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1739 SCOMM 69: HOUSE LIABILITY INSURANCE TASK FORCE, 1989-1990 307

Society's objectives with respect to job-related health and safety are promoted by various institutional mechanisms—market forces, notably implicit or explicit bargains between workers and employers, occupational safety and health regulations, social insurance programs for job-related illnesses and injuries (workers' compensation, for example), and the civil liability system. Since no single mechanism need serve all functions, a division of responsibility is possible. The workers' compensation system, for instance, may be effective in compensating victims of accidents in the workplace but may provide little incentive to improve safety; the civil liability system, however, may very well help to improve safety by holding out the possibility of damages assessed against employers if they do not cooperate. The relative strengths of the different tools should be recognized and exploited.

Thus the civil liability system cannot be viewed in isolation. One must take into account what is accomplished by other mechanisms before suggesting any changes in its function. Indeed, these mechanisms do more than provide the pertinent backdrop against which the system operates. For accidents in the workplace, they are the driving force behind the compensation that injured workers receive and the determination of the level of risk on the job.

### The Role of the Market

The most useful starting point for discussing safety risks on the job is to review the effects of the market.<sup>3</sup> Unlike broad environmental hazards that may be borne by an individual who has a remote relationship to the party generating the risk, job hazards arise in an employment relationship. The employer that controls both the work environment and overall work operations hires the worker at some wage rate to perform certain tasks. Implicitly if not explicitly, the worker accepts the job and its associated characteristics, including the risk level and the remuneration associated with it. Thus if risks are known, workers will demand additional compensation for the hazards. This compensation could be provided through a higher base wage rate or, after an injury, through insurance benefits.

With perfect markets, the mix of the various forms of compensation

3. For a broader perspective, see W. Kip Viscusi, *Risk by Choice: Regulating Health and Safety in the Workplace* (Harvard University Press, 1983); and Viscusi, *Employment Hazards*.

will be optimal and the risk level will be efficient. Employers will continue investing in safety until the cost incurred just equals the savings achieved in compensation and injuries avoided. Workers will be fully compensated before any accidents for the expected welfare loss to which they are exposed. The additional wage and insurance benefits will equal or exceed the value of their expected loss from injury. Although compensated ex ante, workers will not generally be fully compensated after an injury except when losses are purely financial, in which case risk-averse workers will obtain full insurance for their potential loss in earnings. Because of the wage premium they receive, workers will, however, be better off if no injury occurs, and overall they will not be worse off because of the presence of job risks.

By almost any standard the wage adjustment that workers receive for risk is substantial—an estimated \$90 billion in 1985 dollars for the private sector as a whole.<sup>4</sup> Ex ante compensation is substantial on a unit risk basis as well. Table 6-1 summarizes estimates of the implicit values of life and injury reported in various studies of worker earnings. Consider, for example, results from the 1970–71 Survey of Working Conditions. A \$3.2 million value of life means that workers receive compensation at the rate of \$3.2 million for each expected life lost. Thus a worker facing the average blue-collar death risk of 1 in 10,000 receives extra annual compensation of  $\$3.2 \text{ million} \times 1/10,000$ , or \$320. Similarly, every death at a workplace alters workers' perceptions of the risk and boosts wage levels employers must pay, thus providing a powerful incentive for firms to operate safely. Estimates of the implicit compensation value of nonfatal job injuries are roughly two orders of magnitude lower than the values of fatalities.

A major criticism of looking to additional compensation for a measure of the implicit values of job risks is that workers may not be fully aware of the risks of a given job when they decide to accept it. Such lack of information is no doubt important, particularly with respect to dimly understood health risks. Nevertheless, employers do provide substantial wage compensation for jobs with increased risks. And survey evidence indicates widespread awareness among workers of many risks they do face.<sup>5</sup>

4. This estimate updates to 1985 prices my estimate of \$69 billion in 1980 prices; see chapter 3 of Viscusi, *Risk by Choice*.

5. Ibid.; and W. Kip Viscusi and Charles J. O'Connor, "Adaptive Responses to Chemical Labeling: Are Workers Bayesian Decision Makers?" *American Economic Review*, vol. 74 (December 1984), pp. 942–56.

Table 6-1. *Summary of Labor Market Studies of Wage Premiums for Job Risks*

Thousands of constant 1985 dollars

| Investigator         | Sample                                    | Implicit value of life    | Implicit value of nonfatal injuries |
|----------------------|-------------------------------------------|---------------------------|-------------------------------------|
| Brown                | National Longitudinal Survey, 1967-73     | 1,100-1,700               | n.a.                                |
| Olson                | Current Population Survey, 1973           | 8,100                     | n.a.                                |
| Smith                | Current Population Survey, 1967           | 8,300                     | n.a.                                |
|                      | Current Population Survey, 1973           | 3,600                     | n.a.                                |
| Thaler and Rosen     | Survey of Economic Opportunity, 1967      | 638                       | n.a.                                |
| Viscusi              | Survey of Working Conditions, 1970-71     | 3,200-4,300               | 25-37                               |
| Viscusi              | Panel Study of Income Dynamics, 1976      | 8,000-12,000 <sup>a</sup> | 35-39                               |
| Viscusi and Moore    | Quality of Employment Survey, 1977        | n.a.                      | 37-45                               |
| Viscusi and O'Connor | Survey of Chemical Industry Workers, 1982 | n.a.                      | 11-14                               |

Sources: Charles Brown, "Equalizing Differences in the Labor Market," *Quarterly Journal of Economics*, vol. 94 (February 1980), pp. 113-34; Craig A. Olson, "An Analysis of Wage Differentials Received by Workers on Dangerous Jobs," *Journal of Human Resources*, vol. 16 (Spring 1981), pp. 167-85; Robert S. Smith, *The Occupational Safety and Health Act: Its Goals and Its Achievements* (American Enterprise Institute, 1976); Richard Thaler and Sherwin Rosen, "The Value of Saving a Life: Evidence from the Labor Market," in Nestor E. Terleckyj, ed., *Household Production and Consumption* (Columbia University Press for the National Bureau of Economic Research, 1976), pp. 265-301; W. Kip Viscusi, *Employment Hazards: An Investigation of Market Performance* (Harvard University Press, 1979); Viscusi, *Risk by Choice: Regulating Health and Safety in the Workplace* (Harvard University Press, 1983); Viscusi and Charles J. O'Connor, "Adaptive Responses to Chemical Labeling: Are Workers Bayesian Decision Makers?" *American Economic Review*, vol. 74 (December 1984), pp. 942-56; and Viscusi and Michael J. Moore, "Workers' Compensation: Wage Effects, Benefits Inadequacies, and the Value of Health Losses," *Review of Economics and Statistics*, vol. 69 (May 1987), pp. 249-61.

n.a. Not available.

a. Evaluated at the mean risk level for the sample for a model in which the heterogeneity in wage-risk trade-offs was assessed.

When workers accept jobs whose risks are not fully understood, additional market forces come into play. They may often learn about the risk through on-the-job experience, and if the information is sufficiently unfavorable, they can quit. Indeed, as many as one-third of all resignations among manufacturing workers may be due to job risks.<sup>6</sup> Of course, such learning may involve experiencing a disabling on-the-job injury. And there is no assurance that workers will ever be fully informed.

Still, the market plays a central role in determining job safety outcomes.

6. See Viscusi, *Employment Hazards*; and Viscusi, *Risk by Choice*.

Decisions by workers and employers dictate the jobs workers take and the risks to which they are exposed. Wage premiums for additional risk and such fringe benefits as sick leave, life insurance, and medical insurance provide the primary compensation they receive. Although their welfare typically will be reduced after experiencing an injury, in many cases workers receive compensation *ex ante*. Those who are exposed to risk but who are not injured will be paid more than they would have received in a risk-free job. And before an injury takes place, they will find the position attractive, given their perceptions of the risk.

### Direct Regulation of Risk

Since workers typically will not be fully informed of all the risks they face, market incentives for improving safety may be inadequate. Even if full information were available and risk levels were efficient, society might wish to promote additional reductions in risk to reflect its altruistic concern with individual health.

Control of risks on the job is the primary function of the Occupational Safety and Health Administration, whose mandate is "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions."<sup>7</sup> Compensating accident victims is excluded from the agency's functions and must be met by market forces, workers' compensation, and the civil liability system.

OSHA's primary regulatory strategy has therefore been to issue health and safety standards, which are then enforced by its inspectors, who have the authority to levy fines on firms that do not comply. The agency began operating by adopting industry consensus standards, such as those of the American National Standards Institute, which pertained largely to safety concerns rather than health risks. OSHA's more recent activities have emphasized setting standards for health risks not covered by the initial standards. Table 6-2 summarizes major OSHA regulations that have been issued or proposed since 1972. The standards have been ranked according to diminishing cost-effectiveness as measured by the cost per life saved.

While most of the standards listed in table 6-2 concern health hazards, the most cost-effective standards concern safety. It is also striking that the cost per life saved for roughly half of these regulations greatly exceeds estimates of the value of life revealed by workers' labor market decisions.

7. Section 26 of the Occupational Safety and Health Act of 1970, 29 U.S.C. 651 (1982).

Table 6-2. Cost per Life Saved for OSHA Standards

| Regulation                          | Year | Status <sup>a</sup> | Nature of risk | Initial risk (annual) | Lives saved (annual) | Cost per life saved <sup>b</sup> |
|-------------------------------------|------|---------------------|----------------|-----------------------|----------------------|----------------------------------|
| Oil and gas well servicing          | 1983 | P                   | Safety         | $1.1 \times 10^{-3}$  | 50.000               | 0.1                              |
| Underground construction            | 1983 | P                   | Safety         | $1.6 \times 10^{-3}$  | 8.100                | 0.3                              |
| Servicing wheel rims                | 1984 | F                   | Safety         | $1.4 \times 10^{-5}$  | 2.300                | 0.5                              |
| Crane suspended personnel platforms | 1984 | P                   | Safety         | $1.8 \times 10^{-3}$  | 5.000                | 0.9                              |
| Concrete and masonry construction   | 1985 | P                   | Safety         | $1.4 \times 10^{-5}$  | 6.500                | 1.4                              |
| Hazard communication                | 1983 | F                   | Safety         | $4.0 \times 10^{-5}$  | 200.000              | 1.8                              |
| Grain dust                          | 1984 | P                   | Safety         | $2.1 \times 10^{-4}$  | 4.000                | 2.8                              |
| Asbestos                            | 1972 | F                   | Health         | $3.9 \times 10^{-4}$  | 396.000              | 7.4                              |
| Benzene                             | 1985 | P                   | Health         | $8.8 \times 10^{-4}$  | 3.800                | 17.1                             |
| Ethylene oxide                      | 1984 | F                   | Health         | $4.4 \times 10^{-5}$  | 2.800                | 25.6                             |
| Acrylonitrile                       | 1978 | F                   | Health         | $9.4 \times 10^{-4}$  | 6.900                | 37.6                             |
| Coke ovens                          | 1976 | F                   | Health         | $1.6 \times 10^{-4}$  | 31.000               | 61.8                             |
| Asbestos                            | 1986 | F                   | Health         | $6.7 \times 10^{-5}$  | 74.700               | 89.3                             |
| Arsenic                             | 1978 | F                   | Health         | $1.8 \times 10^{-3}$  | 11.000               | 92.5                             |
| Acrylonitrile                       | 1978 | R                   | Health         | $9.4 \times 10^{-4}$  | 0.600                | 308.0                            |
| EDB                                 | 1983 | P                   | Health         | $2.5 \times 10^{-4}$  | 0.002                | 15,600.0                         |
| Formaldehyde                        | 1985 | P                   | Health         | $6.8 \times 10^{-7}$  | 0.010                | 72,000.0                         |

Source: John F. Morrall, "A Review of the Record," *Regulation*, vol. 10 (November-December 1986), p. 30

a. F = final rule; P = proposed rule; R = rejected rule.

b. Millions of 1984 dollars.

Although the exact cutoff for excessively stringent standards may not be clear, all standards following asbestos appear to impose costs that well exceed the benefits generated. The least cost-effective of OSHA's regulations in force is the arsenic standard, which imposes estimated costs of \$92.5 million per life saved. More lives could be saved at less cost by redirecting the emphases of OSHA's policies.

The most ambitious of OSHA's regulatory initiatives in the 1980s has been its requirement that manufacturers label their hazardous chemicals and meet other informational requirements. The agency adopted the requirement because it believed that substance-by-substance regulation of the thousands of hazardous chemicals in the workplace was not feasible. From an economic standpoint the labeling strategy is attractive because it addresses directly the market's failure to provide adequate information. Although employers began to comply with this regulation only in 1986, and so it is too early to assess its effectiveness, a field study of the responses

Table 6-3. *Worker Responses to Hazard Warnings*

| <i>Item</i>                                   | <i>Asbestos</i> | <i>Chloroacetophenone</i> |
|-----------------------------------------------|-----------------|---------------------------|
| Annual probability of injury before warning   | .09             | .10                       |
| Annual probability of injury after warning    | .26             | .18                       |
| Fraction of workers requiring a wage increase | .71             | .48                       |
| Risk premium (dollars)                        | 2,995.59        | 1,919.01                  |
| Probability of quitting before warning        | .13             | .10                       |
| Probability of quitting after warning         | .65             | .23                       |

Source: W. Kip Viscusi and Charles S. O'Connor, "Adaptive Responses to Chemical Labeling: Are Workers Bayesian Decision Makers?" *American Economic Review*, vol. 74 (December 1984), pp. 942-56.

of workers from different plants suggests that the information may be having a dramatic effect. The general nature of the results is reflected in representative statistics in table 6-3 for two health hazards: asbestos, a well-known carcinogen, and chloroacetophenone, an industrial chemical that causes eye irritation. In each case, workers were shown a label of the type now used by chemical firms with labeling systems. For both hazards the perceived annual risk level, which is scaled in frequency terms comparable to the Bureau of Labor Statistics injury and illness rates, was about one chance in ten before seeing the label. The hazard warning almost tripled the perceived risk in the case of asbestos and doubled it for chloroacetophenone. The fraction of workers who viewed their jobs as high risk (above the national injury risk) also escalated. These increases in risk perceptions were accompanied by a desire for additional wage compensation in many instances (over 70 percent for asbestos), the average premium being \$3,000 for working with asbestos and \$1,900 for chloroacetophenone. Finally, if the workers did not receive additional pay, they would be more likely to quit their jobs, particularly if they worked with asbestos.

