

JUSTINE S. HASTINGS\* AND MICHAEL A. WILLIAMS†

## Market Share Liability: Lessons from *New Hampshire v. Exxon Mobil*

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\* Professor of Economics and International and Public Affairs at Brown University and Research Associate at the National Bureau of Economic Research.

† Competition Economics, LLC. The authors thank Kimiko Hayashi for research assistance.

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### INTRODUCTION

Water pollution is pervasive, but tracking a pollutant back to its source can be difficult or impossible. When a firm takes actions to maximize its profits, but these actions cause pollution or environmental degradation, the firm has caused a “negative externality.”<sup>1</sup> A firm creates a negative externality when it decides to engage in a production process and takes into account only its private costs without consideration of the pollution costs that others must bear. In this case, the firm has imposed a negative externality onto other members of society, lowering aggregate economic welfare. Economics teaches that firms causing such “negative externalities” should be taxed or fined to “internalize” costs they cause, thus ensuring market efficiency.<sup>2</sup> Environmental regulation and remediation requirements can mitigate or prevent negative externalities by forcing firms to internalize the costs of their pollution through the use of monetary penalties for environmental damage. Such penalties cause firms to include environmental costs in their decision-making processes and thus take such costs into account before deciding on a production technology.

Consider the following hypothetical example. Suppose that reformulated gasoline (RFG) with methyl tertiary butyl ether (MTBE) costs \$1.00 per gallon to produce while RFG with ethanol costs \$1.03. However, MTBE causes \$0.08 per gallon in real damage to water resources and health. If the firm considers only its private production costs and profits absent the pollution externality, the firm will choose MTBE because it is \$0.03 cheaper per gallon. On the other hand, if the firm believes that it will be held responsible for remediation of environmental damage caused by its decision, it will adopt ethanol because ethanol is \$0.05 per gallon less expensive than MTBE inclusive of remediation costs. Remediation costs imposed by the government or the legal system add a real cost to producing gasoline

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<sup>1</sup> See, e.g., ROBERT S. PINDYCK & DANIEL L. RUBINFELD, MICROECONOMICS 661–64 (Pearson, 8th ed. 2013).

<sup>2</sup> See, e.g., *id.* at 667–78.

with MTBE rather than ethanol, thus forcing firms to internalize the harm their decisions impose on other members of society.

The State of New Hampshire was one of the many states affected by water pollution caused by MTBE gasoline. In 2003, the State filed a lawsuit in an effort to cause the responsible parties to pay for the remediation costs of the water pollution.<sup>3</sup> In 2013, following the longest trial in state court history, a New Hampshire jury found ExxonMobil responsible for the widespread presence of MTBE in the state's drinking water and awarded a \$236 million verdict in favor of the State.<sup>4</sup> In 2015, the Supreme Court of New Hampshire affirmed the jury's verdict.<sup>5</sup>

The State's expert economist used a market share liability approach to allocate the water pollution costs among the responsible parties.<sup>6</sup> This liability allocation method was granted by the trial court and affirmed by the Supreme Court of New Hampshire.<sup>7</sup> In this Article, we discuss the role played by market share liability in the New Hampshire MTBE litigation. We examine the history of market share liability in litigation involving a number of products, as well as the strengths and weaknesses of market share liability in other areas of product liability litigation. We also discuss how market shares can be weighted to reflect the relative damages caused by similar—but not identical—products.

## I

### MARKET SHARE LIABILITY

#### *A. Methodology*

Market share liability is a method of allocating liability among potential tortfeasors based on their market shares in product liability litigation. Market share liability has been adopted when consumers are harmed by fungible goods whose manufacturers cannot be identified. The reasoning behind market share liability theory is that while a particular manufacturer may not necessarily cause a specific harm, the manufacturer's probability of harming a given plaintiff equals its market share. Hence, the plaintiff is protected from the risk of harm

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<sup>3</sup> State v. Exxon Mobil Corp., 126 A.3d 266, 274 (N.H. 2015).

<sup>4</sup> *Id.* at 273.

<sup>5</sup> *Id.* at 294–95.

<sup>6</sup> *Id.* at 297–98. The authors served as testifying and consulting economists, respectively, to the State of New Hampshire.

<sup>7</sup> *Id.* at 299.

rather than from physical harm, while a defendant manufacturer is responsible for the “tortious imposition of risk.”<sup>8</sup> According to leading torts scholars, market share liability is derived from a “risk-based conception of tort liability” designed to reduce unreasonable risks through a “deterrence-based torts system.”<sup>9</sup>

The traditional causation rule that requires a plaintiff to prove direct causation in order to be entitled to compensation was first modified in the influential *Summers v. Tice* case.<sup>10</sup> In this case, defendants—rather than plaintiffs—were held to have the burden of proving causation if the following conditions were met: “(1) all possible ‘culpable’ entities are joined in the action; (2) each defendant has an opportunity to exculpate itself by proving that its conduct did not cause the plaintiff’s injury; and (3) each instrumentality that may have injured the plaintiff carried a uniform risk of harm.”<sup>11</sup>

### ***B. DES Litigation***

In the 1980s, the less strict causation rule adopted in *Summers* was expanded into the market share liability framework in a series of cases relating to diethylstilbestrol (DES) product liability.

#### *I. Sindell v. Abbott Laboratories*

In *Sindell v. Abbott Laboratories*,<sup>12</sup> the California Supreme Court modified the causation rule in *Summers* that “a plaintiff join all possible culpable entities to the action” and instead required that plaintiffs must join “only a ‘substantial share’ of such entities.”<sup>13</sup> According to the principles of market share liability set forth in *Sindell*, which were based in part on an innovative comment in the *Fordham Law Review* by Naomi Sheiner,<sup>14</sup> each defendant manufacturer was responsible for its share of DES sold in a given geographic area even if the plaintiff could not trace her injuries back to that manufacturer’s product. As the court stated, “Under this approach, each manufacturer’s liability would

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<sup>8</sup> Mark Geistfeld, *The Doctrinal Unity of Alternative Liability and Market-Share Liability*, 155 U. PA. L. REV. 447, 449 (2006).

<sup>9</sup> *Id.*

<sup>10</sup> *Summers v. Tice*, 199 P.2d 1, 1–5 (Cal. 1948).

<sup>11</sup> Andrew R. Klein, *Beyond DES: Rejecting the Application of Market Share Liability in Blood Products Litigation*, 68 TUL. L. REV. 883, 885–86 (1993) (footnotes omitted).

<sup>12</sup> *Sindell v. Abbott Labs.*, 607 P.2d 924 (Cal. 1980).

<sup>13</sup> Klein, *supra* note 11, at 886.

<sup>14</sup> See Naomi Sheiner, *DES and a Proposed Theory of Enterprise Liability*, 46 FORDHAM L. REV. 963 (1978).

approximate its responsibility for the injuries caused by its own products.”<sup>15</sup>

DES was a synthetic hormone marketed from 1947 to 1971 to pregnant women for prevention of miscarriage. Research revealed in 1971 that DES taken by pregnant women can cause adenocarcinoma in their female offspring many years later. Many of the plaintiffs could not identify the manufacturers of the DES taken by their mothers because there were over 200 manufacturers of the generic drug and so many years had passed. Plaintiff Judith Sindell commenced a class action against eleven manufacturers of DES alleging their joint and several liability for cooperating to market DES as a safe and effective drug for prevention of miscarriage. Ms. Sindell’s claim was dismissed by the trial court because she was not able to identify the exact defendant manufacturer(s) that made the DES taken by her mother.<sup>16</sup>

However, the Supreme Court of California reversed the trial court’s decision, concluding that “alternative liability”<sup>17</sup> should be broadened into market share liability under which the burden of identification shifts to the defendant if the plaintiff “establishes a *prima facie* case on every element of the claim except for identification of the actual tortfeasors, and the plaintiff has joined the manufacturers of a ‘substantial share’ of the DES market.”<sup>18</sup> The defendants are then severally responsible for the share of the judgment representative of their contribution to the market when the injury occurred. Each defendant was given the opportunity to exculpate itself if it could prove that it did not make the DES that resulted in the injury.<sup>19</sup>

The two key factors that prevented a DES victim from identifying the manufacturer of the DES taken by her mother were the long latency period and the fungible characteristics of DES.<sup>20</sup> The court in *Sindell* adopted market share liability based on the uniform characteristics of DES. The court allowed alteration of the principle followed in *Summers*

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<sup>15</sup> *Sindell*, 607 P.2d at 612.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* at 598. The California Supreme Court defined “alternative liability” as follows: “Plaintiff places primary reliance upon cases which hold that if a party cannot identify which of two or more defendants caused an injury, the burden of proof may shift to the defendants to show that they were not responsible for the harm. This principle is sometimes referred to as the ‘alternative liability’ theory.” *Id.*

<sup>18</sup> *Exxon Mobil Corp.*, 126 A.3d at 295.

<sup>19</sup> *Sindell*, 607 P.2d at 602.

