MARKET SHARE LIABILITY BEYOND DES CASES: THE SOLUTION TO THE CAUSATION DILEMMA IN LEAD PAINT LITIGATION?

DONALD G. GIFFORD*
PAOLO PASICOLAN**

ABSTRACT

Over 300,000 young children in America—disproportionately poor and children of color—suffer from childhood lead poisoning. This disease ordinarily is caused by the deterioration of lead paint into flakes, chips, and dust that children ingest or inhale. Victims of childhood lead poisoning have tried to sue manufacturers of lead paint or lead pigment, but they face a seemingly insurmountable obstacle. Traditional tort law requires a plaintiff to prove that a specific tortfeasor caused the harm. This is almost impossible in the lead paint context because the paint that caused the harm usually consists of many layers, applied over the course of as long as a century, now covered up by non-leaded paint. To overcome this obstacle, victims of childhood lead poisoning have invoked the theory of "market share liability."

Market share liability originally was devised in the 1980s to allow recovery by the victims of the generic miscarriage preventative diethylstilbestrol (DES). DES was taken by women whose daughters later developed certain cancers. But the DES daughters could not identify the

* Edward M. Robertson Research Professor of Law, University of Maryland School of Law. On October 20, 2005, Professor Gifford testified before a Joint Hearing of the Wisconsin Legislature's Judiciary Committees on behalf of the Wisconsin Coalition for Civil Justice in favor of a bill that would undo some of the consequences of the Wisconsin Supreme Court's opinion in *Thomas v. Mallett*, which extended a variant of market share liability to actions against lead pigment manufacturers. 701 N.W.2d 523 (Wis. 2005). On March 14, 2006, he testified before the Maryland House Judiciary Committee on behalf of DuPont in opposition to a bill that would have extended market share liability to manufacturers of lead paint.

** B.A., Ateneo de Manila University; J.D. expected 2006, University of Maryland. Mr. Pasicolan is an associate at DLA Piper Rudnick Gray Cary U.S. LLP.

specific manufacturer whose drug their mothers consumed. The California Supreme Court, in Sindell v. Abbott Laboratories*, granted them relief by apportioning liability among DES manufacturers according to each one's share of the market. Victims of other defective products then urged courts to extend market share liability beyond the DES context. With a few exceptions, such efforts failed because the other products were not "fungible," i.e., they were not as interchangeable as the generic drug DES. Additionally, DES was taken during a nine-month period, making it relatively easy for courts to determine the market shares of each manufacturer with a reasonable degree of accuracy—not so with other products. Thus, for some twenty years, market share liability lay dormant.*

In 2004, Allen Rostron published an article that challenged the implicit assumption in market share liability that fungibility meant chemical identity. Indeed, he identified three definitions of fungibility: (1) functional interchangeability, (2) physical indistinguishability, and (3) uniformity of risk. Almost immediately thereafter, the Wisconsin Supreme Court, in Thomas v. Mallet*, employed portions of Rostron's analysis to allow a victim of childhood lead poisoning to proceed to trial under Wisconsin's variant of market share liability.*

The extension of market share liability to the lead paint context is problematic. Lead paints, or paints with lead pigment, do not pose a uniform risk of harm because paints with higher concentrations of lead are more harmful than those with less. Additionally, it is impossible, as a practical matter, to determine the market shares of the manufacturers of lead paint and lead pigment given the hundred-year period in which manufacturers have entered, exited, and re-entered the market to be segmented.

If market share liability is to apply beyond the DES context, this expansion must be consistent with the policies that gave rise to the theory. We thus propose that application of market share liability be predicated on three requirements: (1) uniform products must pose risk in a uniform manner and to a uniform degree; (2) it must be impossible, as a practical matter, for a victim to trace the harm-causing product back to its specific manufacturer; and (3) courts must be able to ascertain each manufacturer's market share with a reasonable degree of accuracy.

INTRODUCTION

Lured by success in the tobacco litigation, a handful of plaintiffs' firms now are targeting manufacturers of lead paint and lead pigment, products that played a role in causing childhood lead poisoning.[1] Victims of childhood lead poisoning suing these

1. Saundra Torry, *Lead Paint Could Be Next Big Legal Target*, WASH. POST, June 10, 1999, at A1 ("Armed with new legal theories, trial lawyers and politicians locally and across the nation are gearing up to mount a major assault on the former makers of lead paint . . . . The potential battle borrows much of its inspiration from the recent legal assault on big tobacco-a confrontation that wrung a $240 billion settlement from cigarette makers after states took on the industry in a series of lawsuits."). On February 22, 2006, a Rhode Island jury found three manufacturers of lead pigment liable, the first trial court verdict against such manufacturers. Charles Forelle, *Rhode Island Wins Lead-Paint Suit*, WALL ST. J., Feb. 23, 2006, at D7.

manufacturers, however, face a seemingly insurmountable obstacle. The law ordinarily requires a plaintiff to identify the specific tortfeasor who caused the harm.[2] This is virtually impossible in the lead paint context. The deteriorated lead paint that caused the harm almost always consists of many layers of paint, applied over a period as long as a century, now buried under additional layers of non-leaded paint.[3] It is practically impossible, therefore, for a victim to prove which specific manufacturer produced the lead paint, or the lead pigment in the paint, that caused the harm.[4]

Enter "market share liability," a doctrine developed in the 1980s to circumvent the causation problems encountered by plaintiffs in a highly specific type of litigation: lawsuits brought by women suffering from certain cancers against manufacturers of the miscarriage preventative diethylstilbestrol (DES), which the victims' mothers took during pregnancy.[5] The victims of DES could not causally connect their diseases to the drug produced by any specific manufacturer, so the California Supreme Court, in *Sindell v. Abbott Laboratories*, pioneered an alternative means of proving cause-in-fact known as market share liability.[6] This theory presumes that the amount of harm caused by each manufacturer is proportional to its share of the market for DES.[7] By holding a DES

2. *See infra* notes 29, 73 and accompanying text.

3. *See infra* note 266 and accompanying text.

4. *See infra* notes 85-89 and accompanying text.

5. *See generally* Sindell v. Abbott Labs., 607 P.2d 924 (Cal. 1980); Naomi Sheiner, Comment, *DES and a Proposed Theory of Enterprise Liability*, 46 FORDHAM L. REV. 963 (1978).

6. *Sindell*, 607 P.2d at 937.

7. *Id*.

manufacturer liable for its market share proportion of total damages, fairness was achieved.

In DES cases, the products always were chemically identical, as required by the Food and Drug Administration,[8] and always were consumed in less than a nine-month period. These highly unusual facts allowed courts to determine the market shares of various DES manufacturers at least somewhat accurately.[9] Chemical identity also made it reasonable to assume that the manufacturers' respective market shares reflected the amount of harm each manufacturer caused.[10]

But what of the possible extension of market share liability to other products that caused latent diseases, but that could not be traced from victim to manufacturer? In the quarter century after *Sindell*, injured victims frequently tried to convince courts to extend market share liability beyond the DES context.[11] With the rarest of exceptions,[12] such

8. *Id*. at 932.

9. *See id*. at 937 ("It is probably impossible, with the passage of time, to determine market share with mathematical exactitude. . . . [but] the difficulty of apportioning damages among the defendant producers in exact relation to their market share does not seriously militate against the rule we adopt.").

10. *See id.* (noting that DES is produced from an "identical formula" and holding that it is reasonable "to measure the likelihood that any of the defendants supplied the product which allegedly injured plaintiff by the percentage which the DES sold by each of them . . . bears to the entire production of the drug sold by all").

11. *E.g.*, George v. Housing Auth. of New Orleans, 906 So. 2d 1282 (La. Ct. App. 2005) (fire alarms); McGuinness v. Wakefern Corp., 608 A.2d 447 (N.J. Super. Ct. 1991) (lasagna ingredients); Hamilton v. Beretta U.S.A. Corp., 750 N.E.2d 1055 (N.Y. 2001) (handguns).

12. Hunnings v. Texaco, Inc., 29 F.3d 1480 (11th Cir. 1994) (mineral spirits); Morris v. Parke, Davis & Co., 667 F. Supp. 1332 (C.D. Cal. 1987) (diphtheria-pertussis-tetanus vaccines); Ray v. Cutter Labs., 754

attempts failed because courts found that other products are not "fungible."[13] Fungibility, the notion that certain goods are interchangeable,[14] became the talisman required for market share liability, but it was never really defined, described, nor understood by courts.[15] Nor did scholars untangle the meanings of fungibility until Allen Rostron's groundbreaking article in 2004, which also advocated a broader variant of market share liability called "proportional share liability."[16]

Almost immediately upon the heals of Rostron's article, the Wisconsin Supreme Court, in *Thomas v. Mallett*,[17] adopted Rostron's analytical framework, if not many of his conclusions.[18] The *Thomas* court used it to extend Wisconsin's variant of market share

F. Supp. 193 (M.D. Fla. 1991) (Factor VIII); *In re* MTBE Prods. Liab. Litig., 175 F. Supp. 2d 593 (S.D.N.Y. 2001) (methyl tertiary butyl ether); Wheeler v. Raybestos-Manhattan, 11 Cal. Rptr. 2d 109 (Cal. Ct. App. 1992) (asbestos break pads); Smith v. Cutter Biological, Inc., 823 P.2d 717 (Haw. 1991) (Factor VIII); Russo v. Material Handling Specialties, Co., 1995 WL 1146853 (Mass. Dist. Ct. 1995) (unpublished decision) (airline beverage carts).

13. *E.g.*, *George*, 906 So. 2d at 1287; *Hamilton*, 750 N.E.2d at 1067; *McGuinness*, 608 A.2d at 447.

14. BLACK'S LAW DICTIONARY 675 (6th ed. 1990).

15. *See infra* Parts II.B, III.A.1.

16. Allen Rostron, *Beyond Market Share Liability: A Theory of Proportional Share Liability for Nonfungible Products*, 52 UCLA L. REV. 151 (2004).

17. 701 N.W.2d 523 (Wis. 2005).

18. Rostron and the *Thomas* court disagree on the ultimate relevance of fungibility. Rostron initially defines fungibility in three ways: functional indistinguishability, physical indistinguishability, and uniformity of risk. Rostron, *supra* note 16, at 163-67. He later argues, however, that only the uniformity-of-risk definition is appropriate for market share liability. *Id*. at 168. More than this, Rostron believes that fungibility is irrelevant under his theory of "proportional share liability." *Id*. at 168-69; *see infra* Part III.A. The *Thomas* court, on the other hand, adopts Rostron's three definitions of fungibility and uses them to

liability, known as "risk contribution theory," to actions against lead pigment manufacturers.[19] Meanwhile, the Maryland legislature debated a proposal to extend market share liability to lead paint manufacturers.[20]

Market share liability thus has awoken from its long slumber. Will it be the vehicle to circumvent the traditional element of particularized causation, enabling the judiciary to solve the financing issues associated with the lead poisoning epidemic? To answer this question, it is necessary for the first time to determine the appropriate boundaries of market share liability in light of the policies that justify its radical departure from traditional principles of causation.[21] This Article undertakes that task. Examining market share liability in the lead paint context is important both as a matter of social policy, given the importance of childhood lead poisoning in our society,[22] and as an arena in which to test and refine the parameters of market share liability.[23]

Part I begins by reviewing the California Supreme Court's seminal opinion in *Sindell* and extracting from it the policies that undergird market share liability. We then

---

hold that lead pigment is fungible. *Thomas*, 701 N.W.2d at 560. Rostron and the *Thomas* court disagree on a second issue. Rostron recognizes that the lead paint context makes it difficult, if not impracticable, to determine the market shares of various lead paint manufacturers. Rostron, *supra* note 16, at 208-09. The *Thomas* court, in contrast, acknowledges but does not address the problem of determining market shares, presumably leaving that up to a jury. *Thomas*, 701 N.W.2d at 562.

19. *Thomas*, 701 N.W.2d at 567.

20. *See* H.D. 1394, 2006 Leg., 421st Sess. (Md. 2006), *available at* http://mlis.state.md.us/2006rs/bills/hb/bh1394f.pdf (rejected bill) (last visited, April 20, 2006).

21. *See infra* Part I.

22. *See infra* Part II.A.

23. *See infra* Parts IV., V.

argue that the oft-articulated talisman of "fungibility" should be viewed more accurately as a proxy for two presumptions that are functional requirements of market share liability: uniformity of risk and the practical impossibility of manufacturer identification. In addition to these requirements, we suggest that the judicial capacity to determine market shares in a meaningful manner is a third requirement of market share liability implicit in *Sindell*.

In Part II, we briefly describe the lead-poisoning epidemic and then analyze the reasoning of pre-*Thomas* opinions that refused to extend market share liability to the lead paint context.

Part III analyzes how both Rostron and the Wisconsin Supreme Court in *Thomas* severed the implicit link between fungibility and chemical identity, thereby allowing the plaintiff in *Thomas* to proceed against lead pigment manufacturers on a risk contribution theory. To do so, the *Thomas* court adopted Rostron's three definitions of fungibility: (1) functional interchangeability, (2) physical indistinguishability, and (3) uniformity of risk.