Although the hazard communication standard has substantial promise, OSHA standards generally have not yet had the dramatic effects that policymakers envisioned. The most favorable empirical evidence of the agency's efficacy suggests that from 1973 to 1983 its regulations reduced all work injuries and illnesses by 2.6 percent, injuries and illnesses causing lost days of work by 3.6 percent, and the rate of total lost workdays by 6.1 percent.<sup>8</sup> The percentage reduction in injuries is largest for the more severe types, which suggests that OSHA targets more severe hazards disproportionately. Nevertheless, because the agency's rate of inspections and

8. These are the strongest of the set of results reported in W. Kip Viscusi, "The Impact of Occupational Safety and Health Regulation, 1973-1983," *Rand Journal of Economics*, vol. 17 (Winter 1986), pp. 567-80.

the number of penalties assessed have remained low, its regulations have had at best only a moderate effect on workplace health and safety.

OSHA's role can thus be viewed as augmenting that of the market in providing incentives to control risks in the workplace. Unfortunately, its regulations have not fulfilled their initial promise because the standards have often focused on small risks that are expensive to reduce and the enforcement effort has been relatively weak. Many of these shortcomings could be remedied by more effective agency leadership that would recognize there are simply too many hazards to control comprehensively. The issuance of the hazard communication standard was in part an admission of this inadequacy.

### Workers' Compensation

Before the twentieth century, workers who suffered accidents on the job and sought compensation could do so only by filing a lawsuit against their employers and could win only by showing that those employers were careless or negligent. Reliance on the traditional remedies of liability litigation posed a variety of difficulties, however, which no doubt led to the creation of the no-fault system of workers' compensation. An average of one in twenty-five workers suffers an accident each year that leads to lost work time. The lawsuits resulting from such injuries could cause a considerable judicial burden, impose sizable legal costs on employers, and create impediments through legal fees and time delays in workers' obtaining compensation. Tort remedies also do not ensure compensation, since employers can invoke several defenses: contributory negligence, assumption of risk, and the fellow servant rule.<sup>9</sup> Finally, judicial remedies put employer and worker in an adversarial relationship. Since most workplace injuries are temporary, after which the worker returns to his job, filing a lawsuit may damage a relationship that both parties would have liked to preserve.

In large part because of such factors, states have established workers' compensation programs. These statutes typically cover all injuries aris-

9. For a discussion of these principles, see W. Page Keeton, ed., *Prosser and Keeton on the Law of Torts* (St. Paul: West Publishing, 1984), p. 573. Thus the employer could argue that the worker's carelessness contributed to the accident (contributory negligence), that the worker was aware of the risk and incurred it voluntarily (assumption of risk), or that the worker assumed the risk posed by his "fellow servants" upon accepting employment from the "master" (fellow servant rule).

ing out of and in the course of employment, regardless of fault. For the injuries it covers, workers' compensation represents the sole remedy; the worker is generally barred from seeking a recovery from the employer through common law.<sup>10</sup>

These restrictions do not imply that litigation has no function but only that it has a subsidiary one. In some cases of extreme negligence or intentional misconduct, workers can sue employers. They can also sue third parties who manufactured the products contributing to the injury. Thus a forklift driver injured on the job can sue the manufacturer if, for example, a defect in the forklift led to the accident. On balance, however, workers' compensation programs require employees to sacrifice their right to sue employers for the costs imposed by on-the-job injuries in return for receiving some amount of compensation. To receive compensation, workers must show they suffered an injury arising out of and in the course of employment—and that requirement is not innocuous. For example, causality is much simpler to show for accidents than for illnesses, and as a result, workers' compensation benefits serve primarily as accident compensation. The adverse effects of health hazards, particularly those with long gestations, are often not compensated.

For injuries that are covered, the level of compensation is reasonably generous. The typical state formula provides for replacement of two-thirds of wages, subject to various constraints on minimum benefit levels, maximum benefit levels, and benefit duration.<sup>11</sup> Since these benefits are not taxable, their value is often comparable with the value of the worker's net earnings before the injury.<sup>12</sup> The levels of benefits under workers' compensation, however, are somewhat lower than those in products liability awards because workers are paid regardless of fault.<sup>13</sup>

Employers bear the cost of workers' compensation by paying insurance premiums, whose costs provide a financial incentive to maintain a

10. Ibid., pp. 574-75.

11. See U.S. Chamber of Commerce, *Analysis of Worker Compensation Laws* (Washington, D.C., 1986).

12. For a comparison of workers' compensation benefits and products liability settlements, see W. Kip Viscusi, "Alternative Approaches to Valuing the Health Impacts of Accidents: Liability Law and Prospective Evaluations," *Law and Contemporary Problems*, vol. 46 (Autumn 1983), pp. 49-68.

13. A substantial level of replacement was provided for workers included in the University of Michigan Quality of Employment Survey analyzed in W. Kip Viscusi and Michael J. Moore, "Workers' Compensation: Wage Effects, Benefit Inadequacies, and the Value of Health Losses," *Review of Economics and Statistics*, vol. 69 (May 1987), pp. 249-61. Taking into account the tax status of benefits, the rate of wage replacement for this 1976 sample was 0.835.

Table 6-4. *Workers' Compensation Benefits and Related Financial Effects, 1976-83*  
Billions of dollars

| Year | Total premiums | Total payments <sup>a</sup> | Wage reduction | Net employer savings |
|------|----------------|-----------------------------|----------------|----------------------|
| 1976 | 10.9           | 7.6                         | 29.9           | 22.3                 |
| 1977 | 14.0           | 9.8                         | 36.1           | 26.3                 |
| 1978 | 16.6           | 11.6                        | 39.4           | 26.8                 |
| 1979 | 20.0           | 14.0                        | 43.9           | 29.9                 |
| 1980 | 22.0           | 15.4                        | 44.3           | 28.9                 |
| 1981 | 22.9           | 16.0                        | 41.8           | 30.0                 |
| 1982 | 22.5           | 15.8                        | 37.0           | 21.2                 |
| 1983 | 22.9           | 16.0                        | 33.5           | 17.5                 |

Source: Michael J. Moore and W. Kip Viscusi, "Have Increases in Workers' Compensation Benefits Paid for Themselves?" in National Council for Compensation Insurance workers' compensation conference volume, forthcoming, table 5.

a. Amounts have been adjusted to reflect after-tax costs to the firm.

safe workplace. Employers that self-insure or those large firms that are strongly merit-rated will be most influenced by these incentives. The provision of such benefits, however, also reduces workers' incentives to avoid accidents, since, after all, they are not footing any part of the premium. Several recent studies suggest that the effect on these incentives may be significant.<sup>14</sup>

The costs of workers' compensation have increased greatly since the 1970s because benefit levels have become more generous. In 1983, the latest year for which data are available, workers received \$22.9 billion in benefits. Table 6-4 shows yearly workers' compensation payments and after-tax premium costs paid by employers. Both payments and premiums have escalated dramatically since the mid-1970s and have led some observers to voice alarm.

The increasing premiums paint an overly simplistic portrait of the program's actual burden, however. Since workers value benefits both for their insurance aspects and their tax-exempt status, they would be

14. See in particular John W. Ruser, "Workers' Compensation Insurance, Experience-Rating and Occupational Injuries," *Rand Journal of Economics*, vol. 16 (Winter 1985), pp. 487-503, for high estimates; Thomas J. Kniesner and John D. Leeth, "Workers' Compensation with Imperfect State Verification: The Long-Run Impact on Injuries and Claims," paper presented at 1986 summer meeting of the Econometric Society, for estimates of a weaker effect; and James R. Chelius, "The Influence of Workers' Compensation on Safety Incentives," *Industrial and Labor Relations Review*, vol. 35 (January 1982), pp. 235-42, for estimates of no such relationship.

willing to accept lower wages in return for additional benefits. Indeed, unless benefit levels are excessive, the wage reduction will exceed the actuarial value of benefits because risk-averse workers will value the insurance provided by workers' compensation by more than the expected payout. The estimates for two large samples of workers used to generate the wage reduction statistics in table 6-4 indicate that higher benefits lead to a wage offset more than double the current level of premiums. Thus, far from being a financial burden, workers' compensation actually produces net compensation cost savings for employers.<sup>15</sup>

These empirical results can also be used to ascertain the optimal level of benefits.<sup>16</sup> In 1976 benefits were substantially underprovided because the wage reduction workers accepted greatly exceeded the cost of the benefits. But by 1983 levels of compensation had led to benefits close to their optimal level. In terms of efficient insurance, workers' compensation now fulfills its role for those adverse health outcomes covered by the program.

The key remaining inadequacy of workers' compensation is that victims of health hazards often have difficulty obtaining appropriate compensation. Because this problem plagues any compensation program, including civil liability litigation, it is instructive to explore it in detail. The central difficulty is that workers must prove their conditions are job-related. Meeting this test is straightforward when injuries are the result of accidents, but when occupational disease is involved, making an acceptable case for compensation is more difficult. Workers must not only prove they have the disease and that it has adverse health effects but must also prove the link between the disease and the job. Ascertaining such links is often difficult because diseases may have multiple causes, notably those stemming from the workers' own behavior (smoking, say, or alcohol consumption), and because the relative seriousness of different exposure levels may not be well understood. Except for a few "signature" diseases such as asbestosis or mesothelioma, which are caused by exposure to asbestos, the link to the job will be difficult to prove.

15. One possible offset to these savings is the moral hazard problem that may result if higher benefit levels lead to more accidents.

16. See Viscusi and Moore, "Workers' Compensation"; and Michael J. Moore and W. Kip Viscusi, "Have Increases in Workers' Compensation Benefits Paid for Themselves?" in National Council for Compensation Insurance workers' compensation conference volume, forthcoming.

Even if the underlying medical relationship between substance and injury is clear, the worker's history of exposures may not be known. With diseases that occur after gestation of a decade or more, a variety of factors both on and off the job may have contributed. Since record-keeping over long time periods is often nonexistent, it may not be possible to ascertain, for example, what the worker's history of exposure to toxic chemicals has been. Indeed, until the advent of the OSHA hazard communication regulation, it might not have been possible to discover the nature of workers' present exposures. More fundamentally, it may not be possible to verify workers' plant locations and the nature of their jobs.

Workers' compensation statutes impose strict requirements for establishing the relationship between injury and entitlement to benefits. They typically stipulate that a worker must prove the disease is not one of the "ordinary diseases of life" but is "peculiar to the worker's occupation." Some statutes require a worker to have been exposed to the hazard for a specific length of time before granting eligibility for compensation, even though the disease may be caused by a briefer exposure.<sup>17</sup>

If these requirements are met, a worker still may not be able to collect because the statute of limitations may have expired. Some statutes require the worker to file for compensation within a particular period after disablement. Such tests do not appear to be overly restrictive except when the worker does not realize the disease is job-related. Although the usual period is one or two years, if only a short time is allowed, the worker may not have sufficient time to identify the cause of the ailment.<sup>18</sup> The first incidents of liver cancer caused by exposure to polyvinyl chloride, for example, did not lead to widespread awareness of the job risk because they were very rare and were dismissed as random occurrences. Only after diseases become more widespread and better publicized do people become sufficiently aware of their jobs' role in causing the injury.

Much more restrictive in their effects are requirements that workers be employed at the firm where the disease occurred for a minimum period of time—the average is eight years.<sup>19</sup> This is much shorter than

17. See "Note: Compensating Victims of Occupational Disease," *Harvard Law Review*, vol. 93 (March 1980), pp. 921, 923.

18. The period is only ninety days in New York. See National Council on Compensation Insurance, *The Asbestos Crisis—Yesterday, Today and Tomorrow* (New York: NCCI, 1983), p. 16.

19. Government Research Corporation, *Victim Compensation: The Policy Debate* (Washington, D.C., 1983), p. 6.

the usual gestation period for cancer. If workers have changed jobs or retired, they may be unable to qualify for benefits.

These difficulties in the structure of workers' compensation are reflected in compensation payments. Employers are six times as likely to contest a disease-related claim as they are an accident-related one, and they win in two-thirds of these cases, usually on the issue of compensability.<sup>20</sup> Even cases that do result in a compensation payment often involve a prolonged administrative battle; indeed, 60 percent of all such awards are initially denied.<sup>21</sup>

The net effect is that few victims of diseases that workers believe to be occupationally related receive compensation. For disabling illness, estimates of workers compensated range from one in thirty to one in twenty.<sup>22</sup> Five percent or less of these cases are covered. The successful claim rate is higher when the worker has died; about one-third of these cases receive compensation.

