

*The Safety of Chemical Products*¹

Introduction

Many consumer products contain chemicals that might offer unhealthy exposures. The health risk of such products depends on the actual exposure and how a product is used or misused, in addition to the product's potential for chemical emission. Household cleaners, plastics, flame retardants, pesticides, and personal care products are a few types of products that have the potential for health risks.

There are at least three ways to address potential health risks from products: 1) remove the toxic compounds; 2) provide information to allow informed buying/use decisions; and 3) create negative incentives, such as by lawsuits, after harm has been caused. McDonough and Braungart² make a case for removing toxic chemicals from products. Post-sale product liability and defense considerations, as well as a rating system for buying/use decisions, are discussed below.

Product Liability

Over the last several years, product liability and product safety have become high-priority issues for policies and business decisions.³ The application of damages from product liability can be viewed as either punishment or the provision of incentives for safer products. The tension in business

1 This paper will be included in a forthcoming SpringerBriefs publication, tentatively titled *Environmental Perspectives: A Brief Overview of Selected Topics*.

2 William McDonough and Michael Braungart, *Cradle to Cradle, Remaking the Way We Make Things*, New York: North Point Press (2002).

3 Robin Cantor, "Product Liability," in W.S. Bainbridge (ed.), *Leadership in Science and Technology: A Reference Handbook*, Thousand Oaks, California: Sage Publications Inc.: 281–288 (2012).

communities between demand for increased product safety and decreased liability serve to highlight the complexity of issues that corporate risk managers, policy makers, business advisors, and consumers wrestle with on a daily basis to manage product risks.

Product liability is an important area of the U.S. legal and regulatory systems and is also important in the context of enterprise risk management (ERM). Modern ERM emphasizes a proactive product liability focus in a world with many different types of risks. For that reason, ERM has inexorable links with the incentives and penalties inherent in the legal and regulatory structures under which enterprises operate.

Product liability theories and standards have evolved from a traditional foundation in specific and demonstrated manufacturer causation to more complex theories of market, successor, and other “controller” liabilities. In turn, this has expanded the set of issues surrounding questions such as: *Who absorbs the cost of damages, and over what time period?* In this section, we address the expanding scope of product liability issues in the context of ERM and post-sale liability.

In the United States, incentives to limit or manage product liability are most typically associated with tort litigation. “Product liability” is a general term that applies to several possible causes of a compensable injury, traditionally including negligence, breach of warranty, and fraud. While these causes continue today, contemporary product liability litigation often focuses on causes based on defect considerations, in addition to claims about manufacturer conduct. Importantly, strict liability for known or reasonably known product defects can attach to the manufacturer even if there is no aspect of negligence or improper conduct. Not surprisingly, this legal view is controversial from a law and economics perspective that emphasizes efficiency and maximizing innovation and product development.⁴

4 See, e.g., A. Mitchell Polinsky and Steven Shavell, “The Uneasy Case for Product Liability,” *Harvard Law Review* 123(6): 1437–92 (2010).

Modern product liability legal standards distinguish three categories of product defects:

1. Manufacturing defects: when the product departs from its intended design, regardless of the level of care exercised by the manufacturer
2. Design defects: when the reasonably known risks of harm posed by the product could have been reduced or avoided by the adoption of safer commercial technologies or product alternatives
3. Inadequate instructions or warnings defects: when the reasonably known risks of product-related injuries could have been reduced or avoided by reasonable instructions, labels, or warnings⁵

Damages paid to injured parties are essentially the *ex post* imposition of an increase on the cost of production. In the post-sale world of products, however, production might have occurred long ago and possibly involved parties that no longer exist. Even when production is not in the distant past, the (explicit or implicit) economic agreements in the supply chain often do not specify how unanticipated production costs should be allocated among the parties. This is not surprising, given that the mitigation costs of the risks may have been completely unanticipated at the time these contracts and economic relationships were active. Nonetheless, science and technology have facilitated our capabilities to identify and measure exposures to potentially harmful substances in products that enter the stream of commerce. These exposures are sometimes associated with potential injuries, for which it can be difficult or even impossible to identify the parties responsible for the harmful products. Examples of these types of exposures occur with pharmaceutical products, water contamination, air pollution, and product additives widely used in many applications.

Under traditional liability theories, the determination of many aspects of causation is complicated by requirements for evidence, assignment of

5 Restatement (Third) of Torts: Prods. Liab. (1998).

responsible actions by the various parties, the limits of scientific knowledge, and the manifestation of injuries. The legal system sometimes provides an alternative mechanism for compensation for exposure to these risks. Courts have considered alternative, although controversial, theories of product liability that have been and are based on industry data and market participation of the suppliers, rather than on specific proof about the individual conduct of a particular manufacturer.

In addition, product liability is not based solely on defects known at the time of sale, but can also attach to any part in the supply and distribution chain if the product defect reasonably should have been known to the controlling party. Other considerations removed from the specific time of sale might include liability for post-sale failure to warn, and successor liability.