In Part IV, we survey and analyze the existing jurisprudence on market share liability, excluding DES cases, in view of *Thomas*'s three definitions of fungibility. We conclude that any single definition, standing alone, yields results that are both under- and over-inclusive of the outcomes expected given the foundational presumptions of market share liability. Requiring all three definitions to be met equally is unsatisfactory because it is tantamount to equating fungibility with chemical identity. Finally, we demonstrate how allowing courts to use the three definitions as factors in a balancing test already has yielded dramatically inconsistent results given the inherent subjectivity of multi-factor tests.

Part V lays out our alternative formulation of the requirements of market share liability that correspond with the policies that justify the doctrine. We propose that market share liability be predicated on three requirements:

(1) Uniform products must pose risk in a uniform manner and to a uniform degree;

(2) It must be impossible, as a practical matter, for a victim to trace the harm-causing product back to its specific manufacturer; and

(3) Courts must be able to ascertain each manufacturer's market share with a reasonable degree of accuracy.

These proposed requirements make it easier, in several regards, for victims to employ market share liability than it was under any regime requiring chemical identity. It probably also is easier for plaintiffs to satisfy our reformulated requirements than it is for them to prevail if *Thomas* is understood to require that the plaintiff must satisfy all three interpretations of fungibility as described by Rostron and the Wisconsin Supreme Court. Our third requirement, forcing courts to focus explicitly on whether it is possible to determine the respective manufacturers' market shares with a meaningful degree of accuracy, is arguably the most important requirement and the one largely ignored by courts and commentators until now. Most important, our reformulation of the conditions justifying the application of market share liability for the first time aligns these requirements with the underlying justifications for the doctrine.

I. FOUNDATIONAL PREMISES OF MARKET SHARE LIABILITY

A. Sindell v. Abbott Laboratories

Market share liability was devised to allow victims of the defective miscarriage preventative diethylstilbestrol (DES) to recover for their injuries.[24] From 1947 to 1971, over two hundred drug manufacturers produced DES using an identical formula that was never patented.[25] Concomitantly, it was prescribed for millions of expectant mothers[26] In 1971, DES was pulled from the market after studies showed that daughters whose mothers took the drug had an increased risk of developing vaginal and cervical cancer.[27] Shortly thereafter, "DES daughters" across the country filed suit, seeking to hold drug manufacturers liable for their injuries.[28] They could not establish traditional tort liability, however, because they could not identify the specific manufacturer whose drug their mothers took during pregnancy.[29] To sidestep the causation problem, the California Supreme Court in *Sindell v. Abbott Laboratories* devised a market share theory of liability.[30] Under this theory, each manufacturer was liable for damages in proportion to their share of the DES market.[31]

24. Sindell v. Abbott Labs., 607 P.2d 924 (Cal. 1980).

25. Sheiner, *supra* note 5, at 963 n.1, 964 n.3.

26. *Sindell*, 607 P.2d at 927.

27. *Id*. at 925.

28. *Id*. at 927.

29. *Id*. at 925-26.

30. *Id*. at 924.

31. *Id.* at 937.

The *Sindell* court justified the imposition of liability under a relaxed standard of causation for policy reasons familiar in tort law. The court reasoned that "between an innocent plaintiff and negligent defendants, the latter should bear the cost of the injury."[32] Additionally, the court believed that drug manufacturers were in a better position to both absorb the cost of injury and minimize future harm.[33] The *Sindell* court concluded:

> In our contemporary complex industrialized 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.[34]

B. Fungibility as a Proxy for Uniformity of Risk and Impossibility of Manufacturer Identification

The *Sindell* court explicitly discussed fungibility when it provided the policy rationale for imposing market share liability, but the court did not refer to fungibility when it explained the mechanics of the theory.[35] In fact, the California Supreme Court

32. *Id*. at 936 (citing Summers v. Tice, 199 P.2d 1 (Cal. 1948)).

33. *Id*. *See generally* GUIDO CALABRESI, THE COSTS OF ACCIDENTS (1970) (describing loss distribution and harm minimization in the law of torts).

34. *Sindell*, 607 P.2d at 936 (italics added); *see also* Escola v. Coca Cola Bottling Co., 150 P.2d 436, 440 (Cal. 1944) (Traynor, J., concurring) (arguing that modern trends towards mass production require strict liability).

35. *Sindell*, 607 P.2d at 936. *See also* Cummins v. Firestone Tire & Rubber Co., 495 A.2d 963, 972 (Pa. Super. Ct. 1985) (noting that *Sindell* mentions fungibility in its policy discussion of market share liability).

never held that DES was a "fungible good," rather the court found it dispositive that DES was produced from an "identical formula."[36] This may or may not merely be a semantic distinction. Is fungibility the same as chemical identity or are the two concepts separate and distinct? Is chemical identity required for the meaningful application of market share liability? Or will some other form of product similarity or relationship suffice? In Part IV, we analyze courts' differing interpretations of fungibility. Any such analysis, however, must begin with an understanding of the policies that justify market share liability because these policies circumscribe the boundaries of the theory.

Market share liability was devised to address the injustice that results when manufacturers of uniformly defective products escape liability solely because their products cannot be traced back to them.[37] It is based on two foundational presumptions related to fungibility. First, all of the products made by all of the manufacturers are defective in a uniform way,[38] or, alternatively, all of the manufacturers must otherwise

36. *Sindell*, 607 P.2d at 936.

37. *See id.* ("[A]s between an innocent plaintiff and negligent defendants, the latter should bear the cost of injury."); Collins v. Eli Lilly Co., 342 N.W.2d 37, 49 (Wis. 1983) (devising the risk contribution theory because "the interests of justice and fundamental fairness" demand it).

38. *See* Susan Rose-Ackerman, *Market-Share Allocations in Tort Law: Strengths and Weaknesses*, 19 J. LEGAL STUD. 739, 739 (1990) (noting that a fundamental requirement of market share liability is that "products supplied by all producers are homogenous with respect to risk"); Rostron, *supra* note 16, at 165 (DES posed a uniform risk of harm because they were "identically defective, with none being more or less dangerous than the rest."); Sheiner, *supra* note 5, at 995-96, 1002 (justifying market share liability because DES is "identically defective"); *see also* Morris v. Parke, Davis & Co., 667 F. Supp. 1332, 1343 (C.D. Cal. 1987) (applying market share liability where the defective product had "the same defect or combination of defects"); *Sindell*, 607 P.2d at 936 (applying market share liability because DES manufacturers "produced a

have engaged in uniformly tortious conduct.[39] This must be so because market share liability is justified by the notion that between an innocent plaintiff and *tortious* defendants, the latter should bear the cost of injury.[40] Furthermore, all of the products must be uniformly defective, defective in the same manner and to the same degree, or all of the manufacturers' conduct must be uniformly tortious, because market share liability apportions damages according to a manufacturer's share of the market.[41] Such an apportionment presupposes that either each individual product, or each manufacturer's conduct, poses the same quantum of risk.[42] Otherwise, a market share apportionment of liability is unfair because it does not approximate the degree to which each manufacturer contributed to the total risk of harm.[43] Fungibility is important because it usually evinces uniform defectiveness or uniformly tortious conduct.

---

drug from an identical formula"); Hymnowitz v. Eli Lilly & Co., 539 N.E.2d 1069, 1075 (N.Y. 1989) (same); *Collins*, 342 N.W.2d at 44 (same).

39. *See* Hamilton v. Accu-Tek, 62 F. Supp. 2d 802 (E.D.N.Y. 1999) (finding that handgun manufacturers negligently marketed handguns).

40. *Sindell*, 607 P.2d at 936; *Hymnowitz*, 539 N.E.2d at 1075; *Collins*, 342 N.W.2d at 49.

41. *Sindell*, 607 P.2d at 937 (local market); *Hymnowitz*, 539 N.E.2d at 1078 (national market); *but see Collins*, 342 N.W.2d at 49 (apportioning liability according to a defendant's individual contribution to the total risk of harm).

42. Thomas v. Mallet, 701 N.W.2d 523, 560-61 (Wis. 2005); Rostron, *supra* note 16, at 165.

43. *See* Rostron, *supra* note 16, at 165 (arguing that uniformity of risk is "what made market share data the right measure to use to apportion liability").

The second foundational presumption related to fungibility is that the disputed products cannot be traced back to their original manufacturers.[44] This is important because when market share liability is imposed, it is possible—even likely—that a manufacturer will pay damages that it did not *actually* inflict.[45] This apparent unfairness is justified by the presumption that an injured victim cannot identify the manufacturer whose tortious conduct, in fact, caused her harm.[46] Market share apportionment is thus the best available proxy for cause-in-fact. In this regard, fungibility is important because fungible goods tend to cause difficult and often impossible identification problems.

C. Judicial Capacity to Determine Market Shares

The third foundational presumption of market share liability relates to the capacity of courts to determine each manufacturer's market share with a meaningful degree of accuracy.[47] This is important because a manufacturer's market share is the

44. *Sindell*, 607 P.2d at 936; *Hymnowitz*, 539 N.E.2d at 1075; *Collins*, 342 N.W.2d at 49; *but see Sindell*, 607 P.2d at 927-28 (noting that one plaintiff was able to identify the specific manufacturer of the DES her mother took); Abel v. Eli Lilly & Co., 343 N.W.2d 164, 168 (Mich. 1984) (same).

45. *See Sindell*, 607 P.2d at 937 ("[A] defendant may be held liable for a somewhat different percentage of the damage than its share of the appropriate market."); *Hymnowitz*, 539 N.E.2d at 1074 ("[T]he chance that a particular [defendant] caused the injury is often very remote."); *Collins*, 342 N.W.2d at 49 (apportioning liability according to the defendant's contribution to the "*risk* of injury" rather than the actual injury); Sheiner, *supra* note 5, at 974 (under market share liability there is at best a "high probability" that the defendant caused the injury).

46. *See supra* note 44 and accompanying text.

47. *See Sindell*, 607 P.2d at 937 ("It is probably impossible, with the passage of time, to determine market share with mathematical exactitude. . . . [but] the difficulty of apportioning damages among the

proxy for the amount of risk her products posed.[48] In *Sindell*, the judicial determination of market shares was relatively easy.[49] The victim's mother obviously consumed the DES during an identifiable nine-month interval while she was pregnant.

II. MARKET SHARE LIABILITY IN LITIGATION AGAINST LEAD PIGMENT MANUFACTURERS

During the first quarter-century following *Sindell*, market share liability, for all intents and purposes, was limited to DES cases.[50] Slightly more than one-third of all states adopted market share liability in the DES context.[51] Plaintiffs' attorneys attempted to persuade courts to use market share liability in hundreds, perhaps thousands, of cases, but outside the DES context, courts applied the doctrine in merely a handful of them.[52] Initially, litigation against manufacturers of lead pigment was no exception.[53]

---

defendant producers in exact relation to their market share does not seriously militate against the rule we adopt.")

48. *Id*.

49. *See id*. (noting that the DES victims identified the five to six manufacturers that produced ninety percent of the DES marketed).

50. Rostron, *supra* note 16, at 153; Aaron D. Twerski, *Market Share—A Tale of Two Centuries*, 55 BROOK. L. REV. 869, 875 (1989); Andrew B. Nance, Note, *Market Share Liability: A Current Assessment of a Decade-Old Doctrine*, 44 VAND. L. REV. 395, 397 (1991).

51. Rostron, *supra* note 16, at 170 n.103.

52. *See supra* note 12.

53. *E.g.*, Santiago v. Sherwin Williams Co., 3 F.3d 546 (1st Cir. 1993); City of Philadelphia v. Lead Indus. Ass'n, 994 F.2d 112 (3d Cir. 1993); Jefferson v. Lead Indus. Ass'n, 930 F. Supp. 241 (E.D. La. 1996), *aff'd*, 106 F.3d 1245 (5th Cir. 1997); Brenner v. Am. Cyanamid Co., 699 N.Y.S.2d 848 (N.Y. App. Div. 1999); Jackson v. Glidden Co., 647 N.E.2d 879 (Ohio Ct. App. 1995); Skipworth v. Lead Indus. Ass'n, Inc., 690 A.2d 169 (Pa. 1997).

A. Childhood Lead Poisoning

Approximately 310,000 American children less than six-years old have elevated blood lead levels in a range that poses a variety of health risks.[54] The major source of lead exposure among these children is lead paint and the dust generated when it deteriorates.[55] Exposure to poorly maintained and deteriorated lead paint can cause young children to develop various health problems, including impaired cognitive function, behavioral difficulties, impaired hearing, reduced stature, and, in extreme but now rare cases, even death.[56] Lead paint for use in the interior of residences, however, has not been sold since 1978, when it was banned by federal law.[57] Furthermore, voluntary industry reduction in 1955 of the lead content in paint to no more than one percent in total weight.[58] More than eighty percent of the lead still remaining in residential housing today was applied before 1940, and less than four percent was applied after 1960.[59] Most cases of childhood lead

54. Nat'l Ctr. for Envtl. Health, Ctrs. for Disease Control, Put the Lid on Lead, http://www.cdc.gov/nceh/lead/events/leadWeek.htm (last visited Apr. 24, 2006).

55. *Id.* Other sources include home health remedies such as arzacon and greta, some candies imported from Mexico, imported toy jewelry, drinking water from pipes and pipe fixtures containing lead, a parent's occupational exposure, and family members' hobbies that include working with lead. *Id.*

56. PRESIDENT'S TASK FORCE ON ENVTL. HEALTH RISKS & SAFETY RISKS TO CHILDREN, ELIMINATING CHILDHOOD LEAD POISONING: A FEDERAL STRATEGY TARGETING LEAD PAINT HAZARDS 1 (2000) [hereinafter PRESIDENT'S TASK FORCE].