<sup>20</sup> David M. Schultz, *Market Share Liability in DES Cases: The Unwarranted Erosion of Causation in Fact*, 40 DEPAUL L. REV. 771, 771–72 (1991).

on the ground that all DES was manufactured using the same formula by all defendants and the plaintiff could not identify the tortfeasor.<sup>21</sup>

The Supreme Court of California's decision to adopt a market share liability framework was primarily based on the following two arguments: (1) the damages associated with the injury suffered by an innocent plaintiff should be compensated by negligent defendants; (2) because the manufacturer is the most capable of controlling the product defects and of announcing the hazardous consequences, good public policy requires that manufacturers be incentivized to produce safer products by imposing liability on them. Under the circumstances of the case, a given defendant's risk of injuring the plaintiff can be quantified reasonably as the defendant's share of the total DES sold by all the defendants for a particular indication. Each defendant is liable for the judgment apportioned based on its market share, and such apportioned liability translates into the defendant's responsibility for the harm resulting from its own DES.<sup>22</sup>

Finally, in *Sindell*, the defendants did not necessarily have knowledge of the adverse effects of the drug DES at the time they sold the product, but they were found liable for damages based on their market shares.<sup>23</sup> In his dissent, Judge Richardson argued that assigning liability to the drug companies "may well prove to be extremely shortsighted from the standpoint of broad social policy."<sup>24</sup> From an economic perspective, requiring that firms have knowledge of the adverse effects of a product at the time of sale would incentivize firms to avoid gaining such knowledge. Thus, from an economic perspective, the court in *Sindell* created the efficient incentive for firms to take actions to understand the risks of their products. However, even if firms

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<sup>21</sup> Klein, *supra* note 11, at 900.

<sup>22</sup> *Exxon Mobil Corp.*, 126 A.3d at 295.

<sup>23</sup> *Sindell*, 607 P.2d at 612.

<sup>24</sup> *Id.* at 620 ("Who is to say whether, and at what time and in what form, the drug industry upon which the majority now fastens this blanket liability, may develop a miracle drug critical to the diagnosis, treatment, or, indeed, cure of the very disease in question? It is counterproductive to inflict civil damages upon *all* manufacturers for the side effects and medical complications which surface in the children of the users a generation after ingestion of the drugs, particularly when, at the time of their use, the drugs met every fair test and medical standard then available and applicable. Such a result requires of the pharmaceutical industry a foresight, prescience and anticipation far beyond the most exacting standards of the relevant scientific disciplines. In effect, the majority requires the pharmaceutical research laboratory to install a piece of new equipment—the psychic's crystal ball.") (emphasis added).

fail to understand and disclose such risks at the time of sale, economic efficiency requires that they be held liable for damages.

## 2. Martin v. Abbott Laboratories

In a subsequent DES case, the Washington Supreme Court in *Martin v. Abbott Laboratories*<sup>25</sup> formulated what it called the “market share alternate liability” theory, challenging the market share liability theory adopted in the *Sindell* case. The principle under the theory is that the plaintiff need accuse only one manufacturer of DES, but that particular manufacturer is responsible only for its own market share, finding the “substantial share” in the *Sindell* case was ill defined.<sup>26</sup> The court gave the defendants the opportunity to show they were not liable by demonstrating that they did not (1) manufacture the particular type of DES that the plaintiff’s mother took; (2) market DES in the applicable geographic market; or (3) market DES during the applicable time period.<sup>27</sup> The remaining defendants were assigned equal shares of the market associated with the plaintiff’s damages to comprise 100%. Defendants were allowed to challenge such automatic assignment of shares and present their actual market share in the applicable area. If the defendants’ proven shares were less than 100% total, the plaintiff would be entitled to less than 100% of the damages.<sup>28</sup>

## 3. Collins v. Eli Lilly & Co.

A further version of market share liability called the “risk contribution theory” was formulated by the Wisconsin Supreme Court in *Collins v. Eli Lilly & Co.*<sup>29</sup> The rationale behind this theory was that every defendant contributed to the risk of harm suffered by every plaintiff, and therefore each defendant should bear the cost of an extent of fault. The court intended to impose liability on all the defendant drug manufacturers for the harm caused by their products so that they would be inclined to conduct sufficient safety tests on their drugs.<sup>30</sup> The court

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<sup>25</sup> *Martin v. Abbott Laboratories*, 689 P.2d 368, 382 (Wash. 1984) (en banc).

<sup>26</sup> Kenneth R. Lepage, *Lead-Based Paint Litigation and the Problem of Causation: Toward a Unified Theory of Market Share Liability*, 37 B.C. L. REV. 155, 161–62 (1995).

<sup>27</sup> *Id.* at 162.

<sup>28</sup> *Id.*

<sup>29</sup> *Collins v. Eli Lilly Co.*, 342 N.W.2d 37 (Wis. 1984), *cert. denied*, 469 U.S. 826 (1984).

<sup>30</sup> Debra L. Scammon & Mary Jane Sheffet, *Market Share Liability: An Analysis Since Sindell*, 11 J. PUB. POL’Y & MARKETING 1, 5 (1992).

directed the jury to calculate the damages amount due each defendant using an apportionment of the total liability amount based on each defendant's proportional causal negligence.<sup>31</sup>

The Wisconsin Supreme Court did not follow market share liability under *Sindell* in its apportionment of judgment on the ground that it would be difficult to determine the correct national market shares for all the potential defendant manufacturers even though the theory provides a fair method of apportionment.<sup>32</sup> The court, however, agreed with the principal under *Sindell* that defendants pay damages attributable to their negligence or strict liability even in the absence of a causal link to the specific product they produced.<sup>33</sup>

The court in *Collins* found that defendant manufacturers were more capable of covering the cost of injuries than plaintiffs and, therefore, did not require plaintiffs to identify all the responsible manufacturers.<sup>34</sup> The court concluded that a plaintiff needed to identify only one defendant and the plaintiff could be fully compensated by that defendant.<sup>35</sup> The court, however, encouraged a plaintiff to identify multiple defendants so that she would have a higher chance of collecting damages in the case that a defendant is judgment proof.<sup>36</sup>

The *Collins* court directed the jury to calculate the damages amount for each defendant manufacturer according to Wisconsin's existing doctrine called "comparative negligence statute."<sup>37</sup> This doctrine calls for apportionment of the total liability amount based on each defendant's proportional causal negligence.

The *Collins* court directed the jury to take into account the following factors in calculating each defendant's share of liability: (1) any testing done for safety and effectiveness of DES in the intended indication; (2) the magnitude of a defendant's role in having FDA approve DES for the intended indication; (3) a defendant's market share; (4) whether the defendant took a leading role or a passive role in the production and marketing of DES; (5) announcements given by a defendant about hazards associated with DES; (6) volume of DES sold by the defendant after its hazards were known; and (7) any effort made by a defendant

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<sup>31</sup> *Id.*

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> *Id.*

<sup>37</sup> *Id.*



to minimize the injuries to consumers.<sup>38</sup> Hence, the court's apportionment method entailed a defendant's market share as a base but then applied other factors to achieve what the court regarded was the best representation of a defendant's risk of injuring consumers.<sup>39</sup>

#### 4. Hymowitz v. Eli Lilly & Co.

Another version of market share liability was formulated by the New York Court of Appeals in *Hymowitz v. Eli Lilly & Co.*<sup>40</sup> The court used firms' shares in the national DES market to allocate defendants' liability. The court did not allow any defendant to exculpate itself by demonstrating that it did not (1) manufacture the exact type of DES taken by the plaintiff's mother; (2) sell DES during the applicable time period; or (3) sell DES in the applicable geographic area.<sup>41</sup> The court determined that allocating plaintiffs' damages based on defendants' national market shares was appropriate because this would take into account defendants' total liability associated with producing and marketing the defective product.<sup>42</sup> As for culpability, the court ruled that a defendant manufacturer cannot be less guilty just because it marketed more distinguishable pills or marketed in limited stores.<sup>43</sup> The court determined that the defendants' liability for the plaintiffs' damages be several only and cannot add up to 100% unless all the DES manufacturers have been identified as defendants.<sup>44</sup>

## II

### *STATE OF NEW HAMPSHIRE V. HESS CORP.*

#### *A. Overview of Case*

In 1990, an amendment to the Federal Clean Air Act mandated that an oxygenate be used in gasoline to reduce gasoline emissions if certain national air quality standards were not met in a particular geographic area.<sup>45</sup> The amendment required the oxygen content of the gasoline be

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<sup>38</sup> *Id.*

<sup>39</sup> *Id.*

<sup>40</sup> *Hymowitz v. Eli Lilly & Co.*, 539 N.E.2d 1069, 1078 (N.Y. 1989), *cert. denied*, 493 U.S. 944 (1989).

<sup>41</sup> Lepage, *supra* note 26, at 163.