When a clear link between the job and the disease is apparent, the success rates for claims may be much higher. For example, one survey of fatality claims based on exposure to asbestos stated that 61 percent of the claims had been awarded, 25 percent had resulted in an agreement to a modified compensation level, 3 percent had been denied, 6 percent were pending, and 1 percent had been dropped.<sup>23</sup> But cases of diseases related to asbestos have received widespread publicity; the success rate of these claims is much higher than for occupational diseases overall. In this sense, asbestos might be viewed as a "best case" for the functioning of workers' compensation.

The low level of benefits received for occupational disease claims often results from the tendency of claimants to negotiate settlements in contested cases. To the extent that there are causes of the disease that are not job-related, this practice may simply reflect the degree of exposure on the job. Public and private compensation combined replace 40 percent of all wages for severely disabled victims of occupational diseases; they replace 60 percent of the wages for all injury classes combined.<sup>24</sup>

20. "Note: Compensating Victims," p. 923.

21. U.S. Department of Labor, *An Interim Report to the Congress on Occupational Diseases* (Washington, D.C., 1980), p. 3.

22. "Note: Compensating Victims," p. 923; and U.S. Department of Labor, *Interim Report*, p. 3.

23. U.S. Department of Labor, *Interim Report*, p. 2.

24. *Ibid.*

These statistics, however, suggest a much higher level of income support for those with occupational diseases than did the workers' compensation statistics cited earlier. The reason for the discrepancy is that workers' compensation is only a minor source of support for the disabled. The main source is social security (53 percent); others include pensions (21 percent), veterans' benefits (17 percent), and private insurance (1 percent).<sup>25</sup> Workers' compensation accounts for the remainder, or only 5 percent of compensation for occupational diseases.

The relatively small contribution of workers' compensation no doubt results from the difficult practical and legal task of establishing a causal link between a job-related exposure and a particular disease. Although existing statistics on self-assessed occupational disease are inherently arbitrary, they do suggest that few such cases are compensated while the worker is ill. More are compensated after death.

Since the major factor limiting compensation is the issue of causality, occupational diseases often get treated much like nonoccupational ailments. Private pension and insurance provide income support, as do social insurance efforts such as social security. From the standpoint of the individual's welfare, the source of the compensation is not of great consequence; it is the level that matters. Social security disability insurance provides income support for workers with long-term disabilities, irrespective of cause. The extent of earnings replacement hinges on a formula linked to the worker's past earnings. These benefits take the form of an annuity payable for life.

In terms of equity, victims of occupational diseases do better than victims of other illnesses but worse than victims of accidents on the job. To the extent that victims of occupational disease can receive workers' compensation benefits whereas victims of nonoccupational injuries and illnesses cannot, they can fare better overall. In accident cases, however, workers' compensation serves an additional function: it encourages employers to provide a safe workplace because premium levels are tied to accident rates. Occupational disease payments provide less incentive since causality is more difficult to ascertain.

Nevertheless, workers' compensation may result in overpayment for victims of occupational disease who collect from more than one source. Since workers' compensation benefits are not automatically deducted from product liability awards, a victim could potentially collect workers' compensation and reap the benefits for a successful product liability

lawsuit. To avoid such duplication, proposals have been made to reduce the level of the settlements in civil suits by the amount of workers' compensation benefits received.<sup>26</sup> Variations of this proposal are discussed in chapter 8.

## Civil Liability Litigation

### *Institutional Interactions*

Workers' compensation is so dominant a force in compensating for accidents on the job that some observers have questioned whether compensation provided through civil litigation will be of any consequence whatsoever in the long run. Indeed, Keeton and his colleagues have predicted the eventual demise of such litigation:

There is thus a substantial and still important area of labor litigation in which the older law still has significance and vitality. The whole trend is toward cutting it down, making further inroads upon it by bringing as much as possible within the compensation acts; and its ultimate extinction appears only to be a question of time—which, however, may not mean anything immediate.<sup>27</sup>

Although the workers' compensation system is well suited to addressing workplace injuries, illnesses plausibly connected to occupational exposure pose continued problems. Workers not only have difficulty in proving that their diseases were caused on the job, but the benefits they receive if they can establish eligibility may not compensate for the economic and noneconomic (pain and suffering) costs they experience. Accordingly, workers have strong incentives to explore other options for obtaining compensation for severe job-related illnesses and injuries. Chief among these options is a third-party lawsuit against the maker of a product involved in a job accident. Because this option is being increasingly pursued, remedies provided through liability litigation will continue to be important to workers.

Is this desirable? From the standpoint of optimal compensation, accident victims should obtain efficient insurance reimbursement from whatever source might provide it. Thus if they cannot obtain adequate income support and medical reimbursement from workers' compensa-

26. One such initiative was the proposal of Senator Robert Kasten of Wisconsin, the Product Liability Act, S2631, introduced in June 1982.

27. Keeton, *Prosser and Keeton on the Law of Torts*, p. 575.

tion, additional reimbursement through a product liability award is desirable.

Workers may, however, do more than use product liability suits to fill the gaps left by workers' compensation. Although workers' compensation is the employee's exclusive remedy against an employer for injuries covered by the program, such coverage in no way precludes an additional claim against a third party involved in an accident. Recent evidence suggests that efforts to boost levels of workers' compensation have raised benefits for injuries from an inadequate level to roughly their optimal amount.<sup>28</sup> Thus from the standpoint of efficient insurance against income losses, a multiple recovery for injury may lead to over-compensation. For diseases, however, compensation may remain insufficient because benefits are subject to caps and duration limits. Such caps may be particularly important in cases of job-related fatalities, since the death benefits under workers' compensation are very limited. In addition, the quality and level of medical care provided through workers' compensation tends to be minimal. Injuries requiring extensive medical expenditures, such as repeated plastic surgery or specialized vocational rehabilitation, are not well handled. Nor is the best possible care generally provided. In situations in which highly specialized and expensive treatment would have a clear benefit, the court can provide for such care, but these determinations can add costs and delays to treatment.

A second objective of litigation is to provide proper incentives for risk reduction. Workers' compensation awards consist exclusively of compensation for loss of income and medical expenses. Product liability awards cover these losses as well as compensation for pain and suffering. Making the employer or producer of workplace equipment responsible for these expenses provides some financial incentive to encourage safety on their part. Nevertheless, in practice, these incentives appear muted.

Table 6-5 summarizes the average levels of compensation provided in court awards and out-of-court settlements in product liability cases concluded in 1977 (updated in 1985 prices). Although the levels of compensation are not negligible, they are below the values workers have assigned for prevention of these health outcomes, particularly fatalities. Product liability awards for fatalities average roughly one-tenth of the

28. See Moore and Viscusi, "Have Increases in Workers' Compensation Benefits Paid for Themselves?"

Table 6-5. *Distribution of Liability Awards by Severity of Bodily Injury, 1977*

| <i>Severity of injury</i>    | <i>Percentage of parties with payment</i> | <i>Average payment (1985 dollars)<sup>a</sup></i> | <i>Percentage of total payments</i> |
|------------------------------|-------------------------------------------|---------------------------------------------------|-------------------------------------|
| Death                        | 3.6                                       | 219,237                                           | 18.8                                |
| Permanent total disability   | 3.0                                       | 421,374                                           | 29.9                                |
| Permanent partial disability | 2.3                                       | 259,443                                           | 14.2                                |
| Temporary total disability   | 23.0                                      | 27,316                                            | 15.0                                |
| No disability                | 68.2                                      | 13,626                                            | 22.2                                |
| Full sample                  | 100.0                                     | 41,894                                            | 100.0                               |
| Unknown                      | ...                                       | 69,836                                            | ...                                 |

Source: Insurance Services Office, *Product Liability Closed Claim Survey: A Technical Analysis of Survey Results* (New York, 1977), p. 113.

a. The 1977 average payment figures were updated to 1985 values using the CPI.

value of life reflected in the wage-risk trade-off's summarized in table 6-1 and as a result provide too little incentive for safety. Moreover, the safety incentives that are created are dampened by employers' insurance arrangements. Workers' compensation rates for employers who do not self-insure are often governed by industry average risks, so that a firm's specific performance is, at best, only partly reflected in the rates. Similarly, many employers insure against adverse product liability judgments, thus reducing the incentive. The possibility of multiple benefit recoveries encourages safety precautions, but it does so less efficiently than could be achieved through direct OSHA regulation.

A related aspect of workers' compensation and product liability awards is that subrogation and indemnification rules permit the party reimbursing a victim for accident losses to sue a third party to recover his losses. Consider, for example, a worker who is injured while driving a defective forklift and obtains a workers' compensation award. A subrogated fund acquires the employee's right to sue the manufacturer for losses imposed by the defective product. While this legal remedy is feasible, the cost of litigating such a claim reduces its usefulness except when the potential award is very large.

Civil litigation also interacts with government safety regulations. Under current products liability law, the plaintiff can cite a violation of an OSHA safety standard as evidence of failure to adhere to the proper strict liability or negligence standards, thus greatly enhancing the chance of a successful suit.<sup>29</sup> Some observers have suggested that compliance with OSHA and Consumer Product Safety Commission regulations

29. Keeton, *Prosser and Keeton on the Law of Torts*, pp. 220-33.

might be used as a defense in such cases. But compliance may not be sufficient because these regulations are not comprehensive. In some instances there may be no regulation at all addressing a particular hazard; in others the regulation may not be sufficiently specific. For example, OSHA's hazard communication regulation requires that hazardous chemicals used by manufacturing workers be labeled, but it does not specify the label content or format. A products warnings case would explore intensively the adequacy of the label of a specific product.

Nevertheless, it may be sensible to rely on compliance with government regulations as a defense when the relevant regulation constitutes a highly specific design standard. The OSHA standard for ladders, for example, imposes meticulous design constraints.<sup>30</sup> If these standards limit the manufacturer's discretion to such an extent that it cannot greatly alter the product's safety-related attributes, then regulatory compliance takes on added significance.

The chief mechanisms that must establish effective incentives for safety are market forces and government regulation. If these institutions do not establish such incentives, then one cannot rely upon the compensation-oriented institutional approaches to do so.

The joint influence of workers' compensation and tort liability may be nil if a successful claim cannot be filed. If claimants succeed with respect to other remedies, there will be potential overcompensation of victims, leading to dual recovery and inadequate incentives to work safely. This seemingly paradoxical combination of possible overinsurance and inadequate prevention stems from the fact that health risks involve nontransferable, nonmonetary outcomes. The optimal level of insurance compensation for a fatality may be an amount such as \$300,000, depending on the victim's age and family composition, but the appropriate value of life from the standpoint of prevention may be an order of magnitude larger. This divergence between the values for prevention and compensation highlights the need for relying on more than a single institution to meet multiple objectives.

### *Liability Criteria*

Over the past decade third-party lawsuits to obtain compensation for job-related diseases have become increasingly prominent. The asbestos lawsuits and the Agent Orange lawsuits filed by Vietnam veterans are

key examples. Yet many of the limitations of the workers' compensation system also plague products liability litigation, even under the strict liability doctrine increasingly used to resolve such disputes.

To make a successful case under strict liability, one must show that the product was defective, that the defect caused the injury, and that the defendant was responsible.<sup>31</sup> Defendants can defeat such claims by showing that at least one of these conditions has not been met. It is instructive to explore each of these criteria in turn, particularly with respect to the difficulties posed in disease cases.

**PROVING A DEFECT.** The principal test for whether a product is defective is whether the activity involving its use is "abnormally dangerous."<sup>32</sup> The American Law Institute suggests that this standard will be met where the risk is large, severe, and arises from some inappropriate aspect of the activity. Although disease victims are required to exercise "reasonable care," and therefore defendants' liability is not absolute, contributory negligence is not generally a successful defense in cases involving on-the-job exposures.<sup>33</sup>

**PROVING CAUSATION.** The plaintiff must also demonstrate that the product defect caused the injury. In situations involving diseases such as cancer there are typically multiple causes that cannot be readily distinguished. Indeed, the prominence of asbestos-related lawsuits was certainly due in large part to the clear scientific evidence linking exposure to asbestos with mesothelioma and asbestosis. In many other situations, however, the evidence is far less clear; the long gestation for many diseases makes the process of inferring causal linkages especially difficult.

These lags have additional implications for applying statutes of limitations. The time limits vary, but they typically run from one to six years after the date of injury or exposure in negligence and strict liability lawsuits and from three to twenty years from the date of sale in warranty cases.<sup>34</sup> In states where the time period begins at the date of exposure to the hazard, these limits undermine many attempts to secure compensation.

Courts and legislatures in more than forty states have responded to this problem by ruling that the statute of limitations does not begin to run until the injury has been discovered. In thirteen of these states, the

31. *Injuries and Damages from Hazardous Wastes—Analysis and Improvement of Legal Remedies*, Committee Print, 97 Cong. 2 sess. (GPO, 1982), p. 44.

32. American Law Institute, *Restatement (Second) of Torts*, 520.

33. Government Research Corp., *Victim Compensation*, p. 45.

34. "Note: Compensating Victims," p. 920.

time begins after the individual has ascertained or could reasonably have ascertained the causal connection between the job and the illness.<sup>35</sup> Such provisions reduce the formal legal barriers that must be hurdled before a plaintiff can win a case, but they do not eliminate the more general problem of establishing the link between a particular exposure and the disease.

