

W. Kip Viscusi, "Forward" to Richard L. Stroup and Roger E. Meiners, eds., Cutting Green Tape: Toxic Pollutants, Environmental Regulation and the Law (New Brunswick: Transaction Publishers, 2000), pp. ix-xviii.

Foreword

Mass toxic torts are the most salient policy problem in the risk area. The stakes involved are enormous, the potential for error is huge, and social institutions have yet to deal effectively with such risks. Mass toxic torts have received the greatest attention with respect to our judicial system. From the mid-1980s to the early 1990s, the majority of product liability cases in the U.S. Federal courts involved lawsuits over asbestos-related illnesses. This experience is not unique. Other mass tort actions, such as those pertaining to DES, also involved thousands of claimants. The breast implant litigation potentially could involve even more claimants than the asbestos litigation. The prospect of incurring the monumental litigation costs spurred the companies to fashion an administrative settlement to the breast implant litigation. The settlement was initially rejected, although the increasing medical evidence questioning the link between breast implants and many of the more serious alleged health effects has apparently induced plaintiffs to accept a more recent settlement offer.¹

Government regulators also have not had great success in addressing the kinds of risks associated with mass toxic torts. In the case of policies such as the Superfund program that addressed the risks posed by hazardous wastes, the Congress imposed *ex post* liability in much the same way as the courts did for asbestos. Companies must now incur obligations that they could not anticipate at the time of the waste disposal action because the current legal requirements for hazardous waste cleanup did not exist then.

The difficulties caused by mass toxic torts can be traced to several distinctive elements. Here I will explore four of the critical characteristics associated with toxic liability and indicate how they affect the functioning of our various risk institutions. I will then outline several prin-

principles for responsible risk management that represent a substantial departure from society's current approach to toxic liability.

Difficulties Posed by Toxic Liability²

Perhaps the most distinctive characteristic of toxic risks is the gestation period before the risk outcomes of toxic exposures become apparent. In the case of acute injuries, such as an automobile accident, the adverse health outcome is immediate. For dimly understood hazards, such as those posed by asbestos, the links occur after a long period of time, perhaps decades. This time period, coupled with the small probabilities involved, makes inferences difficult. The existence of a health risk will not be known immediately and, even when it is well established, the presence of multiple potential causes will make assessing the risk difficult. Although there are a few exceptional ailments that are signature diseases, such as the mesothelioma risks associated with asbestos, other hazards such as the lung cancer risks associated with asbestos can rise from multiple causes. We would not know for example, whether a cigarette smoking asbestos worker contracted lung cancer from asbestos exposures, or from smoking behavior, or some combination of the two.

In part because of the tremendous uncertainties arising from the substantial gestation period, the workers' compensation system did not function effectively in compensating asbestos workers for their ailments. Thousands of unsuccessful workers' compensation claimants subsequently filed cases to recover through tort liability. Causality issues, however, also pose substantial difficulties for the courts in asbestos and other mass toxic tort cases. In the case of the Agent Orange litigation, Judge Weinstein ultimately fashioned a settlement that provided modest compensation because he believed that causality was too difficult to prove.³ Breast implants pose a similar problem. Based on fragmentary evidence of a link between implants and serious ailments, claimants were successful in receiving multimillion dollar punitive damages awards, but now the scientific evidence seems to indicate that the graver risks claimed in these cases were overstated. Claimants have since been faring less well, although a multibillion dollar settlement fund has been negotiated. Even though the breast implant product itself did not change with respect to its underlying risk characteristics, the courts have shifted in their treatment of this potentially risky product because of the shift-

ing state of scientific knowledge. This knowledge will remain imprecise because the gestation period between receiving the breast implants and the onset of any illnesses makes distinguishing potential causalities a hazardous undertaking.

This gestation period and the fact that companies will be liable *ex post* have a variety of major implications. First, if companies do not anticipate the liability, there will be no incentive effects. This theme is articulated by Donald Dewees in his paper dealing with deterrence issues. The absence of incentives with respect to the hazardous waste cleanup program Superfund and the consequent failure of this effort to have a major risk reduction effect are continuing themes throughout this volume. The *ex post* character of Superfund and related efforts is of concern to Bruce Yandle, Jo-Christy Brown, Roger Meiners, Donald Dewees, and David Fractor. *Ex post* liability also undermines the insurance function that could otherwise take place because it is impossible to contract *ex ante* for unanticipated liabilities and to spread these costs in the usual manner.

