id.} (footnote omitted).

tions, the government specification defense would be unavailable to a defendant. The government specifications defense may have great utility in future toxic tort cases provided that all of the necessary elements of this defense, as outlined in *Agent Orange II*, are met.

V. THE LAST RESORT DEFENSES

A. The Sophisticated Purchaser as Superseding Intervening Cause

Section 440 of the Second Restatement of Torts defines a superseding cause as "an act of a third person or other force which by its intervention prevents the actor from being liable for harm to another which has antecedent negligence is a substantial factor in bringing about." An "intervening" cause does not relieve the defendant from liability for his negligence; however, a "superseding" cause does. Section 442 of the Restatement sets forth some of the considerations for determining whether a given contributing force is a "superseding" cause. Among these are the following: 1) whether the harm that resulted would have been different had defendant’s negligence been the sole cause; 2) whether the intervening force was an independent force or was the direct result of defendant’s negligence; and 3) the degree of culpability of the party’s act which sets the intervening force in motion.

Defendants who manufactured the product which allegedly caused the plaintiff’s injury will often use the defense of superseding cause in cases where the most negligent party may have been the

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151. *See W. PROSSER, supra note 86, § 44, at 270-71.*
152. Section 442 of the Second Restatement provides certain considerations that the reporters believed were important in determining whether an intervening force is a superseding cause of harm to another:

(a) the fact that its intervention brings about harm different in kind from that which would otherwise have resulted from the actor’s negligence;
(b) the fact that its operation or the consequences thereof appear after the event to be extraordinary rather than normal in view of the circumstances existing at the time of its operation;
(c) the fact that the intervening force is operating independently of any situation created by the actor’s negligence, or, on the other hand, is or is not a normal result of such a situation;
(d) the fact that the operation of the intervening force is due to a third person’s act or to his failure to act;
(e) the fact that the intervening force is due to an act of a third person which is wrongful toward the other and as such subjects the third person to liability to him;
(f) the degree of culpability of a wrongful act of a third person which sets the intervening force in motion.

*Id.* § 442.
plaintiff's employer.\textsuperscript{153} Under the workmen’s compensation statutes of most states, a suit by a plaintiff against his employer is barred as a matter of law.\textsuperscript{154} Consequently, in order to recover for a job-related injury, a plaintiff must sue some party other than his employer; in toxic tort cases, this would usually be the manufacturer or supplier. A defendant in such a lawsuit should attempt to escape liability by arguing that the conduct of the employer was a superseding cause of any injury suffered by the plaintiff.

The superseding/intervening cause defense is difficult to apply because under present tort law a plaintiff can establish causation merely by showing that either the conduct of the defendant or the defect in the defendant's product was a substantial contributing factor to his injuries. There can be many causes for a single injury. Whether one cause is substantial when compared to another may depend on whose head is on the chopping block, or on the direction in which plaintiff's expert is pointed. Obviously the defendant who is a

\textsuperscript{153} See \textit{In re Related Asbestos Cases}, 543 F. Supp. 1142 (N.D. Cal. 1982). \textit{Related Asbestos Cases} was a strict liability action brought by insulators and shipyard workers who had been employed by the United States Navy over varying periods of time. \textit{Id.} at 1150. The defendants, manufacturers of asbestos products supplied to the Navy shipyard, asserted an affirmative defense that the Navy as employer was negligent in failing to provide plaintiffs with a safe work place, and that this negligence constituted a superseding cause. \textit{Id.} The plaintiffs argued that this defense should not be allowed in strict liability, but the court differed stating, "We are unable to agree. Strict liability never has been, and is not now, absolute liability. The plaintiff in a strict liability case must still prove that a defect in the design or manufacture of a product was a proximate cause of injury." \textit{Id.} (emphasis in original) (citations omitted).

\textsuperscript{154} Workmen's compensation statutes frequently include an "exclusivity" clause. Such a clause states that if an employee's disease or injury is covered by the statute, the exclusive remedy against the employer is a workmen's compensation award. 2A A. LARSON, \textit{WORKMEN'S COMPENSATION LAW} § 65.00 (1983).

Exclusivity clauses have served to preclude an asbestos-injured employee from suing his employer in tort in a number of cases. \textit{See}, e.g., Weldon v. Celotex Corp., 695 F.2d 67 (3d Cir. 1982); Bunker v. National Gypsum Co., 406 N.E.2d 1239 (Ind. App. 1980); Davis v. Bath Iron Works Corp., 338 A.2d 146 (Me. 1975). Some states, however, recognize exceptions to this bar, the first of which allows an injured worker to sue when he alleges that his employer intentionally caused his injury. \textit{See}, e.g., Neal v. Carey Canadian Mines, Ltd., 548 F. Supp. 357, 390 (E.D. Pa. 1982) (deliberate failure of employer to warn of asbestos hazards allows plaintiff to sue in intentional tort); \textit{In re Johns-Manville/Asbestosis Cases}, 511 F. Supp. 1229, 1234 (N.D. Ill. 1981) ("plaintiff's allegations of intentional torts should not be relegated to the statutory remedy").

The other exception, called the "dual capacity doctrine," allows the employee to sue his employer in tort when the employer is also the manufacturer of the product that caused the injury. \textit{Comment, Issues in Asbestos Litigation}, 34 HASTINGS L.J. 871, 879 (1983). The rationale behind the doctrine is that the employer/manufacturer should not be able to escape liability merely because he is an employer under the workmen's compensation statutes. \textit{Id.} Plaintiffs invoking this doctrine have generally been unsuccessful. \textit{Id.}
party of record will have the accusing finger pointed toward him. His
position, then, will not be altogether sympathetic to a jury if his only
defense is to attempt to redirect that finger to one who is not a party
to the lawsuit.

