Cato Handbook for Policymakers

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39. Health and Safety Policy

Congress should

- eliminate goals of zero risk in statutes governing occupational and environmental health, and
- establish the purpose of safety and health agencies as the identification of opportunities to improve safety and health at costs that are much less than the market value of the benefits.

Before the mid-1960s, the health and safety regulations that we now take for granted were completely absent from the American economy, with the exception of selected regulations for food safety and prescription drugs. The rise of the consumer movement and environmental concerns led to the establishment of the National Highway Traffic Safety Administration in 1966, the Occupational Safety and Health Administration in 1970, the Environmental Protection Agency in 1970, the Consumer Product Safety Commission in 1972, and the Nuclear Regulatory Commission in 1974.

Scholarly assessment of the three decades of experience with regulation and government oversight concludes that health and safety regulations have had no obvious effects on the aggregate trends in accidental deaths. In addition, health and safety statutes and the regulations written to implement them further the incorrect belief that the goal should be zero risk or harm—an impossibly high and costly standard—rather than an efficient or optimal level. And finally, government regulation reduces the incentives for firms to provide their own safety assurances through testing and branding.

Why Should the Government Regulate Risk?

Government action in the health and safety arena can be justified when shortcomings exist in risk information. The goal of regulatory agencies that address health and safety risks should be to isolate instances in which

misinformation about health risks prevents people from making their own informed decisions and to isolate instances where health risks are not internalized in the market decisions.

The existence of a health risk does not necessarily imply the need for regulatory action. For example, as long as workers understand the risks they face in various occupations, they will receive wage compensation through normal market forces sufficient to make them willing to bear the risk; the health risk is internalized into the market decision.

In situations in which the risks are not known to workers, as in the case of dimly understood health hazards or situations in which the labor market is not competitive, market forces might not operative effectively to internalize the risk. Those cases, in theory, provide an opportunity for constructive cost-effective government intervention although actual government policy is often neither constructive nor cost-effective.

Zero versus Optimal Risk

Unfortunately, the rationale of correcting market failures has never been a major motivation of regulatory intervention. The simple fact that risks exist has provided the impetus for the legislative mandates of the health and safety regulatory agencies. To this day, very few regulatory impact analyses ever explore in any meaningful way the role of potential market failure in the particular context and the constructive role that market forces may already play in the regulatory situation that is being considered.

The conventional regulatory approach to health and safety risks is to seek a technological solution through capital investments in the workplace, changes in the safety devices in cars, or similar kinds of requirements that entail no additional care on the part of the individual. Stated simply, the conventional view is that the existence of risks is undesirable and with appropriate technological interventions, we can eliminate those risks. This perspective does not recognize the cost tradeoffs involved; the fact that a no-risk society would be so costly as to make risk infeasible does not arise as a policy concern of consequence.

The economic approach to regulating risk is quite different. The potential role of the government is not to eliminate the risk, but rather to address market failures that lead to an inefficient balance between risk reduction and cost. In theory, the task of government regulatory agencies is to identify cases in which regulation can generate more benefits to society than the costs that are incurred and to address the market failures using a cost-effective approach. To achieve those goals, the focus should not

simply be on rigid technological standards but on the provision of information or flexible regulatory mechanisms that allow firms to meet performance goals cost-effectively.

Risk Assessment, Statistics, and Value Choices

The discussion so far has presumed that we actually know the level of risk posed by exposure to or use of a product or work in a particular industry. For traditional industrial accidents, time series data exist and the calculation of worker fatality rates is rather straightforward. But for new pharmaceuticals and other products that may have health risks as well as benefits, assessments of the health effects from exposure come from samples of people who represent much larger populations.

In assessing the results from such experiments, researchers must estimate the likelihood that the results from the sample represent the results if the population were studied. The answer depends on the size of the sample and the signal-to-noise ratio in the sample.

The smaller the sample and the smaller the signal-to-noise ratio, the lower the likelihood that the sample result is the population result. Said differently, small sample sizes and noisy data increase the variety of possible population results that are logically possible given a particular sample result. In such small, noisy samples, it becomes more likely that observed effects are the result of chance rather than exposure to products.

And then there is the question that actually has no scientific answer: How confident should we be that a result is not the result of chance? Scientific convention says we should be 95 percent confident that the observed effect is not simply the result of chance, but why 95 percent and not 90 or 85 percent? And should one (on average) keep products on the market knowing that some will have negative health and safety consequences, or restrict many products from being sold knowing that some perfectly acceptable products will not be available?