57. Lead-Based Paint Poisoning Prevention Act of 1971, Pub. L. No. 91-695, § 401, 84 Stat. 2078, 2079 (1971) (codified as amended at 42 U.S.C. §§ 4801 (2000)).

58. Am. Standards Ass'n, American Standard Specifications to Minimize Hazards to Children from Residual Surface Coating Materials (Standard Z66.1-1955) (1955).

59. PRESIDENT'S TASK FORCE, *supra* note 56, at 22 tbl.4.

poisoning arise in a small percentage of poorly maintained rental properties.[60] Such properties usually are occupied by children from low-income families, often children of color, who are disproportionately affected by lead poisoning.[61]

The costs to residential property owners, states and municipalities, and the federal government of preventing and treating childhood lead poisoning are substantial. In 1997, over nineteen million housing units in the United States were constructed prior to 1940, most of which contain lead paint.[62] Another forty-four million units were built between 1940 and 1974, many of which also contain lead paint.[63] It is estimated that the cost of screening these units and implementing so-called "interim controls" that dramatically reduce the likelihood of childhood lead poisoning is $1,000 per unit, and the costs of total abatement or removal of lead paint is $9,000 per unit.[64] Even applying the modest interim-control measures only to those most dangerous properties constructed before 1940 yields an astronomical figure of more than $19 billion. This figure only includes primary prevention costs and does not account for the costs of treating already-existing victims, their personal damages (including lost income), and the government's expenses

60. *See, e.g.*, Christy Plumer, Setting Priorities for Prevention of Childhood Lead Poisoning in Providence, http://envstudies.brown.edu/env/theses/master9900/christy_plumer.htm (last visited Apr. 24, 2006) ("Two percent (2%) of the residential addresses in the city housed 51% of the children with elevated blood-lead levels . . . ").

61. PRESIDENT'S TASK FORCE, *supra* note 56, at 2 (reporting that 16% of low-income children living in older housing are poisoned, compared to 4.4% of all children).

62. *Id*. at app. A-10 tbl.11.

63. *Id*.

64. *Id*. at app. A-28 tbl.28. Both these figures are quite conservative. Advocates for property owners and many in the lead abatement business would argue that these figures are artificially low.

to educate the public about the dangers of childhood lead poisoning. As a sad measure of the political will to address the problem, a 2000 presidential task force on childhood lead poisoning recommended a federal budget of $164.5 million to prevent childhood lead poisoning, and the recommendations of the task force largely have been ignored.[65]

Costs of this magnitude have spurred individual victims, as well as states and municipalities, to pursue legal actions against any private party that conceivably might be held liable.[66] For the individual victim of childhood lead poisoning, one obvious target is the landlord who allegedly was negligent in allowing lead paint to deteriorate, a proximate cause of the child's poisoning.[67] Sometimes, however, the landlord is judgment proof. In other circumstances, a landlord may be shielded from liability because some state statutes grant them immunity from common-law liability after they complete specified lead-hazard reduction treatments.[68] Finally, pollution-exclusion provisions in a landlord's insurance contract may preclude coverage and prevent the victim from recovering from the landlord's insurer.[69] In *Thomas v. Mallett*, considered at some length in Section C, the Wisconsin Supreme Court cited the victim's inability to receive

65. *Id.* at 9. Of this budget, approximately $100 million was committed to primary prevention in residences. *Id*.

66. *See supra* note 1.

67. *E.g.*, Brooks v. Lewin Realty III, Inc., 835 A.2d 616 (Md. 2003); Brown v. Dermer, 744 A.2d 47 (Md. 2000); *see also Ohio Jury Awards $100,000 to Lead-Poisoned Boy*, MEALEY'S LITIG. REP.: LEAD, Aug. 13, 2003, at 11; *$2M Verdict for Virginia Girl*, MEALEY'S LITIG. REP.: LEAD, Apr. 16, 2003, at 2.

68. *E.g.*, WIS. STAT. § 254.173(2) (2004); *see also* Thomas v. Mallett, 701 N.W.2d 523, 552-53 (Wis. 2005) (applying statute).

69. *Thomas*, 701 N.W.2d at 552-53.

adequate compensation from the landlord and his insurer as a reason for allowing the victim to proceed against lead pigment manufacturers.[70] Recently, Rhode Island[71] and a number of municipalities[72] also have sued manufacturers of lead paint or lead pigment in an attempt to recover the costs of preventing childhood lead poisoning.

B. Fungibility as Chemical Identity: Dismissal of Claims Because of Inability to Prove Identity of Manufacturer

When victims of childhood lead poisoning sue manufacturers of lead paint or lead pigment, they usually are unable to identify the specific manufacturer that produced the harm-causing product.[73] It is not difficult to see why as the facts in *Skipworth v. Lead Industries Ass'n, Inc.*[74] illustrate. There, the guardian of a child suffering from lead poisoning sued substantially all of the manufacturers of lead pigment, the presumed toxic

70. *Id.*

71. In February 2006, a Rhode Island jury held lead pigment manufacturers liable to the State of Rhode Island for potentially billions of dollars. Forelle, *supra* note 1, at D7.

72. *See, e.g.*, County of Santa Clara v. Atlantic Richfield Co., No. CV788657, 2006 Cal. App. LEXIS 293 (Cal. App. Ct., March 3, 2006) (reversing trial court dismissal of claims against manufacturers); City of Milwaukee v. NL Indus., Inc., 691 N.W.2d 888 (Wis. Ct. App. 2004), *petition for review dismissed*, 703 N.W.2d 380 (Wis. 2005) (reversing dismissal of city's claims against manufacturers of lead paint).

73. *See, e.g.*, Brenner v. Am. Cyanamid Co., 732 N.Y.S.2d 799, 800 (N.Y. App. Div. 2001) ("[P]laintiffs admitted that they could not identify which defendant had manufactured the lead pigment found in their residence."); Skipworth v. Lead Indus. Ass'n, Inc., 690 A.2d 169, 171 (Pa. 1997) ("Appellants stipulated that they could not identify the manufacturer of the poisoning from the lead paint in her home.").

74. 690 A.2d at 172-73.

ingredient in the paint applied to the house in which the child lived.[75] The court found that the house had been painted many times between its initial construction in 1870 and 1977, when, according to the court, the manufacture of paint containing lead pigment for use in residential interiors ceased.[76] No records were available to determine when the house had been painted, which paint manufacturers' products were used, or which pigment manufacturers' products was contained in any given paint.[77] Nor was there a chemical signature that could identify any particular manufacturer's paint or pigment.[78]

Similarly situated plaintiffs have attempted to hold manufacturers of lead paint or lead pigment liable under market share liability, and they have been unsuccessful[79] with the notable exception of the plaintiff in *Thomas*.[80] The judicial rejection of market share liability in these cases naturally flows from the policies behind the theory, previously analyzed in Part I. As we described above, market share liability presupposes that the disputed products pose a uniform risk.[81] According to the court in *Brenner v. American Cyanamid, Co.*, this factor is not met in the lead paint context:

> All DES manufactured had an identical chemical composition. In contrast, lead-based paint is not a fungible product; it contains varying amounts of lead pigments, including white lead carbonate. Arguably, the white lead

75. *Id*. at 171.

76. *Id*.

77. *Id*.

78. *Id*. at 173.

79. *See supra* note 53.

80. Thomas v. Mallett, 701 N.W.2d 523 (Wis. 2005).

81. *See supra* notes 37-43 and accompanying text.

> carbonate used as a raw material in some lead-based paint did not differ between manufacturers. However, paint manufacturers used differing amounts of white lead carbonate, or some other lead pigment, in their paints. Some lead-based paint contained 10% lead pigment, while other paint was more toxic, containing as much as 50% lead pigment. Not only did the amount of lead pigment vary, but so did the type of lead pigment used.[82]

The *Skipworth* court found that the harm-causing product was the lead pigment and not the paint containing it.[83] However, the different compositions of the product ultimately consumed—i.e., the lead paint—affected the quantum of risk posed by equivalent amounts of chemically identical lead pigment:

> In contrast, it is undisputed that lead pigments had different chemical formulations, contained different amounts of lead, and differed in potential toxicity. Appellants contend that "whether all of the lead pigment [the pigment manufacturers] manufactured was exactly the same, in every respect, [is] irrelevant . . . ." We do not see this problem being so easily dismissed. Uncontested evidence shows that differing formulae of lead paint result in differing levels of bioavailability of the lead. Because of differences in bioavailability, a child who ingests dust or chips of lead paint containing equal amounts of lead "derived from two lead paints will not generally develop equal elevation in internal lead level from the two

82. Brenner v. Am. Cyanamid Co., 732 N.Y.S.2d 799, 852 (N.Y. App. Div. 2001).

83. *Skipworth*, 690 A.2d at 173.

> paints. Rather, more highly bioavailable lead has a greater impact than lead in less bioavailable form." Thus, differing formulae of lead paint has a direct bearing on how much damage a lead paint manufacturer's product would cause.[84]

The other requirement for the principled application of market share liability is the ability of a court to determine the respective market shares of various manufacturers, if not with absolute accuracy, then at least with a meaningful approximation.[85] This requirement alone doomed the application of market share liability in cases against manufacturers of lead paint or lead pigment[86] until *Thomas*. Why is it impossible, as a practical matter, to determine market shares with a reasonable degree of accuracy in the lead paint context? First, as the *Skipworth* court noted, the paint that caused the harm may have been applied at any point during "a more than one hundred year period from the date the house was built until lead paint ceased being sold for residential purposes."[87] It is one thing to determine the manufacturers' respective market shares during a nine-month period, as in the DES context; it is a far different proposition to determine market shares during a period in excess of a century. Manufacturers of lead paint and lead pigment entered the market, exited the market, and re-entered (and perhaps re-exited) the market during this period.[88] Second, courts declining to apply market share liability in the lead

84. *Id.*; *accord Brenner*, 699 N.Y.S.2d at 852.

85. *See supra* Part I.C.; *infra* Part V.C.

86. *See, e.g.*, *Skipworth*, 690 A.2d at 173 (recognizing "[t]he difficulty in applying market share liability where such an expansive relevant time period as one hundred years is at issue").

87. *Id.* at 173.

88. *See id.*; *accord Brenner*, 699 N.Y.S.2d at 852.

paint context have found that determining market shares for periods that occurred as long as 130 years ago may be unrealistic.[89] Neither plaintiffs nor defendants possess the necessary records to determine the market shares for lead paint or lead pigment in 1880, 1900, or 1920.

III. MARKET SHARE LIABILITY SHATTERS THE BARRIER OF CHEMICAL IDENTITY

At the dawn of the twenty-first century, market share liability remained a theory constrained by a narrow definition of fungibility, one equated with chemical identity and largely limited to the DES context. The equities in favor of other victims, however, often are compelling. In the case of latent diseases that arise years, or even decades, after a victim is exposed to a product, it usually is impossible for the victim to identify the manufacturer whose products caused the harm. The court may find that the defendant acted tortiously when manufacturing its products and the victim suffered from a harm caused by *some* manufacturer's product. Still, unless the victim shows chemical identity among the products of various manufacturers,[90] the application of market share liability was denied.[91] Not even the compelling health crisis resulting from childhood lead

89. *See supra* note 53.

90. *See, e.g.*, Hunnings v. Texaco, Inc., 29 F.3d 1480 (11th Cir. 1994) (mineral spirits); Morris v. Parke, Davis & Co., 667 F. Supp. 1332 (C.D. Cal. 1987) (diphtheria-pertussis-tetanus vaccines); *In re* MTBE Prods. Liab. Litig., 175 F. Supp. 2d 593 (S.D.N.Y. 2001) (methyl tertiary butyl ether); Wheeler v. Raybestos-Manhattan, 11 Cal. Rptr. 2d 109 (Cal. Ct. App. 1992) (asbestos break pads); Smith v. Cutter Biological, Inc., 823 P.2d 717 (Haw. 1991) (Factor VIII).

91. *See, e.g.*, Setliff v. E.I. DuPont de Nemours & Co., 38 Cal. Rptr. 2d 763 (Cal. Ct. App. 1995) (industrial adhesives and solvents); Bly v. Tri-Continental Indus., Inc., 663 A.2d 1232 (D.C. 1995) (benzene gasoline); *Skipworth*, 690 A.2d 169 (lead pigment).

poisoning loosened the generally prohibitive prerequisites of market share liability.[92] Then, beginning in 2004, scholars, courts, and legislatures reassessed market share liability, a doctrine that had calcified during the previous generation.

A. Proportional Share Liability for Nonfungible Products

In 2004, Allen Rostron published an article[93] that, even after only two years, can convincingly be characterized as influential, if for no other reason than its impact on the Wisconsin Supreme Court.[94] That court relied upon Rostron's analytical framework in its seminal decision in *Thomas v. Mallett*, which extended Wisconsin's variant of market share liability, known as "risk contribution theory," to litigation against lead pigment manufacturers. Rostron had criticized courts in the past for "turn[ing] fungibility into an instrument that can bar use of market share liability in virtually every case."[95] In its place, he proposed an alternative that he labeled "proportional share liability."[96] Under this theory, courts might begin with market share liability, but then use "other available information to make a reasonable allocation of liability that fairly reflects each defendant's contribution to the risk and likelihood of having caused the harm."[97] In the lead paint context, for example, data showing the relative proportions of lead in each manufacturer's paint may be used to adjust the market share calculations to accurately

92. *See supra* note 53 and accompanying text.

