Role of Litigation in Preventing Product-related Injuries

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INTRODUCTION

Injuries and the law are connected in many important ways. The law can be a powerful tool for reducing the risk of injury (1). Laws can compel certain individual behaviors, such as seatbelt use, and prohibit other behaviors, such as speeding, to protect the safety of us all. Laws can also require product manufacturers to design and market their products in a manner that will reduce the likelihood of injury.

Product safety rules are enacted at all levels of government—federal, state, and local. Sometimes these laws, called statutes, are enacted directly by a legislature. Often, however, the details of safe design are delegated to administrative agencies, such as the National Highway Traffic Safety Administration (NHTSA) or the Consumer Product Safety Commission, for promulgation and enforcement. These administrative rulings are referred to as “regulations.” There is a substantial body of literature that evaluates the effectiveness of a variety of product safety statutes and regulations, and often they have been proven effective in controlling the risk of injury (1, 2).

Another aspect of the law, litigation, is sometimes seen (inaccurately) as applying only to the aftermath of an injury, when prevention has failed. A primary purpose of litigation is indeed to assess and assign liability for injury causation, and litigation can result in the compensation of the injured party. However, litigation can serve as a powerful tool for prevention as well. It has long been argued that transferring the cost of injuries through litigation, from the damaged person to the person or corporation who could have but did not prevent the injury, creates a motivation to invest in prevention rather than to pay the penalty of neglect (3).

The conceptual basis by which litigation, actual or threatened, can foster injury prevention involves the direct link that lawsuits create between faulty products or risky behaviors and the imposition of liability for damages. Civil litigation for private wrongs (much of which is called “tort” litigation), rather than criminal prosecution for wrongs committed against society, has as its primary desired outcome a judgment involving money. For obvious reasons, the desire to avoid paying monetary damages can be a powerful motivation. As William Prosser, one of the leading scholars of tort law, recognized, “...there is of course a strong incentive to prevent the occurrence of the harm. ... Not infrequently one reason for imposing liability is the deliberate purpose of providing that incentive” (4, p. 23).

There are, however, additional ways in which tort litigation can promote injury prevention. The process of discovery, through which a plaintiff—the person bringing the lawsuit—learns about the conduct and products of the defendant, can reveal information of critical importance to injury prevention. For example, an injury that might seem to be a rare, “freak accident,” such as an incident where a young child suffered severe burns on more than 30 percent of her body when a vaporizer that was called “tip-proof” by its manufacturer overturned, was better understood as a foreseeable and preventable injury when discovery revealed that the manufacturer had information on other children who had suffered similar injuries with this product (5, 6). A redesign of the vaporizer in question was developed and its use compelled by the manufacturer’s insurance company in this case (6).

Publicity is another possible outcome of litigation that can reduce the risk of injury. In February 1978, a California jury awarded $125 million to Richard Grimshaw who, at age 13 years, had suffered permanently disfiguring burns when the Ford Pinto (Ford Motor Company, Dearborn, Michigan) in which he was a passenger was engulfed in a postcollision fire.
EMPIRICAL EVIDENCE

In addition to case examples (13, 14), there have been several efforts over the years to study the impact of product liability on corporate behavior or decision-making. In 1976, the White House created a Federal Interagency Task Force on Product Liability to examine the effects of such litigation on US businesses. Among its methods, the Task Force used a telephone survey of product manufacturers. While acknowledging the limitations of survey research, the Task Force noted that more than half (51.3 percent) of the large firms responding had instituted some form of special program to reduce the risk of product liability. These programs included efforts to improve quality control, labeling, and product design. Together, the respondents viewed these techniques as having “a significant impact on product safety” (15, p. 1012). Overall, the Task Force concluded that the “picture is one showing a tort system and product safety” (15, p. 1012). This article will 1) review some of the empirical evidence examining the effect of litigation on product safety decisions, 2) provide two recent case examples of different ways that litigation can affect product safety, and 3) discuss several recent legal developments that may affect the ability of litigation to serve as an injury prevention intervention.