Because the superseding cause defense is most frequently used in
cases in which the plaintiff's employer is allegedly the most culpable
party, a specialized form of that defense has evolved known as the
"sophisticated purchaser defense." This defense is appropriate in in-
stances where the purchaser of a product possesses a level of expertise
equal or superior to that of the product's supplier. In such a case, the
defendant will argue that by virtue of the purchaser's superior
knowledge of the hazards presented by the product, the supplier's
duty to warn of these hazards is preempted. 155

In *Hopkins v. E. I. du Pont de Nemours & Co.*, 156 for example, the
Third Circuit held that a dynamite manufacturer was not liable for
failing to warn of the danger of premature explosion since the plain-
tiff's supervisor was fully aware of this danger. The court found that
the duty to warn was solely that of the supervisor. 157 Similarly, in

155. See *In re Related Asbestos Cases*, 543 F. Supp. 1142 (N.D. Cal. 1982). The
defendants in *Related Asbestos Cases*, manufacturers of asbestos products supplied to a
naval shipyard, asserted the sophisticated purchaser defense in a strict liability action
brought against them by various shipyard workers. *Id.* at 1151. They argued that
the Navy, as an employer, was aware of the dangers of asbestos but nonetheless mis-
used the products, thereby absolving the manufacturer for failure to warn. *Id.* The
court allowed this defense. *Id.* See also *Bradco Oil & Gas Co. v. Youngstown Sheet &
Tube Co.*, 532 F.2d 501, 503-04 (5th Cir. 1976) (in a strict liability action to recover
for property damage, an oil and gas company was deemed to be a sophisticated pur-
chaser of tubing to be used in exploratory oil and gas drilling; a manufacturer is not
"compelled to warn sophisticated purchasers of dangers of which the buyer either
knows or should be aware"), cert. denied, 429 U.S. 1095 (1977).

1966), aff'd, 380 F.2d 274 (2d Cir. 1967). *Littlehale* was a products liability action
brought in strict liability by employees who were injured aboard a ship while con-
ducting blasting operations. *Id.* at 793. The plaintiffs in this case sued the manufac-
turer of the blasting caps that had been used in these operations, asserting a failure to
warn. *Id.* The district court applied a "sophisticated user" rationale and found for
the defendants. *Id.* at 803. According to this court, "the user was as well or more
fully informed of the hazards involved and the correct methods of use as was the
manufacturer." *Id.*

156. 212 F.2d 623 (3d Cir. 1954). In *Hopkins*, the plaintiff's decedent was a
workman who had been killed by a dynamite explosion which occurred as a result of
his placing a stick of dynamite into a hole that was still hot from drilling. *Id.* at 624.
Evidence was presented to show that the blasting foreman who supervised the dece-
dent's operations was fully aware that dynamite had the propensity to explode if it
were placed into a newly drilled hole. *Id.* at 625-26. The court concluded that the
manufacturer could not be held liable in a failure to warn negligence action for an
accident that resulted from the employer's disregard of a known hazard. *Id.* at 626.

157. See *id.* at 626.
Jacobson v. Colorado Fuel & Iron Corp.,\textsuperscript{158} the Ninth Circuit held that the knowledge of supervisory personnel regarding the dangers inherent in using a particular metal strand during a concrete stressing process obviated the duty of the manufacturer to warn of particular hazards.\textsuperscript{159} In both of these cases, the courts recognized that where a plaintiff is being directly controlled and supervised by personnel who possess technical knowledge and expertise with respect to the product, a warning by the product manufacturer is neither necessary nor required. As the court in \textit{Jacobson} reasoned, "[T]here is no duty on a supplier of chattels to foresee that the [employer] will fail to follow warnings given or to employ knowledge possessed."\textsuperscript{160}

Generally, the sophisticated purchaser defense has been available in negligence actions. Section 388 of the Second Restatement of Torts, for example, states that if a supplier of goods has reason to expect that the ultimate user will discover the danger inhering in a product, his duty to warn is abrogated.\textsuperscript{161} Courts have also traditionally held that the degree of knowledge possessed by one to whom the chattel is supplied is a pertinent consideration in determining whether a supplier may reasonably rely on an individual to warn.\textsuperscript{162}

The availability of the sophisticated purchaser defense in strict

\textsuperscript{158} 409 F.2d 1263 (9th Cir. 1979). \textit{Jacobson} was a wrongful death action in strict tort liability and warranty brought against a steel strand manufacturer. \textit{Id.} at 1266-67. On the day of the accident, a steel strand used to prestress roof beams snapped, causing the death of the plaintiff's decedent. \textit{Id.} at 1265. The \textit{Jacobson} court held that the defendant could not be held strictly liable in tort for failure to warn of the potential dangers of snapping since the decedent's employer "had full knowledge" that the use to which these strands were being put "was extremely hazardous and potentially harmful." \textit{Id.} at 1271.

\textsuperscript{159} \textit{Id.} at 1273. The \textit{Jacobson} court explained that [w]here a supplier furnishes chattels, the use of which is to be directed by technicians or engineers, it is sufficient to insulate the supplier from liability for failure to warn if the warnings given are sufficient to apprise the engineers or technicians of the dangers involved. . . . There is no duty to warn those who simply follow the directions of the engineers or technicians. \textit{Id.}

\textsuperscript{160} \textit{Id.}

\textsuperscript{161} For the full text of \S~388, see note 100 \textit{supra}.