93. Rostron, *supra* note 16.

94. Thomas v. Mallett, 701 N.W.2d 523, *passim* (Wis. 2005) (citing Rostron, *supra* note 16).

95. Rostron, *supra* note 16, at 153.

96. *Id.*

97. *Id.*

reflect the risk that each manufacturer posed.[98] Lead content thus becomes the multiplier in a weighted average formula.

1. Rostron's Analysis of Fungibility.—What is most pertinent for our purposes is Rostron's untangling of the varying judicial definitions of fungibility. He categorizes three such definitions: (1) functional interchangeability, (2) physical indistinguishability, and (3) uniformity of risk.[99] Rostron traces functional interchangeability directly to the explicit language of *Sindell v. Abbott Laboratories*, which described DES as a "drug interchangeable with other brands of the same product."[100] The second definition of fungible is that neither a consumer nor a court can distinguish the products of one manufacturer from those of another.[101] As Rostron correctly suggests, the first two definitions of fungibility really are second-order factors that determine whether "a product may pose unusually severe identification problems."[102] In short, the real formulation for one requirement of market share liability should be whether it is impossible, as a practical matter, for a victim to trace the harm-causing product back to its specific manufacturer.

Rostron regards the third definition of fungibility, uniformity of risk, as the key to "traditional" market share liability, in contrast with his more flexible proportional share

98. *See infra* notes 108-116 and accompanying text.

99. Rostron, *supra* note 16, at 163-67.

100. 607 P.2d 924, 926 (Cal. 1980).

101. Rostron, *supra* note 16, at 163-64.

102. *Id*. at 165.

liability.[103] After all, only if each product poses a uniform risk of harm is it fair to apportion liability among the manufacturers according to their market shares.[104]

2. Rostron and Judicial Competency.—The draft *Restatement (Third) of Torts* analyzes a theory it calls "risk-adjusted market share liability,"[105] which envisions something similar to Rostron's proportional share liability. Yet the *Restatement* concludes that "while in theory a risk-adjusted market share liability system might be attractive, the administrative costs imposed even by a pure-market-share system augur against such efforts, and there is virtually no case support for a risk-adjusted market share theory."[106] Rostron is highly critical of the *Restatement*'s reluctance to embrace risk-adjusted market share liability.[107] He uses five examples to illustrate how the differences in risk between non-quantifiable products can be quantified, thus making risk-adjusted market share liability (proportional share liability) feasible.

Rostron first describes how risk-adjusted market share liability can apply to cases involving defective vaccines for diphtheria-pertussis-tetanus (DPT)[108] because the vaccine manufacturers record the incidence of injuries resulting from their products.[109] The same risk-adjustment is possible in cases involving asbestos break pads because the

103. *Id*.

104. *See supra* notes 37-43 and accompanying text.

105. RESTATEMENT (THIRD) OF TORTS § 28(b) cmt. o (Proposed Final Draft No. 1 2005).

106. *Id*.

107. Rostron, *supra* note 16, at 173.

108. *Id*. at 174-80.

109 Shackil v. Lederle Labs., 530 A.2d 1287, 1293-94 (N.J. Super. Ct. App. Div. 1987).

amount of asbestos in each pad can be quantified.[110] In the handgun context, adjusting for risk is a little trickier, but still possible, because the government maintains both a database and a search system by which a crime gun can be traced from manufacturer to retailer to consumer.[111] Rostron's fourth example is orbital space debris, which may collide with operational spacecraft.[112] United States and Russian space surveillance systems can identify the nations responsible for the larges pieces of debris;[113] the United States, for example, produced just over fifty percent of total space debris in 1997.[114] Damages resulting from unidentified debris thus could be apportioned by a nation's share of identifiable debris.[115] Lastly, in tobacco litigation, market share liability can be risk adjusted because the government uses a uniform standard to measure the amount of tar, nicotine, and carbon monoxide for almost every cigarette brand in the United States.[116]

Most of Rostron's examples, however, involve products that were marketed (and in one case, launched) relatively recently, e.g., vaccines, handguns, and space debris. None of these examples mirror the complexity of determining the appropriate portions of liability for nonfungible products that were produced and distributed decades ago, but that have caused latent diseases only recently. Rostron acknowledges,

110. Wheeler v. Raybestos-Manhattan, 11 Cal. Rptr. 2d 109, 111 (Cal. Ct. App. 1992).

111. Rostron, *supra* note 16, at 190-93.

112. *Id*. at 200-02.

113. *Id*. at 200. *See generally* Mark J. Sundahl, Note, *Unidentified Orbital Debris: The Case for Market-Share Liability Regime*, 24 HASTINGS INT'L & COMP. L. REV. 125 (2000).

114. Sundahl, *supra* note 113, at 145-46.

115. *Id*.

116. Rostron, *supra* note 16, at 203-04.

> Plaintiffs seeking to recover on a theory of proportional share liability also will continue to face significant and often insurmountable hurdles if they cannot determine the approximate time that the tortious conduct occurred. Although often overlooked, one of the characteristics that made DES a particularly appealing candidate for market share liability is that it was relatively easy to determine the approximate time of manufacture of the DES that caused each plaintiff's injuries.[117]

Ironically, given how his analysis later was used by the Wisconsin Supreme Court in *Thomas v. Mallet*,[118] Rostron explicitly rejects the application of proportional share liability to cases against lead pigment manufacturers:

> The timing of the tortious conduct is much more difficult to determine for some other products and, as a result, proportional share liability is much more difficult to apply. For example, the First Circuit rejected market share liability claims against the makers of lead paint pigments in *Santiago v. Sherwin Williams Co*. on the ground that plaintiff could not identify the time of the tortious conduct with sufficient specificity to allow a reasonable allocation of liability to be made. . . .
>
> Recognizing that proportional share liability can be applied to nonfungible products using information other than just market share data would not necessarily help plaintiffs unable to determine the timing of tortious conduct. For example, a willingness to adjust market share data

117. *Id*. at 208.

118. *See supra* Part III.A.I.

> upward and downward to account for variations in the lead content of different types of paint will not change the fact that a plaintiff does not know the time of the paint's manufacture and sale and therefore cannot identify the approximate year or even decade from which to draw the market share data in the first place.[119]

B. Risk Contribution Theory and Childhood Lead Poisoning

The Wisconsin Supreme Court's opinion in *Thomas v. Mallett*[120] broke new ground in 2005 when it applied a variant of market share liability, which it called "risk contribution theory," in essentially the same factual context as was present in *Skipworth*. The *Thomas* court allowed a victim of childhood lead poisoning to proceed to trial against lead pigment manufacturers, even though the victim could not identify the specific manufacturers that caused him harm.[121] *Thomas* blazes new ground in tort causation by dramatically expanding the boundaries of market share liability beyond DES cases. It also extended the theory, for the first time, to the rapidly emerging and socially important litigation against manufacturers of lead paint and lead pigment. Two aspects of

119. Rostron, *supra* note 16, at 209 (internal footnotes and citations omitted).

120. 701 N.W.2d 523 (Wis. 2005).

121. As would be expected, the court justified its adoption of a market-share-like approach on instrumental grounds, primarily loss distribution. It recognized that compared to the plaintiff, the defendant-manufacturers were "in a better position to absorb the cost of the injury." *Id.* at 558. The court went on to explain that manufacturers "can insure themselves against liability, absorb the damage award, or pass the cost along to the consuming public as a cost of doing business." *Id.* The court also relied on both a loss-minimization rationale, i.e., "deterring knowingly wrongful conduct that causes harm" and corrective justice principles. *Id.* at 558 & n.44.

the court's analysis facilitated the application of a variant of market share liability to the lead paint context.

1. The Thomas *Court Fudges Fungibility.*—Explicitly citing to and building upon Rostron's analysis, *Thomas* eliminated any requirement of chemical identity among the various manufacturers' products.[122] Indeed, the Wisconsin Supreme Court expressly held that "chemical identity is not required" to establish the fungibility necessary for the risk contribution theory.[123]

"Fungibility," the *Thomas* court further observed, "is not a term that is capable of being defined with categorical precision."[124] Consequently, the court required some unspecified combination of the three definitions previously identified by Rostron: whether the disputed products are (1) functionally interchangeable,[125] (2) physically indistinguishable,[126] or (3) "identically defective."[127] The *Thomas* court fails to note that

122. *Id.* at 560.

123. *Id*.

124. *Id.* at 561; *see also* Rostron, *supra* note 16, at 168 (arguing for an understanding of fungibility depending on "uniformity of risk").

125. For example, according to the court, various chemical compounds of white lead carbonate, though not chemically identical, are functionally interchangeable because they were "lead pigments . . . [that] provided the hiding power of paint." *Thomas*, 701 N.W.2d at 561. There are, it should be noted, a wide variety of "functionally interchangeable" paint pigments that do not contain lead, including lithopone, titanium dioxide, latex, water-based and alkyd resin. *Id.* at 535 n.13.

126. Physical indistinguishability "is significant because it is . . . why a product may pose identification problems." *Id.* at 560.

Rostron ultimately concluded that neither functional interchangeability nor physical indistinguishability are necessary for market share liability.[128] More importantly, the court does not explain whether a plaintiff invoking risk contribution theory must meet all three definitions or whether the satisfaction of a single definition suffices. Nor does the *Thomas* court provide any guidance for how a court should weigh the multiple factors. Ultimately, according to the court, the resolution of the fact issue of whether a product is fungible should be left to a jury.[129]

2. Risk Contribution: An Even More Impossible Judicial Task.—It is ironic that the Wisconsin Supreme Court extended its risk contribution theory beyond DES cases given the reason behind why it rejected market share liability in favor of its risk contribution theory. In 1984, the court in *Collins v. Eli Lilly*[130] specifically declined to adopt market share liability for the DES context because it recognized the difficulty of determining even reasonable approximations of each DES manufacturer's market share:

> The primary factor which prevents us from following *Sindell* is the practical difficulty of defining and proving market share . . . There are several reasons for this: The DES market apparently was quite fluid, with

127. Here the court opines that the lack of an identical chemical formula does not mean that each manufacturer's product does not pose the same amount of risk as another manufacturer's product. *Id.* at 560-61. "It is the common denominator," the court emphasizes, "that matters." *Id.* at 562.

128. Rostron, *supra* note 16, at 168.

129. *Thomas*, 701 N.W.2d at 560 n.47 ("[W]e do not resolve factual disputes.").

130. 342 N.W.2d 37 (Wis. 1984) (adopting risk contribution theory in Wisconsin for the first time in an action against DES manufacturers).

> companies entering and leaving the market over the years; some companies no longer exist and some that still exist may not have relevant records; and apparently there are no accurate nationwide records pertaining to the overall production and marketing of DES. We view defining the market and apportioning market share as a near impossible task if it is to be done fairly and accurately in order to approximate the probability that a defendant caused the plaintiff's injuries.[131]

Concerned with the practical impossibility of determining market shares in any meaningful way, the Wisconsin Supreme Court designed its risk contribution theory to determine various manufacturers' respective shares of liability. Under their theory, a jury assigns to each manufacturer the percentage of its financial responsibility for the judgment after considering not only the manufacturer's market share, but also its relative degree of fault and the egregiousness of its conduct:

> In assigning a percentage of liability to each defendant, the jury may consider factors which include, but are not limited to, the following: whether the drug company conducted tests on DES for safety and efficacy in use for pregnancies; to what degree the company took a role in gaining FDA approval of DES for use in pregnancies; whether the company had a small or large market share in the relevant area; whether the company took the lead or merely followed the lead of others in producing or marketing DES; whether the company issued warnings about the dangers of DES; whether the company produced or marketed DES after it knew or should

131. *Id.* at 48-49.

> have known of the possible hazards presented to the public; and whether the company took any affirmative steps to reduce the risk of injury to the public.[132]

The Wisconsin Supreme Court's risk contribution theory is unlikely to resolve what the court accurately identified as the inability of the judicial process to determine, with a meaningful degree of accuracy, each manufacturer's share of liability. For all the reasons described in *Skipworth*,[133] a risk contribution analysis is far more daunting in the lead pigment context than it is in DES cases such as *Collins*. Under a risk contribution analysis, the respective manufacturers' market shares, which the Wisconsin Supreme Court acknowledges are impossible to determine accurately, remains one of the factors used to calculate liability.[134] To determine each defendant's market share in a lead pigment case such as *Thomas*, for example, the jury would be required to consider interdependent factors, including, but not limited to, the timing of the various manufacturers' entry, exit, and sometimes re-entry into the relevant market; what percentage of the plaintiff's exposure to lead pigment occurred at each of the houses in which he lived; which years each of those houses were painted and each manufacturer's share of the market during that time period; and the possibility that lead pigments produced by various manufacturers were absorbed into the victim's body at different rates (a fact disputed between the parties). Once the jury determines the market share for each manufacturer, these determinations would need to be weighed alongside factors

132. *Id*. at 53.

133. 690 A.2d 169, 172-73 (Pa. 1997).

134. *Collins*, 342 N.W.2d at 53.

bearing on the level of egregiousness of each manufacturer's conduct, e.g., its knowledge of the dangers of the product or its negligence in this regard; whether it tested its product for safety; and whether it "took the lead or merely followed others in producing or marketing"[135] the product. It is difficult to see how combining "apples and oranges"—the percentage of market share *and* the level of egregiousness of each defendant's conduct—in any way makes the jury's calculation more manageable.