<sup>42</sup> *Id.*

<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

<sup>45</sup> *State v. Exxon Mobil Corp.*, 126 A.3d 266, 273 (N.H. 2015).

at least 2.0% by weight.<sup>46</sup> The Reformulated Gasoline Program (RFG Program) was subsequently introduced by the Environmental Protection Agency (EPA) to regulate the manufacturing of gasoline, thus ensuring the gasoline would include the required amount of any oxygenate.<sup>47</sup> One of the potential oxygenates was a gasoline additive called MTBE, which increases gasoline's octane levels.<sup>48</sup> While RFG was required in certain metropolitan areas where high concentrations of ambient ozone were prevalent, other areas, including New Hampshire, could choose to participate in the program for credit toward mandatory reduction of emissions.<sup>49</sup>

New Hampshire began to participate in the RFG Program in 1991.<sup>50</sup> Gasoline containing MTBE was available throughout the state from 1995 to 2006.<sup>51</sup> During the 1997–1999 time period, studies done by the New Hampshire Department of Environmental Services, as well as investigations conducted in Maine and California, addressed concerns about the effects of MTBE on groundwater, and a standard regarding the contaminant level for MTBE in drinking water and groundwater was developed and enforced.<sup>52</sup>

In 2000, the EPA warned that MTBE is a pollutant that is not only highly soluble in water and travels farther than other gasoline constituents but is also highly resistant to biodegradation.<sup>53</sup> Remediating groundwater contaminated with MTBE gasoline is significantly more costly than remediating groundwater contaminated with non-MTBE gasoline.<sup>54</sup> After various efforts were made by New Hampshire to remove MTBE gasoline from the market from 2001 to 2004, Congress finally terminated the requirement for an oxygenate and mandated ethanol usage in 2005.<sup>55</sup>

New Hampshire filed a lawsuit in 2003 against a number of parties including gasoline suppliers, refiners, and chemical manufacturers,

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<sup>46</sup> *Id.* at 274.

<sup>47</sup> *Id.*

<sup>48</sup> *Id.*

<sup>49</sup> *Id.*

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

<sup>54</sup> *Id.*

<sup>55</sup> *Id.*

alleging that MTBE caused groundwater contamination.<sup>56</sup> ExxonMobil was the only party not to settle with the State, and the case went to trial in 2013.<sup>57</sup> The jury sided with the State on all counts: negligence, strict liability for design defect, and strict liability for failure to warn.<sup>58</sup> Exxon's position was that it developed its MTBE gasoline in compliance with the state of the art, the State was aware of the hazards associated with MTBE gasoline, and Exxon gave sufficient warnings of the hazards to distributors.<sup>59</sup> However, the jury rejected Exxon's defense.<sup>60</sup> The jury found that Exxon did not adequately prove (1) that a party other than the State or Exxon was solely responsible for the harm; (2) the State's misconduct was responsible for the harm; or (3) at least some or all of the damages caused by Exxon should be allocated to other nonparties.<sup>61</sup>

The State was awarded \$816.8 million in total damages comprising \$142.1 million for past cleanup costs, \$218.2 million for assessment and cleanup of 228 high-risk sites, \$305.8 million for sampling drinking water wells, and \$150.6 million for treatment of MTBE-contaminated drinking water wells at or above the threshold contaminant level.<sup>62</sup> The trial court (the State of New Hampshire Superior Court) determined Exxon's portion of the total damages to be \$236.4 million based on Exxon's market share of 28.94% for MTBE gasoline supplied in New Hampshire during the time frame in question.<sup>63</sup>

### ***B. Industry Background and the State's Allegations***

The gasoline industry operates at several levels: oil production, gasoline refining, transportation (via waterways and pipelines) from refiners to storage terminals, and transportation (via tanker trucks) from storage terminals to retail gasoline stations.<sup>64</sup> During transportation by

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<sup>56</sup> The authors served as testifying and consulting experts, respectively, for the State of New Hampshire.

<sup>57</sup> *Id.*

<sup>58</sup> *Id.*

<sup>59</sup> *Id.* at 274–75.

<sup>60</sup> *Id.* at 274–75.

<sup>61</sup> *Id.* at 275.

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> *Gasoline Explained*, U.S. ENERGY INFO. ADMIN., [https://www.eia.gov/energyexplained/print.php?page=gasoline\\_where](https://www.eia.gov/energyexplained/print.php?page=gasoline_where) (last updated Nov. 8, 2018).

pipeline or barge and during storage in bulk terminals, gasoline produced by different refiners becomes mixed together or “commingled.”<sup>65</sup> Once gasoline produced in different refineries becomes commingled, any individual volume of gasoline cannot be traced back to a particular refinery.<sup>66</sup> This is relevant from a market share perspective because it means that one cannot, even in principle, trace the gasoline produced in a given refinery to a given retail gas station, much less to a plume of MTBE-contaminated groundwater. This fact holds even if the refinery and the retail gasoline station are owned by the same firm. Gasoline only becomes branded at a terminal’s truck rack or tanks, where proprietary additives are blended into the gasoline to differentiate one brand from another.<sup>67</sup>

In *State of New Hampshire v. Hess Corp.*, the State of New Hampshire attributed its harm to Exxon and stated that Exxon was the largest supplier of gasoline to New Hampshire during the damages period.<sup>68</sup> The State contended that Exxon had supplied more than two billion gallons of gasoline, including several hundred million gallons of MTBE gasoline, comprising nearly 30% of the MTBE gasoline in New Hampshire.<sup>69</sup>

The State argued that defendants should be assigned liability based on the shares of gasoline they supplied to distributors in New Hampshire (supplier shares). The State’s complaint asserted that defendants:

knew or reasonably should have known that MTBE would be released into the environment and pollute the waters of the State in violation of New Hampshire law, would interfere with the State’s interest in protecting and preserving surface and groundwaters, and threaten public health and welfare and the environment, as has occurred and is continuing to occur within the State.<sup>70</sup>

Based on these criteria, companies that did not operate a refinery during the relevant period were not identified as defendants. Thus, firms (e.g., wholesale distributors) that supplied MTBE gasoline to New

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<sup>65</sup> Opposing Brief for State of New Hampshire on Exxon’s Appeal Issues at 14–15, *State v. Hess Corp.*, 20 A.3d 212 (N.H. 2011) (No. 2013-0591).

<sup>66</sup> *Id.* at 15.

<sup>67</sup> *Gasoline Explained*, *supra* note 64.

<sup>68</sup> Opposing Brief for Petitioner at 37, *Hess*, 20 A.3d 212 (N.H. 2011) (No. 2013-0591).

<sup>69</sup> *Id.*

<sup>70</sup> See *State v. Hess Corp.*, Case No. 03-C-550, Second Amended Complaint, Jan. 15, 2008, ¶ 6.

Hampshire but did not refine that gasoline were not named as defendants.

### ***C. Arguments by the State and Exxon***

In response to a motion before trial in New Hampshire, the trial court looked to six “restatement factors”<sup>71</sup> to determine whether a market share liability framework should be adopted:

(1) The generic nature of the product; (2) the long latency period of the harm; (3) the inability of plaintiffs to discover which defendant’s product caused plaintiff’s harm; (4) the clarity of the causal connection between the defective product and the harm suffered by plaintiffs; (5) the absence of other medical or environmental factors that could have caused or materially contributed to the harm; and (6) the availability of sufficient “market share” data to support a reasonable apportionment of liability.<sup>72</sup>

The court ruled that the State presented sufficient facts to establish the interchangeability and thus fungibility of gasoline with MTBE (factor 1).<sup>73</sup> The court, however, disagreed on the long latency period associated with the harm caused by MTBE because of its ability to travel faster and farther than other chemicals (factor 2).<sup>74</sup> The court sided with the State on the factor regarding plaintiff’s inability to identify the specific party that caused the harm because MTBE gasoline was commingled by retailers in storage tanks, which made it impossible to identify the source of discharged MTBE gasoline (factor 3).<sup>75</sup> With respect to the link between the defective product and the harm suffered by the State, the court found the State’s economic expert’s market share analysis sufficiently considered data targeting the RFG counties versus non-RFG counties and sided with the State (factor 4).<sup>76</sup> Finally, the court accepted the State’s market share data as sufficient and allowed the State to adopt market share liability in the proceeding (factor 6).<sup>77</sup>

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<sup>71</sup> Victor E. Schwartz, *The Restatement (Third) of Torts: Products Liability-The American Law Institute’s Process of Democracy and Deliberation*, 26 HOFSTRA L. REV. 743–59 (1998). “Although ALI Restatements have no force of law on their own, they have had a persuasive impact on the courts.” *Id.* at 743.

<sup>72</sup> *State v. Exxon Mobil Corp.*, 126 A.3d 266, 291–92 (N.H. 2015).

<sup>73</sup> *Id.* at 292.

<sup>74</sup> *Id.*

<sup>75</sup> *Id.*

<sup>76</sup> *Id.* at 292–93.

<sup>77</sup> *Id.* at 293 (regarding factor 5, the court “noted that Exxon had not asserted that other factors contributed” to other environmental factors that might have contributed to harm).