\textsuperscript{162} See, \textit{e.g.}, Croteau v. Bordon Co., 277 F. Supp. 945 (E.D. Pa. 1968) (in a negligence action for failure to warn, a chemical manufacturer's liability is relieved where a laboratory technician working under the supervision of a knowledgeable chemist is injured in an explosion). \textit{See also} West v. Broderick & Bascom Rope Co., 197 N.W.2d 202 (Iowa 1972). \textit{West} was a products liability action brought under a negligence theory by an iron worker against the manufacturer of a wire rope sling. \textit{Id.} at 208. The plaintiff sought damages for personal injuries he sustained when the sling, carrying a heavy load of equipment, parted and struck the plaintiff in the head. \textit{Id.} at 206. The plaintiff contended that the manufacturer had breached his duty to warn of the sling's maximum capacity. \textit{Id.} at 208. The court held that it was a question for the jury as to whether the plaintiff's expertise as an ironworker relieved the manufacturer of its duty to warn. \textit{Id.} at 211.
liability actions is not as certain. In *Lockett v. General Electric Co.*, the trial court accepted this defense in a strict liability case where the plaintiff had been injured by a ship's engine gears which the defendant had supplied to the plaintiff's employer, a corporation engaged in ship construction. The *Lockett* court stated that there is "no duty to give a warning to members of a profession against dangers generally known in that profession." Other courts, however, have disallowed this defense in strict liability actions. These courts reason that in strict liability the manufacturer's duty to provide the ultimate consumer a safe product is nondelegable. Similarly, in a strict liability action where the alleged defect is a failure to warn, the manufacturer's duty to warn is also considered by these courts to be nondelegable. Thus, in making a determination of the manufacturer's liability, courts adopting the nondelegable duty position view as irrelevant the fact that a plaintiff's employer may have independently known of the particular dangers associated with the manufacturer's product. These courts also claim that they have rejected the sophisticated purchaser defense because it focuses the jury's attention on the defendant's conduct rather than on the defendant's product, thereby


164. *Id.* at 1212. The *Lockett* court reasoned that "even assuming for the sake of argument that the condition was not readily observable to a person without special experience, it certainly can be assumed that Sun Ship has special experience in the assembly and construction of vessels ... [which should have made it] able to perceive that danger." *Id.* Thus, the court concluded, the manufacturer "had a legitimate right to rely on Sun Ship to protect its own employees from harm and had no duty to anticipate that Sun Ship would operate the gears so as to present a dangerous condition." *Id.*

165. See, e.g., *Neal v. Carey Canadian Mines, Ltd.*, 548 F. Supp. 357 (E.D. Pa. 1982). In *Neal*, 24 former employees of a plant which manufactured asbestos insulation products brought suit against the companies which had supplied asbestos to the plant. *Id.* at 365. The plaintiffs contended that the supplier's failure to warn of the hazards of asbestos was the proximate cause of their asbestos-related injuries. *Id.* The defendant in *Neal*, however, claimed that the acts or omissions of the plaintiffs' employer in failing to warn and protect employees against asbestos exposure was a superseding cause of the plaintiffs' injuries. *Id.*

In its decision in *Neal*, the district court found the employer's conduct to be a causal factor in the injuries suffered by the plaintiffs. *Id.* at 371. However, the court said that this did not automatically mean that such conduct was a superseding cause. *Id.* Since the employer's conduct was similar to that of the entire industry, the court concluded that it could not be deemed so extraordinary as to constitute a superseding cause. *Id.* at 371-72. According to the *Neal* court, the supplier's duty to warn was "non-delegable," and therefore the supplier was still liable to the plaintiffs despite the intervening acts of the plaintiffs' employer. *Id.* at 369. For an additional discussion of *Neal*, see notes 63, 131 & 154 supra.

*See also* Dougherty v. Hooker Chem. Corp., 540 F. 2d 174, 179 (3d Cir. 1976) (in strict liability action for failure to warn of fatal properties of a chemical solvent, the manufacturer cannot escape liability by establishing the employer's independent knowledge of these properties).
Toxic Tort

converting a strict liability action into a negligence action.\textsuperscript{166}

Even in jurisdictions accepting the defenses philosophically, the availability of those defenses is limited by those sections of the Restatement that control its applicability in actions brought under a negligence theory. Section 447 of the Restatement provides that the negligent act of an intervenor is not a superseding cause if the following factors exist: 1) the original actor should have foreseen the possibility of the intervenor's conduct; 2) a reasonable, informed person would not regard the intervenor's act as highly extraordinary; or 3) the intervenor's act was not extraordinarily negligent and was a normal consequence of the situation created by the original actor.\textsuperscript{167}

Section 447's limiting effect on the superseding/intervening cause and sophisticated purchaser defenses can be seen in the typical asbestos case.

Generally, in an asbestos-related disease suit, the defendant contends that the plaintiff's employer breached his duty of providing a safe workplace to plaintiff and, as a result of this breach, the employer's conduct became a superseding cause of the plaintiff's injury. However, a "superseding cause" defense will probably be rejected on the basis of section 447 if the plaintiff can prove that it was foreseeable that the employers would not have advised their employees of the hazards of asbestos or of the need to take safety precautions, or that the employer's failure to warn or take precautions was not extraordinarily negligent, and that injury resulted from the defendant supplier's action.\textsuperscript{168}

Another Restatement section further limits the use of the superseding cause as a defense in asbestos cases brought under a negligence theory. In order to establish that a third party's actions or inactions amounted to a superseding cause, section 442B requires that the intervenor (the employer) intentionally caused the harm, and that this harm was different from the harm caused by the original act.\textsuperscript{169} Unless both of these elements are established, the original actor remains

\begin{footnotes}
\item[167.] See Restatement (Second) of Torts § 447 (1965).
\item[168.] Id.
\item[169.] Id. § 442B. According to § 442B of the Restatement, Where the negligent conduct of the actor creates or increases the risk of a particular harm and is a substantial factor in causing that harm, the fact that the harm is brought about through the intervention of another force does not relieve the actor of liability, except where the harm is intentionally caused by a third person and is not within the scope of the risk created by the actor's conduct.
\end{footnotes}
liable.\textsuperscript{170}