**PROVING THE DEFENDANT'S RESPONSIBILITY.** Plaintiffs must show that defendants are responsible for the risk. In practice plaintiffs must show that they were exposed in some way to the product of a specific manufacturer that carried the risk. Because of the long time lags involved in many occupational disease cases, plaintiffs may have great difficulty in meeting this test, especially in linking a particular producer with the risk. A worker who used asbestos in manufacturing fireplaces, for example, might not know the identity of the supplier.

Some courts have resolved the identification problem by finding that all producers of a particular substance should be held liable.<sup>36</sup> But this resolution raises still other problems: how should liability be allocated? One practical procedure is to assess liability on the basis of market share.<sup>37</sup>

In some cases the costs are borne by insurance companies as well as producers, but this not only increases the number of parties involved, it also complicates the informational requirements, since courts must ascertain which insurer should be held liable and in what amount. In many cases insurance has been sold off to excess carriers or reinsurance companies, introducing additional parties. And the courts' task may be further complicated if such coverage has been written decades ago.

Producers can still avoid liability, however, if they can establish that plaintiffs assumed the risk of injury, that they were aware of the risk and incurred it voluntarily. Much of the impetus for the voluntarily adopted chemical labeling efforts has come from a desire to inform users of the chemical of the risks they face, thus reducing the prospects that producers will be held liable for workers' injuries.

**OTHER COMPLICATING FACTORS.** Even if the victims must be able to make a case for compensation, they may not be able to collect. The party found responsible may not have sufficient funds to pay all the claims. Or the firm may have closed—indeed, over several decades firms

35. *Injuries and Damages from Hazardous Wastes*, pp. 43-44.

36. *Sindell v. Abbott Laboratories*, 26 Cal. 3d 588 (1980), 163 Cal. Rptr. 132, 607 P.2d 924, cert. den., 449 U.S. 912, 101 S.Ct. 286, 66 L. Ed. 2d 140.

37. *Injuries and Damages from Hazardous Wastes*, pp. 61-62.

face a reasonably high probability of closure. But even if the firm remains in business, a surge in the number of lawsuits may threaten its financial viability. Many risks, such as those posed by asbestos or a nuclear power plant catastrophe, will affect a large number of people simultaneously. In the absence of legally mandated caps on awards or unusual insurance protection, resources will be insufficient to meet all valid compensation claims. Claims involving diseases may well be in the billions of dollars—possibly over \$38 billion for asbestos alone.<sup>38</sup> Very large levels of payoffs might threaten the viability of the insurance industry and would even have a sizable fiscal impact if the government were the insurer. Opportunities for reorganization under bankruptcy laws enhance the possibility that there will be a limit on the potential liability lower than the total value of legitimate compensation claims.

Despite these shortcomings, products liability provides an important source of compensation for job-related diseases. Almost one-third of all products liability claims are for industrial accidents.<sup>39</sup> But only 11 percent of those who received payment in products liability claims for bodily injury received it for job-related causes.<sup>40</sup> These claims were, however, for much larger amounts than the typical bodily injury award. Roughly 42 percent of total payments were for accidents caused by industrial hazards, and the average payment was \$98,000 (in 1976 dollars).

Much of the average award, however, goes toward legal fees, expert witnesses, and court costs. Overall, only 37.5 cents of every product liability insurance premium dollar goes to claimants.<sup>41</sup> In part, this reflects traditional insurance company administration and overhead, which reduces the amount of the total premium that is paid out to resolve claims. The victims' share of the actual award devoted to legal and other expenses is much greater. In one small sample of asbestos settlements, which differs from the aggregative sample for all injuries cited above, 41 percent of all compensation was used to pay legal fees and other litigation expenses.<sup>42</sup> The average performance of the products liability compensation system may be much better. Indeed, the

38. Paul MacAvoy, "The Economic Consequences of Asbestos-Related Disease," working paper 27 (Yale School of Organization and Management, 1982), p. 4.

39. "Note: Compensating Victims," p. 918.

40. Insurance Services Office, *Product Liability Closed Claims Survey: A Technical Analysis of Survey Results* (New York, 1977), p. 60.

41. "Note: Compensating Victims," p. 928.

42. James S. Kakalik and others, *Costs of Asbestos Litigation* (Rand Corporation, Institute for Civil Justice, 1983), p. v.

litigation cost per case should decrease as the legal precedents in these cases become clear-cut and the outcomes more predictable. As a result, legal costs should constitute a decreasing share of total products liability awards.

### *Asbestos Claims*

As just noted, firms may not have the resources to pay all valid products liability claims, especially as liability doctrines result in greater awards. The asbestos claims provide the most dramatic and best documented illustration of this problem.

Exposure to asbestos poses several risks. It may lead to asbestosis, which involves scarring of the lungs and pulmonary insufficiency that may be fatal. This is a chronic, noncancerous disease. Asbestos may also lead to lung cancer, which is the cause of death for one-fifth of all asbestos workers. This risk may interact with cigarette smoking, which is believed to increase the incremental asbestos mortality rate (relative to nonsmoking workers not exposed to asbestos) by ten times. Asbestos is also the principal cause of mesothelioma, a cancer that affects the lining of the lung or abdominal wall. Finally, a number of other types of cancer (for example, gastrointestinal cancer) have also been linked to asbestos, but no dose-response relationship has been estimated. As in the case of lung cancer, there are other possible causes of these diseases so that it is often difficult to infer the contributory role of asbestos exposures.<sup>43</sup>

Even in situations of multiple causality, the extremely potent carcinogenicity of asbestos makes it a strong candidate for causing the disease. A nonsmoking asbestos worker, for example, faces five times the mortality rate from lung cancer as workers who do not smoke and who are not exposed to asbestos, and faces roughly half the risk of a cigarette smoker.<sup>44</sup> If, however, a worker smokes cigarettes and is exposed to asbestos, his mortality rate from lung cancer is fifty times that of a nonsmoker who does not work with asbestos. The net effect of such powerful risks is that asbestos may account for up to one-half of all cases of occupational cancer.

These potent hazards in turn have given rise to a rapid increase in

43. For medical information, see Irving J. Selikoff, *Disability Compensation for Asbestos-Associated Disease in the United States* (Springfield, Va.: National Technical Information Service, 1981), pp. 19-29.

44. *Ibid.* pp. 332-35.

asbestos-related lawsuits that began in 1973 with the application of strict liability principles in products liability lawsuits. One leading asbestos producer, the Manville Corporation, had 16,500 suits pending against it in 1982, with an estimated potential cost of \$660 million.<sup>45</sup> Over 100,000 additional suits against Manville are anticipated by 1992.

The settlements in asbestos-related cases averaged \$72,000 from 1967 to 1976, of which an average of \$28,500 was spent to cover legal fees.<sup>46</sup> The total price tag to the industry of the settlements and litigation expenses up to 1982 has been estimated to be \$1 billion. One-third of this amount has been borne by asbestos producers and two-thirds has come from insurance firms.<sup>47</sup>

As significant as these amounts may seem, the primary costs imposed by asbestos-related diseases will appear in lawsuits that have yet to be resolved or settled. The best estimate of the financial liability of the asbestos industry, based on compensation payments made to claimants thus far, is \$38.2 billion.<sup>48</sup> The range of estimates is \$7.6 billion to \$87.1 billion, a disparity caused by the possibly substantial variation in several key parameters—the incidence of the disease, the average settlement, and the rate of growth in claims.

To put the asbestos costs in perspective, it is instructive to compare them with the potential resources available for compensating victims. The combined net worth as of 1982 of the fifty-one insurance companies involved in asbestos claims was \$11.5 billion. The net worth of the asbestos industry was \$15.6 billion, but the pertinent amount will be less than this figure to the extent that firms create asbestos-related subsidiaries, as has Manville, giving it protection from some claims under Chapter 11 of the federal bankruptcy laws.<sup>49</sup>

In short, the financial resources available to pay asbestos claimants are not likely to be sufficient to cover the cost. Even the combined net worth of the asbestos industry and all insurance companies that have paid asbestos claims will not suffice.

For this and other reasons, alternative approaches involving government action have been suggested. These include shifting the burden of the claims to the federal government, establishing a more modest compensation system, and setting up a pool of funds to pay future claimants.

45. Government Research Corp., *Victim Compensation*, pp. 12-13.

46. Selikoff, *Disability Compensation*, p. 11.

47. Kakalik, *Costs of Asbestos Litigation*, p.v.

48. MacAvoy, "Economic Consequences of Asbestos-Related Disease," p. 66.

49. *Ibid.*, pp. 77-78.

## Toxic Tort Compensation Schemes

The genesis of the recent compensation proposals for victims of occupational disease can be traced to insurance arrangements mandated for hazardous wastes, as well as to the longer-term role of workers' compensation in supporting victims of job accidents. Under the Resource Conservation and Recovery Act, the owner of a landfill or hazardous waste site must maintain insurance coverage for liability up to \$6 million, excluding legal fees.<sup>50</sup> The Comprehensive Environmental Response, Compensation and Liability Act imposes similar requirements on vessels that transport hazardous substances: they must have insurance coverage up to the maximum of either \$300 per gross ton of hazardous waste carried or \$5 million.<sup>51</sup> The Superfund Study Group has proposed changes in mechanisms of compensation that would alter the legal structure to make compensation for exposure to hazardous waste more like the workers' compensation system.<sup>52</sup>

### *Occupational Disease Compensation*

The concept of targeting a compensation program on victims of occupational disease is not new. Since its establishment in 1969 the black lung program has provided income support to coal mine workers disabled by the disease.<sup>53</sup> This program differs from workers' compensation in that the eligibility criteria are generous. A worker was initially presumed to be totally disabled from black lung disease if he had worked in a coal mine for at least ten years and had medical evidence of complicated pneumoconiosis. The program was later expanded to include respiratory and pulmonary impairment (plus fifteen years of coal mining employment). Benefits took the form of an annuity that was not tied to worker wages. The associated costs mushroomed from \$150 million in 1970 to more than \$1 billion by the late 1970s, in large part because of the increased number of claims. This unexpectedly rapid growth should provide a cautionary signal for all those who project costs for any disease compensation program. The estimates should be sufficiently large to include unexpected growth in claims.

In 1977 the financing of the black lung effort from general revenues

50. 29 CFR 264.147(b), as revised in 47 *Federal Register* 16555 (April 16, 1982).

51. 42 U.S.C. 9608(a)(1) (1982).

52. *Injuries and Damages from Hazardous Wastes*, pp. 196-271.

53. U.S. Department of Labor, *Interim Report*, pp. 85-91.

was abandoned and a tax on coal production instituted (50 cents a ton for underground mines and 25 cents a ton for surface mines). Because this tax is not explicitly linked either to workplace conditions or to incidence of the disease, it creates no explicit incentives for particular mine operators to operate more safely. However, the tax will reduce coal output.

The basic outlines of the black lung program were found in the most prominent asbestos compensation policy proposed thus far—the Occupational Disease Compensation Act of 1983 (H.R. 3175). Often referred to as the Miller bill for its sponsor, Democratic Congressman George Miller of California, this act would have set up a program resembling workers' compensation; the benefits would have served as workers' exclusive remedy for asbestos-related exposures. Potential compensation would have been capped, but workers would have gained greater certainty of receiving compensation. Cases of mesothelioma would have been presumed to be asbestos-related. Lung cancer would have been covered by a similar presumption, provided that it occurred within ten years of the first job exposure. Funding would have been provided by a tax on employers linked primarily to relative market share rather than benefits awarded.

Although cost estimates are not available for this act, they are available for its antecedent, H.R. 5735.<sup>54</sup> Based on an intermediate-risk assumption, total compensation costs for occupational diseases related to asbestos exposure will be \$28 billion (using a 2 percent real interest rate). If, however, all non-job-related cases of lung cancer for asbestos workers are compensated, as the act would ensure, the cost would reach \$98 billion.

These statistics highlight the major danger of disease compensation programs. The inherent difficulty of distinguishing job-related from other illnesses will boost costs well beyond what can be reasonably afforded—in this case more than tripling the burden.

It is instructive to compare these estimates with likely court-ordered compensation costs estimated by MacAvoy (also based on a 2 percent discount rate).<sup>55</sup> If only lung cancers caused by job-related asbestos

54. Cost discussions are based on the findings in Frederick B. Siskind, "Cost Impact of the 1982 Miller Proposal (H.5735) for Compensating Accident Victims," Office of the Assistant Secretary for Policy, U.S. Department of Labor (November 1982). The principal change in the more recent version was that, instead of continuing indefinitely, benefits to widows compensated for only five years of income.

55. MacAvoy, "Economic Consequences of Asbestos-Related Disease."

exposures were compensated, the costs of the compensation bill evaluated at a comparable basis would be \$10 billion less than court-ordered compensation. But if, as seems likely, almost all lung cancers among asbestos workers would receive compensation, the cost would triple to an amount well in excess of the estimated costs imposed by prospective products liability lawsuits. As a result, it would not be in the financial self-interest for asbestos producers and affected insurance companies to have such legislation supersede the present mechanisms for settling claims.

In fact, the financial burdens imposed by the proposed asbestos compensation legislation could not be borne by the asbestos industry. Some firms would shut down. Others would reorganize, and their asbestos-producing units would file for bankruptcy. To the extent that compensation burdens would be shifted to other firms in the industry, their financial viability would also be threatened. In short, the asbestos compensation proposal does not appear to be economically viable.