A telling case that dramatizes the problems posed for insurance companies is the experience of Lloyd's of London. Throughout the period in which it wrote asbestos insurance coverage and even through the 1980s Lloyd's consistently underestimated the potential number of court cases that would arise from asbestos. Its estimates of the worst case scenarios of asbestos-related suits was 81,000 in 1982, which they then increased to 180,000 in 1990, but even these estimates remained far below the tally by the American Bar Association that indicated that the suits would number 340,000.⁴

The difficulty of *ex post* liability either with respect to Superfund, asbestos, or any other hazard is that the unanticipated nature of such costs undermines many of the critical market mechanisms that regulate risk. Firms will not experience a deterrence effect if the legal sanctions and the expected penalties for hazardous behavior are not known at the time they make their decisions. Similarly, insurance firms will not charge appropriate premium levels to the extent that future legal regimes cannot be reasonably anticipated. Firms cannot charge premiums retroactively given the passage of new laws, and even if contracts were structured in this manner the financial insolvency resulting from mass toxic torts would often prevent recouping costs. For analogous reasons the usual economic parables in which firms spread the costs of insurance across all product purchasers will not hold true because these are costs

for actions taken in the past, not costs associated with current products. Thus, it will not be feasible for firms to pass these costs on to consumers because other firms without the history of such liabilities will be able to undercut them.

The second distinguishing characteristic of mass toxic torts is their mass nature. A large number of people are often exposed to these risks. Coupled with the lengthy gestation period before the ailments become apparent, this characteristic leads to a situation in which there will be waves of claimants once the risks become known. For example, suppose that breast implants begin in year one at 100,000 implants per year and continue through year ten. If problems posed by breast implants were apparent immediately, then presumably before even the 100,000 women had received the implants in the first year, these problems would be identified and companies would cease selling this product. If, however, the risk outcomes are not apparent until after a ten-year lag, there will be 1,000,000 claimants. There is consequently an explosive growth in the claimant pool that arises because companies will continue to sell these risky products during this lag period unaware of the ultimate risks. When the risks become apparent, they will be hit by successive waves of purchasers of the product.

The fact that these lawsuits will arrive on mass in the courts is not a benign outcome. The large number of suits, whether it is for asbestos, breast implants, or some other toxic liability situation, will clog the courts. The large number of suits against individual firms also will impose huge unanticipated litigation costs on the firms. Firms may settle such suits to avoid the litigation expense even if they have a product they believe to be safe. If the costs are too great, firms will simply reorganize, declaring bankruptcy because of the costs generated by this unanticipated wave of suits. Insurers will respond in ways that will not foster risk management. Lloyd's tottered on the brink of bankruptcy, sending a strong lesson to the insurance industry at large. It is now much more difficult to obtain the kind of coverage for environmental or toxic liability that firms were previously able to purchase. Insurance companies have become wary of the long-term risks posed by these open-ended policies. The result of imposing liability retroactively has been to lead insurance companies to exit the market for mass tort risks. The entire scenario in terms of company and insurance firm responses for toxic liability contrasts quite starkly with that for manufacturing defects. For these hazards, the firm can identify the problem quickly,

react in a way that remedies the defect without an undue lag, and incur the kinds of costs that are potentially insurable.

The uninsurability of the risks associated with toxic liability stems from a single characteristic relevant to insurance firms, which is that in addition to being unanticipated, these risks are highly correlated. Insurance companies are very successful in insuring independent risks that, in effect, cancel themselves out in the insurance company's portfolio. Thus, insuring famous athletes' health and the hands of concert pianists is well within the abilities of insurance firms such as Lloyd's of London. However, if all such risk ailments were not independent but would all occur simultaneously to all of the firm's insured parties, then insurance would not be financially feasible. It is just that type of problem that arises with respect to mass toxic torts in which there are waves of correlated risks rather than independent risks that do not move together.

A third distinguishing characteristic of toxic risks is that they often involve small probabilities. The small magnitude of the risks is often well below a level that many would regard to be a *de minimis* hazard. For example, R. L. Stroup observes that the air toxics policy of the U.S. Environmental Protection Agency addresses risks that are comparable in magnitude to the chance of being hit by an airplane. There is little doubt that most people would agree that such risks do not merit our attention, much less the expenditure of billions of dollars. Unfortunately, the failure to provide for tradeoffs in the legislation governing risk management makes examples such as this the norm rather than the exception. Although the risks tend to be small, the number of people exposed to these hazards may be substantial. It is the presence of very large populations exposed to relatively small risks that gives rise to the mass toxic tort nature of these hazards.

Because toxic hazards are often low probability events, it becomes more difficult for individuals to learn about the probabilities involved. In situations of multiple causes it may be hard to distinguish several decades after the time of the exposure what the cause of a particular ailment was. The small probabilities coupled with a long gestation period and problems of multiple causation compound the difficulties of a risk assessor.