RECENT CASE EXAMPLES

Compared with many other consumer products, motor vehicles are subject to a substantial amount of safety regulation. Since Congress established the National Highway Traffic Safety Administration in the 1960s, NHTSA has...
promulgated numerous standards intended to make cars safer. Since then, the motor vehicle crash fatality rate per mile driven has declined by a remarkable 70 percent (20). Nevertheless, motor vehicles remain the leading cause of injury-related deaths in the United States, with more than 41,000 such deaths in 2000 (20). As a result, motor vehicles are also associated with a substantial amount of product liability litigation.

Two recent examples of litigation against motor vehicle manufacturers will help to illustrate how liability can influence safer product design, as well as the interplay among litigation, regulation, and the media.

**Case example 1: Bridgestone/Firestone tires and the Ford Explorer**

**Background.** Business partners for almost 90 years, Bridgestone/Firestone North American Tire, LLC (“Firestone”; Nashville, Tennessee), in 1990 introduced a new tire for the 1991 Ford Explorer (Ford Motor Company)—the 15-inch (0.381-m) ATX, later introduced in 1995 and 1996 as the ATX II and the Wilderness AT. Some of the first signs that Firestone’s product was to become involved in one of the largest automotive safety episodes in US history appeared in 1996, as the company began to receive a number of complaints related to tire tread separations (21). Arizona public officials, for example, reported Firestone tread separations and related accidents, requesting replacement of all affected tires purchased under state contract (22). The problem widened further in 1997 as, still unknown to federal regulators, Ford automotive dealers stationed in the Middle East began to notice tread separations on Firestone’s new Wilderness AT tires supplied with Ford’s Explorers (21). In August 1999, Ford began a “customer notification enhancement action”—it did not refer to the action as a “recall”—to replace the tires on its Explorers in Saudi Arabia. Ford did not initially notify NHTSA of this action. Ford later expanded its program, offering free alternative tires for Explorers in Thailand and Malaysia, in February 2000 (21, 23).

**NHTSA’s initial role.** In 1998, State Farm Insurance (Bloomington, Illinois) notified NHTSA of 21 US cases of Firestone tire tread separations, but the agency took no immediate action. State Farm reported another 30 cases in 1999, again without substantial action by the agency (24). During this time, NHTSA had also been receiving complaints directly from consumers. However, Ford’s “customer notification enhancement action” in the Middle East, Thailand, and Malaysia apparently went unnoticed by NHTSA and unreported (as was lawful under existing regulations) by Ford (25). In fact, it was not until early 2000, alerted by a news report on a Houston television station, that NHTSA launched its own defect investigation into the Ford/Firestone matter (23). Thus, while NHTSA conducts ongoing surveillance and analyzes injury claims to detect potentially emergent injury problems, the system is not always effective.

**Litigation and media attention.** In contrast to NHTSA’s initial response, the tort system reacted fairly quickly to the injuries, deaths, and property damage in the US market related to Ford/Firestone. In 1995, Firestone faced 37 personal injury claims. By May 2000, the company faced a total of at least 193 personal injury claims and 2,288 property damage claims, and it was defending 66 lawsuits related to failures of its tires. Over the course of 2001, the number of private lawsuits grew to approximately 280 personal injury cases (25, 26). Even in advance of final regulatory action, therefore, the tort system was very actively responding to the public health threat.

In addition to filing lawsuits, some litigators also sought to educate consumers, public entities, and news organizations about the risks associated with Ford Explorers and Firestone tires. For example, one Arkansas attorney combined public relations and consumer education with an immense body of material gained through civil discovery. He supplied internal Ford documents to Congressional investigators, news reporters, consumer groups, and other plaintiffs’ attorneys. Public attention and consumer interest in the story ultimately became so great that “[e]ven Ford officials say they’ve never seen an auto-safety story like it” (27, p. 46).