Even if the burden could be borne, the primary mechanism for funding would be an output-related tax. This tax would reduce the output of affected firms but would provide no incentive for risk reduction for diseases likely to be compensated in the next two decades, since these are the product of past decisions. Diseases that would have to be compensated beyond that point might create incentives for safety to the extent that the funding mechanism is linked to current job conditions.

Because of the difficulty of making any precise linkage of this type, one alternative would be to place a tax on current asbestos exposure levels. Such an externality tax could lead to an efficient level of risk and hence could supplant direct regulatory controls. Any additional costs needed to fund benefits for diseases already caused would be drawn from general revenues.

This approach, however, would address only a small segment of the occupational disease problem—new asbestos-related diseases. It would ignore the chief problem posed today by decades of asbestos exposure: paying for future claims arising from asbestos-related diseases already in gestation.

### *An Affirmative Policy Proposal*

Gaps in information make it difficult to design an effective policy to address the problem of occupational disease. For diseases that have been already caused, no compensatory or regulatory system can alter safety

incentives retroactively. The most that can be done is to provide efficient levels of insurance. There is no compelling rationale for policy involvement beyond existing social insurance efforts, since victims of occupational disease are no more deserving than victims of environmental exposures or risks of undetermined origin. To the extent that workers can prove a job link in a product liability suit or workers' compensation claim, there is at least some promotion of equity by making the companies involved pay the costs.

For the diseases not yet caused, the emphasis should be on regulatory measures, since these are targeted most directly at the risks. Workers' compensation and the civil liability system have a role to play in complementing this safety incentive and in providing adequate levels of compensation.<sup>56</sup>

## Conclusion

The long-run functioning of the market for potentially hazardous jobs will continue to be governed by multiple institutions. Chief among these is the role of free market forces as worker preferences generate a powerful incentive to provide adequate job safety. The principal mechanisms to bolster market forces are government regulations to promote control of risk and workers' compensation to address income and medical insurance needs. The responsibilities of these institutions are so extensive that the civil liability system will be much less important with respect to job accidents and illnesses than for any other class of accidents. Indeed, the system's only current function is for third-party lawsuits.

This secondary function is, however, not inconsequential. For job-related diseases civil liability remedies have become increasingly prominent. The functioning of the legal system with respect to mass toxic torts is not entirely uncontroversial, but many of the problems that have been encountered are inherent to the problem area.

56. For a fuller discussion of policy remedies for occupational disease, see W. Kip Viscusi, "Structuring an Effective Occupational Disease Policy: Victim Compensation and Risk Regulation," *Yale Journal of Regulation*, vol. 2, no. 1 (1984), pp. 53-81.

## *Products Liability Law and the Accident Rate*

George L. Priest

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WITHIN the past three decades, products liability law has been transformed from a minor subfield of commercial law and negligence litigation to an exceptionally rich and diverse set of doctrines that constitutes perhaps the most prominent feature of modern civil jurisprudence. There is little need today to plead the importance of products liability law. No one conscious of the dwindling budget and meager accomplishments of the Consumer Product Safety Commission can pretend that the United States makes a serious effort to regulate product quality directly. Instead, our society relies on liability actions to police the manufacturing process. The prospect of liability judgments affects design and production decisions of all manufacturers, foreign and domestic, that sell to U.S. consumers.<sup>1</sup> And increasing numbers of corporate bankruptcies and reorganizations stem from such judgments. As recently as a decade ago, insurance for products liability was subsumed in general commercial liability coverage, of insufficient importance for separate categorization. Today it is a growing component of commercial underwriting—indeed growing at such a rate that foreign and domestic reinsurers have recently been frightened into withdrawing further coverage.

Along with medical malpractice law, products liability law is widely viewed as the most egregious source of modern legal uncertainty. Within the past two years, efforts to reduce these uncertainties and, more generally, the extent of liability have generated extraordinarily vituperative legislative battles among manufacturers, insurers, consumers, and trial

1. A recent study reported that 25 percent of the nation's 500 largest corporations had withdrawn products from the market because of liability or liability insurance problems. Nathan Weber, *Product Liability: The Corporate Response* (New York: Conference Board, 1987), pp. 4-7.

lawyers seeking to change the law or to preserve it. Some forty states have enacted tort reform legislation, and twenty of them, important tort reform legislation.<sup>2</sup>

Yet despite the tremendous controversy over modern products liability law, its goals have been uncontroversial. Virtually all courts and commentators have embraced the goals of accident reduction and insurance that correspond to the principal economic effects of the law. There are only two important economic effects of any legal rule: a rule can provide incentives to reduce the accident rate and, for accidents that cannot be prevented, a legal rule can provide a form of victim compensation insurance tied to product sales.<sup>3</sup> Although there are occasional references to fairness and equity, courts in products cases have largely focused on these two economic goals alone in their elaboration of the law.<sup>4</sup>

The current controversy instead stems from disagreement over whether the expansion of products liability law successfully achieves these objectives of deterrence and providing compensation insurance. Until recently, the debate has not been well focused on the goals the courts are striving to achieve. Critics of the law, including product manufacturers, have condemned the extent to which the law has disrupted their activities, but they have not shown that increased manufacturing costs and insurance premiums are inappropriate results of a demand for safer products. Consumer advocates have championed the higher levels of compensation awarded to injured consumers, but they have not shown that higher compensation is essential for obtaining safer products or that the compensation provided by litigation offers insurance that would not otherwise be available. A separate group of academic analysts, led by prominent law and economics scholars, has argued that modern products liability law promotes accident reduction efficiently, but the scholars have supported the claim only with models and have provided no empirical confirmation of any sort.

In recent years, however, many commentators have come to appreciate the need for more careful analytic focus on the insurance and accident reduction goals of the law. There has long been widespread skepticism

2. For a summary, see Michael Bird and Brenda Trolin, *Selected State Legislative Action Re: Affordability and Availability of Liability Insurance* (Washington, D.C.: National Conference of State Legislatures, 1986).

3. See George L. Priest, "Internalizing Costs," unpublished manuscript (Yale Law School, 1987).

4. For a discussion of the development of this judicial approach toward products liability law, see George L. Priest, "The Invention of Enterprise Liability: A Critical History of the Intellectual Foundations of Modern Tort Law," *Journal of Legal Studies*, vol. 14 (December 1985), pp. 461-527.

concerning the ability of a civil legal regime to provide effective compensation insurance because it was thought that the insurance provided by the law would never be sufficiently comprehensive.<sup>5</sup> The new criticism of the law's insurance function, however, argues that civil law should never attempt to provide insurance because of adverse effects on consumers. First it was demonstrated that the compensation insurance provided through contract law remedies was excessive.<sup>6</sup> The analysis was extended to tort law and to the problem of catastrophic injuries in particular.<sup>7</sup> Recently, it has been shown that the insurance provided in products liability law was inferior to what might be allocated by contract.<sup>8</sup> And more recently still, it has been demonstrated both that the expansion of liability on insurance grounds reduces insurance availability and that it harms most seriously poor and low-income consumers, exactly those that courts had hoped to help by the expansion of liability.<sup>9</sup> This work shows that the attempt to provide insurance through the law is largely responsible for the recent insurance crisis and that insurance availability could be increased and poor and low-income consumers benefited if the insurance component of modern law were excised completely. Chapter 2 of this volume demonstrates these effects analytically.

This chapter represents an attempt to evaluate the other of the two goals of modern products liability law: the effect of the law on product safety. The first discusses the implications of data concerning trends in products liability claims and judgments and in product-related accidents. The second part approaches the question analytically. It describes the current understanding of the effects of the standard of strict products liability dominant in modern law and economics scholarship, and it performs an empirical test of the efficient accident reduction characteristics of the law, suggesting that much of the modern economic approach is simplistic and misdescriptive of the law. The third part looks carefully at the most basic doctrines of modern products liability law affecting product manufacture, design, and warning. It attempts to show why, in their

5. Guido Calabresi, *The Costs of Accidents: A Legal and Economic Analysis* (Yale University Press, 1970).

6. Samuel A. Rea, Jr., "Nonpecuniary Loss and Breach of Contract," *Journal of Legal Studies*, vol. 11 (January 1982), pp. 35-53.

7. Patricia M. Danzon, "Tort Reform and the Role of Government in Private Insurance Markets," *Journal of Legal Studies*, vol. 13 (August 1984), pp. 517-49.

8. Richard A. Epstein, "Products Liability as an Insurance Market," *Journal of Legal Studies*, vol. 14 (December 1985), pp. 645-69.

9. George L. Priest, "The Current Insurance Crisis and Modern Tort Law," *Yale Law Journal*, vol. 96 (June 1987), pp. 1521-90.

Table 7-1. *Federal Products Liability Cases Filed, 1974-86*

| Year | Cases filed | Percent<br>change from<br>previous year |
|------|-------------|-----------------------------------------|
| 1974 | 1,579       | ...                                     |
| 1975 | 2,886       | 83                                      |
| 1976 | 3,696       | 28                                      |
| 1977 | 4,077       | 10                                      |
| 1978 | 4,372       | 7                                       |
| 1979 | 6,132       | 40                                      |
| 1980 | 7,755       | 26                                      |
| 1981 | 9,071       | 17                                      |
| 1982 | 8,944       | -1                                      |
| 1983 | 9,221       | 3                                       |
| 1984 | 10,745      | 17                                      |
| 1985 | 13,554      | 26                                      |
| 1986 | 13,595      | 0.3                                     |

Sources: *Annual Report of the Director of the Administrative Office of the United States Courts*, various issues.

current formulation, these doctrines depart substantially from rules that would more adequately control the accident rate. There is little dispute that the accident rate can be most effectively controlled by application of very rigorous cost-benefit analysis of product design issues. This part also attempts to set forth how modern products liability doctrines could be redrafted to better achieve the accident reduction goal.

### Trends in Products Liability Litigation and in Accident Rates and Their (Questionable) Implications for Evaluation of the Law

Much of the severe disagreement over the ultimate effects of the expansion of modern products liability stems from differing interpretations of changes in the volume of products liability litigation. Table 7-1 shows that products liability filings in federal courts have increased from 1,579 in 1974 to 13,595 in 1986.<sup>10</sup> It is this 861 percent growth in twelve years that suggests the great increase in the effect of products liability law on manufacturing operations. Annual filing rates increased substantially in 1975

10. For a fuller discussion of these statistics, see U.S. Department of Justice, *Report of the Tort Policy Working Group on the Causes, Extent and Policy Implications of the Current Crisis in Insurance Availability and Affordability* (Washington, D.C., 1986). See also Priest, "Current Insurance Crisis," pp. 1532-34.

Table 7-2. *Products Liability Trials and Verdicts, Cook County, Illinois, and San Francisco, 1960-84*

Awards in thousands of 1984 dollars

| <i>Trials</i>                 | 1960-64 | 1965-69 | 1970-74 | 1975-79 | 1980-84           |
|-------------------------------|---------|---------|---------|---------|-------------------|
| Number of jury trials         |         |         |         |         |                   |
| Cook County                   | 73      | 140     | 219     | 212     | 177               |
| San Francisco                 | 54      | 88      | 127     | 101     | 49                |
| Percent of total trials       |         |         |         |         |                   |
| Cook County                   | 2       | 3       | 5       | 7       | 5                 |
| San Francisco                 | 4       | 5       | 8       | 8       | 6                 |
| Mean award                    |         |         |         |         |                   |
| Cook County                   | 265     | 287     | 578     | 597     | 828               |
| San Francisco                 | 99      | 194     | 145     | 308     | 1,105             |
| Median award                  |         |         |         |         |                   |
| Cook County                   | 103     | 118     | 178     | 196     | 187               |
| San Francisco                 | 27      | 72      | 51      | 81      | 200               |
| 90th percentile award         |         |         |         |         |                   |
| Cook County                   | 710     | 532     | 727     | 1,132   | n.a.              |
| San Francisco                 | 429     | n.a.    | n.a.    | 817     | n.a.              |
| Percent of total trial awards |         |         |         |         |                   |
| Cook County                   | 6.4     | 11.0    | 22.0    | 23.7    | 10.0 <sup>a</sup> |
| San Francisco                 | 6.0     | 12.0    | 8.0     | 14.0    | 16.4 <sup>a</sup> |

Sources: For number of trials, percent of total, and mean and median awards, author's calculations based on Mark A. Peterson, *Civil Juries in the 1980s: Trends in Jury Trials and Verdicts in California and Cook County, Illinois*, R-3466-ICJ (Santa Monica: Rand Corp., 1987). For 90th percentile awards and percent of total trial awards, author's calculations based on Mark A. Peterson and George L. Priest, *The Civil Jury: Trends in Trials and Verdicts, Cook County, Illinois, 1960-1979*, R-2881-ICJ (Rand Corp., 1982); and Michael G. Shanley and Mark A. Peterson, *Comparative Justice: Civil Jury Verdicts in San Francisco and Cook Counties, 1959-1980*, R-3006-ICJ (Rand Corp., 1983). The figures reported in Peterson do not correspond to those reported in Peterson and Priest or Shanley and Peterson for unspecified reasons.

n.a. Not available.

a. Derived by author from Peterson, *Civil Juries in the 1980s*, table 4.6.

and 1976, again in 1979 and 1980, and in 1985. Curiously, the volume of filings remained virtually constant between 1985 and 1986.