To demonstrate the limiting effect of section 442B, another example from asbestos litigation may be helpful. As previously noted, plaintiffs often allege that the supplier was negligent or that the product was defective because the manufacturer failed to warn. In the typical asbestos case, the plaintiff will counter defendants' invocation of the superseding cause defense by contending that in order for the defense to be available under section 442B of the Restatement, the defendant must prove that the harm suffered by the plaintiff was outside the scope of risk created by the manufacturer's failure to warn.\textsuperscript{171} In most cases, a court will be likely to conclude that the harm to the plaintiff resulted from the asbestos supplier's original failure to warn and was thus within the scope of risk. Consequently, an asbestos defendant when confronted with a jury instruction based upon sections 447 or 442B of the Restatement would be hard pressed to utilize successfully either the superseding/intervening cause or sophisticated purchaser defenses. Similarly, it is doubtful that defendants in other toxic tort situations would be able to use these defenses due to the courts' tendency to find that a manufacturer or supplier had a duty to warn under sections 447 and 442B of the Restatement.

Another problem inherent in the superseding/intervening cause defense is the issue of when a product supplier's duty to warn is discharged. Frequently a supplier may have warned an intermediary, such as the plaintiff's employer, of the hazards associated with using the manufacturer's product. These warnings for various reasons, however, may never have reached the ultimate consumer of the product. In some instances, courts confronted with such a factual scenario have held that the manufacturer of a product has a nondelegable duty to provide the ultimate user of a product with sufficient warnings and instructions to enable him to use the product safely.\textsuperscript{172} Courts subscribing to this nondelegable duty theory have not, however, held manufacturers and suppliers who have provided adequate warnings and instructions for their products liable for breakdowns in

\begin{itemize}
\item[\textsuperscript{170}] See id.
\item[\textsuperscript{171}] See \textit{Restatement (Second) of Torts} § 442B (1965). For the full text of § 442B, see note 169 supra.
\item[\textsuperscript{172}] See, e.g., \textit{Borel v. Fibreboard Paper Prods. Corp.}, 493 F.2d 1076 (5th Cir. 1973), cert. denied, 419 U.S. 869 (1974). The \textit{Borel} court stated that "a seller may be liable to the \textit{ultimate} consumer or user for failure to give adequate warnings. The seller's warning must be reasonably calculated to reach such persons and the presence of an intermediate party will not by itself relieve the seller of this duty." \textit{Id.} at 1091 (emphasis in original). For a more detailed discussion of the duty to warn, see notes 99, 106-08 and accompanying text \textit{supra}.
\end{itemize}
the communication process that have been caused by others.\textsuperscript{173}

Even in situations where a defendant has equipped his product with sufficient warnings and instructions, the plaintiff can nonetheless attack either the means which the defendant used to warn the product's user or the language used in the warning.\textsuperscript{174} Courts rarely, if ever, rule that a defendant's warning is adequate as a matter of law, leaving the question instead for the jury. However, a manufacturer whose product is accompanied by sufficient warnings and by instructions on how to use the product safely might be more successful utilizing a "proximate cause" or a "defective product" defense, rather than

\begin{quote}
\textsuperscript{173} See Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076 (5th Cir. 1973). In Borel, the Fifth Circuit stated that \\
\[\text{[i]n general, of course, a manufacturer is not liable for miscarriages in the communication process that are not attributable to his failure to warn or the adequacy of the warning. This may occur, for example, where some intermediate party is notified of the danger, or discovers it for himself, and proceeds deliberately to ignore it and to pass on the product without a warning.} \]
\textsuperscript{Id.} at 1091-92. See also Weekes v. Michigan Chrome & Chem. Co., 352 F.2d 603, 607 (6th Cir. 1965) (supplier not required to go so far as to insure that each ultimate consumer was adequately warned of his product's dangerous propensities since it would be an impossible burden).

\textit{But cf.} Dougherty v. Hooker Chem. Co., 540 F.2d 174, 179 (3d Cir. 1976). The Third Circuit in Dougherty found that the question of whether the supplier was required to warn the ultimate purchaser varied under the circumstances. The court explained that \\
\[\text{[t]he determination of whether the method or means utilized to warn is sufficient will depend upon a balancing of considerations involving among other factors, the dangerous nature of the product, the form in which the product is used, the intensity and form of the warnings given, the burdens to be imposed by requiring warnings, and the likelihood that the particular warning will be adequately communicated to those who will foreseeably use the product.} \]
\textsuperscript{Id.}

\textsuperscript{174} See Spruill v. Boyle-Midway, Inc., 308 F.2d 79 (4th Cir. 1962). In Spruill, a child died as a result of drinking furniture polish left within his reach by his mother. \textsuperscript{Id.} at 81-82. The product manufacturer claimed that the inadequacies of the warning were irrelevant because the mother admitted that she never read the label. \textsuperscript{Id.} at 86-87. The Fourth Circuit, however, disagreed with the manufacturer and stated, \\
\[\text{In this case had the warning been in a form calculated to attract the user's attention, due to its position, size, and coloring of its lettering, and had the words used therein been reasonably calculated to convey a conception of the true nature of the danger, this mother might not have left the product in the presence of her child.} \]
\textsuperscript{Id.} at 87. For further discussion of Spruill, see note 108 \textit{supra} and note 175 \textit{infra}.
\end{quote}

\textit{See also} Pegg v. General Motors Corp., 258 Pa. Super. 59, 391 A.2d 1074 (1978) (plaintiff contended that manufacturer's use of only the word "Danger" on a drum of combustible chemicals was an inadequate warning which made the product defective); Maize v. Atlantic Refining Co., 352 Pa. 51, 41 A.2d 850 (1945) (plaintiff contended that the words "Caution! Do not inhale fumes. Use only in a well ventilated place. . . . " on a container of poisonous cleaning solvent was an insufficient warning). For additional discussion regarding inadequate manufacturer's warnings, see note 116 \textit{supra}.
the sophisticated purchaser defense. Under the "proximate cause" defense, a defendant would contend that any failure in the communication process was caused by another party and thus he could not be held responsible for it. Under the defective product argument, a defendant would claim the product was not defective when it left his control because it was accompanied by sufficient warnings and instructions to make the product safe for its intended use. Either the "proximate cause" or "defective product" argument would be more affirmative than the "superseding cause" or "sophisticated purchaser" argument and, therefore, more appealing to the factfinder.