Exxon's position was that the trial court incorrectly adopted market share liability in this case even if it were an acceptable theory of recovery.<sup>78</sup> Exxon filed a motion before trial asking the court to impose the State's obligation to identify (1) the specific defendants that caused the harm; (2) the amount of damages to recover from each of them; (3) the timing and manner of the occurrence of the damages; and (4) the applicable legal theory to hold them responsible for the damages.<sup>79</sup> The court denied the motion as follows:

[R]equiring the State to allege specifically which defendant caused each injury would create an impossible burden given the allegations of commingling of MTBE and the asserted indivisible injury to the State of New Hampshire's water supplies. To mandate the State to establish more particularized causation would essentially allow the defendants to seek to avoid liability because of lack of individualized proofs where the gravamen of the claim is . . . that all defendants placed gasoline containing MTBE into the stream of commerce, thereby causing [the State's] injury.<sup>80</sup>

Subsequently, the trial court issued an order concluding that market share liability was a reasonable method in this case, ruling that courts allow plaintiffs to adopt alternative theories of liability, such as market share liability and "commingled product theory," in a situation where a plaintiff cannot identify which one of the group of parties that produce the same product caused harm.<sup>81</sup> The court further clarified that commingled product theory would only remove the plaintiff's burden to identify the specific proportion of a defendant's site-specific gasoline responsible for the harm, but such information is neither feasible nor necessary.<sup>82</sup>

Commingled product theory is a "modification of market share liability" characterized by two distinguishing features.<sup>83</sup> First, a commingled product is a new blended commodity that comprises gaseous or liquid products produced by known manufacturers.<sup>84</sup> Therefore under commingled product theory, plaintiffs are required to identify, to the best of their knowledge, the actual defendants that manufactured the products that comprise the harmful commingled

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<sup>78</sup> *Id.* at 291.

<sup>79</sup> *Id.*

<sup>80</sup> *Id.* (quoting the trial court).

<sup>81</sup> *Id.*

<sup>82</sup> *Id.*

<sup>83</sup> *In re Methyl Tertiary Butyl Ether ("MTBE") Prods. Liab. Litig.*, 379 F. Supp. 2d 348, 378 (S.D.N.Y. 2005).

<sup>84</sup> *Id.* at 378-79.

product. Because plaintiffs cannot just name all the manufacturers in a particular market that may be liable for the harm during the relevant time frame, they would need to conduct sufficient research to identify as many of the actual tortfeasors as possible if not all of them. Second, plaintiffs cannot identify the actual tortfeasors even if they are harmed immediately after the occurrence of contamination. In other words, a long latency period between the occurrence of contamination and recognition of harm is not required.<sup>85</sup>

The plaintiff's economic expert used the State's 1996–2005 Motor Fuels Distributor Reports (distributor tax records filed monthly by licensed distributors in New Hampshire showing the amount of gasoline supplied in the State) to calculate Exxon's 1996–2005 supplier market share in New Hampshire.<sup>86</sup> For the 1988–1995 period, however, the expert used the suppliers' monthly sales reports to calculate Exxon's 1988–1995 market share because the distributor tax records were not available during this time.<sup>87</sup> According to the expert's calculations, Exxon's supplier share was 28.94% for the 1996–2005 period and 30.1% for the 1988–1995 period.<sup>88</sup>

Several defendants in *New Hampshire v. Hess Corp.* argued that under *Sindell*, market share liability must be assigned based on manufacturing shares.<sup>89</sup> Not surprisingly, these were defendants whose refining shares were lower than their supplier shares.<sup>90</sup> The State argued that manufacturing shares were unreliable.<sup>91</sup> The long distances from refineries located in the U.S. Gulf, Canada, and overseas to New Hampshire, and the resulting commingling of the product caused there to be no reliable way to assign shares of gasoline consumed in New Hampshire based on firms' refining shares.<sup>92</sup>

The defendants also pointed out that the quantity of MTBE varied by type of gasoline.<sup>93</sup>

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<sup>85</sup> *Id.* at 379.

<sup>86</sup> Opposing Brief for the State of New Hampshire on Exxon's Appeal Issues at 15, State v. Exxon Mobil Corp., 126 A.3d 266 (N.H. 2015) (No. 2013-0591), 2015 WL 13684787.

<sup>87</sup> *Id.*

<sup>88</sup> *Id.* at 15–16.

<sup>89</sup> Opening Brief for Appellants Exxon Mobil Corp. & Exxonmobil Oil Corp. at 49, State v. Exxon Mobil Corp., 126 A.3d 266 (N.H. 2015) (No. 2013-0591), 2014 WL 12796091.

<sup>90</sup> *Id.*

<sup>91</sup> Opposing Brief for the State of New Hampshire, *supra* note 86, at 15.

<sup>92</sup> *Id.*

<sup>93</sup> Opening Brief for Appellants Exxon Mobil Corp. & Exxonmobil Oil Corp., *supra* note 89, at 48.

They then argued that all prior court decisions applied market share liability only when the product was fungible: “Where the [market share] theory has been adopted, an absolute predicate to its application is that the product in question be fungible and generic in nature: that is, one defendant manufacturer’s product must be indistinguishable from the next manufacturer’s product.”<sup>94</sup>

There is no set standard regarding when mathematical adjustments should be applied by the courts for calculation of market shares, so the products are adjusted to be fungible even if the products are manufactured with various amounts of harmful material.<sup>95</sup> In a product liability case involving pollution of groundwater allegedly caused by oil refiners’ supply of MTBE gasoline,<sup>96</sup> the court adopted market share liability to apportion the oil refiners’ liability even though the concentration of MTBE in gasoline varied from 2–15% by volume.<sup>97</sup> The risk of harm associated with MTBE is uniform under a market share scenario where the risk is measured based on the units of MTBE rather than the amount of gasoline sold.<sup>98</sup> In other cases, courts have been reluctant to adopt the same principle. In a case alleging that benzene found in gasoline led to leukemia, the court determined that gasoline containing benzene was not fungible because the concentration of benzene varied from 0–5% by volume.<sup>99</sup> Similarly, in another case latex gloves with varying amounts of allergy-inducing protein were determined to be non-fungible.<sup>100</sup> The fact that uniformity of risk associated with a harmful product is not clearly defined helps courts use the fungibility requirement to adopt market share liability loosely.<sup>101</sup>

In a different case involving MTBE, the MDL Court concluded:

MTBE-containing gasoline is a fungible product because all brands are interchangeable, and because different concentrations of MTBE in different batches of gasoline do not affect its ability to contaminate groundwater. As such, it is inherently difficult to identify the refiner that caused plaintiffs’ injuries, and indeed, may be even more

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<sup>94</sup> *In re Dow Corning Corp.*, 250 B.R. 298, 362–63 (E.D. Mich. 2000).

<sup>95</sup> Allen Rostron, *Beyond Market Share Liability: A Theory of Proportional Share Liability for Nonfungible Products*, 52 UCLA L. REV. 151, 166 (2004).

<sup>96</sup> *In re Methyl Tertiary Butyl Ether (“MTBE”) Prods. Liab. Litig.*, 175 F. Supp. 2d 593, 599 (S.D.N.Y. 2001).

<sup>97</sup> Rostron, *supra* note 95, at 166–67.

<sup>98</sup> *Id.* at 167.

<sup>99</sup> *Id.*

<sup>100</sup> *Id.*

<sup>101</sup> *Id.*



difficult than in DES cases because DES pills could be distinguished by appearance (e.g., color, shape, or size of the pills). MTBE-containing gasoline is an indiscrete liquid commodity that mixes with other products during transport, and might not vary in appearance from batch to batch. According to plaintiffs, when it is released into the environment, it lacks even a chemical signature that would enable identification. Furthermore, because plaintiffs allege injury (i.e., contamination) from any amount of MTBE, defendants' products present equivalent risks of harm to all plaintiffs, regardless of the concentration of MTBE in the gasoline.<sup>102</sup>

Market share liability also requires a plaintiff to prove that defendants breached a duty to avoid an unreasonable risk of harm from their products.<sup>103</sup> A plaintiff must show such conduct by defendants before he can proceed with a less strict standard for validating causation.

In *New Hampshire v. Hess Corp.*, the State argued that the defendant chose to produce and market MTBE gasoline without warning of risks associated with MTBE even though it could have alternatively produced gasoline with ethanol.<sup>104</sup> At the conclusion of the trial, the trial court instructed the jury:

Market share liability requires that the State . . . prove all the elements for negligence, or strict liability defect in design, or strict liability based on a failure to warn and that the State suffered harm. In addition, the State must prove the following: (1) it has identified enough MTBE gasoline manufacturers or suppliers in this case so that a substantial share of the relevant market is accounted for; and (2) MTBE gasoline is fungible, meaning that one manufacturer's or supplier's MTBE gasoline is interchangeable with another's; and (3) the State cannot identify the manufacturer or supplier of the MTBE gasoline that caused the harm.<sup>105</sup>

#### ***D. Jury Verdict, Appeal, and Final Opinion of the New Hampshire Supreme Court***

In its decision, the jury in *New Hampshire v. Hess Corp.*, determined that the State had substantiated all of its claims.<sup>106</sup> The jury found that the State proved all three elements above (a substantial number of

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<sup>102</sup> *In re Methyl Tertiary Butyl Ether ("MTBE") Prods. Liab. Litig.*, 379 F. Supp. 2d 348, 376–77 (S.D.N.Y. 2005).