In sum, both by detaching the notion of fungibility from chemical identity and by including the consideration of factors that go to the level of egregiousness of the defendants' conduct, the Wisconsin Supreme Court has made its variant of market share liability less feasible, not more realistic. What it has perhaps accomplished, however, is to make it virtually impossible for an appellate court, the legislature, the press, or commentators to say that any particular jury's determination of the respective shares of liability was clearly wrong under the multi-factor test of risk contribution theory.

IV. THE UNDER- AND OVER-INCLUSIVENESS OF THE *THOMAS* DEFINITIONS

Rostron used a tripartite nomenclature to catalogue the definitions of fungibility and argued that fungibility is not co-extensive with chemical identity.[136] The *Thomas* court adopted both his nomenclature and his argument.[137] In this Part, we consider virtually all of the previous market share liability cases not involving DES to discover how other courts have understood fungibility. Our survey reveals that any one of the *Thomas* definitions, or any combination of definitions, is under- and/or over-inclusive of

135. *Id.*; *see also supra* note 187.

136. Rostron, *supra* note 16, at 163-67; *see supra* Part III.A.1.

137. Thomas v. Mallett, 701 N.W.2d 523, 559-61 (Wis. 2005).

the ideal universe of market share liability cases in light of the original policies that justified the creation of the doctrine. In the next Part, we suggest an alternative formulation for when market share liability should apply, one that goes beyond merely cases involving chemical identity but one that remains true to the underlying policy justifications of the theory.

The *Thomas* court recognized that its definitions of fungibility were imperfect.[138] Each can be under-inclusive, over-inclusive, and sometimes both. As such, how fungibility is defined is often outcome determinative. A survey of products that have been held fungible by some courts but not others leads a cynical mind to suspect that judges apply the definition that produces their desired result. A less sinister explanation is that any definition of fungibility is limited, and clever lawyering can exploit the manipulability of any or all of these definitions. The limitations of the *Thomas* definitions are the subject of this Part; Section A evaluates each individually, while Section B considers how they interact.

A. The Limitations of the Thomas *Definitions*

1. Functional Interchangeability.—The first *Thomas* definition of fungibility, functional interchangeability, is heavily context dependent. The *Thomas* court explained the notion of context-dependence by way of example: "for signaling New Year's eve, a blast from an auto horn and one from a saxophone may be equivalent as noise, but few would want to dance to the former."[139] As this demonstrates, one probably could imagine

138. *Id*. at 561-62; *accord* Rostron, *supra* note 16, at 163-67.

139. *Thomas*, 701 N.W.2d at 560 (quoting Hamilton v. Accu-Tek, 32 F. Supp. 2d 47, 51 (E.D.N.Y. 1998)).

some context to make any two objects functionally interchangeable. Fortunately, it seems that no court has been willing to fabricate an absurd context solely to hold dissimilar products fungible. Courts have, however, defined fungibility in a functional interchangeability sense to downplay the fact that the disputed products do not pose a uniform risk. Put differently, functional interchangeability is over-inclusive when it groups manufacturers of defective products with manufacturers of non-defective products or groups manufacturers of products that pose widely varied levels of risk.

For example, *Ray v. Cutter Laboratories*[140] involved Factor VIII, a blood protein that promotes clotting. Hemophiliacs take Factor VIII externally during bleeding episodes becausetheir own bodies lack sufficient quantities.[141] The plaintiff hemophiliac in *Ray* allegedly contracted the acquired immune deficiency syndrome (AIDS) from an unidentifiable batch of Factor VIII, so he sued the manufacturers of the product under market share liability.[142] The *Ray* court held that Factor VIII may be found to be fungible at trial. To so hold, the court first conceded that there were fundamental differences between DES and Factor VIII.[143] Unlike DES, which was made from a generic formula, the composition of each batch of Factor VIII depended on the pool of donors whose blood was included in each batch. More importantly, while DES was uniformly defective, some batches of Factor VIII were infected while others were not. This distinction alone should have been dispositive because market share liability is predicated upon the

140. 754 F. Supp. 193 (M.D. Fla. 1991).

141. Smith v. Cutter Biological, Inc., 823 P.2d 717, 721 (Haw. 1991).

142. *Ray*, 754 F. Supp. at 195.

143. *Id.* at 195-96.

uniform risk posed by products.[144] The *Ray* court nevertheless held that Factor VIII might be fungible because "one manufacturer's Factor VIII may essentially be used interchangeably with another manufacturer's product."[145]

2. Physical Indistinguishability.—Physical indistinguishability is the second *Thomas* definition of fungibility.[146] It is important because physically indistinguishable goods are harder to trace back to their original manufacturers. Physical indistinguishability can be under- or over-inclusive depending on the degree to which products must be indistinguishable from one another to be categorized as "physically indistinguishable." For instance, the *Thomas* court held that lead pigments are not

144. *See supra* notes 37-43 and accompanying text.

145. *Ray*, 752 F. Supp. at 196. Indeed, the court found persuasive that the State of Florida does not specify any unique characteristics when it conducts bid invitations for anti-hemophilic factor concentrates. *Id*. The plaintiff in *George v. Housing Authority of New Orleans*, also used a functional interchangeability argument. 906 So. 2d 1282 (La. Ct. App. 2005). In that case, an apartment caught fire causing its residents, a mother and her three children, to evacuate. *Id*. at 1284. Regrettably, one child died from fire-related complications and another was severely burned. *Id*. The mother subsequently filed several suits, including one against smoke alarm manufacturers because her smoke alarm did not go off. *Id*. Addressing the market share liability claim, the *George* court defined fungibility as "commercially interchangeable with other property of the same kind," *id*. at 1287, n.1, i.e., functional interchangeability. The court then held that smoke alarms were not fungible because "different smoke alarms by different manufacturers have different qualities." *Id*. at 1287 The court did not explain what those different qualities were or how they precluded one smoke alarm from being functionally interchangeable with another. The *George* court could not convincingly deny the application of market share liability because it adopted an over-inclusive definition of fungibility.

146. Thomas v. Mallet, 701 N.W.2d 523, 560 (Wis. 2005).

physically indistinguishable because differences between them were evident only on the microscopic scale.[147] Lead pigment, for example, came in three distinct chemical formulas.[148] The *Thomas* definition of physical indistinguishability is arguably over-inclusive because it would consider water and diluted hydrofluoric acid, a colorless, tasteless poison, to be fungible. On the other hand, requiring physical indistinguishability on the microscopic scale is equivalent to demanding chemical identity, something the *Thomas* court refused to do because it would render fungibility under-inclusive.[149]

Physical indistinguishability is under-inclusive for another reason: considerations other than physical appearance may link a defective product to its manufacturer. The court in *Russo v. Material Handling Specialties Co.*[150] considered factors other than physical indistinguishability to determine whether a product was traceable to its original manufacturer. In that case, a flight attendant was struck in the groin by an unsecured beverage cart.[151] As a result, it was necessary to remove his right testicle and sympathetic nerve blocks. The flight attendant sued the several manufacturers who supplied the beverage carts to the airline. Because he was unable to identify the manufacturer of the cart that injured him, he relied on market share liability. The *Russo* court imposed market share liability because the carts were uniformly defective and could not be traced back to their original manufacturers. The carts were built from a generic design, and individual manufacturers did not place any model or serial number on their products. For all intents

147. *Id*. at 561.

148. *Id*. at 559.

149. *Id*. at 559-60.

150. 1995 WL 1146853 (Mass. Dist. Ct. 1995) (unpublished decision).

151. *Id*. at *5.

and purposes, therefore, the carts were physically indistinguishable. The court noted, moreover, that the airline did not have a tracking system to identify the manufacturer of a particular cart. If the airline had such a system, physically indistinguishable products may be traced back to their original manufacturers. The *Russo* court correctly recognized that considerations other than physical appearance, such as pattern of use, may link a defective product to its manufacturer.

Similar reasoning was used in *In re Methyl Tertiary Butyl Ether (MTBE) Products Liability Litigation.*[152] In that case, well owners brought a class action against petroleum manufacturers for allegedly polluting their groundwater with MTBE.[153] MTBE is a highly soluble gasoline additive that contaminates water faster and more pervasively than other gasoline components. It also is recognized by the government as a possible human carcinogen. Every year, over nine million gallons of gasoline with MTBE are released into the environment during transportation, storage, sale, or use. The *In re MTBE* court addressed many issues, including whether market share liability could be invoked by well owners from states that recognized the theory.[154] The court held that the well owners established a prima facie case for the fungibility of MTBE given its chemical nature and how it was sold.[155] The court reasoned that MTBE lacked a "chemical signature" unique to a particular manufacturer.[156] Moreover, because MTBE is more water soluble than

152. 175 F. Supp. 2d 593 (S.D.N.Y. 2001).

153. *Id.* at 599.

154. *Id.* at 619-20. The plaintiff class consisted of citizens of California, Florida, Illinois, and New York; only Illinois had declined to adopt market share liability. *Id.* at 620-23.

155. *Id.* at 621.

156. *Id.*

other gasoline components, wells contaminated with it show little or no traces of other additives that could identify the manufacturer responsible for the contamination. Additionally, petroleum manufacturers trade MTBE amongst each other, making identification even more indeterminable. The court's reasoning raises two important points. First, although different manufacturers' MTBE may be physically indistinguishable from one another, other gasoline components may help identify a specific manufacturer. Second, the petroleum manufacturers' practice of trading MTBE, which had no bearing on physical indistinguishability, contributed to the identification problem. The *In re MTBE* court implicitly recognized that fungibility in the physical indistinguishability sense is under-inclusive, so it examined other factors to determine whether a specific manufacturer could be linked to the contamination of particular wells.

3. Uniformity of Risk.—Under the third *Thomas* definition of fungibility, a product is fungible if one manufacturer's product poses the same risk of harm as another's.[157] Fungibility in the uniformity-of-risk sense, standing alone, is more over-inclusive than the other definitions because dissimilar products may pose a uniform risk of harm. Consider the following two cases. In *McGuinness v. Wakefern Corp.*,[158] several members of a family developed salmonella type-D food poisoning after eating home-cooked lasagna. The lasagna was made from eggs, noodles, mozzarella cheese, pasta sauce, and ricotta cheese, so the family sued the manufacturer of each ingredient under market share liability.[159] The theory presumably applied because the family did not know

157. Thomas v. Mallet, 701 N.W.2d 523, 560-61 (Wis. 2005).

158. 608 A.2d 447 (N.J. Super. Ct. 1991).

159. *Id*. at 448.

which ingredient was contaminated with the salmonella bacteria, so the chance of any particular ingredient causing the food poisoning was identical. An analogy may be helpful: in Russian roulette, only the gun chamber with the bullet poses a risk of harm; the other five are harmless. Not knowing which one has the bullet, however, makes each pull of the trigger pose the same risk of harm. The *McGuinness* court ultimately chose not impose market share liability because the manufacturers made "dissimilar products."[160] The court did not define fungibility or explain how the lasagna ingredients were "dissimilar" probably because the products were obviously neither functionally interchangeable nor physically indistinguishable.[161] Additionally, the ingredients were not proven to be uniformly defective; the plaintiffs did not show that every ingredient had salmonella. What they did show, ironically, is that each ingredient hypothetically could have posed a uniform risk of harm.

Like the McGuiness family, the plaintiff in *Setliff v. E.I. DuPont de Nemours & Co.*[162] sought to define fungibility in a uniformity-of-risk sense. In that case, the employee of a paint store allegedly sustained vital organ damage, and emotional injuries relating to it, after prolonged exposure to paint and solvent fumes. [163] The employee sued some forty manufacturers of paint, solvents, strippers, and glue under market share liability, alleging that the products contained "common toxic chemical ingredients."[164] The *Setliff* court did not apply market share liability because even the employee conceded

160. *Id*. at 449.

161. Indeed, the plaintiffs traced each ingredient back to its original manufacturer. *Id*. at 448.

162. 38 Cal. Rptr. 2d 763 (Cal. Ct. App. 1995).

163. *Id*. at 765.

164. *Id*. at 769.

that there was no "'fungible' agent common to all the products."[165] Again, the employee reasonably argued that fumes from one or all of the paints and solvents could have caused his injury; therefore, each posed the same quantum of risk.

Even when used to analyze similar products, fungibility in the uniformity-of-risk sense tends to be over-inclusive because it may group manufacturers of defective products with manufacturers of non-defective products. *Ray v. Cutter Laoratories*,[166] for example, involved AIDS-infected batches of Factor VIII. The *Ray* court recognized that some batches of Factor VIII were defective while others were not.[167] One would assume, therefore, that Factor VIII is not fungible in the uniformity-of-risk sense because defective batches posed a risk of harm while non-defective batches did not. The *Ray* court, however, reasoned differently. Defective batches of Factor VIII were infected with AIDS because, at that time, there was no formal process to screen blood donors for the disease.[168] Thus, the probability that any given batch was infected with AIDS was the same (the Russian roulette rationale). The *Ray* court's uniformity-of-risk definition of fungibility is over-inclusive because a manufacturer of a non-defective product may be held liable for the injuries caused by the manufacturer of a defective product. This exceeds the scope of *Sindell* because the DES manufacturers were held liable for either causing injury-in-fact or contributing to the risk of harm. Under *Ray*, a manufacturer that in fact *neither* caused injury-in-fact *nor* contributed to the risk of harm could be held liable.