**Conflicting data.** Epidemiologic data regarding Ford/Firestone could sometimes appear to be contradictory. Certain analyses yielded different results depending on body style (two door vs. four door) or drive train (two-wheel vs. four-wheel drive) (27). Ford and Firestone themselves took conflicting views of the evidence. Firestone argued, in part, that Explorers were almost four times as likely as other sport utility vehicles to roll over in single-vehicle, tire-related highway accidents (28). Ford argued that the problem originated with the tires because, among other things, it claimed that a group of Explorers equipped with Goodyear tires (The Goodyear Tire & Rubber Company, Akron, Ohio) were less prone to crashes than a group fitted with Firestone tires (29). Moreover, according to consumer groups, data from NHTSA’s Fatality Analysis Reporting System of motor vehicle crash deaths for 1995–1998 showed that “Explorer fatalities were almost three times as likely to be tire related as those with other SUVs [sport utility vehicles] or cars” (30, p. A1).

Future research will likely clarify the relative risks posed by Ford Explorers and Firestone tires. Conversely, though, one of the features of the litigation system is that, unlike scientific research, judges and juries must resolve disputes with the evidence immediately available. Although this may create the potential for an erroneous outcome, it also allows possible safety hazards to be addressed more quickly, even in the absence of perfect data.

**Industry and legislative change.** As of May 2002, approximately 271 deaths and more than 800 nonfatal injuries have been attributed by federal regulators to Ford Explorers fitted with Firestone tires (31). Bridgestone/Firestone has incurred at least $3 billion in costs related to its tire recall and Ford, another $6 billion (32). Firestone’s recall involved approximately 6.5 million tires and Ford’s involved 13 million (21, 29). On November 8, 2001, Bridgestone/Firestone, Inc., announced a comprehensive settlement of state claims under which it would pay $500,000 to 53 US states and territories with an additional $5 million for consumer education and a total of $10 million for the states’ attorneys’ fees (33).

The Ford/Firestone case ultimately resulted in federal legislation. The Transportation Recall Enhancement, Accountability, and Documentation Act (or “TREAD Act”) was enacted on November 1, 2000. Among other items, it increases NHTSA’s budget, enhances the penalties that could be imposed on automobile manufacturers that fail to report defects, opens the way to requiring electronic tire pressure monitors in automobiles, addresses tests and ratings for rollover risk and child safety seats, and allows NHTSA to require disclosure of overseas automobile safety recalls (34, 35).

The response to injuries caused by Ford Explorers equipped with Firestone tires stands as a compelling example of the importance of private tort litigation’s role in identifying dangerous products and promoting safety. The case demonstrates the ability of tort litigation to 1) act in advance of regulators; 2) acquire industry information, through civil discovery, which can inform public health interventions; 3) attract public attention; and 4) ultimately lead to industry, regulatory, and legislative change.

Case example 2: Ford and vehicle stalling

An example of the potential for courts to very directly adopt the role of the regulatory system, when it has failed to act, is illustrated by the case of Howard v. Ford Motor Co. (36). The case also illustrates the ability of a single judge, without the kind of media or public attention that Ford/Firestone attracted, to affect injury prevention policy.

Howard involved the ignition system of more than 20 million Ford vehicles manufactured from 1983 to 1995. Ford had decided to mount one part of that system, called the thick film ignition (TFI) module, under the hood of the car, directly on the vehicle’s distributor. Plaintiffs argued that this placement could cause the TFI module to fail when the vehicle became especially hot, causing the vehicle to stall. If this happened when the vehicle was running, they argued, the situation could be quite dangerous, especially if the car’s power steering and/or brakes were also affected. The case was brought as a class action lawsuit in California on behalf of vehicle owners in an attempt to force Ford Motor Company to acknowledge the problem and remedy the situation. For its part, Ford argued that: 1) the TFI module was not defective; 2) a stalling vehicle might not represent a particular safety hazard; and 3) its vehicles were no more prone to crashes or fatalities than comparable vehicles without the TFI module (36).