<sup>103</sup> *State v. Exxon Mobil Corp.*, 126 A.3d 266, 292 (N.H. 2015).

<sup>104</sup> Opposing Brief for the State of New Hampshire, *supra* note 86, at 11.

<sup>105</sup> *Exxon Mobil Corp.*, 126 A.3d at 298–99.

<sup>106</sup> *Id.* at 297.

MTBE gasoline manufacturers were identified, "MTBE gasoline is fungible," and the State is unable to identify the source of the MTBE gasoline found in polluted water).<sup>107</sup>

The jury assigned liability based on supplier shares of all gasoline rather than refining shares.<sup>108</sup> The New Hampshire Supreme Court affirmed the superior court's ruling that the jury properly held Exxon responsible for its share of the supply market and not the refining market.<sup>109</sup> The New Hampshire Supreme Court agreed with the trial court's reasoning that the jury properly found Exxon responsible for its supply of MTBE gasoline even though it did not refine all of its MTBE gasoline supply.<sup>110</sup> Exxon should have been aware of the harm associated with MTBE as a refiner.<sup>111</sup> According to the trial court, the jury could have measured the State's damages based on both supplier and market share estimates because they both represented Exxon's "creation of the risk" in the State of New Hampshire.<sup>112</sup>

The Supreme Court of New Hampshire agreed with the jury's findings based on sufficient evidence.<sup>113</sup> The court concluded that the judicial system is willing to compensate plaintiffs who would be left uncompensated because of extreme difficulty to identify the exact tortfeasor.<sup>114</sup>

### III MARKET SHARE LIABILITY THEORY APPLIED IN OTHER LITIGATION

In this section, we explore the possible uses of market share liability applied to other litigation matters. We conclude that market share liability may provide valid damages estimates in a variety of different types of litigation.

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<sup>107</sup> *Id.*

<sup>108</sup> *Id.* at 299.

<sup>109</sup> *Id.*

<sup>110</sup> *Id.*

<sup>111</sup> *Id.*

<sup>112</sup> *Id.*

<sup>113</sup> *Id.* at 297.

<sup>114</sup> *Id.*

### A. DPT Vaccine

In *Shackil v. Lederle Laboratories*,<sup>115</sup> the plaintiff sued DPT manufacturers for brain damage due to toxins in a vaccine that allegedly caused encephalitis.<sup>116</sup> The plaintiff claimed that the manufacturer could have made a vaccine without toxins.<sup>117</sup> Shackil could not identify the exact manufacturer of the DPT that caused injury and thus sued all manufacturers.<sup>118</sup>

The defendant vaccine manufacturers disagreed with the applicability of market share liability in this case, arguing that their vaccines were not really fungible based on the differences in biological characteristics resulting from various manufacturing processes.<sup>119</sup> Siding with the defendants, the trial court dismissed the case, but the appellate court reversed the trial court's decision and remanded the case for further proceedings with more evidence.<sup>120</sup>

The appellate court found that similar physical appearance and identical production processes were not necessary factors for market share liability or any type of proportional liability theory.<sup>121</sup> The court found that all brands of the vaccine allegedly had some chance of defect, and the chemical composition of the vaccine hardly mattered to a consumer.<sup>122</sup> In the court's view, differences in chemical composition were insignificant as a physically distinguishing factor.<sup>123</sup> Defendant Eli Lilly, for instance, claimed that it differentiated its DPT vaccine by manufacturing it through a patented centrifugal process.<sup>124</sup> Its DPT vaccine was comprised partially of an acellular form of pertussis vaccine and allegedly had a significantly lower risk of injuring consumers than the vaccine in whole-cell forms produced by other manufacturers.<sup>125</sup>

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<sup>115</sup> *Shackil v. Lederle Labs.*, 530 A.2d 1287 (N.J. Super. Ct. App. Div. 1987), *rev'd*, 561 A.2d 511 (N.J. 1989).

<sup>116</sup> Rostron, *supra* note 95, at 175.

<sup>117</sup> *Id.*

<sup>118</sup> *Id.*

<sup>119</sup> *Id.*

<sup>120</sup> *Id.*

<sup>121</sup> *Id.* at 175–76.

<sup>122</sup> *Id.* at 176.

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

<sup>125</sup> *Id.*

The appellate court evaluated the applicability of a type of proportional liability because the DPT vaccines were not subject to uniform risk.<sup>126</sup> The “risk-modified market share analysis” expressed in the court’s opinion starts with apportioning a certain defendant manufacturer’s liability based on its market share, but then its liability share is adjusted down if it provides evidence that its vaccine caused fewer occurrences of encephalitis.<sup>127</sup> The trial judge was directed to apply such a risk-based method to apportion liability.<sup>128</sup>

Eventually the case went to the Supreme Court of New Jersey and was reversed and dismissed.<sup>129</sup> The court ignored without any explanation the proportional share liability theory expressed by the appellate court and treated the simple market share liability approach as the only valid approach in its analysis.<sup>130</sup> The Supreme Court essentially found that the DPT vaccine was not a fungible product because Eli Lilly’s proprietary manufacturing process made its vaccine significantly less likely to cause encephalitic injuries according to the scientific literature cited by the court.<sup>131</sup>

The Supreme Court concluded that market share liability would be potentially applicable if Eli Lilly were excluded because the other five manufacturers all produced their vaccines using whole-cell processes.<sup>132</sup> Nonetheless, the court found there was already a federal statutory compensation scheme for those harmed by vaccines and denied allocation of liability.<sup>133</sup> Shortly after the *Sindell* case, a California appellate court declined application of market share liability in *Sheffield v. Eli Lilly & Co.*<sup>134</sup> In that case, the plaintiff claimed that she was harmed by an unsafe antipolio vaccine and could not identify the exact defendant that manufactured the vaccine.<sup>135</sup> The antipolio vaccine manufacturers in the *Sheffield* case did not have the same chance of harming the consumers because the defect was attributable

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<sup>126</sup> *Id.*

<sup>127</sup> *Id.* at 177.

<sup>128</sup> *Id.*

<sup>129</sup> *Id.*

<sup>130</sup> *Id.*

<sup>131</sup> *Id.* at 177–78.

<sup>132</sup> *Id.* at 179.

<sup>133</sup> *Id.*

<sup>134</sup> *Sheffield v. Eli Lilly & Co.*, 192 Cal. Rptr. 870, 880 (Cal. Ct. App. 1983).

<sup>135</sup> Andrew B. Nace, *Market Share Liability: A Current Assessment of a Decade-Old Doctrine*, 44 VAND. L. REV. 395, 416 (1991).

to the manufacturing process of one company and not to the design.<sup>136</sup> Market share liability in this context would have imposed financial liability on innocent manufacturers.<sup>137</sup>

A few years later, a federal district court in California allowed the case *Morris v. Parke, Davis & Co.* to proceed with market share liability.<sup>138</sup> The plaintiff in this case claimed that he was harmed by a DPT vaccine.<sup>139</sup> The court felt it was reasonable to loosen the requirement for the causation link in the DPT vaccine case, which differs significantly from the polio vaccine case.<sup>140</sup> The court held in *Morris* that the DPT vaccines made by all the defendants were potentially faulty and that they failed to take proper care in manufacturing and marketing activities related to the vaccine.<sup>141</sup> The court found each defendant responsible for the damages represented by its share of the market in which it was negligent.<sup>142</sup> The court, however, did not consider the two issues that influenced the decision made by the *Sheffield* court: (1) the factor associated with the long passage of time considered in *Sindell*, and (2) the risk of preventing further development of vaccines.<sup>143</sup> *Morris* has not been followed by courts outside California.<sup>144</sup>

### **B. Asbestos Brake Pads**

Efforts to apply market share liability in litigation involving asbestos generally have not succeeded. Most courts have found that asbestos and DES significantly differ in ways that make market share liability inappropriate for calculating damages in asbestos litigation.<sup>145</sup> For example, in *210 East 86th Street Corp. v. Combustion Engineering, Inc.*, the court denied application of market share liability on the grounds that asbestos was not fungible in a manner similar to DES.<sup>146</sup>

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<sup>136</sup> *Id.*

<sup>137</sup> *Id.*

<sup>138</sup> *Morris v. Parke, Davis & Co.*, 667 F. Supp. 1332, 1348 (C.D. Cal. 1987).

<sup>139</sup> Nace, *supra* note 135, at 417.

<sup>140</sup> *Id.*

<sup>141</sup> *Id.* at 417.

<sup>142</sup> *Id.* at 417–18.

<sup>143</sup> *See id.* at 418.

<sup>144</sup> *Id.*

<sup>145</sup> Frank J. Giliberti, *Emerging Trends for Products Liability: Market Share Liability, Its History and Future*, 15 TOURO L. REV. 719, 726 (1999).

<sup>146</sup> *210 E. 86th St. Corp. v. Combustion Eng'g, Inc.*, 821 F. Supp. 125, 127 (S.D.N.Y. 1993).