B. Contributory Negligence

The doctrine of contributory negligence bars a plaintiff from recovering any damages for the injuries he suffered if he contributed in any way to those injuries through his own negligence. A majority of jurisdictions, including Pennsylvania, have abrogated the contributory negligence defense in favor of a comparative negligence standard. Comparative negligence, rather than completely barring a recovery by a plaintiff whose negligence contributed to his injuries, generally reduces a plaintiff's recovery by the percentage that his negligence contributed to the accident or event. Thus, where a plaintiff has been injured and the jury decides that the defendant is eighty

175. See, e.g., Spruill v. Boyle-Midway, Inc., 308 F.2d 79 (4th Cir. 1962) (after an infant's death through the ingestion of furniture polish, manufacturer of product alleged that product contained sufficient warnings and that the mother's negligence was the sole proximate cause of the child's death). For a further discussion of Spruill, see notes 108 & 174 supra.

176. See generally W. PROSSER, supra note 86, § 65 (1971).

177. See, e.g., 42 PA. CONS. STAT. ANN. § 7102(a) (Purdon 1982). The Pennsylvania statute provides as follows:

In all actions brought to recover damages for negligence resulting in death or injury to person or property, the fact that the plaintiff may have been guilty of contributory negligence shall not bar a recovery by the plaintiff or his legal representative where such negligence was not greater than the causal negligence of the defendant or defendants against whom recovery is sought, but any damages sustained by plaintiff shall be diminished in proportion to the amount of negligence attributed to the plaintiff.


Only 10 jurisdictions have retained the contributory negligence defense: Alabama, Arizona, Delaware, District of Columbia, Indiana, Kentucky, Maryland, Missouri, North Carolina, and Virginia. C. HEPT & C. HEPT, COMPARATIVE NEGLIGENCE MANUAL 188-89 (Supp. 1983). For a list of states that have adopted some form of comparative negligence, see notes 179 & 181 infra.

178. See, e.g., Anderson v. Eagle Motor Lines, Inc., 423 F.2d 81, 83 (5th Cir. 1970) (under Mississippi law, contributory negligence is no bar to recovery; instead damages are reduced proportionally).
percent responsible for the accident and the plaintiff is twenty percent at fault, any award in favor of the plaintiff would be reduced by twenty percent.

In "pure" comparative negligence states, if the plaintiff were eighty percent at fault for the injuries that he suffered and the defendant was twenty percent at fault, any award in favor of the plaintiff would be reduced by eighty percent but the plaintiff would still recover twenty percent of his damages. In "non-pure" comparative negligence states, such as Pennsylvania, the plaintiff is barred from recovery if his negligence was more than fifty percent responsible for the injury causing event.

Contributory negligence in most jurisdictions is not a defense to a strict liability action. Several courts have fiercely debated the applicability of comparative negligence principles to strict liability actions. Jurisdictions that do not permit the contributory or com-

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181. The states other than Pennsylvania that have adopted a "non pure" comparative negligence are Arkansas, Colorado, Connecticut, Georgia, Hawaii, Idaho, Indiana, Kansas, Maine, Massachusetts, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Jersey, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, South Carolina, Texas, Utah, Vermont, West Virginia, and Wisconsin. C. HEFT & C. HEFT, supra note 180, at 188-89.

182. See C. HEFT & C. HEFT, supra note 180, § 1.40. Some non-pure negligence states permit a plaintiff to recover only if his negligence is less than that of the defendants. Id.

183. See, e.g., Murray v. Fairbanks Morse, 610 F.2d 149, 156 (3d Cir. 1979) (acknowledging that "contributory negligence generally has not been recognized as a defense to a section 402A action"); Berkebile v. Brantly Helicopter Corp., 462 Pa. 83, 100, 337 A.2d 893, 901 (1975) (in Pennsylvania a "plaintiff cannot be precluded from recovering in a strict liability case because of his own negligence"); RESTATEMENT (SECOND) OF TORTS § 402A comment n (1965) ("contributory negligence of the plaintiff is not a defense when such negligence consists merely in a failure to discover the defect in the product, or to guard against the possibility of its existence").

184. Several courts have been willing to apply comparative principles to a strict liability action. See, e.g., Butaud v. Suburban Marine & Sporting Goods, Inc., 555 P.2d 42 (Alaska 1976); Daly v. General Motors Corp., 20 Cal. 3d 725, 575 P.2d 1162, 144 Cal. Rptr. 380 (1978). Other courts have declined to apply comparative negligence principles in strict liability actions on the ground that such an application would be fundamentally incompatible with the nature of a strict liability action. See,
Comparative negligence defenses in strict liability actions stress that in this type of action the jury's focus should be on the alleged defective product and not on the conduct of either the plaintiff or the defendant.\(^{185}\) Under the principles of strict liability, these jurisdictions argue, if the defendant supplied a defective product which was the proximate cause of plaintiff's injuries, he should be fully liable for any injuries suffered by the plaintiff unless the plaintiff's conduct was so reckless as to constitute product misuse.\(^{186}\)