On October 11, 2000, California Superior Court Judge Michael Ballachey rejected Ford’s arguments and ruled in the plaintiff’s favor on several matters. The judge began by reviewing the history of Ford’s design of the TFI module, concluding that the decision to mount the module on the distributor, rather than in some cooler location, was motivated by cost considerations. The court also concluded that “Ford has been aware, since at least 1982, that installing its TFI ignition modules on the distributors . . . made them inordinately prone to failure due to excessive exposure to heat and thermal stress” (36, p. 8). The court’s decision also describes Ford’s response to five separate defect investigations opened by NHTSA in response to stalling complaints by consumers. Ultimately, the judge concluded that Ford had withheld vital information from NHTSA and noted that Ford had also demanded the return of documents in other TFI litigation as a condition of settling those cases with the plaintiffs (36).

Regarding the safety of Ford’s TFI module-equipped vehicles, research and testimony provided by injury epidemiologist Leon Robertson proved persuasive in the case. Robertson had used data from the Fatality Analysis Reporting System to compare fatal crash involvement rates of TFI module-equipped vehicles with other Ford vehicles without the device. After controlling for other factors related to the risk of fatal crash, such as vehicle weight and wheelbase, Robertson determined that the TFI module-equipped vehicles had a 9 percent higher fatality rate (36) (Leon Robertson, Nanlee Research, personal communication, 2002).

Having resolved most of the factual and legal issues in the plaintiff’s favor, perhaps the most interesting aspect of the case involves the remedy Judge Ballachey imposed. In addition to paying compensation for costs associated with replacing the TFI module, Ford was also ordered by the court to recall the affected vehicles and to fix the problem. This became the first time that a judge, rather than NHTSA, had ordered the recall of a vehicle (37). Ford initially promised to appeal this part of the decision but eventually agreed to a settlement with the plaintiffs.

This lawsuit may also produce future benefits for product safety. Under the terms of the settlement, Ford also agreed to contribute $5 million for independent automotive safety research to be conducted at George Washington University and other academic centers (38).

Epidemiology in Litigation

For most of the history of tort litigation, little or no evidence based on epidemiologic information was presented or needed to be presented. In many cases, that type of scientific evidence was unnecessary because eyewitness accounts of an incident could easily establish the causal link between a breach of duty and the consequent damages. For example, if a car struck a pedestrian, resulting in a fracture of the pedestrian’s femur, there would be no question that the etiology of the fracture was the transfer of energy in the crash.

In the last several decades, however, lawsuits have been brought for events that either have no eyewitness or disproportionately involve certain types of products for which “traditional” forms of evidence of causation are lacking. In these types of cases, epidemiologic evidence is relied upon in order to prove the causal relation between an act or an exposure and the resulting injury to human health. For example, in Cook v United States, plaintiffs filed suit against the federal government, alleging that they had developed Guillain-Barré syndrome after being vaccinated during the 1976 swine flu immunization program (39). At that time, the etiology of Guillain-Barré syndrome was not well understood nor was the syndrome easily diagnosed. Nevertheless, the federal government agreed to accept liability for any case of Guillain-Barré syndrome arising within 10 weeks of
swine flu vaccination without further proof of causation after a study by the Centers for Disease Control and Prevention linked the vaccine to elevated attack rates of Guillain-Barré syndrome. The Cook plaintiffs sought to extend this window of compensation to cases arising beyond the 10-week post-vaccination limit. In doing so, the plaintiffs’ arguments revolved entirely around questions regarding the quality of epidemiologic evidence, including the proper baseline rate of Guillain-Barré syndrome in the population and the most appropriate depiction of the epidemiologic curve in the presence of missing or incomplete data.

Other examples include toxic tort lawsuits alleging that human damage has been caused by “invisible” toxic exposures, or a lawsuit might allege that a motor vehicle design, such as that of the Jeep (DaimlerChrysler Corporation, Auburn Hills, Michigan), was dangerous and produce scientists to demonstrate that car crash reports implicated the vehicle as figuring disproportionately in injury-producing rollovers (40). Because of these and other cases, epidemiology has now become a more recognized form of evidence in trials (41), and epidemiologists are often sought as expert witnesses. The relation between law and epidemiology is therefore reciprocal. Law can be used to influence the epidemiology of injuries, and the science of epidemiology can be used to influence the outcome of the legal process.