In addition, the court contrasted the wide range of toxicities and their effects caused by different types of asbestos products.<sup>147</sup> The court also contrasted the differing chemical compositions present in asbestos products against the uniform physical attributes and chemical composition characteristics of DES.<sup>148</sup> Finally, the court addressed the difficulty with defining the relevant market for asbestos products because of their range of shapes, purposes, and functions.<sup>149</sup>

However, market share liability was accepted in the California case *Wheeler v. Raybestos-Manhattan*, which involved asbestos brake pads.<sup>150</sup> This product liability action was initiated by mechanics who allegedly suffered from asbestos fibers inhaled from brake pads on which they worked.<sup>151</sup> The court found that the asbestos brake pads met the fungibility standard and allowed the mechanics to proceed in their action with market share liability.<sup>152</sup> The court found that asbestos brake pads were highly similar, and that all the asbestos brake pads contained approximately the same amount of chrysotile.<sup>153</sup> The plaintiffs had most exposure to asbestos fibers from brake products when they were inspecting or replacing the old pads.<sup>154</sup> While the identity of the manufacturer of a new brake pad is easily determined by markings on the pad, it is difficult or impossible to identify the manufacturer of a used brake pad because the markings generally are unreadable.<sup>155</sup>

The court in *Wheeler* crafted a damages award that attempted to account for the fact that the defective products were not perfectly fungible due to risk variances caused by different amounts of harmful substances.<sup>156</sup> A solution to this issue would be to adjust the defendants' market shares based on the differences in the degrees of risk. Given equal market shares, a defendant that makes pads with 60% asbestos should pay more in damages than a manufacturer that makes pads with 40% asbestos. Such a damages award would require having

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<sup>147</sup> Giliberti, *supra* note 145.

<sup>148</sup> *Id.*

<sup>149</sup> *Id.*

<sup>150</sup> *Wheeler v. Raybestos-Manhattan*, 11 Cal. Rptr. 2d 109, 109-10 (1992).

<sup>151</sup> Giliberti, *supra* note 145, at 727.

<sup>152</sup> *Id.*

<sup>153</sup> *Id.*

<sup>154</sup> Rostron, *supra* note 95, at 181.

<sup>155</sup> *Id.*

<sup>156</sup> *Id.*

experts calculate specific risks associated with the various types of asbestos pads.

### ***C. Lead Paint***

#### *I. Skipworth v. Lead Industries Ass'n*

Victims suffering from lead poisoning in their childhood typically cannot identify the particular lead paint or lead pigment manufacturers that caused the poisoning. In *Skipworth v. Lead Industries Ass'n*, the lead poisoning victim's guardians sued virtually all the lead pigment manufacturers.<sup>157</sup> The lead pigment was considered to be the harmful component of the paint used in the victim's house.<sup>158</sup> The relevant time frame during which the paint was sold was identified as 1870 to 1977.<sup>159</sup> The victim's house was built in 1870, and lead paint was no longer used in homes by 1977.<sup>160</sup> There was no information regarding when the house had been painted, the manufacturer of the paint, or the manufacturer of the pigment in the paint.<sup>161</sup> In addition, lead pigment has no chemical characteristics that are traceable.<sup>162</sup>

The case was eventually argued before the Supreme Court of Pennsylvania. The court identified two major factors in the market share liability approach in this case that would cause distortion in liability allocation.<sup>163</sup> First, the court identified the lead pigment, rather than the paint made with the pigment, as the harmful product.<sup>164</sup> Second, the court found that the over one hundred-year time period was too long because many manufacturers have entered and exited the market.<sup>165</sup> Using a market share liability approach would improperly hold certain pigment manufacturers liable who were not tortfeasors.<sup>166</sup>

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<sup>157</sup> Williams ex rel. Skipworth v. Lead Indus. Ass'n, 690 A.2d 169, 171 (Pa. 1997).

<sup>158</sup> Donald G. Gifford & Paolo Pasicolan, *Market Share Liability Beyond DES Cases: The Solution to the Causation Dilemma in Lead Paint Litigation?*, 58 S.C. L. Rev. 115, 128 (2006).

<sup>159</sup> *Id.*

<sup>160</sup> *Id.*

<sup>161</sup> *Id.*

<sup>162</sup> *Id.*

<sup>163</sup> Williams ex rel. Skipworth v. Lead Indus. Ass'n, 690 A.2d 169, 172 (Pa. 1997).

<sup>164</sup> *Id.* at 173.

<sup>165</sup> *Id.*

<sup>166</sup> *Id.*

For these reasons, the Supreme Court of Pennsylvania rejected application of market share liability in the *Skipworth* case.<sup>167</sup>

## 2. *Brenner v. American Cyanamid Co.*

In *Brenner v. American Cyanamid Co.*, the trial court originally allowed market share liability, but the appellate court reversed and rejected that approach.<sup>168</sup> Plaintiffs commenced a legal action against manufacturers of white lead pigment, alleging that the infant plaintiff was harmed by the white lead pigment in the paint applied on his house.<sup>169</sup> Plaintiffs asserted a market share liability theory as a means of damages recovery.<sup>170</sup> The Supreme Court of New York in Erie County found that the plaintiffs could not have identified the manufacturers that made the white lead pigment in the paint applied on their house because all white lead pigment had the same chemical characteristics.<sup>171</sup> White lead pigment was sold in the market as a generic product.<sup>172</sup> The court found that market share liability was applicable in this context where there was difficulty with identification of the tortfeasors because of the fungible nature of the product.<sup>173</sup>

The defendant manufacturers of white lead pigment for paint appealed the Erie County Supreme Court's order denying their partial motion for summary judgment on plaintiff's assertion of market share liability.<sup>174</sup> The appellate court denied the applicability of market share liability for the following reasons:

- (1) white lead carbonate was not the only type of lead pigment used in lead paint;
- (2) white lead carbonate was used for exterior residential paint or non-residential paint as well as interior residential paint;
- (3) plaintiffs were unable to tell when the lead paint was applied to their apartment;
- (4) lead-based paint was not the only product that contains lead pigments;

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<sup>167</sup> *Id.*

<sup>168</sup> *Brenner v. American Cyanamid Co.*, No. 12596/93, 1999 N.Y. Misc. LEXIS 440, at \*6-7 (N.Y. Sup. Ct. Jan. 25, 1999); *Brenner v. American Cyanamid Co.*, 699 N.Y.S.2d 848, 854 (N.Y. App. Div. 1999).

<sup>169</sup> *Brenner*, 1999 N.Y. Misc. LEXIS 440, at \*1.

<sup>170</sup> *Id.*

<sup>171</sup> *Id.* at \*3-4.

<sup>172</sup> *Id.* at \*4.

<sup>173</sup> *Id.* at \*6-7.

<sup>174</sup> *Brenner*, 699 N.Y.S.2d at 848.



- (5) lead-based paint contains varying concentrations of lead pigment and thus was not fungible;
- (6) white lead carbonate suppliers did not have direct control over the risk of harm associated with lead paint;
- (7) lead poisoning was not associated with one type of disease; and
- (8) the Legislature did not provide for a remedy sought by plaintiffs who claimed lead poisoning.<sup>175</sup>

Therefore, the appellate court granted the defendants' partial motion for summary judgment on plaintiff's assertion of market share liability.<sup>176</sup>

The appellate court in *Brenner* found that lead pigment is not fungible.<sup>177</sup> The court did not interpret fungibility as "functional interchangeability" and found that lead pigments are physically distinguishable on an extremely detailed level because there are differences among the types of lead pigments used by various manufacturers.<sup>178</sup> The court also found that lead pigments are not fungible based on varying proportions of lead pigment in paints made by various manufacturers which translate into various levels of risk.<sup>179</sup> According to the court, the finished paint products with lead pigment concentration ranging from 10–50% made by various manufacturers were not fungible.<sup>180</sup>

### 3. Thomas v. Mallett

The facts surrounding the Wisconsin Supreme Court case *Thomas v. Mallett* were very similar to those in *Skipworth*.<sup>181</sup> In *Thomas*, the plaintiff was permitted to seek damages from lead paint pigment manufacturers in trial even though the plaintiff was not able to identify the particular manufacturer responsible for injury.<sup>182</sup> The Wisconsin Supreme Court in *Thomas* concluded that lead pigment was fungible.<sup>183</sup> The court's logic was that because any pigments in paint, including lead pigments, are one of the two essential elements that comprise

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<sup>175</sup> *Id.* at 852–53.

<sup>176</sup> *Id.* at 854.

<sup>177</sup> *Id.* at 853.

<sup>178</sup> Gifford & Pasicolan, *supra* note 158, at 148.

<sup>179</sup> *Id.* at 148–49.

<sup>180</sup> *Id.* at 148.

<sup>181</sup> See *Thomas ex rel. Gramling v. Mallett*, 701 N.W.2d 523, 528–29 (Wis. 2005).

<sup>182</sup> Gifford & Pasicolan, *supra* note 158, at 134.