165. *Id*. at 769-70.

166. 752 F. Supp. 193 (M.D. Fla. 1991).

167. *Id*. at 196.

168. *Id*.

Fungibility in the uniformity-of-risk sense may be under- or over-inclusive in another respect. Courts sometimes determine fungibility based on the variance in toxicity levels between products. Products with significantly varying levels of toxicity do not pose a uniform risk of harm and, hence, are not fungible. Products with toxicity levels that vary within a limited range pose a *relatively* uniform risk of harm and, hence, are fungible. The *Thomas* court provided the most reasoned explanation for the distinction. "[W]hether a product poses a uniform risk," *Thomas* noted, "depend[s] on the choice of the unit for which risk is measured."[169] For example, "while each milligram of DES presented the same amount of risk, each DES pill did not, because the pills came in different dosages."[170] Thus, while "products may contain different concentrations of the hazardous substance," there is "leeway" to hold them fungible.[171] Lead paint pigment is fungible in the uniformity-of-risk sense presumably because the lead concentration levels of the different pigments varied within a limited range.[172] The *Thomas* court did not, however, quantify what level of variance is dispositive of fungibility. Thus, fungibility in the uniformity-of-risk sense can be under-inclusive if a court requires, say, zero variance (i.e., chemical identity) or over-inclusive if a court only requires a common toxin.[173] The latter scenario is what the dissent in *Thomas* accused the majority of doing.[174]

169. *Thomas*, 701 N.W.2d at 561 (quoting Rostron, *supra* note 16, at 166).

170. *Id*.

171. *Id*. at 561.

172. *Contra id*. at 584 (Wilcox, J., dissenting).

173. *E.g.*, *id*. at 562 (majority opinion).

174. *Id*. at 585 (Wilcox, J., dissenting).

Different courts have found different levels of variance dispositive of fungibility. One court, for instance, held that a toxicity variance within a five-percent range precluded a finding of fungibility, while another court ruled that a variance within a fifty-percent range was indicative of fungibility. In *Bly v. Tri-Continental Industries, Inc.*,[175] two auto mechanics died of leukemia allegedly resulting from long-term exposure to gasoline containing benzene.[176] Their decedents subsequently sued several gasoline manufacturers and suppliers under market share liability. The District of Columbia Court of Appeals held that the facts in *Bly* did not justify the adoption of market share liability for the District. The court reasoned that gasoline containing benzene is not fungible because it is not produced according to a single formula, and the benzene content of different manufacturers varied between zero and five percent.[177]

In *Wheeler v. Raybestos-Manhattan*,[178] the court held that asbestos brake pads were fungible enough to establish a prima facie case for market share liability. To do so, the court defined fungibility in a functional interchangeability sense, but also evaluated both physical indistinguishability and the uniformity of risk.[179] The court conceded that "from the standpoint of an auto mechanic," the brake pads were not functionally interchangeable because different automobiles needed brake pads of varying shapes and

175. 663 A.2d 1232 (D.C. 1995).

176. *Id*. at 1243.

177. *Id*. at 1243 & n.9.

178. 11 Cal. Rptr. 2d 109 (Cal. Ct. App. 1992).

179. *Id*. at 111 (citing WEBSTER'S NEW COLLEGIATE DICTIONARY 338 (7th ed. 1969) ("[o]f such a kind or nature that one specimen or part may be used in place of another specimen or equal part in the satisfaction of an obligation" or "interchangeable").

sizes.[180] For that same reason, the court also recognized that the brake pads were not physically indistinguishable.[181] The *Wheeler* court nevertheless concluded that the brake pads may be fungible because they all contained a single type of asbestos fiber, chrysotile.[182] Moreover, the amount of chrysotile in the brake pads varied within a limited range as they contained forty to sixty percent asbestos by weight.[183] This demonstrated that "the risk of harm posed by the products of each manufacturer is more nearly equivalent."[184] In short, the brake pads posed a relatively uniform risk of harm because the asbestos levels only varied within a fifty-percent range. The *Wheeler* court's reasoning, that a toxicity variance of fifty percent evinces fungibility, is inconsistent with the *Bly* court's reasoning, that a five-percent variance precludes fungibility.[185] Of course, benzene may be so much more toxic than asbestos that a five-percent variance in the toxicity of the former poses significantly greater risks than a fifty-percent variance in the toxicity of the latter. That said, the results appear to be inconsistent.

In short, long before Rostron first used the terms functional interchangeability, physical indistinguishability, and uniformity of risk, and the Wisconsin Supreme Court ratified this nomenclature, courts functionally had used the three concepts in deciding to apply market share liability. The *Thomas* court was unclear about whether market share

180. *Id*. at 111.

181. *Id*.

182. *Id*.

183. *Id*.

184. *Id*. at 111-12.

185. *Compare* Bly v. Tri-Continental Indus., Inc., 663 A.2d 1232, 1243 & n.9 (D.C. 1995), *with* Wheeler v. Raybestos-Manhattan, 11 Cal. Rptr. 2d 109, 111 (Cal. Ct. App. 1992).

liability was justified by the presence of a single definition, whether all three definitions were required, or whether market share analysis depended upon a multi-factor balancing test.

Our analysis has shown that the use of any single definition, either in isolation from other definitions or as the overwhelmingly predominant definition, yields results that are incongruent with the policies underlying market share liability. Yet requiring that all three definitions be met is practically equivalent to demanding chemical identity. Most products that simultaneously are functionally interchangeable, physically indistinguishable, and uniformly risky are chemically identical. The next Section considers the viability and desirability of the intermediate approach, that of using each of the three definitions as factors in a multi-factor balancing test.

B. The Inconsistency of Multi-Factor Balancing Tests

The *Thomas* court recognized the limitations in each of its three definitions of fungibility.[186] Indeed, the court presumably offered three definitions, rather than just one, to mitigate the subjectivity of any single definition.[187] This assumes that the interaction between three definitions minimizes the potential subjectivity inherent in any single factor, arguably because the under-inclusiveness of one definition compensates for the over-inclusiveness of another. However, several definitions of a single term, much like a multi-factor test, may equally be subject to inconsistent judicial treatment reflecting

186. Thomas v. Mallet, 701 N.W.2d 523, 561-62 (Wis. 2005).

187. *See id.* at 561 ("Fungibility . . . is not a term that is capable of being defined with categorical precision.").

judicial bias.[188] Courts may, for instance, give one definition more weight than another to arrive at a predetermined outcome. Room for play in the joints can be seen when two courts assess the fungibility of the same product and reach opposite conclusions. A side-by-side comparison of their differing rationales reveals that their conclusions depended on the definition of fungibility they used or the significance they placed on one definition over another. A brief examination of the fungibility of handguns, lead pigment, and Factor VIII is illustrative.

1. Handguns.—In *Hamilton v. Accu-Tek*,[189] handgun victims sued handgun manufacturers for negligent marketing and distributing of firearms in a manner that fostered making handguns easily accessible to careless youths and violent criminals alike.[190] Judge Jack Weinstein held the manufacturers liable under market share liability because he believed that the theory was meant to address the societal harms posed by products like handguns. He observed that it is nearly impossible for a victim to identify the manufacturer of the handgun that caused the injury because most "crime guns" are never recovered. A ballistics analysis of recovered shell casings may eliminate possible manufacturers, but it usually cannot identify a specific one. Judge Weinstein further

188. *See* Carlos E. Gonzalez, *The Logic of Legal Conflict: The Perplexing Combination of Formalism and Anti-Formalism in Adjudication of Conflicting Legal Norms*, 80 OR. L. REV. 447, 576 (2001) ("Courts can always manipulate the weight assigned to one or two factors in a balancing test . . . in order to avoid or select a problematic or desired substantive outcome."); Herma Hill Kay, *Chief Justice Traynor and Choice of Law Theory*, 35 HASTINGS L.J. 747, 795 (1984) ("[M]ulti-factor rules . . . lend themselves to manipulation and to the incorporation of contradictory approaches.").

189. 62 F. Supp. 2d 802 (E.D.N.Y. 1999).

190. *Id*. at 843.

reasoned that principles of loss distribution and loss minimization counsel for application of market share liability.[191] He then concluded that handguns were fungible in a functional interchangeability sense.[192] "From the point of view of criminals using them," Judge Weinstein noted, "there are no relevant differences between handguns."[193] Indeed, "the fungibility of handguns . . . is even clearer when viewed from the vantage point of shooting victims."[194]

The New York Court of Appeals, on a certified question, disagreed with Judge Weinstein and held that handgun victims could not assert market share liability.[195] To do so, the court first distinguished DES from handguns.[196] The court observed that DES was an "identical, generically marketed product," while handguns were not.[197] It was therefore possible to identify the manufacturer of the handgun that caused a particular victim's injury. The Court of Appeals also rejected the argument that the manufacturers' marketing and distribution practices proximately caused the societal harm.[198] After all, the handgun victims never asserted that the manufacturers' marketing and distribution practices were uniform.[199] This was crucial because "[e]ach manufacturer engaged in

191. *Id*. at 843-44.

192. *Id*. at 844.

193. *Id*.

194. *Id*.

195. Hamilton v. Beretta U.S.A. Corp., 750 N.E.2d 1055 (N.Y. 2001).

196. *Id*. at 1067.

197. *Id*.

198. *Id*.; *Accu-Tek*, 62 F. Supp. 2d at 808.

199. *Beretta*, 750 N.E.2d at 1067.

different marketing activities that allegedly contributed to the illegal handgun market in different ways and to different extents."[200] In this situation, therefore, the manufacturer's share of the market "does not necessarily correspond to the amount of risk created by its alleged tortious conduct."[201]

Hamilton demonstrates that different definitions of fungibility may produce different outcomes. To show that handguns were fungible, Judge Weinstein framed functional interchangeability in the broadest possible context: all criminals use handguns for the same purpose.[202] The Court of Appeals, by contrast, evaluated the functionality of handguns in a narrower context. Handguns are not fungible because they are not identical; different handguns have different features.[203] Regarding traceability, Judge Weinstein reasoned that it is impracticable to link an injured victim to a specific handgun manufacturer.[204] The Court of Appeals reasoned that it is not impossible to identify the manufacturer of the handgun that caused a particular injury.[205] Observe the subtle difference between impracticability and impossibility. The Court of Appeals noted that it is possible to link a particular injury to a specific manufacturer if both the gun and bullet

200. *Id*.

201. *Id*.

202. *Accu-Tek*, 62 F. Supp. 2d at 844.

203. *Beretta*, 750 N.E.2d at 1067; *see also* George v. Housing Auth. of New Orleans, 906 So. 2d 1282, 1287 (La. Ct. App. 2005) ("[D]ifferent smoke alarms by different manufacturers have different qualities."); *supra* Part IV.A.1.

204. *Accu-Tek*, 62 F. Supp. 2d at 843.

205. *Beretta*, 750 N.E.2d at 1067.

are recovered.[206] But as Judge Weinstein keenly observed, crime guns rarely are recovered.[207] The Court of Appeals used an impossibility standard of traceability to conclude that handguns are not fungible, while Judge Weinstein used an impracticability standard to conclude that they are. Regarding the uniformity of risk, Judge Weinstein argued that each individual handgun poses the same quantum of risk because they are used for the same purpose.[208] The Court of Appeals reasoned that the lack of uniform marketing practices differentiates each manufacturer's contribution to the total risk of harm.[209] Judge Weinstein used the inherent nature of handguns to determine the quantum of risk, while the Court of Appeals examined how handguns are marketed and distributed.

2. Lead Pigment.—As detailed above, *Thomas* held that lead pigment is fungible. To do so, the *Thomas* court first noted that lead pigments are functionally interchangeable because they are one of two necessary components of paint.[210] They are physically indistinguishable because they can only be differentiated on the microscopic scale.[211] Regarding the uniformity of risk, lead paint pigments pose the same quantum of risk because they contain a common toxic element, lead, the concentration of which varies within a limited range.[212]

206. *Accu-Tek*, 62 F. Supp. 2d at 845.

207. *Id*. at 843.

208. *Id.* at 844.

209. *Beretta*, 750 N.E.2d at 1067.

210. Thomas v. Mallet, 701 N.W.2d 523, 561 (Wis. 2005).

211. *Id*.

212. *Id*. at 562.

By contrast, a New York court in *Brenner v. American Cyanamid Co.*[213] held that lead pigment was not fungible. The court did not consider fungibility in the functional interchangeability sense, but it did find that lead pigments are not physically indistinguishable because different manufacturers used different types of pigments.[214] Unlike in *Thomas*, the court in *Brenner* differentiated the pigments on the microscopic level.[215] Regarding the uniformity of risk, the *Brenner* court observed that the amount of lead pigment in different manufacturers' paints varied from ten to fifty percent, and that therefore, "the finished product that was used by consumers here, i.e., lead paint, was not fungible."[216] The court in *Breener* concluded that the different manufacturers' lead pigments did not pose a uniform risk of harm.[217] In *Skipworth*, the Pennsylvania Supreme Court found that the different chemical formulations of lead pigment resulted in different risk to children because some lead pigment was more easily internalized by the body than were other chemical formulations.[218]

213. 699 N.Y.S.2d 848 (N.Y. Sup. Ct. 1999).

214. *Id*. at 853.