A consequence of the small magnitude of the probabilities and the difficulty of learning about the risk is that the risks will tend to be ambiguous. There may be a fairly broad range of scientific uncertainty regarding the magnitude of the risk. The appropriate guide should be the mean value of the risk, whereas government risk regulation agen-

cies often focus on various upper bound values, such as the 95th percentile of the distribution. In practice, this bias is even more extreme as government risk analysts often use the 95th percentile of each particular parameter to calculate the overall risk, such as the exposure level to the chemical. The result is that there is a compounding of conservatism that leads to an overall degree of conservatism with respect to the risks posed by hazardous wastes that goes well beyond the 99th percentile of the overall risk distribution. Often, there is less than a one percent chance that the risks are as large as government estimates. This distortion in the probabilities shifts our priorities from the more substantial risks that are better known, to imprecisely understood but small risks that should merit less attention.

The government and the courts have both failed us in addressing toxic liability issues. In each case, liability imposed by these institutions is *ex post*. Because this liability is after the fact, at the time the risks are generated companies cannot anticipate the subsequent liability costs, eliminating any deterrent effects. It is also not feasible for companies to contract sensibly for such risks. Moreover, it is particularly striking that the most significant perpetrator of many of these mass torts—the U.S. Government—is often exempt from liability. The paper by Bruce Benson on “Toxic Torts by Government” delves into both the asbestos and Agent Orange experiences. In the case of asbestos, the largest exposure occurred during World War II to shipyard workers who installed asbestos insulation in Navy ships. However, this decision was not one that resulted from corporate behavior but instead was the result of specifications for ship construction mandated by the U.S. Navy. Similarly, the herbicide Agent Orange that was the target of massive litigation was a defoliant used in Vietnam. Although the U.S. Government exerted all control over the decision to apply this powerful herbicide, the chemical companies producing the herbicide, such as Dow Chemical Company, were the subsequent targets in the lawsuits.⁵

Toward a Sound Policy

Although there are substantial errors in the way that our social institutions have addressed toxic liability issues, it is possible to formulate a sensible policy in this area. Here I will distinguish four principles for a rational risk policy involving toxics. Many of these guidelines are interrelated, as they each reflect an efficiency orientation.

First, all policies should have social benefits in excess of social costs. This is the basic principle of benefit-cost analysis discussed by R. L. Stroup and is the social analog of the market test discussed by Bruce Yandle. The difference from a market situation is that rather than asking whether the individual purchasers of a product would find it attractive to do so we instead are asking the question of whether society is willing to pay an amount for a particular policy that exceeds its cost.

What would be the implications of such an efficiency-oriented policy? In the case of courts, the focus should be on whether the risk level is efficient. Thus, a negligence test would rule rather than strict liability in which all ailments are compensated irrespective of whether the risk level reflects a suitable balancing of costs and benefits. The infeasibility of strict liability in the case of mass toxic torts arises because of the large exposed population. If one wished, for example, to compensate all victims of asbestos exposures, then the magnitude of this compensation would bankrupt not only all asbestos producers but also all their insurance companies. A continuing difficulty in mass toxic torts situations is identifying causality. Thus, it is not feasible to distinguish which lung cancers of asbestos workers were due to asbestos exposures as opposed to other causes. In the case of asbestos, this inability to distinguish causality and the need to compensate all lung cancers of asbestos workers irrespective of cause boost the potential compensation costs by roughly an order of magnitude.

A negligence-type approach focuses on deterring inefficient behavior. In that regard, the test should be relative to the state of information at the time of the exposure rather than to standards of information and liability that may develop decades after the exposure period. *Ex post* liability does not play any constructive efficiency role in fostering safer decisions.

The government should likewise apply a benefit-cost test to its policies. At present no such tests are applied to environmental and occupational exposures to toxics. The government instead pursues more uncompromising objectives, which often leads to inordinate attention to insignificant risks and diversion of resources from the truly substantial hazards. In the case of the hazardous waste cleanup effort under the Superfund program, the cost per case of cancer prevented by this effort is well in excess of \$10 billion per case. This amount is more than 1,000 times greater than the figure that the U.S. Department of Transportation is willing to spend per accident prevented through improved

highway and airline safety. Enormous dividends could be reaped by shifting our attention from dimly understood toxics with very small risks to more fundamental hazards such as those posed by highway risks.⁶

A second principle for sound policy is that there should be honest risk assessment based on the mean level of the risk. Current policies focus on upper bound values that distort our risk priorities. In some cases, these distortions arise from extrapolating the results from animal tests to humans, as is noted by Aaron Wildavsky. There is also a tendency to rely on "junk science" in situations of scientific uncertainty, which is a danger discussed by David Bernstein, Kenneth Foster and Peter Huber. Even if we foster accurate risk assessments, individuals may misperceive these risks. Daniel Benjamin discusses the potential for risk overestimation in the case of very small risks, which is the level that most toxics pose. He also indicates that many of these patterns of overestimation may not stem from irrationality but rather from lack of accurate risk information. His essay highlights the importance of the government as a purveyor of risk information. But for such information to be useful it must promote sound risk judgments rather than alarm because of excessive attention to worst case scenarios.