<sup>183</sup> *Thomas*, 701 N.W.2d at 561.

paint, they are “functionally interchangeable.”<sup>184</sup> The court concluded that lead paint pigments are “physically indistinguishable” because they can be distinguished only on an extremely detailed level.<sup>185</sup> Lastly, the court concluded that lead paint pigments are equally risky because they contain similar proportions of lead which is the common toxic material.<sup>186</sup>

The *Thomas* decision expanded the market share liability doctrine in one important respect. The decision removed the requirement that defendants’ products be chemically identical.<sup>187</sup> Instead, the court in *Thomas* concluded that liability should be based on whether defendants’ products are “(1) functionally interchangeable, (2) physically indistinguishable, and (3) identically defective.”<sup>188</sup> Although the court cited the market share liability analysis of Professor Rostron,<sup>189</sup> Professor Rostron argued that the first two factors were not necessary.<sup>190</sup> Moreover, Professor Rostron argued in favor of “proportional and collective liability” under which defendants’ products need not be identically defective but rather could be applied where defendants’ products impose varying degrees of risk.<sup>191</sup>

#### ***D. Factor VIII Blood Products***

Several cases involving nonrecombinant Commercial Factor VIII blood products have successfully adopted the market share liability framework. Factor VIII is a natural protein present in human blood that governs clotting and coagulation.<sup>192</sup> Factor VIII previously was obtained from individual blood donors, fractionalized to remove plasma, and provided to patients with hemophilia.<sup>193</sup> Unfortunately, a large number of Factor VIII products were infected by the HIV virus during the 1980s.<sup>194</sup> As with the DES cases, the hemophiliac patients

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<sup>184</sup> *Id.*

<sup>185</sup> *Id.*

<sup>186</sup> *Id.* at 562.

<sup>187</sup> Gifford & Pasicolan, *supra* note 158, at 135.

<sup>188</sup> *Id.*

<sup>189</sup> See generally Rostron, *supra* note 95, at 196–98 (arguing that in some cases, courts mistakenly rejected market share liability on the basis of a finding that the products in question were not sufficiently fungible).

<sup>190</sup> Gifford & Pasicolan, *supra* note 158, at 135.

<sup>191</sup> Rostron, *supra* note 95, at 157–59.

<sup>192</sup> Daniel J. Grimm, *Accounting for Risk Disparity: An Alternative to Market Share Liability*, 2006 COLUM. BUS. L. REV. 549, 554 (2006).

<sup>193</sup> *Id.*

<sup>194</sup> *Id.* at 554–55.

who were harmed by infected Factor VIII products had difficulty identifying the tortfeasor.<sup>195</sup> In addition, Factor VIII consumers often did not learn they had been harmed by the blood product until long after it had been administered to them.<sup>196</sup>

The courts in two cases against nonrecombinant Factor VIII producers adopted market share liability. The Supreme Court of Hawaii in *Smith v. Cutter Biological* adopted a broad version of market share liability based on *Hymowitz v. Eli Lilly & Co.*<sup>197</sup> The court was not swayed by the fact that other courts had refused to adopt the theory of market share liability in non-DES litigation.<sup>198</sup> The court stated that new principles of causation would be necessary to compensate innocent plaintiffs harmed by Factor VIII products.<sup>199</sup> The court in *Smith* followed *Hymowitz* and allocated defendants' liability based on their national market shares.<sup>200</sup> The *Hymowitz* court's logic for adopting the national market was that each defendant's share in the national market reflects its overall culpability.<sup>201</sup> The court in *Smith* also considered Factor VIII to be fungible in the sense that "it can be used interchangeably" and found that market share liability theory applied in the DES cases "helpful."<sup>202</sup>

Similarly, in *Ray v. Cutter Laboratories*, a federal court in Florida approved the use of market share liability as applied to Factor VIII producers as long as the plaintiff demonstrated a sufficient effort to identify the tortfeasors.<sup>203</sup> Unlike in DES and other cases involving products that have equal chances of defect, adoption of market share liability in the cases involving Factor VIII must take into account the fact that differing manufacturing processes used to produce Factor VIII pose varying degrees of risk.<sup>204</sup>

As noted earlier, the court in *Ray v. Cutter Laboratories* determined that market share liability could be adopted in litigation involving

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<sup>195</sup> *Id.* at 555.

<sup>196</sup> *Id.*

<sup>197</sup> *Smith v. Cutter Biological, Inc.*, 823 P.2d 717, 728 (Haw. 1991).

<sup>198</sup> Klein, *supra* note 11, at 910.

<sup>199</sup> *Id.* at 910–11.

<sup>200</sup> *Id.* at 911.

<sup>201</sup> *Id.*

<sup>202</sup> *Smith*, 823 P.2d 717 at 724.

<sup>203</sup> *See Ray v. Cutter Labs.*, 754 F. Supp. 193, 195–96 (M.D. Fla. 1991).

<sup>204</sup> Grimm, *supra* note 192, at 556.

Factor VIII products.<sup>205</sup> This ruling came out before the decision in *Smith v. Cutter Laboratories*.<sup>206</sup> However, a different federal district court in Florida declined the adoption of market share liability the following year in *Kellar v. Cutter Laboratories*.<sup>207</sup> The court in this case disagreed with the decision in *Ray v. Cutter Laboratories*; it found that the *Ray* court did not consider the varying degrees of risk associated with the Factor VIII products made by different manufacturers.<sup>208</sup>

Unlike the consumers in the DES cases, the consumers of Factor VIII products face a nonuniform risk of injury. While DES is uniformly harmful, Factor VIII is not harmful by nature, rather it is harmful only when infected blood enters the manufacturing process.<sup>209</sup> The degree of risk can vary depending on many factors, such as where plasma is collected by the manufacturer and how high the level of quality control is in the manufacturing process.<sup>210</sup> On the other hand, DES is uniformly dangerous to every fetus due to its chemical composition.<sup>211</sup>

The court in *King v. Cutter Laboratories* also found that Factor VIII products are not composed in the same way partly because every manufacturer makes its factor concentrate through its own proprietary process.<sup>212</sup> The court declined the use of market share liability in this Factor VIII case on the ground that not every unit of Factor VIII posed the same level of risk of defect because not every unit of Factor VIII was equally infectious.<sup>213</sup> The court found that the risk of defect associated with Factor VIII was not attributable to the product's natural characteristics but was related to the way it was processed.<sup>214</sup>

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<sup>205</sup> *Ray*, 754 F. Supp. 193 at 196.

<sup>206</sup> Klein, *supra* note 11, at 910 n.145.

<sup>207</sup> *Kellar v. Cutter Labs.*, No. 88-14059-C1V-RYSKAMP, slip op. at 2 (S.D. Fla. Feb. 24, 1992).

<sup>208</sup> Klein, *supra* note 11, at 910 n.145.

<sup>209</sup> Grimm, *supra* note 192, at 562.

<sup>210</sup> *Id.*

<sup>211</sup> *Id.*

<sup>212</sup> *King v. Cutter Labs., Div. of Miles, Inc.*, 685 So. 2d 1358, 1360 (Fla. Dist. Ct. App. 1996).

<sup>213</sup> Grimm, *supra* note 192, at 562-63.

<sup>214</sup> *Id.* at 563.

### ***E. Orbital Debris***

Growth in the amount of orbital debris has resulted in numerous collisions.<sup>215</sup> Given the rate of increase in the volume of debris, the increasing costs of collisions are likely to adversely affect the growth of the satellite industry.<sup>216</sup>

Applying market share liability in the context of orbital debris has been suggested, but specific methods of assigning market share liability in potential orbital debris litigation have yet to be developed.<sup>217</sup> A major challenge with applying market share liability in the orbital debris context relates to determining each launching party's share in the existing problematic debris.<sup>218</sup> Estimating the total mass of orbital debris through statistical and mathematical methods is feasible.<sup>219</sup> However, determining the percentage of the total mass attributable to a given party is difficult.<sup>220</sup>

In principle, the shares of the total mass of debris that can be tracked back to specific parties could be used to assign shares of the remaining, untraceable debris.<sup>221</sup> Untraceable debris is composed primarily of pieces of debris generated in collisions and explosions of larger pieces of debris.<sup>222</sup> Thus, smaller pieces of debris are the products of larger pieces of debris. Therefore, if a percentage of large pieces of traceable debris belongs to a certain party, it can be inferred that approximately the same percentage of smaller, untraceable debris likely belongs to the same party.<sup>223</sup>

According to NASA, there were 17,817 identified objects in Earth orbit as of October 4, 2016.<sup>224</sup> Of this total, 5699 objects belonged to the United States, 6354 to Russia, and 3782 to China.<sup>225</sup> This means that the contribution indices associated with the United States, Russia, and China were 32.0%, 35.7%, and 21.2% respectively. The remaining

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<sup>215</sup> Mark J. Sundahl, *Unidentified Orbital Debris: The Case for a Market-Share Liability Regime*, 24 HASTINGS INT'L & COMP. L. REV. 125, 126 (2000).

<sup>216</sup> *Id.*

<sup>217</sup> *Id.* at 127.

<sup>218</sup> *Id.* at 144.