**RECENT DEVELOPMENTS IN THE LAW AFFECTING THE USE OF LITIGATION**

Several new developments in the law or in the way that courts have reacted to product liability claims may affect the future ability of litigation to serve as a tool for injury prevention. These developments include new rules for the admissibility of expert testimony, cases that address when federal product safety standards will prevent a lawsuit from proceeding against that product at all, and varying judicial treatment of innovative litigation against firearm manufacturers.

**Admissibility of scientific evidence**

For the plaintiff to win most products liability cases, he or she must demonstrate (among other factors) that the injuries suffered were caused by the manufacturer’s product. Sometimes this is a trivial matter, as when a pedestrian is struck by an automobile. In other cases, however, expert scientific testimony is required to connect the plaintiff’s injuries with the defendant’s product. When scientific evidence is introduced by plaintiffs, defendants will often challenge the reliability of that evidence and seek to have it excluded. Concerns about the use of allegedly unreliable research—so-called junk science—in litigation have been raised by critics of product liability litigation (42).

For many years, at least in federal courts, the test for whether expert testimony was sufficiently reliable to be admitted was based on the case of *Frye v United States*. In *Frye*, a federal appellate court had decided in 1923 that, for scientific evidence to be admissible, its methodology or other basis must be “sufficiently established to have gained general acceptance in the particular field in which it belongs” (43, p. 47).

In 1993, the US Supreme Court revisited *Frye*’s “general acceptance” standard in the case of *Daubert v Merrill Dow Pharmaceuticals, Inc.* (44). In *Daubert*, the plaintiffs were two children, Jason Daubert and Eric Schuller. While pregnant, the mothers of both children had used the drug Bendectin, manufactured by Merrill Dow (Kansas City, Missouri) and commonly prescribed to combat morning sickness or other nausea. When Jason and Eric were born with certain birth defects, they and their parents sued Merrill Dow, alleging that Bendectin was the culprit. At trial, Merrill Dow introduced the results of published epidemiologic studies that suggested no association between Bendectin and birth defects. Plaintiffs countered with expert testimony of their own including, in part, unpublished reanalyses of some of the data in the epidemiologic studies, indicating that Bendectin was associated with birth defects. Merrill Dow argued that the plaintiffs’ evidence should be excluded because it did not meet *Frye*’s general acceptance test, and both the trial court and Court of Appeals agreed (44).

The Supreme Court disagreed and reversed the decision. Rather than relying exclusively on the notion of general acceptance, the Court concluded that a number of possible factors affected whether scientific evidence is sufficiently reliable to be admissible. In particular, the Court identified four factors that judges could consider: 1) whether the “theory or technique . . . can be (or has been) tested”—this is the concept of falsifiability at the heart of the scientific method; 2) whether the theory or technique has resulted in peer review and publication; 3) the “error rate” of the scientific technique; and 4) the traditional general acceptance inquiry from *Frye*. The Court also emphasized that the reliability determination should focus “solely on principles and methodology, not on the conclusions they generate” (44, pp. 594–5).

Six years later in the case *Kumho Tire Co. v Carmichael* (45), the Court had an opportunity to clarify certain aspects of its earlier *Daubert* decision. In *Kumho*, Patrick Carmichael was driving a minivan when one of the tires, manufactured by Kumho, suffered a blowout. In the resulting crash, one passenger was killed and others were injured. In their product liability case against Kumho, plaintiffs retained a tire engineering expert who concluded that the blowout resulted from a defect in the tire. On appeal, the Supreme Court ruled that its *Daubert* decision applied equally to technical or other specialized knowledge like engineering. It also reiterated that the four Daubert factors were meant to provide guidance but were not the only factors that a court could use to assess reliability. Judges, the Court acknowledged, would have to tailor their analyses to the specific kind of evidence being offered (45).