Whether courts will generally continue to exclude the contributory and comparative negligence defenses in a strict liability action remains to be seen as a significant number of progressive jurisdictions have ruled that it is proper in strict liability cases for a jury to determine the relative degree of causal fault for the accident attributable to the plaintiff and to reduce the plaintiff's recovery accordingly.\(^{187}\)

While the contributory negligence defense has often been effective in personal injury cases, contributory negligence evidence in a toxic tort case generally has not enabled a defendant to escape liability completely. If a toxic substance injures enough people so that a cause of action arising from it would be construed as a toxic tort, it is doubtful that a jury would be inclined to believe that the plaintiff brought his injuries upon himself through his own carelessness. Ultimately, if the contributory negligence defense is to have a real value

\(^{185}\) See, e.g., Jackson v. Coast Paint and Lacquer Co., 499 F.2d 809, 812 (9th Cir. 1974). The Court of Appeals for the Ninth Circuit in Jackson stated as follows:

In strict liability it is of no moment what defendant 'had reason to believe.' Liability arises from 'sell[ing] any product in a defective condition unreasonably dangerous to the user or consumer.' It is the unreasonableness of the condition of the product, not the conduct of the defendant, that creates liability.

\(^{186}\) See Murray v. Fairbanks Morse, 610 F.2d 149 (3d Cir. 1979) (possibility that a plaintiff may be barred from recovery because of his own misconduct has been significantly narrowed to those cases in which voluntary assumption of risk or product misuse occurs); Decorative Precast Stone Erectors, Inc. v. Bucyrus-Erie Co., 493 F. Supp. 555 (W.D. Pa. 1980) (in Pennsylvania, under § 402A, misuse of a product can absolve a manufacturer from liability), aff'd sub nom. Bucyrus-Erie Co. v. Jones & Laughlin Steel Corp., 642 F.2d 440 (3d Cir. 1981). For a discussion of the product misuse defense, see notes 194-196 and accompanying text infra.

\(^{187}\) See, e.g., Murray v. Fairbanks Morse, 610 F.2d 149 (3d Cir. 1979) (pure comparative negligence applicable to strict liability action under Virgin Island law); Edwards v. Sears, Roebuck & Co., 512 F.2d 276 (5th Cir. 1975) (comparative negligence applied to strict liability action despite facial limitation of the statute to negligence actions); Sun Valley Airlines, Inc. v. Avco-Lycoming Corp., 411 F. Supp. 598 (D. Idaho 1976) (non-pure comparative negligence standard applied to strict liability action under Idaho law).
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in a toxic tort context, it will probably be in the area of apportionment of damages only.

C. Assumption of the Risk

Where a party has subjective, personal knowledge of the risks associated with a particular product or substance, and nevertheless proceeds to work with that product in such a fashion as to encounter the hazard, courts have generally denied the plaintiff recovery on the ground that he has assumed the risk. Assumption of the risk has long been held to be a valid defense in both negligence and strict liability actions. Successful application of this defense consists of three elements: 1) the plaintiff's knowledge that a condition is dangerous; 2) the plaintiff's appreciation of the nature or extent of the danger; and 3) the plaintiff's voluntary exposure to the danger.

The assumption of the risk defense is an affirmative defense, so the defendant has the burden of proving its existence and applicability.

188. See W. Prosser, supra note 86, § 68.


190. See Restatement (Second) of Torts § 496 (1965). Section 496A of the Restatement states the general principle underlying the doctrine of assumption of risk: "A plaintiff who voluntarily assumes a risk of harm arising from the negligent or reckless conduct of the defendant cannot recover for such harm." Id. § 496A. Section 496C of the Restatement explains in more detail the requirements for this defense:

[A] plaintiff who fully understands a risk of harm to himself or his things caused by defendant's conduct or by the condition of defendant's land or chattels, and who nevertheless voluntarily chooses to enter or remain, or to permit his things to enter or to remain within the area of that risk, under circumstances that manifest his willingness to accept it, is not entitled to recover for harm within that risk.

Id. § 496C. Section 496D then emphasizes that a plaintiff does not assume the risk "unless he then knows of the existence of the risk and appreciates its unreasonable character." Id. § 496D.

See Thomas v. American Cystoscope Makers, Inc., 414 F. Supp. 255 (E.D. Pa. 1976). In Thomas, a physician brought an action against the manufacturer of a surgical instrument to recover damages for electrical burn of the cornea of his eye which was allegedly caused by a design defect in the manufacturer's product. Id. at 258. Defendant countered that the plaintiff had operated the instrument when he knew that it was not operating properly. Id. at 262. In its opinion the district court noted that the focus of the defense was on "the subjective facts of what Dr. Thomas actually knew, understood and appreciated." Id. at 263. The court concluded that the awareness that something was wrong with the instrument fell "far short of a subjec-
Since this defense requires the defendant to establish that the plaintiff had the necessary subjective knowledge, even the most artful cross-examiner will find it difficult to meet this burden of proof. In a toxic tort case, the long latency periods often associated with diseases related to exposure to a toxic substance further curtail the usefulness of this defense. With diseases characterized by long latency periods, a defendant often does not have access to sources of proof dating back to a worker's first exposure to a toxic substance. Thus, a defendant has no way to counter the claims of a worker who maintains that he was unaware of the risks associated with the toxic substance when he was first exposed to it, and therefore either was not in a position to avoid exposure or by that time, had already suffered sufficient exposure to have caused the injuries that he alleges.