A third principle for a sound risk policy is that the size of the exposed population matters. Surprisingly, the number of potential exposures often does not enter government risk assessments. Rather, the focus is on a hypothetically exposed individual. However, if no one is actually exposed to the risk then surely we should devote less attention to it than a risk for which there may be very substantial exposed populations.

In our analysis of 200 Superfund sites, James T. Hamilton and I found that the EPA did in fact adhere to its former policy of ignoring the size of exposed populations.⁷ Indeed, the agency gives no preference whatsoever to hazardous waste sites for which there are large exposed populations as opposed to sites where there are no people exposed to the hazard. Shifting focus to the total benefits and total costs of policy efforts will help eliminate this inattention to the role of human exposures.

The recognition of exposed populations is also pertinent when courts attempt to judge a company's performance within the context of corporate liability. The company places products on the market but generally cannot distinguish which individuals will buy the product. Thus, the appropriate test for whether a product or product-related risk is inefficient should be from the standpoint of the entire market. From this market perspective, would the benefits of reducing the risk exceed the

costs? The focus of individual court cases on particular exposed individuals rather than on the entire market narrows the jury's attention in a way that does not foster such a comprehensive perspective. In contrast, regulatory agencies could potentially address such issues from a broader perspective, but a successful regulatory approach requires that current regulatory mandates incorporate the kind of benefit-cost balancing and sound risk analysis that has been advocated here.

The fourth and final issue pertaining to a sound policy approach is that sensible risk management policy is better for human health than the current profligate approach. Squandering resources on risk reduction efforts that achieve very little is not simply wasteful. In doing so we divert resources from real risks that could be eliminated. Such efforts take funds out of our consumer market basket that could have been spent on better food, housing, medical care, and other commodities relating to health. The result is that ineffective regulations impose real health costs. Indeed, estimates suggest that every time we spend from \$10 million to \$50 million on risk regulation we sacrifice one statistical life that could have been saved through the improved standard of living that would have resulted from such expenditures on a normal mix of consumer goods (Viscusi 1998, ch. 5).

The most powerful force improving human health throughout this and earlier centuries has been the improvement in our standard of living. Many of these improvements can be traced to a variety of social innovations as well as to our increased affluence. As discussed in the paper by David Addock and Daniel Polsby, it is somewhat ironic that judicial and policy efforts designed to enhance human health may stymie the innovation and economic progress that is necessary to promote our well-being. Sensible judicial and regulatory policies will do more to promote human health than will seemingly uncompromising, but misdirected risk reduction efforts. The papers in this volume will help establish the framework for more sensible management of the risks associated with toxic liability.

— W. Kip Viscusi
Cogan Professor of Law and Economics
Director, Program on Empirical Legal Studies
Harvard Law School

Notes

1. In July 1998 the U.S. silicone breast implant manufacturer Dow Corning announced a \$3.2 billion dollar compensation package to settle the estimate 177,000 joint cases against the company. Shortly thereafter an independent panel of experts commissioned by the British government concluded that "Silicone gel breast implants are not associated with any greater health risk than other surgical implants"; and "In particular, there is no evidence of an association with an abnormal immune response or typical or atypical connective tissue diseases or syndromes." Similar conclusions had been reached earlier by two British reviews, a Canadian and a French study, and a review by the American Medical Association. The most recent British study (Silicone Gel Breast Implants: The Report of the Independent Review Group. 1998. London: Department of Health) references previous reviews and the voluminous scientific literature. It can be found on the web at <http://www.silicone-review.gov.uk>. Angell (1997) is an accessible yet scientifically accurate account of the breast implant controversy.
2. I provide a broader discussion of many of these issues in Viscusi (1991).
3. See the excellent volume by Peter Schuck (1986).
4. See Viscusi (1998) for documentation of this and related risk issues.
5. The potential for serious risk should have been evident at the time of Agent Orange's use since this herbicide was powerful enough to be a defoliant in areas with dense vegetation.
6. For a review of such tradeoffs, see Viscusi (1998).
7. See Viscusi and Hamilton (1996).

References

- Angell, Marcia. (1997). *Science on Trial: The Clash of Medical Evidence and the Law in the Breast Implant Case*. New York: W. W. Norton & Company.
- Schuck, Peter. 1986. *Agent Orange on Trial*. Cambridge, MA: Harvard University Press.
- Viscusi, W. Kip. 1991. *Reforming Products Liability*. Cambridge, MA: Harvard University Press.
- . 1998. *Rational Risk Policy*. Oxford: Oxford University Press.
- Viscusi, W. Kip, and James T. Hamilton. 1996. "Cleaning Up Superfund." *The Public Interest* 124 (Summer): 52-60.