Together, *Daubert* and *Kumho* pose interesting new challenges for the ability of product liability to provide incentives for safer products. In some scientific areas, plaintiff’s experts may be held to a higher standard before their evidence will be admissible. *Daubert* also requires judges to be skillful gatekeepers of scientific and technical evidence—applying the four factors and/or other criteria to assess reliability and therefore admissibility. In some circumstances,
this may require judges to obtain a sophisticated understanding of epidemiologic or other methods. In fact, several organizations recently have produced materials intended to teach judges about epidemiology and biostatistics (46).

**Products that comply with safety standards: preemption**

Even when manufacturers of consumer products comply with a state or federal regulatory system, litigation may still be necessary to ensure that a product is as safe as it can be. The existence of a federal regulatory system, though, may affect the ability of injured consumers to bring litigation at all. On the basis of two recent US Supreme Court opinions, however, it can sometimes be difficult to predict when consumers injured by an allegedly defective product that is regulated by federal law can sue the manufacturer. The Supreme Court has held that, under some circumstances, a person claiming injuries because a vehicle lacked airbags may not sue the manufacturer, while someone injured from a failed pacemaker could, even though in both cases the manufacturers had complied with applicable federal law.

In *Geier v American Honda Motor Company*, the plaintiff was seriously injured when the 1987 Honda Accord (American Honda Motor Co., Inc., Torrance, California) she was driving collided with a tree. In compliance with federal safety standards, the vehicle had a manual lap-shoulder belt (which the plaintiff was wearing) but did not have an airbag or other passive restraint device (47). “Passive” safety devices work regardless of individual behavior and are generally considered more effective than active devices alone, which require compliance by the user (48). Geier and her parents sued the manufacturer claiming, in part, that the car had been designed negligently and defectively because the manufacturer did not install an airbag on the driver’s side. Honda argued that this type of no-airbag lawsuit was “preempted” (or rendered invalid) because it conflicted with the objectives of the federal regulatory scheme (47). Preemption can occur when action at one level of government (here, the federal law) supersedes action at a lower level (here, the state tort claim).

In its 2000 ruling, the US Supreme Court agreed with Honda and dismissed Geier’s lawsuit. The Court explained that the 1984 version of Federal Motor Vehicle Safety Standard (FMVSS) 208, promulgated by NHTSA under authority of the National Traffic and Motor Vehicle Safety Act, required that automobile manufacturers equip some, but not all, of their 1987 vehicles with passive restraints. According to the comments of the Department of Transportation that accompanied FMVSS 208, the standard deliberately gave the manufacturers several passive restraint devices from which to choose. According to the Court, “[t]hose choices would bring about a mix of different devices introduced gradually over time; and FMVSS would thereby lower costs, overcome technical safety problems, encourage technological development, and win widespread consumer acceptance”—all promoting the standard’s safety objective. Finding that the petitioner’s tort action was an “obstacle” to that objective, the Supreme Court held that the suit was preempted by the federal regulatory scheme. The Court acknowledged that The Safety Act contained a so-called savings clause, intended to preserve the ability of injured consumers to bring product liability actions. In this particular case, however, the Court argued that Congress did not intend that litigation should be allowed (in its view) to frustrate the purposes of the Act (47).

In another recent case, however, the Supreme Court reached a different conclusion. In *Medtronic v Lohr*, a heart patient sued the manufacturer of her pacemaker that failed and caused her injury (49). The Supreme Court addressed the question of whether the Medical Device Amendments of 1976 to the Federal Food, Drug, and Cosmetic Act preempted a negligence action against the manufacturer based on an allegedly defective medical device. Under the Medical Device Amendments, medical devices are classified into three categories. Class III devices include pacemakers and other devices that pose the greatest risk of human harm. Class III devices generally may be introduced into the market only after a rigorous Food and Drug Administration review known as “premarket approval,” which requires on average of 1,200 hours to complete. However, two broad exemptions substantially reduce the number of medical devices actually subject to this review: 1) devices introduced before 1976 can remain on the market until the Food and Drug Administration initiates and completes the approval process; and 2) new devices that are “substantially equivalent” to a preexisting device. In order to meet the second exemption, the manufacturer submits a “premarket notification” to the Food and Drug Administration, which then conducts a limited review (on average, 20 hours) to determine if the medical device qualifies. Medtronic’s pacemaker fell within the substantially equivalent exemption (49).