Table 7-2 shows changes in products liability jury trials and judgments since 1960 in Cook County, Illinois, and San Francisco.<sup>11</sup> The absolute number of jury trials and the proportion of products liability trials in civil litigation increased rapidly in both jurisdictions from 1970 to 1974 but have been declining since. Regardless of number, the mean plaintiff judg-

11. For fuller discussions of these data, see Mark A. Peterson and George L. Priest, *The Civil Jury: Trends in Trials and Verdicts, Cook County, Illinois, 1960-1979*, R-2881-ICJ (Santa Monica: Rand Corp., 1982); Michael G. Shanley and Mark A. Peterson, *Comparative Justice: Civil Jury Verdicts in San Francisco and Cook Counties, 1959-1980*, R-3006-ICJ (Rand Corp., 1983); and Mark A. Peterson, *Civil Juries in the 1980s: Trends in Jury Trials and Verdicts in California and Cook County, Illinois*, R-3466-ICJ (Rand Corp., 1987).

ment in these trials has skyrocketed, with extraordinary increases in Cook County in 1970-74 and 1980-84 and in San Francisco in 1975-79 and 1980-84. Judgments in the largest cases have been the primary influence on the increase in the average award. As a percentage of total trial judgment dollars awarded, products liability awards expanded in Cook County and San Francisco, respectively, from a relatively insignificant 6.4 percent and 6 percent of judgment dollars in 1960-64 to nearly 24 percent and 14 percent of judgment dollars in 1975-79. From 1980 to 1984, however, this proportion dropped substantially in Cook County (to 10 percent), although it increased in San Francisco (to more than 16 percent).

It might be thought at first glance that the data concerning litigation trends for the past decade are contradictory, since they show large increases in filings and trial judgments yet decreases in the number and proportion of products liability trials and in the proportion of trial awards. All trial statistics, however, must be interpreted with the influence of litigants' settlement decisions in mind.<sup>12</sup> Only 4 to 5 percent of all claims are ultimately litigated to trial; thus 95 to 96 percent are settled without entering public records. Indeed, products liability defendants have strong incentives to settle suits because adverse judgments will affect manufacturing operations beyond the award's dollar amount.<sup>13</sup>

Increases in the average judgment and, presumably, in the likelihood of a plaintiff's success because of the expansion of manufacturer liability may very well lead to an increase in suits filed. Defendants, however, are likely to have greater interests in settling these suits to avoid the larger impact of adverse judgments. Indeed, as the implications of adverse judgments become broader and more far-reaching, manufacturers' incentives to settle increase. Thus the decline in the number and proportion of trials and trial dollars, coupled with an increase in filings and in average awards, may well reflect a substantial rise in the rate of products liability settlements.

Tables 7-3 through 7-6 show trends in product-related accidents. The relationship between these accident data and the litigation data of the preceding tables is complex. If the expansion of products liability has had an important impact on product safety, we should observe a decrease in the injury rate in the years after the expansion.

12. See, generally, George L. Priest and Benjamin Klein, "The Selection of Disputes for Litigation," *Journal of Legal Studies*, vol. 13 (January 1984), pp. 1-55.

13. For a model and both simulation and direct empirical support for this approach, see *ibid.*

Table 7-3. *Deaths per 100,000 Resident Population, by Accident Type, Selected Years, 1950-80*

| Accident type                     | 1950 <sup>a</sup> | 1955 <sup>a</sup> | 1960 | 1965 | 1970 | 1975 | 1980 |
|-----------------------------------|-------------------|-------------------|------|------|------|------|------|
| Possibly product related          |                   |                   |      |      |      |      |      |
| Motor vehicle                     | 23.1              | 23.4              | 21.3 | 25.4 | 26.9 | 21.3 | 23.5 |
| Railway                           | 1.4               | 0.8               | 0.6  | 0.5  | 0.4  | 0.3  | 0.3  |
| Fires and flames                  | 4.3               | 3.9               | 4.3  | 3.8  | 3.3  | 2.8  | 2.6  |
| Firearms                          | 1.4               | 1.3               | 1.3  | 1.2  | 1.2  | 1.1  | 0.9  |
| Explosive material                | n.a.              | n.a.              | n.a. | n.a. | 0.3  | 0.2  | 0.1  |
| Hot substances, corrosive liquids | 0.6               | 0.5               | 0.2  | 0.2  | 0.1  | 0.1  | 0.1  |
| Poisoning by drugs and medicines  | n.a.              | n.a.              | n.a. | n.a. | 1.2  | 1.5  | 1.1  |
| Poisoning by other substances     | 1.1               | 0.9               | 0.9  | 1.1  | 0.6  | 0.7  | 0.3  |
| Poisoning by gases                | 1.2               | 0.7               | 0.7  | 0.8  | 0.8  | 0.7  | 0.5  |
| Medical procedures                | 0.4               | 0.5               | 0.6  | 0.8  | 1.8  | 1.5  | 1.1  |
| Nonproduct related                |                   |                   |      |      |      |      |      |
| Accidental falls                  | 13.8              | 12.3              | 10.6 | 10.3 | 8.3  | 6.9  | 5.9  |
| Accidental drowning               | 3.2               | 3.1               | 2.9  | 2.8  | 3.1  | 3.1  | 2.7  |
| All other accidents               | 10.1              | 9.5               | 8.9  | 8.8  | 8.4  | 7.6  | 7.6  |
| Total                             | 60.6              | 56.9              | 52.3 | 55.7 | 56.4 | 47.8 | 46.7 |

Source: U.S. Bureau of the Census, *Statistical Abstract of the United States*, various issues.

n.a. Not available.

a. Excludes Alaska and Hawaii.

As table 7-2 shows, the greatest growth in products liability trials occurred between 1965 and 1974. If this litigation were stimulated by an increase in the injury rate, one should observe the increase between 1962 and 1970, given the typical three- to five-year delay between accident and trial. Trial volume declined after 1974. If the decline reflected an increase in product safety rather than in settlement behavior, the product-related injury rate should have dropped after 1970. Indeed, given the substantial increase in median awards after 1969, the injury rate should have dropped rapidly after 1970 if the decline in trial volume reflects an increase in product safety.

Tables 7-3 through 7-5 report accidental death and injury rates in the United States, of which, of course, deaths or injuries that are the consequence of products constitute only some proportion. Table 7-3 presents accidental death rates by the context of the accident. Death rates in almost all accident categories have been declining steadily but not sharply since 1950. There is little evidence of a sharp decrease in accident rates after 1970 that might be attributed to the deterrent effect of products liability law. The substantial decline in the death rate between 1970 and 1975 in the motor vehicle category can be more confidently attributed to the increase in gasoline prices and adoption of the

Table 7-4. Worker Job Deaths per 100,000 Workers and Total Disabilities, Selected Years, 1945-83

| Year | Deaths | Disabling injuries (millions) | Year | Deaths | Disabling injuries (millions) |
|------|--------|-------------------------------|------|--------|-------------------------------|
| 1945 | 33     | 2.00                          | 1976 | 14     | 2.20                          |
| 1950 | 27     | 1.95                          | 1977 | 14     | 2.30                          |
| 1955 | 24     | 1.95                          | 1978 | 14     | 2.20                          |
| 1960 | 21     | 1.95                          | 1979 | 13     | 2.30                          |
| 1965 | 20     | 2.10                          | 1980 | 13     | 2.20                          |
| 1970 | 18     | 2.20                          | 1981 | 12     | 2.10                          |
| 1973 | 17     | 2.50                          | 1982 | 12     | 1.90                          |
| 1974 | 16     | 2.30                          | 1983 | 11     | 1.90                          |
| 1975 | 15     | 2.20                          |      |        |                               |

Source: U.S. Bureau of the Census, *Statistical Abstract of the United States*, 1985, p. 425.

fifty-five mile per hour speed limit than to products liability law.<sup>14</sup> Moreover, the rate of auto deaths rose between 1975 and 1980, a finding inconsistent with any deterrent effect of expanding products liability law. There was also a sharp decline between 1965 and 1970 in the death rate attributed to poisoning by "other substances," but this occurs too early to be the result of products law. Similarly, the decline in this category between 1975 and 1980 is isolated. From these data it is difficult to credit the expansion of products liability with much deterrent effect.

Table 7-4 shows death and disabling injury rates for workers. Again, the data do not indicate the proportion of injuries caused by products, although it is well known that injuries on the job form a very large component of total products liability claims.<sup>15</sup> Worker death rates have declined steadily since 1945, although the rate of decline seems to have slowed after 1960. The rate of disabling injuries has been far more variable, increasing from 1960 through 1973 and remaining roughly constant from 1974 through 1981. Although it declined somewhat in 1982, even in 1982 and 1983 it was only slightly less than the rate in 1950.

14. See Transportation Research Board, *55: A Decade of Experience* (Washington, D.C.: National Academy Press, 1984).

15. According to studies of products liability claims involving large losses, in 1979 workers comprised 59.2 percent of bodily injured claimants and in 1985, 60.1 percent; Alliance of American Insurers, *Highlights of Large-Loss Product Liability Claims* (Schaumburg, Ill., 1980); and Lawrence W. Soular, *A Study of Large Product Liability Claims Closed in 1985* (Schaumburg, Ill.: Alliance of American Insurers and American Insurance Association, 1986), p. 26.

Table 7-5. *Disabling Work Injuries per Million Employee Hours, by Selected Industry, Selected Years, 1950-70*

| Industry                            | 1950 <sup>a</sup> | 1955 <sup>a</sup> | 1960 | 1965 | 1970 |
|-------------------------------------|-------------------|-------------------|------|------|------|
| Manufacturing                       |                   |                   |      |      |      |
| Food products                       | 18.9              | 18.6              | 21.1 | 23.4 | 28.8 |
| Textile mill products               | 11.0              | 9.7               | 9.2  | 9.6  | 10.4 |
| Lumber and wood products            | 50.2              | 40.5              | 38.0 | 36.0 | 34.1 |
| Chemicals                           | 11.1              | 8.0               | 7.4  | 7.5  | 8.5  |
| Petroleum products                  | 9.3               | 6.5               | 6.8  | 8.6  | 11.3 |
| Fabricated metal products           | 19.0              | 15.4              | 15.4 | 18.1 | 22.4 |
| Machinery (excluding electrical)    | 13.8              | 11.1              | 10.8 | 11.9 | 14.0 |
| Coal mining                         | n.a.              | n.a.              | 42.5 | 44.7 | 41.6 |
| Contract construction               | 41.0              | 34.5              | 31.5 | 28.3 | 28.0 |
| Transportation and public utilities |                   |                   |      |      |      |
| Local rail and bus                  | n.a.              | 11.8              | 14.3 | 15.8 | 23.9 |
| Trucking                            | 34.5              | 28.7              | 32.3 | 29.2 | 35.3 |
| Electric and gas                    | 13.8              | 8.2               | 6.2  | 5.3  | 6.6  |
| Wholesale and retail trade          | 12.3              | 12.6              | n.a. | 11.8 | 11.3 |
| State government hospitals          | n.a.              | n.a.              | 16.3 | 21.0 | 21.4 |

Sources: U.S. Bureau of the Census, *Statistical Abstract of the United States*, 1960, p. 232, and 1972, p. 239.

n.a. Not available.

a. Excludes Alaska and Hawaii.

Table 7-5 shows work injuries by industry calculated against worker hours rather than against the size of the work force. The results are mixed. The injury rate declined between 1965 and 1970 in only four industries: lumber and wood products, coal mining, contract construction, and wholesale and retail trade. For all others the rate has increased progressively since 1960, although in many it had been decreasing from 1950 to 1960. In the few industries in which there were declines, the declines were modest. There is no evidence in either table 7-4 or table 7-5 of a reduction in the injury rate of a magnitude corresponding with the expansion of products liability.

Finally, table 7-6 shows the annual number of product-related injuries requiring hospital emergency room treatment. These data present the most detailed correlation of injuries according to specific product type, but they show only the absolute number of injuries rather than injury rates adjusted according to the number of products in use, the number of users, or the extent of use. In addition, they are vastly overinclusive for my purposes because they report all injuries related to products, not just those related to product manufacture or design features that are affected by the law. Thus, for example, according to the full reports of the Consumer Product Safety Commission, the nation's most injurious consumer product is stairs (662,000 injuries in 1980), followed by bicycles (526,000), baseball equipment (432,000), and

Table 7-6. *U.S. Product-Related Injuries Requiring Hospital Emergency Room Treatment, Fiscal Years 1974-81*  
Thousands

| Product              | 1974 | 1975            | 1976            | 1977            | 1978             | 1979            | 1980             | 1981 <sup>a</sup> |
|----------------------|------|-----------------|-----------------|-----------------|------------------|-----------------|------------------|-------------------|
| Playground equipment | 140  | 143             | 158             | 164             | 151 <sup>b</sup> | 165             | 162 <sup>b</sup> | 178               |
| Ladders              | 61   | 73              | 81              | 85              | 83 <sup>b</sup>  | 98              | 89 <sup>b</sup>  | 98                |
| Power lawn mowers    | 56   | 63              | 57 <sup>b</sup> | 61              | 69               | 74              | 63 <sup>b</sup>  | 71                |
| Swimming pools       | 53   | 56              | 69              | 68 <sup>b</sup> | 68               | 89              | 116              | 124               |
| Power saws           | 41   | 58              | 59              | 60              | 68               | 71              | 73               | 79                |
| Cleaning agents      | 35   | 36              | 40              | 35 <sup>b</sup> | 40               | 38 <sup>b</sup> | 32 <sup>b</sup>  | 38                |
| Electrical fixtures  | 25   | 22 <sup>b</sup> | 26              | 28              | 26 <sup>b</sup>  | 34              | 32 <sup>b</sup>  | 41                |
| Chain saws           | 23   | 27              | 28              | 35              | 48               | 51              | 62               | 64                |
| Space heaters        | 20   | 7 <sup>c</sup>  | 8               | 10              | 10               | 16              | 23               | 25                |
| Electric power tools | 13   | 13 <sup>b</sup> | 16              | 16              | 14 <sup>b</sup>  | 22              | 25               | 28                |
| Tractors             | 6    | 7               | 7               | 10              | 9 <sup>b</sup>   | 10              | 13               | 13                |

Sources: *Annual Report of the Consumer Product Safety Commission*, various issues.

a. Calendar year.

b. Indicates reduction from previous year.

c. CPSC begins to differentiate among three heater categories

football equipment (425,000). Even beds generate more injuries a year (168,000) than any of the products reported in table 7-6. I have therefore culled from the complete tables those products for which injuries are most likely to be the consequence of technological design or manufacturing features affected by the expansion of products liability.