Which error is worse is not a scientific question and cannot be answered by more or better science. Whether one should worry more about false-positive or false-negative statistical errors is a value rather than a scientific question.

Despite the inability of science to adjudicate value disputes, many health and safety decisions are delegated to bureaucracies, like the Food and Drug Administration, that allegedly use scientific methods to decide what products and practices to allow on the market. In fact, values enter into such decisions in three ways. First, scientists must decide how large the

sample sizes should be because that decision, in turn, dictates whether small effects can be differentiated from zero effect. Larger samples allow smaller effects to be differentiated from no effect with greater confidence. Second, scientists must either accept conventional significance tests (95 percent confidence) or propose alternatives, and this choice dictates whether false-positive or false-negative errors are more likely and thus, implicitly, less costly. Third, given the findings of clinical trials and epidemiological studies, scientists and doctors vote using majority rule on whether the benefits are worth the costs, which is obviously an economic rather than strictly scientific decision. In a more libertarian world, the government or preferably multiple private entities would gather and disseminate information but then let individuals decide what to do with it.

How Should Risks Be Evaluated?

Using detailed data on wages and fatality risks across occupations, economists have estimated people's tradeoffs between money and fatality risk, thus establishing a value of statistical lives based on market decisions. The estimates imply that workers receive premiums of about $700 to face an additional annual work-related fatality risk of 1 chance in 10,000. Put somewhat differently, if there were 10,000 such workers facing an annual fatality of 1 chance in 10,000, there would be one actual death on average. In return for that risk, the 10,000 workers would receive total additional wage compensation of $7 million. The compensation establishes the value of a statistical life, based on the workers' wage premiums given the risks they face.

The estimates suggest that in situations in which there is an awareness of the risk, market forces create adequate safety incentives. Thus, we are not operating in a world in which there are no constraints other than regulatory intervention to promote our safety. Rather, market forces already create incentives for safety that should not be overridden by intrusive regulations.

Assessment of Regulatory Performance

Although many agencies use reasonable measures of the value of a statistical life for assessing benefits, the cost per life saved for the regulations actually promulgated often far exceeds the estimated benefits. The restrictive nature of agencies' legislative mandates often precludes consideration of costs in the regulatory decision.

Table 39.1 lists various health and safety regulations and their estimated opportunity cost per life saved (in 2002 dollars). Because the legislative mandate varies across regulations, one sees great variance in the cost per life saved. Indeed, the cost varies even within certain regulatory agencies. For example, EPA's regulation of trihalomethane in drinking water has an estimated cost per statistical life saved of only $300,000, whereas the regulation of sewerage sludge disposal has an estimated cost per life saved of $530 billion. A regulatory system based on sound economic principles would reallocate resources from the high- to the low-cost regulations. That would result in more lives saved at the same cost to society (or equivalently, shifting resources could result in the same number of lives saved at a lower cost to society).

Table 39.1
Opportunity Costs per Statistical Life Saved
(millions of 2002 dollars)

Regulation	Year Issued	Agency	Opportunity Cost per Statistical Life Saved
Childproof lighters	1993	CPSC	$0.1
Unvented space heaters	1980	CPSC	0.2
Trihalomethanes	1979	EPA	0.3
Food-labeling regulations	1993	FDA	0.4
Children's sleepwear flammability	1973	CPSC	2.2
Child restraints	1999	NHTSA	3.3
Grain dust	1988	OSHA	11.0
Benzene	1987	OSHA	22.0
Coke ovens	1976	OSHA	51.0
Asbestos ban	1989	EPA	78.0
DES (cattle feed)	1979	FDA	170.0
Sewage sludge disposal	1993	EPA	530.0
Land disposal restrictions: Phase II	1994	EPA	2,600.0
Drinking water: Phase II	1992	EPA	19,000.0
Formaldehyde	1987	OSHA	78,000.0
Solid waste disposal facility criteria	1991	EPA	$100,000.0

SOURCE: W. Kip Viscusi, ''Regulation of Health, Safety, and Environmental Risks,'' National Bureau of Economic Research Working Paper no. 11934, January 2006.

NOTE: CPSC = Consumer Product Safety Commission; DES = diethylstilbestrol; EPA = Environmental Protection Agency; FDA = Food and Drug Administration; NHTSA = National Highway Traffic Safety Administration; OSHA = Occupational Safety and Health Administration.