Another complicating factor in a defendant's use of the assumption of the risk defense in toxic tort cases is that a defendant claiming that the plaintiff assumed the risk, but that the product was not defective, is maintaining factually inconsistent theories. If a product is not defective, then the manufacturer or supplier cannot be held liable in a toxic tort case and the issue of assumption of the risk does not arise. In toxic tort cases where the plaintiff's theory is the defendant's failure to warn, it will, as a practical matter, be difficult for a defendant, who has failed to warn of the health hazards associated with his product, to convince the jury that the plaintiff, nevertheless, knew of the alleged hazard and chose to encounter it.

This defense is fraught with other problems as well. For instance, a supplier's defense in a toxic tort case is usually that he was unaware of the specific hazards associated with the toxic substance when it was sold. In such a context, it is difficult to allege that the plaintiff—who in almost all cases knows less about a given product than the defendant—knew of the product's specific hazards when he purchased it. Furthermore, in cases where the defendant has provided sufficient warning of the health hazards associated with his

tive perception and appreciation of the particular risk of harm that ultimately resulted, which is required to invoke assumption of the risk". Id. See also Jones v. Three Rivers Management Corp., 483 Pa. 75, 88, 394 A.2d 546, 552-53 (1978) ("[a]ssumption of the risk as a defense requires a demonstration that, in fact, plaintiff knew of the danger created by defendant's negligence and explicitly or implicitly accepted the risks created by this negligence"). But see Green v. Parisi, 478 F.2d 313, 315 (3d Cir. 1973) (since subjective awareness element of assumption of risk is exceedingly difficult to prove, it may be inferred from the surrounding circumstances).

191. RESTATEMENT (SECOND) OF TORTS § 496G (1965). Section 496G of the Restatement provides that "[i]f the defendant would otherwise be subject to liability to the plaintiff, the burden of proof of the plaintiff's assumption of risk is upon the defendant." See also Green v. Parisi, 478 F.2d 313, 315 (3d Cir. 1973).
product, the defendant should not argue that the plaintiff had assumed the risk of injury; but that the product was not defective since it was accompanied by sufficient warnings notifying the user of the product’s potential hazards.

Finally, the continuing viability of the assumption of the risk defense has been called into question by some courts. One court has recognized that a worker’s fear of losing his job is a form of economic coercion sufficient to vitiate the defense of assumption of the risk.\textsuperscript{192} The Pennsylvania Supreme Court in a decision that restricted the applicability of the assumption of the risk defense, raised the possibility that the defense should not be permitted under any circumstances.\textsuperscript{193}

\textbf{D. Product Misuse}

Jurisdictions that have adopted strict liability as embodied in section 402A of the Second Restatement of Torts have generally recognized misuse or abnormal use of a product as a defense to a strict liability action.\textsuperscript{194} The key question in determining if a plaintiff’s use of a product was a “misuse” is whether the use to which the plaintiff put the product was beyond a defendant’s reasonable expectations of

\textsuperscript{192} See Johnson v. Clark Equipment Co., 547 P.2d 132 (Or. 1976). In Clark Equipment, the Oregon Supreme Court recognized that fear of unemployment must be considered in determining whether the risk was assumed. \textit{Id.} at 140. The court stated as follows:

For example, a worker might fear that a slowdown in his individual production would slow down the entire production team and thereby draw the attention of his boss. If he has a history of such slowdowns, or of causing excess spoilage or ruining machine parts, he may have good cause to fear dismissal. The job market could be tight, and he may have little hope of being able to find a new job. Moreover, the situation may demand an immediate, hurried decision. It is certainly possible that, under such circumstances, a reasonable jury could find that his decision to encounter a known risk was not unreasonable. \textit{Id.} at 140-41.

\textsuperscript{193} See Rutter v. Northeastern Beaver County, 496 Pa. 590, 437 A.2d 1198 (1981). Rutter was an action brought by a student against the school district for injuries he suffered while participating in summer football practice. \textit{Id.} at 594-95, 437 A.2d at 1200. The Pennsylvania Supreme Court rejected the school district’s invocation of the assumption of risk defense, finding that the difficulties of the defense outweigh the benefits. \textit{Id.} at 613, 437 A.2d at 1209. The plurality decision then restricted the use of the defense by holding that “except where specifically preserved by statute[,] or in cases of express assumption of risk, or cases brought under 402A, ... the doctrine of assumption of risk is abolished.” \textit{Id.} For a further discussion of Rutter, see note 9 supra.

the purpose for which the product was marketed.\footnote{See Restatement (Second) of Torts § 402A comment h (1965). Comment h of § 402A states that a "product is not in a defective condition when it is safe for normal handling and consumption . . . . The defective condition may arise not only from harmful ingredients, not characteristic of the product itself either as to presence or quantity, but also from foreign objects contained in the product, from decay or deterioration before sale, or from the way in which the product is prepared or packed." Id.} Examples of misuse may include knocking a bottle against a radiator to remove the cap or adding too much salt to food.\footnote{Id.}

The limitation that the misuse must be unforeseeable in order for the defendant to be insulated from liability generally precludes the applicability of the product misuse defense in a toxic tort situation. Toxic torts, by their very definition, involve widespread use or exposure to a particular substance. If a great many people are using or being exposed in some peculiar fashion to a toxic substance, then a strong argument can be made that the use to which large numbers of people are putting the product is not a misuse. If a particular use of a given product is widespread and the manufacturer considers that use to be a misuse, the manufacturer should probably have foreseen this usage of the product and taken precautions to prevent the product from being used in such a fashion.

The product misuse defense is typically employed only in strict liability actions. Although evidence of product misuse is sometimes introduced in negligence actions, defense counsel will use that evidence to construct a contributory negligence defense rather than product misuse defense. Because a contributory negligence defense is usually unavailable in strict liability actions, an astute defendant would label evidence tending to show that the plaintiff was contributarily negligent as "product misuse" evidence.