Whether the threat of tort actions provides sufficient private incentive for manufacturers to have effective monitoring, product recall, and risk management strategies in place is an important social issue. For example, rulings in a number of prominent lawsuits relating to off-label usage and promotion of drugs indicate that the onus for proper labeling and disseminating information relating to drug usage and potential harms rests with the manufacturer.⁶ In this respect, measures such as supplier verification, approval programs, and informative labeling may facilitate effective reductions in product liability risk faced by manufacturers.

Going forward, science will continue to change the need for ERM to monitor diligently for future consequences and sources of product liability. Genotoxicity is an example of an emerging area in risk monitoring. This area builds on research that suggests that exposure to chemicals during embryonic development can result in DNA changes that might lead to toxic tort allegations. From a manufacturer's perspective, this introduces a new outlook on legacy liabilities that may persist even after the product has been discontinued for generations.

⁶ Monica M. Welt and Elizabeth L. Anderson, "Changing Perspectives on Chemical Product Risks," *John Liner Review* 23(3): 58–72 (2009).

Given the substantial costs imposed by tort proceedings, parties in market transactions often attempt to limit their liability for injuries by adding either warning labels to products or liability-release provisions to sale, rental, or licensing contracts. Some commentators have noted that when a pre-contractual relationship exists between sellers and consumers, tort damages are a socially inefficient means of internalizing the costs of accidents or injuries.⁷ Ultimately, product prices reflect tort damages. According to this view, consumers and society would be better off if buyers and sellers negotiated directly to determine the sharing of risk for defective products based on which party can most effectively bear the risk. This view supports the use of limited product warranties, product labeling, and liability release provisions in contracts or at the point of sale to lower product costs and encourage the use of risky but beneficial products.

Product Safety Rating

A potential enhancement for ERM would be a chemical product rating system. Such a system would provide manufacturers with a rational way to consider their products while providing consumers with pertinent information for buying and use decisions. An effective product rating system would not necessarily eliminate products with lower ratings, because lower-rated products might still have large enough benefits to remain viable. Both risks and benefits are important.

A useful product safety rating system would consolidate elements scattered through various government efforts in existence today, but should be a voluntary system that is simple to understand. The issues involved with product safety can be incredibly complex, but a rating system will only be successful if it is simple. Effectiveness depends on many factors, but two conditions worth considering are ease of use and the ability to complete the user's understanding of the risks. Perhaps it is best to split the rating

⁷ Paul H. Rubin, *Tort Reform by Contract*, Washington, DC: AEI Press (1993).

system into two parts: a summary rating and easy access to supplemental information. The challenge for development of a rating system will be to capture the important issues while packaging it in an understandable and meaningful way—simplistic elegance, not simplistic ignorance.

Easy access to supplemental information may allow for a simpler summary rating system if it allows users to expand their understanding of the ratings, compare their exposures to that assumed by the rating, and compare across products for purchase and use decisions. Such easy access in today's internet and smart-phone world is practical and provides an interesting Silicon Valley project.

But delivery is only half the challenge; the key to product rating success will be to make the information meaningful. For example, much pertinent information exists, such as in U.S. Environmental Protection Agency (USEPA) pesticide registration material, Materials Safety Data Sheets (MSDS), USEPA's toxicity database (IRIS (Integrated Risk Information System)), or the U.S. Centers for Disease Control and Prevention's Toxicity Profiles—but this information is not meaningful to consumers. It is not reasonable to expect consumers to sift through LD50s (lethal dose 50 percent of the time) in toxicity profiles and create their own method of comparison. It is recognized that meaningful simplification will be challenging because it will involve notions of toxicity, exposure, and risk communication—but it is necessary.

The mere presence of a toxic compound in a product is only part of the story. Consumers must also understand if their use of a product offers higher exposures than what is assumed by the rating system, in case they want to seek a safer-rated product for their higher exposure pattern. Thus, easy access to the assumed exposure for each product rating (e.g., shampoo used once a day in a five-minute shower) would be useful. It may be that consumers wash their hair twice a day, but a safer-rated product does not wash as well, so the benefits of the less-safe product outweigh the risks. In a

market economy, consumers should have the right information to make that decision. Importantly, empowering consumers with accessible information has effectively and substantially changed their relationship in other markets, such as healthcare and energy, and it could do the same for consumer products.

It will not be easy to create an effective chemical product rating system and meaningful supplemental information to go with it. However, such a system could satisfy the consumer on many levels, and manufacturers could use the system to develop safer products with marketing advantages.

Product Gestalt

The most important issue for product safety today is to recognize it as a problem. In most cases, people are exposed to more and higher levels of chemicals from the products they use than from hazardous waste Superfund sites. Yet consumers and producers are at a comparable stage to medicine use prior to the U.S. Food and Drug Administration.

While reactive product liability responses have a place after the damage is done, it is also possible to do a better job preventing harm in the first place. Such a proactive stance involves better product design and a simple rating system with straightforward access to additional and pertinent information. Manufacturers certainly want to make products safer, and much progress is being made. Clearly, the products we use have benefits, but consumers need a new lexicon to weigh those benefits against potential risks.