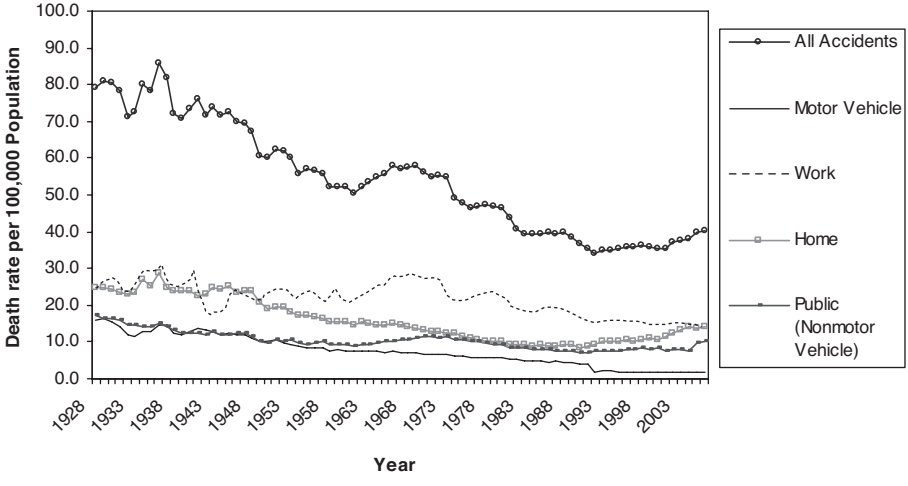
Effect of Regulation on Accident Rates

What has been the overall effect of the emergence of health and safety regulations since the early 1970s? One yardstick of performance is to see whether accident rates have declined. Figure 39.1 summarizes fatality rates of various kinds, including motor vehicle accidents, work accidents, home accidents, public non–motor vehicle accidents, and a cumulative category of all accidents.

The basic message of Figure 39.1 is that accident rates have been declining throughout the past 80 years (although that trend has recently stopped). The improvement in our safety is not a new phenomenon that began with the advent of regulatory agencies commissioned to protect the citizenry. There is, for example, no significant downward shift in Figure 39.1's trend for job fatality risk after the establishment of OSHA in 1971. And Figure 39.2 shows that auto fatalities (per 100 million vehicle miles) declined steadily throughout the last 85 years as well. As in the case of the other accident statistics, there is no evidence of a sharp, discontinuous break in the downward trend that occurred with the advent of regulatory policies.

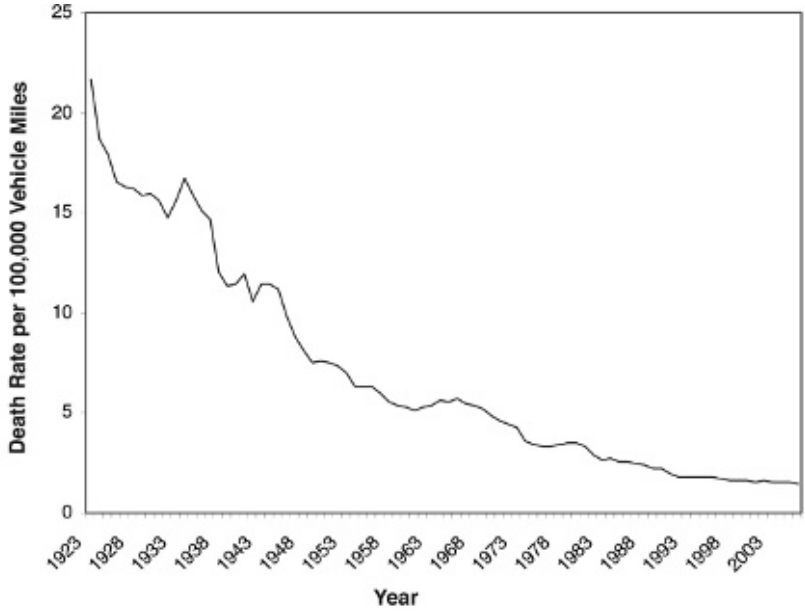
While there may be a beneficial safety-enhancing role played by regulation, the steady decrease in risk throughout the century supports the hypoth-

Figure 39.1
Unintentional Injury Deaths in the United States, 1928–2006



SOURCE: *Injury Facts* (Itasca, IL.: National Safety Council, 2008), pp. 36–37.

Figure 39.2
Motor Vehicle Death Rate in the United States, 1923–2006



SOURCE: *Injury Facts* (Itasca, IL: National Safety Council, 2008), pp. 110–11.

esis that improvements in societal wealth have greatly increased our demand for safety over time. Coupling that wealth with technological improvements—many of which have been stimulated by the greater demand for safety—has led to dramatic improvements in our individual well-being. Market forces rather than regulatory policy have likely been the most important contributor to safety improvements since early last century.