VI. EVIDENTIARY CONSIDERATIONS RELEVANT TO TRIAL STRATEGY

As noted previously, several defenses that are available in negligence actions are unavailable in strict liability actions, and vice versa. As such, plaintiffs may be forced to elect one cause of action over the other. For example, in many jurisdictions, evidence that a defendant complied with applicable codes, standards, or trade customs may not be admissible in a strict liability action but often will be admissible in a negligence action.\footnote{See, e.g., Holloway v. J.B. Systems, Ltd., 609 F.2d 1069 (3d Cir. 1979). Holloway was a products liability action brought against the manufacturer of an allegedly defective tank which injured worker-plaintiff. Id. at 1070. The Third Circuit, in} Similarly, unless a claim for punitive damages
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is being pressed, evidence regarding a defendant’s conduct in marketing a defective product is inadmissible in a strict liability action unless it has some bearing on the issue of whether the product was defective. For these reasons, a plaintiff who has brought an action in both negligence and strict liability must decide prior to trial whether his case will be stronger if tried in negligence, in strict liability, or in both. Many plaintiffs who bring actions in both negligence and strict liability will drop their negligence action just prior to trial or at the close of their case. They do so for several reasons. First, a plaintiff may believe that the court’s instructions to the jury on both negligence and strict liability may confuse the jury as to the distinction between the two different actions. Some plaintiffs do not want to risk this confusion and therefore will drop their negligence claim since their burden of proof in a negligence action is more difficult. Secondly, a plaintiff often does not want the jury to be instructed that they must consider the degree to which the plaintiff’s negligence contributed to his injuries, which is something that the court must do if the case is to be submitted to the jury under a negligence theory in a comparative negligence state. And finally, a plaintiff may not want a defendant to be able to introduce evidence to show the degree of care that the defendant exercised in testing the safety of the product prior to marketing it. A plaintiff in this situation may feel that, despite a judge’s instructions on the weight to be given to this evidence, the introduction of such will inevitably strengthen a defendant’s case.

However, a plaintiff will sometimes decide to retain both negligence and strict liability claims in his action since some courts have allowed a plaintiff to prevail on his negligence claim even if the strict liability claim has failed. If a plaintiff submits his case under both negligence and strict liability theories, the defendant has a golden opportunity to present certain evidence that can be highly favorable to his case. For example, a defendant may be able to demonstrate to the jury the degree to which the plaintiff contributed to his own injury. Furthermore, the defendant may be able to introduce evidence showing the degree of care that he exercised in testing the product’s safety prior to its sale. He may introduce evidence showing that his product greatly exceeded general standards applicable to such products at the time the product was sold. Finally, defense counsel can also contrast the defendant’s exercise of care in an attempt to avoid liability alto-

affirming the jury verdict for the manufacturer emphasized that “negligence concepts such as ‘trade custom’ or ‘reasonable care’ have no place in suits brought under § 402A as that section has been interpreted by the Pennsylvania courts.” *Id.* at 1073.
Evidence of a defendant’s due care and a plaintiff’s lack of care can also be used to mitigate the size of the plaintiff’s award.

VII. CONCLUSION

From the defendant’s perspective, the most successful defenses in the burgeoning area of toxic tort litigation are the statute of limitations, medical causation, and product identification defenses. Because courts look upon toxic torts as a societal problem to be handled within the framework of the existing tort system, decisions in this area seem to rely heavily on public policy considerations.

Litigants, insurers, and attorneys alike have suggested, however, that there should be an alternative method of resolving these disputes other than the traditional tort and jury trial system. Not surprisingly, the focus of negotiations between the various committees spawned by the Manville bankruptcy has centered on a non-judicial solution to the asbestos puzzle. Similarly, proponents of uniform product liability laws, trade associations, and legal scholars are diligently exploring other ways of resolving toxic tort claims. The judiciary, itself, has perceived a need for reform. For example, Judge Klein of the Philadelphia Court of Common Pleas urged a review of the existing system, stating:

[T]o put it bluntly, the present system just is not working. The civil court calendar in Philadelphia cannot cope with the volume of over 3,000 asbestos cases that have been filed. Results of jury verdicts are capricious and uncertain. Sick people and people who have died a terrible death from asbestos are being turned away from the courts, while people with minimal injuries who may never suffer severe asbestos disease are being awarded hundreds of thousands of dollars, and even in excess of a million dollars.

The asbestos litigation often resembles the casinos sixty miles east of Philadelphia more than a courtroom procedure. And just as the casinos are the winners in Atlantic City, the lawyers are the winners in asbestos litigation since the costs of litigation far exceed benefits paid to claimants.

The Philadelphia court system has focused a great portion of its civil resources on the asbestos litigation, devised

198. For a brief examination of some of the alternatives to litigation which have been proposed for dealing with asbestos litigation, see Locks, *Asbestos Litigation: Can the Beast Be Tamed?*, 28 *Vill. L. Rev*., 1184, 1193-1207 (1983).

199. For a discussion regarding why such legislation is needed in the area of toxic torts, see generally Schwartz & Means, *supra* note 2.
methods of disposition of cases that have won national acclaim, and has processed record numbers of major civil cases. But the new cases are filed faster than any court system of Philadelphia's size can dispose of them.

Ideally, the federal or state legislatures should address the problem. But even if legislation is enacted some time in the future, it may not solve the problems of the thousands of cases which have already been filed.

Since legislative remedies seem remote, the courts should recognize that application of traditional tort law to the "creeping disease" situation is often like trying to fit a square peg into a round hole. 200

It is obvious to all involved in toxic tort litigation that the present method of handling toxic tort claims is less than adequate, and it is equally obvious that other ways of coping with toxic tort injuries will emerge in the years ahead. In the meantime, defendants should realize that their time may be best spent preparing frontal assaults on traditional toxic tort remedies.