Table 7-6 shows that for most products and most years, the number of injuries increased steadily between 1974 and 1981.<sup>16</sup> As is evident, declines are infrequent (sixteen of a possible seventy-seven). If products liability had remained constant over the period, one might expect that the number of injuries would increase as product use increased in a growing economy and would decline as technological advances made products safer (see, in particular, tables 7-3 and 7-4). Given the expansion of products liability litigation over this period and the increase in damages awarded, it is surprising that there is no evidence of a systematic decrease in product-related injuries. Indeed, these data present no evidence of even a slowing in the growth rates of these injuries.

What do these statistics tell us about the effects of the expansion of products liability litigation? Little more than the obvious: that there has been an enormous expansion of products liability. They cannot tell us whether the expansion has been beneficial or harmful.

16. After 1981 the Consumer Product Safety Commission modified its reporting method, presenting statistics much less variegated by product type and deleting reports of many products. See *Annual Report of the U.S. Consumer Product Safety Commission*, 1981, and later years.

The injury and death statistics in tables 7-3 through 7-6 are mysterious. Although they are admittedly crude, they provide no evidence that the expansion of litigation has affected the injury or death rate. This conclusion corresponds to findings of the small number of careful empirical studies of specific products, each of which shows little accident-reduction effect of either expanded products liability litigation or greater direct regulation of product quality.<sup>17</sup>

If this conclusion is accurate, it is disquieting. The expansion of products liability has led to the withdrawal of large numbers of products from consumer markets and large increases generally in product prices.<sup>18</sup> Most commentators presume that products withdrawn from the market are relatively more risky than others and that product prices have been increased in response to greater manufacturer investments in product safety. Both effects, however, should result in sharp reductions in the injury rate, reductions that appear not to have occurred.

The quality of empirical data is so poor, however, that no confident conclusion can be reached about the success of products liability law in establishing incentives for the manufacture of safer products. The law appears to have had no significant effect, but more careful research on the issue is needed. The remainder of this chapter attempts to find other ways to determine whether the law has influenced product safety.

## The Economic Argument for Strict Products Liability Evaluated

### *How Strict Products Liability Is Thought to Generate Optimal Accident Reduction*

The central principle of modern products liability law is the strict liability standard adopted for defective products by the *Restatement of Torts (Second)* in 1965 and by the various states shortly thereafter.<sup>19</sup>

17. For example, W. Kip Viscusi, *Regulating Consumer Product Safety* (Washington, D.C.: American Enterprise Institute, 1984); and Sam Peltzman, "The Effects of Automobile Safety Regulation," *Journal of Political Economy*, vol. 83 (August 1975), pp. 677-725.

18. For withdrawals, see Weber, *Product Liability*. For prices, see Priest, "Current Insurance Crisis."

19. See *Restatement (Second) of Torts*, § 402A (1965). For a discussion of the adoption of the section and for the state response to the adoption, see Priest, "Invention of Enterprise Liability," pp. 511-19.

Although many doctrinal details in the products field depart from strict liability, the standard remains the benchmark from which all new doctrinal developments derive. Almost universally when courts are faced with novel products problems requiring new doctrines or new applications of earlier doctrines, they will return to the central distinction between the rejected negligence standard and the now-dominant strict liability standard to infer a solution. This approach has received nearly unanimous scholarly support, and there has been no serious conceptual criticism of the strict liability standard since its original announcement.<sup>20</sup>

The most sophisticated justification of strict products liability is that of law and economics. In its early years law and economics scholars emphasized the efficiency of negligence, especially as the standard was applied in the nineteenth century, and one might have expected some disapproval of modern strict liability.<sup>21</sup> As commitment to the efficiency-of-the-law hypothesis grew, however, greater efforts were made to determine ways in which strict products liability itself could be efficient. In 1970 Guido Calabresi provided important encouragement for expanding manufacturer liability; in more recent work by Steven Shavell and by William Landes and Richard Posner, the law and economics movement has embraced products liability law on the grounds that strict liability creates incentives for optimal accident reduction, as do the other doctrines in the field that essentially adopt an economic cost-benefit approach.<sup>22</sup> Indeed, strict liability is now commonly considered as efficient as negligence in terms of reducing accidents and, in the context of products, superior to the negligence standard on several subsidiary grounds.

Although it could not be claimed that the recent direction of the law is the result of sophisticated economic analysis, the discovery of the

20. But see Richard A. Epstein, *Modern Products Liability Law: A Legal Revolution* (Westport, Conn.: Quorum Books, 1980). Epstein's criticism of strict products liability has been confused by his more general theoretical embrace of the strict liability standard; see "A Theory of Strict Liability," *Journal of Legal Studies*, vol. 2 (January 1973), pp. 151-204. He attempts to clarify his theory in "Products Liability as an Insurance Market," *Journal of Legal Studies*, vol. 14 (December 1985), p. 660.

21. For the efficiency of the negligence standard, see Richard A. Posner, "A Theory of Negligence," *Journal of Legal Studies*, vol. 1 (January 1972), pp. 29-96; for disapproval of strict liability, see Posner, *Economic Analysis of Law* (Little, Brown, 1972).

22. See Calabresi, *Costs of Accidents*; Steven Shavell, "Strict Liability versus Negligence," *Journal of Legal Studies*, vol. 9 (January 1980), pp. 1-25; and William M. Landes and Richard A. Posner, "A Positive Economic Analysis of Products Liability," *Journal of Legal Studies*, vol. 14 (December 1985), pp. 553-66.

seemingly benign economic effects of strict products liability has generated a sense of confidence in the law's current direction.<sup>23</sup> Much of this confidence stems from the fact that courts have embraced the economic goals of accident reduction and insurance in developing the products liability field.

The economic analysis of the effects of liability rules on the accident rate is straightforward.<sup>24</sup> To establish efficient incentives for accident reduction, a legal rule should place liability on the party that could most easily have prevented the accident, as long as the accident was worth preventing. More precisely, liability should be placed on the party for whom marginal prevention costs are lower, again as long as marginal prevention costs are lower than the marginal benefits of prevention. Courts achieve this result in practice by evaluating the accident to compare what the alleged tortfeasor and the victim could have done to have prevented the accident. Since potential parties to accidents will know that they can avoid all liability if they take cost-justified accident prevention precautions, the accident rate will achieve the efficient level. Incentives will be established to prevent every accident that is worth preventing.

According to the analysis, in the products context a negligence standard will achieve efficient accident reduction if manufacturers are held to be negligent, and thus liable for resulting injuries, if they fail to make all cost-justified investments in accident avoidance. This view of negligence compels consumers to bear all losses in those instances in which manufacturers have not acted negligently, a burden that places incentives on consumers themselves to take all cost-justified precautions. Thus in terms of accident prevention, the negligence standard will induce efficient preventive investments by both parties.

The strict liability standard, however, can achieve identical effects. Strict liability is presumed to hold manufacturers liable for product-related injuries unless the consumer is found to be contributorily negligent.<sup>25</sup> The contributory negligence standard will establish incentives for consumers to take cost-justified precautions as long as the rule is defined in terms of relative marginal costs and benefits of consumer prevention.

23. But see Epstein, *Modern Products Liability Law*.

24. This analysis was first presented in Posner, *Economic Analysis of Law*. See also John Prather Brown, "Toward an Economic Theory of Liability," *Journal of Legal Studies*, vol. 2 (June 1973), pp. 323-49; and Shavell, "Strict Liability versus Negligence."

25. *Ibid.* But see chapter 2 in this volume.

If it is, then because manufacturers are required to bear all losses when consumers are not contributorily negligent, manufacturers themselves will take precautions solely to reduce their own costs.

The key to the standard economic approach is that courts adopt cost-benefit definitions of negligence and, under strict liability, of contributory negligence. The accident rate will be as low as it can efficiently be as long as courts carefully review the marginal costs and benefits of manufacturer and consumer prevention. Accidents may still occur because of error or oversight or because some types of accidents are simply not worth preventing. But the accident rate will be as low as it can efficiently be.

Strict liability, according to this analysis, is simply the converse of negligence in terms of residual responsibility for losses that cannot be efficiently prevented. That is, the only difference between negligence and strict liability is responsibility for those losses that occur despite the cost-justified preventive investments of both parties. Under the negligence standard, consumers bear responsibility for these losses, and under strict liability, manufacturers.

In the years since the articulation of this approach, advocates have developed subsidiary accident reduction grounds for preferring the strict liability standard.<sup>26</sup> In a famous article, Guido Calabresi and Jon Hirschoff proposed shifting from a legal rule that requires precise comparison of marginal prevention costs and benefits to a simpler standard based on a determination of which of the parties is in the better position to make the cost-benefit analysis. Thus the proposed rule would have a court or jury place liability on the party best able to make the cost-benefit judgment rather than have the court or jury make the cost-benefit judgment itself. In various examples, Calabresi and Hirschoff suggested that product manufacturers are typically in better positions than consumers to make these calculations, thus justifying a standard of strict manufacturer liability.<sup>27</sup> More recently, Landes and Posner have

26. Of course, there are several grounds for preferring a strict liability standard that are unrelated to accident prevention. One is alleged administrative savings, since the negligent act need not be proved. See Alan Schwartz, "Products Liability Reform: A Theoretical Review," working paper 65 (Yale Law School, Program in Civil Liability, August 1987). A second is the greater level of insurance provided by a strict liability standard. See Priest, "Current Insurance Crisis."

27. Guido Calabresi and Jon T. Hirschoff, "Toward a Test for Strict Liability in Torts," *Yale Law Journal*, vol. 81 (May 1972), pp. 1055-85. For a notable example, see the discussion in which the authors justify manufacturer liability to a passerby injured when a consumer mowing a lawn hits a rock (p. 1064).

defended various applications of the strict liability standard for product defects on similar grounds.<sup>28</sup> This approach, of course, endorses the cost-benefit standard but differs from what I have called the standard economic analysis chiefly in the level of cost-benefit application.

A second ground for preferring a strict liability standard in products cases is to offset consumer misperceptions about product quality.<sup>29</sup> According to this analysis, consumers may underestimate or overestimate product risks and as a consequence purchase products that are either more or less risky than they would prefer if fully informed. These consumer misperceptions, however, will have consequences only under a negligence standard, where consumers bear liability for accidents not worth preventing. Under a strict liability standard these risks will be built into the product price, leading consumers to make efficient product choices.

These grounds for preferring strict liability, however, are highly controversial. First, the approach has very carefully defined limits. The analysis concedes that consumer misperceptions are irrelevant to the basic safety characteristics of products. Products will be designed and manufactured efficiently in terms of accident reduction because, under either negligence or strict liability, manufacturers will bear accident costs if they fail to make all cost-justified investments in product safety. Consumer misperceptions are therefore relevant only with respect to product accidents that are not worth preventing. That is, consumer misperceptions become a policy concern only after courts have completed rigorous cost-benefit judgments of the relative accident prevention abilities of injurer and victim.

Second, adopting strict liability to offset consumer misperceptions will increase consumer welfare unambiguously only when the negligence and strict liability standards are exactly equivalent in terms of their insurance consequences. It is now strongly suspected that the insurance consequences of strict liability are adverse to consumer welfare.<sup>30</sup> The benefits to be achieved by internalizing costs to offset consumer misperceptions may thus be remote.

Finally, there are many reasons to doubt that consumers systemati-

28. Landes and Posner, "Positive Economic Analysis." This approach is discussed later.

29. See Michael Spence, "Consumer Misperceptions, Product Failure and Producer Liability," *Review of Economic Studies*, vol. 44 (October 1977), pp. 561-72; and Shavell, "Strict Liability versus Negligence." See also chapter 2 of this volume.