215. *Compare* Brenner v. Am. Cyanamid Co., 699 N.Y.S.2d 848, 853 (N.Y. Sup. Ct. 1999), *with Thomas*, 701 N.W.2d at 561; *see also In re* MTBE Prods. Liab. Litig., 175 F. Supp. 2d 593, 621 (S.D.N.Y. 2001) (examining the "chemical signature" of MTBE to determine fungibility).

216. *Brenner*, 699 N.Y.S.2d at 853.

217. *Id*. Recall, this also was the thrust of Justice Wilcox's dissenting opinion in *Thomas*. 701 N.W.2d at 584 (Wilcox, J., dissenting).

218. *See supra* note 84 and accompanying text.

3. Factor VIII.—In *Ray v. Cutter Laboratories*,[219] the court held that Factor VIII may be fungible. Under a functional-interchangeability analysis, the court reasoned that all Factor VIII serves the same purpose regardless of the different donors and methods used to make each batch.[220] The court also considered the uniformity-of-risk factor and noted that while some batches of Factor VIII were infected with AIDS while others were not, there was an equal probability that any given batch was infected because none of the manufacturers screened for AIDS.

By contrast, the court in *Doe v. Cutter Biological*[221] held that Factor VIII was not fungible. The court observed, under an analysis of physical indistinguishability, that each manufacturer's product is distinguishable by "brand name, package color, lot number, and number of units of Factor VIII per vial."[222] Indeed, the court added, "it would have been possible—had the plaintiff kept such records—to identify the [specific manufacturer]."[223] The *Doe* court also reasoned that Factor VIII did not pose a uniform risk of harm because only some batches were infected with AIDS.

The *Ray* court used a functional interchangeability argument while the *Doe* court did not, but the *Doe* court used a traceability argument while the *Ray* court did not. This may be because functional interchangeability, contextualized broadly, tends to be over-inclusive; while physical indistinguishability, under an impossibility standard, tends to be

219. 752 F. Supp. 193 (M.D. Fla. 1991).

220. *Ray*, 752 F. Supp. at 196.

221. 852 F. Supp. 909 (D. Idaho 1994).

222. *Id.* at 913 (quoting Smith v. Cutter Biological, Inc., 823 P.2d 717, 733 (Haw. 1991) (Moon, J., dissenting)).

223. *Id.*

under-inclusive. Both courts used fungibility in the uniformity-of-risk sense in different ways. The *Ray* court looked at the entire batch of Factor VIII and correctly determined that any given batch had the same chance of being contaminated with AIDS. The *Doe* court compared the contaminated batches with the uncontaminated ones and concluded that the former posed greater risks than the latter.

V. A PURPOSIVE RESTATEMENT OF THE REQUIREMENTS FOR MARKET SHARE LIABILITY

The *Thomas* court's attempt to define fungibility was long overdue, but it should be considered a starting point rather than the apodictic standard governing the proper application of market share liability. One way to improve the *Thomas* definitions is to align them with the policies behind market share liability. Fungibility itself rests upon two foundational presumptions: first, uniform products pose risk in a uniform manner and to a uniform degree; and second, it is impossible, as a practical matter, for a victim to trace the harm-causing product back to its specific manufacturer.[224] Because these foundational presumptions justify the market share apportionment of liability, they should be the primary consideration behind any definition of fungibility. In short, fungibility should be defined purposively rather than linguistically; any definition should be an indicator of whether a product poses a uniform risk (considered in Section A) and is untraceable (discussed in Section B). Conversely, any definition of fungibility that undermines these foundational presumptions should be refined.

Should market share liability ultimately apply, the plaintiff is relieved from proving the most basic requirement of traditional tort law: cause-in-fact, proving that a specific tortfeasor caused the harm. Accordingly, a third requirement must be satisfied to

224. *See supra* Part II.

properly impose market share liability. It must be possible for a court to determine each manufacturer's market share, at least with a reasonable degree of approximation. If no such approximation can be made, the plaintiff should not be allowed to recover under market share liability. Section C describes the court's obligation to decide whether market shares can be determined in a meaningful manner.

Under our proposal, each of the requirements outlined in this Part must be satisfied for market share liability to apply. Unlike the Wisconsin Supreme Court's opinion in *Thomas*, there is no ambiguity here: merely satisfying one of the requirements is not enough; this is not a balancing test; and the determination is one to be made as a matter of law by the court, not the jury.

A. Uniform Products Must Pose Risk in a Uniform Manner and to a Uniform Degree

It is easy to understand why courts have used some variant of a uniformity-of-risk standard to analyze market share liability cases.[225] If products pose a uniform risk, each manufacturer's distribution share of that product neatly approximates the harm caused. The problems that result from such a standard, if it is either employed by itself or not carefully articulated, may be less obvious. As but one paradigmatic example, the McGuiness family could not identify which lasagna ingredient was contaminated with salmonella, so they argued that each ingredient posed a uniform risk in the hopes of triggering market share liability.[226] The uniformity-of-risk factor really consists of three separate elements: (1) uniformity of product identity; (2) uniformity of either product

225. *See, e.g.*, *supra* Part IV.A.3.

226. McGuinness v. Wakefern Corp., 608 A.2d 447 (N.J. Super. Ct. 1991); *see supra* notes 158-161 and accompanying text.

defectiveness or the manufacturer's other tortious conduct; and (3) uniformity in degree of risk.

1. Uniformity of Product Identity.—Under the first element, the disputed products must be, in a common sense manner, identical. Even if multiple ingredients in household cleaning agents may cause harmful health effects, courts should not join in a single action the manufacturers of these different agents.[227] Nor should courts apply market share liability against the manufacturers of the lasagna ingredients.[228]

In reality, the reasons for requiring product identity bear more upon the factors discussed in Sections B and C, untraceability and the judicial determination of market shares, than they do upon any requirement that products pose equivalent risks. First, as previously discussed,[229] market share liability is not justified for actions involving manufacturers of traceable products. Products that are not identical are more easily traceable. Second, and more importantly, it is conceptually meaningless for a court to determine the market shares of products that are not identical. What is the point of determining the respective market shares of the manufacturers of two different products, say cheese and noodles, when the manufacturers of these products are not even in the same market? Finally, because market share liability is a rare exception to the requirement that a plaintiff prove the identity of the tortfeasor that caused the harm, it seems reasonable to restrict the application of the doctrine to situations involving more-or-less identical products.

227. *See* Setliff v. E.I. DuPont de Nemours & Co., 38 Cal. Rptr. 2d 763 (Cal. Ct. App. 1995) (declining to impose market share liability to manufacturers of paints, glues and solvents).

228. *See McGuinness*, 608 A.2d at 447.

229. *See supra* Part IV.A.2.

2. Uniformity of Product Defectiveness or Other Tortious Conduct.—For market share liability to apply, the plaintiff should be required to prove that each manufacturer's product is defective in a uniform way or that each manufacturer's conduct was otherwise tortious in a uniform way. Again, in the lasagna case, it is highly probable that only one of the ingredients was, in fact, contaminated with salmonella; therefore, the application of market share liability would have been inappropriate.[230] *Sindell* itself required the plaintiff to prove that each of the manufacturers engaged in tortious conduct.[231] The loss-minimization rationale that justifies market share liability[232] makes sense only if all of the manufacturers are engaged in similarly tortious conduct.

Not only must each manufacturer's conduct be tortious, the conduct must be tortious in an identical way.[233] Consider an action seeking to impose market share liability on handgun manufacturers. Some manufacturers' guns have a design defect because they lack a safety lock on the trigger,[234] some have malfunctioning safety locks

230. *See McGuinness*, 608 A.2d at 447.

231. Sindell v. Abbott Labs., 607 P.2d 924, 937 (Cal. 1980).

232. *Id.* at 936.

233. In *Hamilton v. Accu-Tek*, Judge Weinstein sought to impose market share liability upon handgun manufacturers not because the guns were defective, but because the manufacturers' negligent marketing and distribution practices made the guns easily accessible to criminals. 62 F. Supp. 2d 802, 844 (E.D.N.Y. 1999).

234. *E.g.*, Sturm, Ruger & Co. v. Bloyd, 586 S.W.2d 19 (Ky. 1979); Halliday v. Sturm, Ruger & Co., 770 A.2d 1072 (Md. Ct. Spec. App. 2001).

(a manufacturing defect),[235] and some were negligently marketed and distributed.[236] These very different forms of tortious conduct would make meaningless any determination of either the uniformity of risk or the manufacturers' respective shares of the market. Presumably, separate market determinations would need to be made for the market for guns without safety locks, the market for guns with malfunctioning safety locks, and the market for guns negligently distributed.

3. Uniformity in Degree of Risk.—The Maryland General Assembly, during the 2006 session, considered and rejected legislation that would have held manufacturers of lead paint, not manufacturers of lead pigment contained in the paint, liable under market share liability.[237] Yet it was clear that equal amounts of lead paint did not pose uniform risks. The chemical composition of paint varied widely; the amount of lead by weight in paint ranged from less than two percent to more than seventy percent.[238] In these

235. *E.g.*, Rodriquez v. Glock, Inc., 28 F. Supp. 2d 1064 (N.D. Ill. 1998); Abrams v. Marlin Firearms Co., 838 So. 2d 975 (Miss. 2003).

236. *Hamilton*, 62 F. Supp. 2d at 802.

237. *See* H.D. 1394, 2006 Leg., 421st Sess. (Md. 2006), *available at* http://mlis.state.md.us/2006rs/bills/hb/bh1394f.pdf.

238. *Compare* Am. Standards Ass'n, *supra* note 58 (voluntary industry standard adopted in 1955 limiting lead content in paint to no more than one percent of total weight), *with* BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, *United States Government Master Specification for Paint, White, and Tinted Paints Made on a White Base, Semipaste, and Ready Mixed* (Fed. Specifications Bd., Standard Specification No. 10B), *in* CIRCULAR OF THE BUREAU OF STANDARDS, No. 89, at 2 (3d ed. 1927) (requiring that white base, semipaste paint purchased by the federal government include between forty five percent and seventy percent white lead).

circumstances, market share liability was inappropriate because one unit of one product posed a risk thirty-five times as great as another that contained much less lead.[239] Thus, a requirement that various manufacturers products pose a uniform level of risk remains a foundational premise for market share liability. In the absence of such a requirement, a manufacturer's share of the market does not reflect their proportionate shares of the harm.

B. Practical Impossibility of Tracing the Victim's Harm to a Specific Manufacturer

The second *Thomas* definition, physical indistinguishability, actually is a secondary factor that serves as a proxy for one of our requirements of market share liability: the impossibility, as a practical matter, of tracing the harm-causing product back to its specific manufacturer. Similarly, the first *Thomas* definition, functional interchangeability, also affects traceability, but it has a far greater impact on the judicial determination of market shares. The impact of functional interchangeability on the judicial determination of market shares will be discussed in Section C.

1. Physical Indistinguishability as a Proxy for the Absence of Traceability .— Fungibility in the physical indistinguishability sense is better understood through the lens of the traceability presumption. Courts should examine the physical indistinguishability of products to determine whether any given product can be traced back to its original manufacturer. As previously described, however, physical indistinguishability is both

239. *But see* Rostron, *supra* note 16, at 174 (suggesting that one could "adjust market share data to achieve an allocation of liability that reasonably reflects the likelihood of each manufacturer having caused the plaintiff's injury"). Under Rostron's theory, one would first determine the market shares of each paint manufacturer and then adjust the percentages to account for the varying lead concentrations among them. *See supra* notes 96-98,108-116 and accompanying text.

under- and over-inclusive as a proxy for the traceability of a product.[240] Courts, for example, can examine factors other than physical indistinguishability to determine the extent of the traceability problem.[241] Further, fungibility in the physical indistinguishability sense can be manipulable.[242] For instance, Wisconsin has held that lead paint pigment is fungible, while New York has held that it is not, partly because Wisconsin does not require physical indistinguishability on the microscopic scale, while New York does.[243] The decision to adopt one standard of physical indistinguishability over another is an inherently subjective judicial enterprise.

2. Functional Interchangeability as a Traceability Factor.—Recall that another of the *Thomas* definitions of fungibility is functional interchangeability, that is, each manufacturer's product must be functionally interchangeable with the products of another.[244] This definition affects both the traceability question and the judicial determination of market shares; the latter will be discussed in Section C.

Even if multiple manufacturers' products are physically indistinguishable and pose a uniform risk of harm, market share liability still is not justified unless the products are used for the same or similar purposes. This ensures that disputed products comprise a single, definable market. For example, in *Brenner v. American Cyanamid Co.*,[245] the

240. *See supra* Part IV.A.2.

241. *See supra* notes 150-156 and accompanying text.

242. *See supra* IV.A.1.

243. *Compare* Thomas v. Mallet, 701 N.W.2d 523, 561 (Wis. 2005), *with* Brenner v. Am. Cyanamid Co., 699 N.Y.S.2d 848, 853 (N.Y. Sup. Ct. 1999); *see also supra* notes 146-149 and accompanying text.

244. *Thomas*, 701 N.W.2d at 560; Rostron, *supra* note 16, at 163-64.