<sup>219</sup> *Id.*

<sup>220</sup> *Id.*

<sup>221</sup> *Id.* at 144–45.

<sup>222</sup> *Id.* at 145.

<sup>223</sup> *Id.*

<sup>224</sup> NASA, *Satellite Box Score*, 20 NASA ORBITAL DEBRIS Q. NEWS 16, 16 (Oct. 2016).

<sup>225</sup> *Id.*

11.1% was attributable to other countries including France, Japan, and India.<sup>226</sup> The dollar amount of each party's damages could be calculated by multiplying the total damages amount by the share of the party's traceable debris.<sup>227</sup>

#### IV

#### MARKET SHARE LIABILITY THEORY MAY NOT APPLY IN SOME CIRCUMSTANCES

Courts likely will have an increasing role in handling disputes relating to the effects of climate change caused in part by producers of carbon dioxide (CO<sub>2</sub>). According to a 2007 decision by the U.S. Supreme Court in *Massachusetts v. Environmental Protection Agency*,<sup>228</sup> the Clean Air Act authorizes the EPA to control air pollution caused by CO<sub>2</sub> emissions from motor vehicles.<sup>229</sup> Although the consequences of legal disputes involving global warming are presently uncertain, these types of disputes likely will increase in the future. More parties will be inclined to commence tort litigation as more types of damages are recognized as being caused by global warming.<sup>230</sup>

Recent studies have found a stronger correlation between global warming and cumulative CO<sub>2</sub> emissions rather than current CO<sub>2</sub> emissions. For example, Leduc, Matthews, and de Elía found a linear relationship between cumulative CO<sub>2</sub> emissions and regional change in the temperatures except in certain high-latitude regions.<sup>231</sup> Richard Heede concludes that the current trend of global warming is primarily attributed to historic emissions rather than current emissions.<sup>232</sup> Therefore, the greenhouse gas producer who currently produces the highest share of greenhouse gas is not necessarily the most responsible for global warming.

A damages system based on market share liability is not particularly suitable for tort claims related to global warming because market share liability imposes only several liability. Current CO<sub>2</sub> emissions

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<sup>226</sup> *Id.*

<sup>227</sup> Sundahl, *supra* note 215, at 145–46.

<sup>228</sup> *Massachusetts v. Env'tl. Prot. Agency*, 549 U.S. 497, 528 (2007).

<sup>229</sup> 42 U.S.C.A. § 7521(a)(1) (West 2018).

<sup>230</sup> Daniel J. Grimm, *Global Warming and Market Share Liability: A Proposed Model for Allocating Tort Damages Among CO<sub>2</sub> Producers*, 32 COLUM. J. ENVTL. L. 209, 209–10 (2007).

<sup>231</sup> Martin Leduc et al., *Regional Estimates of the Transient Climate Response to Cumulative CO<sub>2</sub> Emissions*, 6 NATURE CLIMATE CHANGE 474, 475 (2016).

<sup>232</sup> Richard Heede, *Tracing Anthropogenic Carbon Dioxide and Methane Emissions to Fossil Fuel and Cement Producers, 1854-2010*, 122 CLIMATIC CHANGE 229, 230 (2014).

producers make ongoing contributions to cumulative climate change and may reflect a relatively small share of total CO<sub>2</sub> emissions caused by producers over several centuries. Such discrepancies in shares of current and historical CO<sub>2</sub> emissions producers are especially relevant as the economic rationale for damages is to correct the incentives of market actors presently creating negative externalities. Therefore, assessing damages through market share liability based on historical shares may not properly incentivize current CO<sub>2</sub> emissions producers to change their behavior.

A more appropriate allocation of liability in the context of CO<sub>2</sub> emissions would be to use the defendants' market share as a proof of substantial causation, a common form of proof of causation that supports both joint and several liability, as well as punitive damages.<sup>233</sup> In handling disputes relating to climate change, courts rely heavily on climate science, which may establish the causal link between defendants' actions and plaintiffs' claim. Without such causal link, a court would find that plaintiffs lack standing to sue and would have to dismiss the lawsuit.<sup>234</sup>

A damages theory based on joint and several liability is particularly suitable for tort claims related to CO<sub>2</sub> emissions because it gives each defendant more incentive to minimize its ongoing greenhouse gas emissions to avoid exposure to joint liability. Under joint and several liability in a tort claim, any one of the defendants can be entirely responsible for the payment of the total damages before allocating the other defendants their shares in the total damages.<sup>235</sup> Joint and several liability would provide significant incentive to reduce CO<sub>2</sub> emissions, as estimates of damages associated with climate change are significant.<sup>236</sup> For example, a 2017 study estimating economic damages due to climate change in the U.S. adopts a "probabilistic" and "empirically derived" damages model that "integrates climate science, econometric analyses, and process models."<sup>237</sup> This damages model

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<sup>233</sup> See *In re Methyl Tertiary Butyl Ether Prods. Liab. Litig.*, 725 F.3d 65, 115–16 (2d Cir. 2013).

<sup>234</sup> Sabrina McCormick et al., *Science in Litigation, the Third Branch of U.S. Climate Policy*, 357 SCIENCE 979, 979 (2017).

<sup>235</sup> See, e.g., *Joint and Several Liability*, LEGAL INFO. INST., [https://www.law.cornell.edu/wex/joint\\_and\\_several\\_liability](https://www.law.cornell.edu/wex/joint_and_several_liability) (last visited Feb. 21, 2019).

<sup>236</sup> See Soloman Hsiang et al., *Estimating Economic Damage from Climate Change in the United States*, 356 SCIENCE 1362, 1362 (2017).

<sup>237</sup> *Id.*

estimates that every increase of one degree Celsius in the average temperature causes market, and nonmarket, damage in the U.S. equal to approximately 1.2% of gross domestic product.<sup>238</sup>

This type of damages approach was adopted in the New York City MTBE case in which both the trial court and the Second Circuit approved the use of market share as circumstantial evidence of actual causation of the plaintiff's injury.<sup>239</sup> The court found the defendant Exxon liable because of "evidence linking its own product to the plaintiff's injury."<sup>240</sup> The court concluded that

[v]iewed in context, the market share data adduced by the City served merely as some proof that sufficient quantities of Exxon gasoline were delivered to gas stations in the vicinity of Station Six to make it more likely than not that Exxon gasoline played a substantial role in bringing about the City's injury. Like the District Court, we perceive a difference between employing market-share data in this fashion and imposing liability based solely on a defendant's share of the market for a dangerous product, absent any evidence that the defendant's own product directly caused some of the harm alleged. Here, the City did not use market share data as a substitute for showing that Exxon contributed to the contamination of Station Six. Instead, it used such data to help quantify the scope of that contribution.<sup>241</sup>

To apply substantial causation in a global warming damages context, defendants' quantified CO<sub>2</sub> emissions could be used as proof of the degree of contribution to damages. For example, Heede conducted a study of historic CO<sub>2</sub> and methane emissions attributable to the ninety largest producers of fossil fuels and cement. In this study, these ninety entities (fifty investor-owned, thirty-one state-owned, and nine current or former centrally planned states) were selected because they produced equal to or greater than the threshold level of eight million tons of carbon per year for fossil fuel production.<sup>242</sup> These ninety entities are headquartered in forty-three countries and consist of fifty-six crude oil and natural gas producers, thirty-seven coal extractors, and seven cement producers.<sup>243</sup>

The study found that 914 billion tons of CO<sub>2</sub> equivalent gas were generated by the ninety entities between the years 1854 and 2010, which accounts for 63% of all the industrial CO<sub>2</sub> and methane

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<sup>238</sup> *Id.* at 1366.

<sup>239</sup> *In re Methyl Tertiary Butyl Ether Prods. Liab. Litig.*, 725 F.3d 65, 117 (2d Cir. 2013).

<sup>240</sup> *Id.* at 116.

<sup>241</sup> *Id.*

<sup>242</sup> Heede, *supra* note 232, at 231.

<sup>243</sup> *Id.*



generated worldwide between the years 1751 and 2010.<sup>244</sup> This means that 37% of all the industrial CO<sub>2</sub> and methane generated worldwide between 1751 and 2010 is attributable to other entities that have not been identified in this study. Heede identifies the ninety entities and their respective production of fuels and cement, CO<sub>2</sub>, methane, and total CO<sub>2</sub> equivalent emissions from 1854 to 2010, as well as each of the ninety entities' share of the global CO<sub>2</sub> equivalent emissions generated from 1751 to 2010.<sup>245</sup>

### CONCLUSION

Negative externalities are pervasive in today's modern economy. Economic efficiency requires, and public policies attempt to ensure, that polluting firms internalize the costs they impose on society. In many instances, however, tracking a pollutant back to its source can be difficult or impossible. In such circumstances, market share liability may serve as a viable method with which to assign damages. In other circumstances (e.g., global warming litigation) the alternative methodology of substantial causation may better serve to ensure that polluting firms internalize the costs they impose on society.

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<sup>244</sup> *Id.* at 234.

<sup>245</sup> *Id.* at 237 tbl.3.