As in *Geier*, the defendant in *Medtronic* argued that, because its device complied with the applicable regulatory scheme, the plaintiff’s lawsuit should be preempted. This time, though, the Supreme Court refused to dismiss the plaintiff’s case. In *Medtronic*, the Court explained that there was a general presumption against preemption unless that was the clear purpose of Congress. The Court then conducted a careful examination of the specific language of the Medical Device Amendments and other evidence of Congress’s purpose in enacting the law. It concluded that Congress did not intend to preempt the kind of products liability action being brought by the plaintiffs (49).

If, as in *Geier*, the courts preempt the plaintiff’s case before it can proceed, it is more difficult for litigation to serve its injury prevention purpose. For now, though, it appears that compliance with a federal regulatory scheme will not usually preempt products liability litigation. However, in specific cases, preemption will depend on not only the precise wording of the federal statute and corresponding regulations but also the particular state claim raised.

**Firearms: conflicting state law and “obvious hazards”**

Recent litigation against the gun industry demonstrates the potential importance of scientific data in determining liability. It also shows that liability may depend on state law that can vary dramatically among the states. Liability can also depend on the predilections of the judge, often leading
to inconsistent results. A good example of this problem involves a comparison of two product liability actions brought in New Mexico and Michigan.

In *Smith v Bryco Arms*, the New Mexico Court of Appeals allowed a case to proceed against a gun manufacturer and a distributor, overturning the trial court’s initial dismissal of the case (50). *Smith* involved a boy aged 15 years who unintentionally shot his friend aged 14 years in the mouth with a .22-caliber pistol, seriously injuring him. The victim and two other boys (neither the shooter) had been playing at the victim’s home when they decided to buy some food. While they were out, one of the boys, the one aged 15 years, bought a model J-22 handgun and ammunition from someone in a parking lot for $40. During the purchase, the boy inserted the ammunition magazine into the gun. The three boys returned to the victim’s house and continued to play with the gun, and the victim called the shooter to come over. At some point, the boy who had bought the gun removed the ammunition magazine while the other three boys, erroneously believing that the gun was unloaded, passed the gun around in another room. When the gun was passed to the shooter, he pulled the trigger and unintentionally shot the victim (50).

The plaintiffs, the victim and his parents, raised both product liability and negligence claims, alleging that the handgun used in the shooting was in an unreasonably dangerous and defective condition because it lacked the following: 1) a safety device that would prevent the gun from firing if the ammunition magazine was removed (called a magazine safety); 2) a safety device to warn users when a round of ammunition had been loaded (called a loaded chamber indicator); and 3) an adequate printed warning that the gun could fire even if the ammunition magazine had been removed (50). Magazine safeties and loaded chamber indicators can prevent unintentional shootings when the user does not know that a bullet is in the chamber ready to be fired (11).

The Court of Appeals concluded that suppliers are responsible for risks arising from the foreseeable uses, unintended uses, and misuses of their products. It found “nothing new or unusual” in the plaintiffs’ action and allowed the suit to go forward. In reaching its decision, the Court discussed a 1991 US General Accounting Office report, which found that 23 percent of unintentional shootings might have been prevented if the user had known the gun was loaded (51), and another study that showed that, in New Mexico between 1984 and 1988, 25 children aged 0–14 years were killed in unintentional shootings (52). The court held that a reasonable jury might consider this evidence, along with other evidence presented, and conclude that the defendants “were on notice, knew, or should have known of the risks posed by bullets in the chamber.” With respect to feasibility, the plaintiffs provided evidence that a magazine safety might cost about 22 cents and a loaded chamber indicator about 8 cents. The plaintiffs also produced evidence that these devices were available and widely known when the gun was designed, manufactured, and distributed, supporting their argument that installation of these safety devices was both feasible and inexpensive (50).