245. 699 N.Y.S.2d 848, 852-52 (N.Y. App. Div. 1999).

court found that the plaintiff had "not narrowed the national market to include only those manufacturers of white lead carbonate that sold the product for interior residential use."[246] In other words, the plaintiff had not limited the market to products that were functionally interchangeable. "In addition to interior residential paint," the court continued, "white lead carbonate was used for products such as exterior residential paint and nonresidential paint, uses that are not alleged to be harmful. Plaintiffs have not produced evidence of any single defendant's share of the relevant market for interior residential paint use."[247]

Functional interchangeability limits the market to include only the manufacturers of products used for a specific purpose. This obviously affects whether the plaintiff can trace the harm-causing product back to its specific manufacturer. If, for example, evidence exists that the products of a specific lead pigment were used exclusively in exterior paints, it cannot be claimed that this specific manufacturer produced pigment used in interior paints.

The lack of traceability remains an foundational presumption of market share liability because it justifies the departure from traditional tort standards that require plaintiffs to prove causation. While fungibility understood as physical indistinguishability most often squares with cases in which the victim cannot trace the product to a specific manufacturer, it is both under- and over- inclusive. Functional interchangeability also affects traceability, but it only is a single factor that may suggest, in any particular case, whether it is reasonable to expect the victim to trace her harm to a specific manufacturer.

246. *Id.* at 852.

247. *Id.*

Courts instead should address directly the question of whether it is feasible for the plaintiff to trace the products causing her harm to the specific manufacturer that produced them.

3. Traceability: An Impossibility Standard or an Impracticality Standard? —The extent to which a product must be untraceable to justify market share liability has never been squarely examined in a published opinion. Should it be impossible, or merely impracticable, to trace a product back to its original manufacturer? The court in *In re Dow Corning Corp.*[248] suggests an impossibility standard.[249] That case was a bankruptcy action against a debtor, a manufacturer of defective breast implants.[250] The United States sought to recover from the manufacturer medical costs that the government provided victims injured by its breast implants. Among the many theories the United States invoked to support its claim was market share liability.[251] The United States used this theory to avoid having to identify each and every victim of the manufacturer's breast implants. The court did not impose market share liability because breast implants are not fungible goods.[252] Fungibility, the court noted, meant that "one defendant manufacturer's product must be indistinguishable from the next manufacturer's product." Breast implants were not indistinguishable because manufacturers used "different designs and

248. 250 B.R. 298 (Bankr. E.D. Mich. 2000).

249. *But see* Sindell v. Abbott Labs., 607 P.2d 924, 927 (Cal. 1980) (noting that one plaintiff was able to identify the manufacturer of the DES her mother took); Abel v. Eli Lilly & Co., 343 N.W.2d 164, 168 (Mich. 1984) (same).

250. *In re* Dow Corning Corp., 250 B.R. at 307.

251. *Id*. at 360.

252. *Id*. at 363.

composition."[253] Furthermore, the court added, "[t]he mere fact that it may be *difficult* for the plaintiff to establish product identification is insufficient to invoke the market-share theory . . . . [M]ere difficulty in producing evidence is not sufficient to excuse a party from doing so."[254]

Market share liability is a departure from the traditional starting point in civil litigation, where a plaintiff must prove all the elements of the tort to recover. As such, it is reasonable to require a burden beyond mere difficulty of proof to satisfy the traceability requirement and warrant market share liability.[255] At the same time, the hypothetical ability of the plaintiff to prove the requisite causal connection between a particular victim and a specific manufacturer should not, in all cases, prevent the use of market share liability. Recall that a few DES daughters were able to identify the specific drug manufacturer whose product their mothers took during pregnancy.[256] For this reason, we believe that a "practical impossibility" standard best preserves the integrity of tort law. It allows the use of market share liability, if the other requirements are met, in

253. *Id*.

254. *Id*.

255. *See* Sindell v. Abbott Labs., 607 P.2d 924, 936 (Cal. 1980) (modifying traditional principles of causation under exceptional cases); Hymnowitz v. Eli Lilly & Co., 539 N.E.2d 1069, 1075 (N.Y. 1989) ("modify[ing] the rules of personal liability" for the DES situation, which posed "inordinately difficult problems of proof"); Collins v. Eli Lilly Co., 342 N.W.2d 37, 49 (Wis. 1983) (recognizing that the DES situation posed "difficult problems" that warranted the creation of a new theory of causation).

256. *Sindell*, 607 P.2d at 927 (noting that one plaintiff was able to identify the manufacturer of the DES her mother took); Abel v. Eli Lilly & Co., 343 N.W.2d 164, 168 (Mich. 1984) (same).

those instances where there is no realistic chance for an injured consumer to identify the manufacturer of the product causing her harm.

The Supreme Court of Texas used a practical impossibility standard in *Gaulding v. Celotex Corp.*[257] In that case, a husband purchased from a salvage yard an asbestos-laden board that he used to make a cabinet for his wife.[258] Though she outlived him, the wife died of mesothelioma, an asbestos-related disease, so her children sued the possible manufacturers of the board under market share liability.[259] The court recognized that it was practically impossible for the plaintiffs to identify the specific manufacturer of the board.[260] The court did not, however, impose market share liability because it also was practically impossible to determine market shares as the board could have been made anywhere at any time.[261] Market share liability would be appropriate, however, in a situation in which it is possible to determine market shares, but practically impossible to identify the actual tortfeasor.[262]

4. Traceability in Parens Patriae and Other Collective Tort Actions.—Litigation against the indeterminate manufacturers of harm-causing fungible products often is

257. 772 S.W.2d 66 (Tex 1989).

258. *Id*. at 67.

259. *Id*.

260. *Id*. at 71.

261. *Id*.

262. Hypothetically speaking, if the product in *Gaulding* had been made by a fixed number of manufacturers whose market shares in Texas mirrored their national market shares, it would have been possible to determine market shares, but still practically impossible to identify the actual tortfeasor.

brought by a collective entity, such as the state or municipal government; [263] a class-action representative;[264] or hospital or medical insurer, seeking recoupment of medical expenses.[265] In these collective actions, particularly *parens patriae* actions brought by state or municipal governments, the untraceability requirement is less important. By definition, the harm to the state is collective in nature. The government is therefore not expected to submit individualized proof establishing causal connections between the harms experienced by each particular resident and each specific manufacturer and then to tally the results. Instead, the state or municipality relies upon statistical and sampling evidence to prove the harm to the collective entity in the aggregate.

In this context, the untraceability requirement assumes a lesser role in determining whether to apply market share liability. The requirement of the judicial capacity to accurately determine market shares, however, assumes a greater importance. If courts are allowed to use market share liability as a substitute for the tallying of individually caused harms, even greater scrutiny of the accuracy of the trial court's determination of market shares is warranted. The lack of the ability to trace the causal connection between individual victims and specific manufacturers is not irrelevant. Appellate courts reviewing a trial court's allocation of manufacturers' shares of financial responsibility

263. *See, e.g.*, City of Philadelphia v. Lead Indus. Ass'n, 994 F.2d 112 (3d Cir. 1993); City of Milwaukee v. NL Indus., Inc., 691 N.W.2d 888 (Wis. Ct. App. 2004); *see also* Forelle *supra note* 1, at D7 (reporting the jury verdict awarding the State of Rhode Island damages in a lead paint action).

264. *E.g. In re* MTBE Prods. Liab. Litig., 175 F. Supp. 2d 593 (S.D.N.Y. 2001); *Sindell*, 607 P.2d at 924; Lewis v. Lead Industries Ass'n, Inc., 793 N.E.2d 869 (Ill. App. Ct. 2003).

265. *Cf. In re* Dow Corning Corp., 250 B.R. 298 (Bankr. E.D. Mich. 2000) (denying market share liability claim by the U.S. government acting as health insurer of last resort).

under a market share analysis should be wary if the government plaintiff and the trial court had the capacity to trace causal connections between individual victims of product-caused harms and specific manufacturers and instead opted to rely upon market share analysis and statistical and sampling data.

C. Judicial Competence to Determine Market Shares

With any particular product, several individual factors indicate the likely feasibility of a court determining market shares. First, can the time interval during which the tortious conduct occurred be limited to a finite and reasonably short timeframe? In the DES cases, the applicable time is only slightly longer than nine months. By contrast, it is unlikely that courts are capable of meaningfully determining market shares[266] in a situation where a child has been lead poisoned in a home that was painted multiple times at indeterminate dates between the time that paint containing lead pigment was first commonly available in the 1870s[267] to when the sale of lead paint was outlawed in 1978.[268]

The second factor suggesting the feasibility of meaningfully determining market shares is the length of time that has passed between the time of the manufacture or

266. *E.g.*, Santiago v. Sherwin Williams Co., 3 F.3d 546, 550-51 (5th Cir. 1993); Jefferson v. Lead Indus. Ass'n, 930 F. Supp. 241, 247 (E.D. La. 1996), *aff'd*, 106 F.3d 1245 (5th Cir. 1997); Brenner v. Am. Cyanamid Co., 699 N.Y.S.2d 848, 852-52 (App. Div. 1999); Donald G. Gifford, *The Peculiar Challenges Posed by Latent Diseases Resulting from Mass Products*, 64 MD. L. REV. 613, 658-60 (2005); Rostron, *supra* note 16, at 209-10.

267. Skipworth v. Lead Indus. Ass'n, Inc., 690 A.2d 169, 171 (Pa. 1997).

268. Lead-Based Paint Poisoning Prevention Act of 1971, Pub. L. No. 91-695, § 401, 84 Stat. 2078, 2079 (1971) (codified as amended at 42 U.S.C. §§ 4801 (2000)).

distribution of the product and the time of trial.[269] It obviously is far easier to determine market shares with a reasonable degree of accuracy for a product sold and distributed in 2005 than it is for a product sold and distributed in 1923.

The third recurring set of factors influencing the feasibility of the determination of market shares is the number of producers in the relevant market[270] and the fluidity of entry and exit from that market.[271] It is one thing to determine market shares in a context in which there always were three manufacturers of the harm-causing product and all three manufacturers began production at roughly the same time and also stopped production at roughly the same time. It is far more difficult if there are hundreds of manufacturers and these manufacturers entered the market at different times, exited the market at various times, and often re-entered and re-exited the market.

Finally, *Thomas*'s first definition of fungibility, functional interchangeability, may affect the judicial competence to meaningfully calculating market shares, just as it does in determining whether a harm-causing product can be traced back to its specific

269. In *Sindell*, DES was manufactured from 1941 to 1971 and the plaintiff sued in 1976. 149 Cal. Rptr. 138, 151 (Cal. Ct. App. 1978); Sheiner, *supra* note 5, at 963 n.1, 964 n.3. The lead pigment used in *Thomas* was available from 1900 to 1980; the suit was filed in 1996. 701 N.W.2d 523, 530 (Wis. 2005).

270. *See, e.g.*, *Sindell*, 607 P.2d at 937 (noting that five to six companies controlled ninety percent of the DES market); *Thomas*, 701 N.W.2d 523, 570 (Wilcox, J., dissenting) (observing that there were some 200 paint manufacturers in the Milwaukee area between 1910 and 1971).

271. *See, e.g.*, *Skipworth*, 690 A.2d at 173 ("Over the one hundred year period at issue, several of the pigment manufacturers entered and left the lead paint market."); *Thomas*, 701 N.W.2d 523, 570-71 (Wilcox, J., dissenting) (detailing the varying times during which the various pigment manufacturers entered and exited the market).

manufacturer.[272] If lead pigment, for example, was an ingredient in a variety of products other than paint intended for use in the interior of residences, the appropriate market for determining each manufacturer's market share is not the sales of all lead pigment, but rather only the sales of all lead pigment used for interior paint. It is possible, indeed likely, that some lead pigment manufacturers sold their product as an ingredient in one finished consumer product, while others sold theirs as an ingredient in a second finished product. These markets must be differentiated if the volume of product distribution is to serve as a meaningful proxy for harm caused. This too becomes a complicating factor.

With the addition of the multiple factors outlined above, as well as others not described, the interaction of the various factors results in the process of determining market shares becomes geometrically more complex. With lead pigment or lead paint, the time of possible exposure may be as great as a century and residences were painted at unknown times and irregular intervals. With lead paint, the number of producers numbered in the hundreds. In the case of lead pigment, the product had multiple uses, many of which posed little or no risk to children. It is difficult to see how proponents of litigation against manufacturers of lead paint or lead pigment can convincingly claim that courts are capable of determining the market shares for these manufacturers with even a reasonable degree of approximation.

CONCLUSION

Childhood lead poisoning is a significant and under-appreciated public health crisis. Funding is required to address the crisis and to eliminate lead-paint hazards, and it is understandable that many public officials and judges, intellectual heirs of the 1960s,

272. *See supra* Part V.B.2.

believe that courts, more than legislatures, are the appropriate institutions to solve this public health crisis.[273] But courts are not legislatures. They do not have the power to tax specific industries or to appropriate funds to remedy a pervasive public health crisis. The authority of any court to transfer money from one party to another is inextricably linked to proof of a required causal connection, however defined, between the injurer's tortious conduct and the victim's injury. Market share liability purports to be an alternative means of proving causation, not a new, extra-constitutional grant of taxation and spending powers to the courts. The requirements of market share liability outlined here are ones based on judicial competence and feasibility. If market share liability in any given factual context cannot realistically apportion financial responsibilities among manufacturers in a manner that reasonably approximate the harms caused by each manufacturer, then the assessment of damages under market share liability is no longer a judicial function.

273. *See generally* John C.P. Goldbreg & Benjamin C. Zipursky, *Accidents of the Great Society*, 64 MD. L. REV. 364 (2005).