Recent Policy Controversy

Markets can provide safer products if consumers are willing to pay for them, and some firms credibly commit to provide them and are rewarded for doing so more than the cost of safety provision. Such a state of affairs is called a separating equilibrium: differing degrees of quality and safety are provided at different prices, and consumers choose the package of price and quality level that they prefer.

A market that does not separate is said to ''pool.'' In a pooled market, price and quality variation is not sustainable either because consumers are unwilling to pay for the costs of quality differences (not a market failure)

or market characteristics prevent firms from credibly committing to quality and thus consumers have difficulty differentiating good- from poor-quality products.

An impediment to the formation of separating outcomes is the existence of numerous small-scale, anonymous producers whose output is combined without branding. Traditionally, many agricultural products have been marketed this way. In turn, the market pools, and then a safety scandal occurs. The government responds with ''regulation'' and inspection. Consumers are reassured. But the inspection budgets and systems are inadequate to prevent future safety and health events. New safety incidents occur, and the cycle repeats.

Recently, Congress has responded to two health and safety episodes in predictable fashion. The discovery of lead paint on children's toys imported from China and the salmonella outbreak stemming from Mexican peppers induced Congress to pass new consumer product safety legislation and President George W. Bush to increase the appropriation request for the FDA for fiscal year 2009 by $275 million. Such responses dull both firm and consumer incentives to think about safety and reinforce the mistaken belief that markets are incapable of credibly providing adequately safe products.

Two cases involving food illustrate how markets can transcend the traditional anonymity of agricultural commodities and credibly provide greater quality for a higher price and how regulation can actually interfere in that process. Since the Jack in the Box E. coli outbreak in 1993, branded fast-food outlets and grocery chains have paid a premium for ground beef from Beef Products Incorporated because of the innovative technology and practices that firm uses to reduce the possibility of bacterial contamination. The key to the market separation is that branded fast-food outlets and grocery stores have market value that is greater than their assets. This so-called goodwill would vanish if they were linked to contaminated beef.

The second case involves mad cow disease, U.S. beef producers, and Korean beef consumers. Korea, which used to be the third-largest importer of American beef, has banned American imports since the 2003 mad cow case in the United States. A farm in Kansas wants to test *all* its cattle upon slaughter (at an extra price of $20) to satisfy Korean consumers (and their government) of the meat's safety rather than test 1 in 1,000 randomly as required by the U.S. Department of Agriculture. The USDA has not permitted the firm to use the test because it argues that its standards are adequate. In effect, regulation mandates that the market pool rather than separate.

The toy market also separates rather than pools. U.S. toy manufacturers, the few that remain, emphasize quality and safety in return for a higher price. But consumers deserted such products, often sold in small independent stores, for imports from China sold for less at large chain stores, in part because of the existence of regulation, which they assumed would protect them from risk.

The large importers have responded to the lead-paint scandal by requesting increased regulation through the Consumer Product Safety Commission. Rather than gain consumer trust through their own efforts like the small U.S. manufacturers, the large importers want to use regulation to force the market to pool again—to convince the consumer not to think about price and quality tradeoffs because of government assurance of quality—a clear form of corporate welfare.

Reform Agenda

Almost from its inception, health and safety regulation has been the target of proposed reform. Some policy improvements have occurred, such as elimination of some of the nitpicking of safety standards, the increased use of informational approaches to regulation, and enhanced enforcement efforts. However, health and safety regulations have fallen short of any reasonable standard of performance.

The underlying difficulty can be traced to the legislative mandates of the regulatory agencies. Rather than focus regulations on instances of market failure, the emphasis is on reducing risk irrespective of cost. The regulatory approach has also been characterized by an overly narrow conceptualization of the potential modes of intervention. The emphasis has been on command-and-control regulations rather than information provision or performance-oriented standards.

Defenders of the current regulatory approach have long seized the moral high ground by claiming that their uncompromising efforts protect individual health; less consequential concerns such as cost should not interfere with that higher enterprise. The fallacy of such thinking is that high-cost, low-benefit safety regulations divert society's resources from a mix of expenditures that would be more health enhancing than the allocations dictated by the health and safety regulations. Agencies that make an unbounded financial commitment to safety are frequently sacrificing individual lives in their symbolic quest for a zero-risk society. It is unlikely that this situation will be remedied in the absence of fundamental

legislative reform. But as the recent salmonella and lead toy cases illustrate, Congress has great difficulty responding rationally to risk crises.

Suggested Readings

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—Prepared by Peter Van Doren