In several other cases also alleging that a gun was defectively designed because it lacked a magazine safety, however, judges have dismissed the plaintiff’s case at the outset. For example, *Raines v Colt Industries* was brought before a federal court in Michigan (53). In that case, Kent Raines was shot and killed when his companion, Nathaniel Davis, was playing with a Colt pistol (Colt’s Manufacturing Company, Inc., West Hartford, Connecticut). Hoping to scare Raines, Davis first removed the ammunition magazine from the gun. Thinking that the gun was now unloaded, Davis pulled the trigger, fatally shooting his friend in the head. Both were juveniles at the time of the shooting.

As in the *Smith* case, Raines (through his estate) argued that the Colt handgun was defective and could have been made safer with the installation of a magazine safety. This time, though, the court ruled in Colt’s favor, dismissing the case. The court’s reasoning focused on its analysis of the dangers posed by the Colt pistol. The court wrote, “the dangers presented by the loaded gun were open and obvious to a reasonable and expected user” (53, p. 825). Therefore, under Michigan law, Colt did not have an obligation to make its product safer.

In states that apply a broad reading of the “open and obvious” rule, its purpose is to prevent manufacturers of certain products, like knives or axes, from being potentially liable every time a user cuts himself. Arguably, though, the hazard posed by a gun erroneously thought to be unloaded is a potentially hidden one. From an injury prevention perspective, it is also preventable. When the firearm manufacturer could make its product safer without altering the basic function of the gun, application of the open and obvious rule in this manner removes litigation’s financial incentive to incorporate new safety devices.

**CONCLUSION**

Product liability continues to be an important tool for the prevention of injuries. Although it is sometimes difficult to attribute specific changes to specific cases, the weight of the anecdotal and empirical evidence suggests that litigation has made some products safer. Prevention occurs through the imposition of monetary damages, media attention, information gathering, and litigation’s ability to foster subsequent legislative or regulatory change.

We have chosen to limit our discussion to product-related injuries, but litigation may also help to prevent other forms of injury. For example, owners of buildings or property can be sued for injuries that occur when there is inadequate safety or security. This is referred to as premises liability (54).

Recent legal developments may affect litigation’s ability to prevent injuries in the future. In addition to the judicial decisions discussed in this article, one broad category of change is often (perhaps erroneously) referred to as “tort reform.” Tort reform encompasses a host of legislative changes considered or enacted in some states. These may include caps on the total amount of damages that can be imposed, limits on the ability to sue manufacturers of older products, and changes to standards of liability. Courts, legislators, and plaintiffs are just now beginning to respond to these new laws (55).
On the other hand, plaintiffs and their lawyers, sometimes assisted by injury prevention professionals, continue to develop innovative litigation strategies. For example, lawsuits have been brought by cities and counties against the firearm industry, arguing that guns could be designed, marketed, and distributed to reduce their likelihood of causing injuries, thereby reducing costs for the municipalities. These lawsuits, modeled after tobacco litigation, may or may not be successful (56). So far, none has yet proceeded to trial and several have been dismissed on appeal. Others, however, are moving forward (57). For example, the Appellate Court of Illinois reversed the trial court's decision dismissing the city of Chicago's case (58). Similarly, the Ohio Supreme Court has allowed the city of Cincinnati’s case to proceed, explicitly citing work by public health researchers regarding the lawsuit’s injury prevention potential (59).

Litigation is certainly not a perfect tool for product-related injury prevention. It can sometimes send mixed signals to manufacturers, and it may be associated with potentially harmful social costs for some industries. However, litigation can also be a critically important intervention, particularly where product regulation is absent or has failed to achieve an adequate level of safety. Because of the potential to reduce injury, practitioners of injury prevention should consider litigation as one option when deciding how best to address a particular injury problem.

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