30. See Priest, "Current Insurance Crisis."

cally underestimate risks (the source of the problem). Risk-averse consumers, especially, will invest to avoid misperception, and very large proportions of product sales represent repeat purchases by consumers with both information and experience in the characteristics of the specific product.<sup>31</sup>

Recently, an effort has been made to apply the standard economic analysis of strict liability to the more particular doctrines of products liability law. In a 1985 article Landes and Posner reviewed the rules of products liability law and showed that the "current doctrinal structure" of the field is "*in the main* consistent with efficiency."<sup>32</sup> They reasoned that in cases involving component or process failures (more typically, manufacturing defects), strict liability is efficient because consumers can do nothing to prevent such defects and because strict liability creates incentives for manufacturers to invest in research to reduce their frequency. In cases involving design and warning defects, strict liability is efficient because, in application, the standard closely resembles negligence: courts have explicitly adopted "risk-utility" standards that the authors believe are indistinguishable from weighing marginal prevention costs against benefits. Similarly, the concept of unavoidably dangerous products is efficient because courts employ it chiefly when consumer information costs are high or when manufacturers can best search for ways to make products safer. Products liability law incorporates "the general range of defenses based on victim misconduct," which, of course, is crucial to the efficiency claim. Moreover, products law "contains at least one interesting refinement that seems economically justified": a consumer can still pursue manufacturer liability, even though the dangerousness of the product was obvious, when the manufacturer could have cheaply redesigned or shielded the dangerous characteristic.<sup>33</sup>

Landes and Posner admittedly do not attempt to justify every products liability rule or decision, and there are some very obvious omissions. They do not explain the role of the concept of defect, nor do they address those jurisdictions that have explicitly rejected the contributory negligence defense in strict liability actions. They express reservations about, but do not carefully analyze, the developing doctrine of manu-

31. See Schwartz, "Products Liability Reform"; and U.S. Federal Trade Commission, *Market Facts, Warranties Rules Consumer Follow-Up: Evaluation Study Final Report* (Washington, D.C.: FTC, 1984).

32. Landes and Posner, "Positive Economic Analysis," p. 535.

33. *Ibid.*, pp. 553-61.

facturer liability for foreseeable consumer misuse.<sup>34</sup> But again, they purport only to claim that products liability law is "in the main" efficient.

The influence of the economic defense of products law should not, however, be underestimated. In its first years the expansion of manufacturer liability was defended as a means of redistributing income by those who preferred burdening manufacturers rather than injured victims.<sup>35</sup> Indeed, the redistributive defense has seemed the preeminent example of the debate between those seeking to employ the law to achieve equitable ends and those seeking to achieve efficiency, a debate that has dominated legal scholarship since the 1960s.<sup>36</sup> The most sophisticated students of the effects of law, however, have resolved this debate by making equity and efficiency into allies where products are concerned. The expansion of products liability is claimed both to benefit consumers and to create optimal accident reduction incentives. This conception thus cements the foundation of modern products liability law in a way unknown to any other modern field of legal scholarship. But how realistic is the argument for the efficiency of products liability law?

### *The Efficiency of Strict Products Liability*

The standard economic approach is crucial to the defense of modern products liability law because it provides the only reason for believing that the law establishes incentives for efficient accident reduction. Therefore, it is important that the approach be carefully examined. The standard analysis of strict products liability has several implications. First, as under the negligence standard, courts should be observed to be focusing their attention on the marginal costs and benefits of accident prevention by the parties; under strict liability, they should, in particular, be focusing on costs of prevention to victims. Second, courts should be resolving disputes in accord with the efficiency standard. They should be accurately evaluating the relative costs and benefits of prevention and should be holding the manufacturer liable only when the marginal prevention costs to the victim are relatively greater than to the manufacturer.

Can these implications be tested empirically? It is easy to evaluate the

34. Ibid., pp. 560-63.

35. See Calabresi, *Costs of Accidents*.

36. For an example in the products liability field, see "Symposium on Products Liability: Economic Analysis and the Law," *University of Chicago Law Review*, vol. 38 (Fall 1970), pp. 1-141.

first by examining whether courts are in fact focusing on the relative costs and benefits of accident prevention. The second implication, however, poses more troublesome empirical problems. It is extremely difficult to evaluate independently whether cost-benefit decisions are actually efficient. Courts, surely, have access to more detailed and reliable information about marginal costs and benefits than do commentators who must rely on the courts' descriptions of the facts.

Yet a third implication of the standard economic approach provides some independence for examining courts' determinations of efficiency. As described earlier, the economic approach defines the strict liability standard as equivalent to the negligence standard with respect to accident prevention; strict liability is different only in assigning insurance responsibility for accidents not worth preventing. Indeed, with respect to control over the determinants of the accident rate, the two standards not only have identical effects, they *are* identical. According to the standard law and economics approach, under both negligence and strict liability the judge or jury weighs the relative marginal costs and benefits of prevention to injurer and victim and, if either one or both could have prevented the accident in a cost-effective manner, assigns liability to the party for whom marginal prevention costs are lower.<sup>37</sup>

It follows that except for cases in which neither party could have prevented the accident, the assignment of liability in similar disputes should be similar under negligence and strict liability.<sup>38</sup> Thus we can evaluate the consistency of courts' cost-benefit decisions by comparing the resolution of factually similar disputes under the two standards. If courts are focusing on the marginal costs and benefits of prevention and are assigning liability similarly under negligence and strict liability, we can be confident that accident reduction incentives are efficient as pro-

37. See Brown, "Economic Theory of Liability."

38. There may be very small differences in terms of litigation—settlement incentives. In disputes in which courts or juries are uncertain as to relative marginal prevention costs, courts decide in favor of injurers under negligence (that is, finding no negligence) and in favor of victims under strict liability (that is, finding no contributory negligence). This may lead to a slightly different set of cases being litigated when evidence is problematic. But these differences are probably small, since the underlying basis for decision under the two standards remains the same. There may be also a wealth effect attending the shift from using negligence as a basis for decision to using strict liability. See Donald Wittman, "Is the Selection of Cases for Trial Biased?" *Journal of Legal Studies*, vol. 14 (January 1985), pp. 185-214; and George L. Priest, "Reexamining the Selection Hypothesis: Learning from Wittman's Mistakes," *Journal of Legal Studies*, vol. 14 (January 1985), pp. 215-43.

posed by the standard economic approach. But if these implications fail to hold, we cannot be assured, and it will become necessary to examine these incentives more carefully.

I have attempted to compile sets of factually similar cases in typical products liability contexts decided first under the negligence standard and then after judicial adoption of the strict liability standard. I have selected negligence cases decided shortly before the adoption of strict liability to minimize the significance of technological changes over time. Obviously, cases involving manufacturing defects will be decided differently under the two standards. I also present examples of cases involving design defects and allegedly inadequate warnings.

Consider first some typical cases of consumer injuries implicating lawn mower design. In a 1964 negligence decision, *Murphy v. Cory Pump and Supply Co.*, a seven-year-old child was injured when she slipped on the grass and fell in front of a rotary mower operated by an older sister. The plaintiff claimed that the mower was inherently dangerous and had been negligently designed because it had no front guard; indeed, it was without a front screen or bar lower than eight and three-quarters inches from the ground. The court held as a matter of law that there was no manufacturer negligence because the mower would have caused no harm without the independent act of the victim and because the manufacturer "should not be required to anticipate or protect against any such accident."<sup>39</sup>

Compare the strict liability decision of the Supreme Court of California eight years later in *Luque v. McLean*, in which the adult owner of a lawn mower had slipped on wet grass and fallen, inserting his hand in a small hole for grass ejection that had been labeled "Caution." The court reversed a jury verdict in favor of the manufacturer, noting that ordinary contributory negligence does not bar recovery under strict liability nor does the latent character of the alleged defect.<sup>40</sup> Similarly, in 1975 in *Rogers v. Toro Manufacturing Company*, a Missouri court of appeals reversed a jury verdict in favor of a manufacturer in a case in which a child was injured when the child's father left the machine running but unattended, despite warnings in the product pamphlet: "Never Leave Equipment Unattended," "Keep Children or Pets Away,"

39. 197 N.E.2d 849 (Ill. App. Ct. 1964), p. 858.

40. 501 P.2d 1163 (Cal. 1972). Quoting from *Greenman v. Yuba Power Products, Inc.*, 377 P.2d 897, 901, the court held that the objective of strict liability is to impose the costs of injuries resulting from defective products on manufacturers rather than injured persons powerless to protect themselves (p. 1169).

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a jury verdict in favor of a manufacturer in a case despite the victim's  
slip (and despite the much more carefully guarded machine); another  
ruled out any reference to the victim's contributory acts.

If the standards are not equally efficient, does negligence or strict liability appear the relatively more efficient in reducing accidents? None of the courts in these cases seems to have been focusing carefully on the relative marginal costs and benefits of accident prevention. Perhaps one could interpret the court's decision in *Murphy*, under the negligence standard, as reflecting a comparison of marginal prevention costs in the court's conclusion that the seven-year-old could have avoided falling under the mower. But the court gave no consideration to preventive investments by the manufacturer such as safer product design, concluding baldly that the manufacturer has no duty to protect against such accidents. *Murphy* is not atypical in this regard. The open and obvious danger defense was a prominently applied doctrine in products cases under the negligence standard. Yet it is equally difficult to regard the decisions made under strict liability as reflecting a weighing of marginal costs and benefits. There is little consideration of alternative precautions available to either of the parties.

It is also implausible that the decisions under either negligence or strict liability are efficient in fact. Who can believe that a rotary blade unprotected for eight and three-quarter inches (*Murphy*) represents efficient product design, especially in comparison with the heavily protected blade described in *Luque* only eight years later? Similarly, however, it is difficult to regard the strict liability decisions as establishing efficient accident prevention incentives. The standard economic approach presumes that the determination of efficiency under strict liability

# **CORRECTION**

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HAS BEEN REPHOTOGRAPHED  
TO ASSURE LEGIBILITY**

and "Always Shut Off Engine When Removing or Reinstalling Bags." The court held that the warning was defective since it did not indicate that the mower might engage if left unattended. According to the court, a plaintiff's contributory negligence is no defense for the manufacturer under strict liability.<sup>41</sup>

Do these decisions establish efficient incentives for accident prevention? The decisions under the negligence and strict liability standards cannot both be efficient since they clearly resolve these disputes differently. Under negligence the court ruled in favor of the manufacturer as a matter of law on the ground that the victim's slipping constituted an independent act. Under strict liability one court (in *Luque*) overturned a jury verdict in favor of a manufacturer in a case despite the victim's slip (and despite the much more carefully guarded machine); another ruled out any reference to the victim's contributory acts.

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will be implemented through the definition of the victim's contributory negligence. But in both *Luque* and *Rogers* courts refused to regard victims' contributory negligence as determinative. Indeed, in *Rogers* the court denied the availability of contributory negligence as a defense under strict liability.

Consider, next, typical cases of design defect litigation involving worker injuries. *Messina v. Clark Equipment Company* in 1959 concerned a worker who was killed when the bucket on an earthmover fell as he was getting out of the cab. In his claim of negligent design the plaintiff had proved that it was customary among other manufacturers of such machines to install guards and protective devices to prevent an operator from leaving the cab while the bucket was raised. Despite this seemingly uniform practice, however, the court affirmed summary judgment against the plaintiff on the grounds that there was no hidden defect or concealed danger.<sup>42</sup>

Compare the 1978 strict liability decision in *Barker v. Lull Engineering Company, Inc.*, in which a high-lift loader operator was injured as he jumped out of the cab when the load began to fall. The plaintiff claimed that the loader was defectively designed because it did not have seat belts or a roll bar and because it was without outriggers appropriate for the steep slope on which the load was being negotiated. The manufacturer claimed that the employer had chosen the wrong machine for the job. The regular operator of the lifter had unsuccessfully recommended a different machine and ultimately had called in sick because he believed that the lift was too dangerous. The Supreme Court of California reversed a jury decision in favor of the manufacturer on the grounds (among others) that the plaintiff should not have to prove that the machine was unreasonably dangerous.<sup>43</sup>

Do these decisions establish incentives for efficient accident prevention? Again, despite the factual similarity of the disputes, the judgments are radically different, so both cannot be efficient. In addition, as before, judicial analysis of relative prevention costs and benefits seems perfunctory at best. In *Messina*, the negligence decision, the court ruled against the plaintiff on grounds that he knew or should have known of the danger, but it gave little attention to alternative product designs that the manufacturer could have chosen. In *Barker*, the famous strict liability decision, the court reversed the jury decision in a case in which,

42. 263 F.2d 291 (2d Cir. 1959).

43. 573 P.2d 443 (Cal. 1978).

though there had been substantial testimony with respect to product design, there were also many concerns about the misjudgments of the victim or of the victim's employer.

Once again, it is very difficult to regard either decision as establishing efficient incentives for accident reduction. In *Messina* the court exonerated the manufacturer even though its machine was alleged to be inferior in terms of safety precautions to *all* other such machines in the trade. In *Barker* the jury verdict was overturned and a new trial ordered despite the substantial evidence implicating worker contributory negligence and improper product choice. Again, according to the standard economic analysis, the chief focus in strict liability cases should be on the victim's contributory actions. In *Barker* the court ignored the victim's precautions despite the jury verdict against him.

Finally, consider typical cases involving employee injuries from exploding or breaking grinding wheels in which the principal legal issue was the manufacturer's failure to warn of product dangers. In *Oettinger v. Norton Company*, decided in 1957 under the negligence standard, an employee was injured when an abrasive spindle exploded and penetrated the safety goggles he was wearing. The plaintiff alleged that the manufacturer had failed to warn of the appropriate point speed on the product itself or on the product container. The court affirmed a judgment for the manufacturer (thus reversing a jury decision for the worker) on the grounds that the manufacturer's distribution of a pamphlet to the employer was legally sufficient.<sup>44</sup>

Compare two similar cases decided under the strict liability standard. In 1973 in *Young v. Aro Corporation*, a worker was killed when a grinding wheel disintegrated, allegedly because of excessive grinder speed. The grinder carried a warning on a nameplate indicating that workers should check grinder speed with each wheel change. The court reversed a jury decision for the manufacturer on grounds that the trial judge had failed to instruct the jury that sometimes particular job requirements may keep workers from reading nameplates. According to the court, the jury should have been instructed that reasonable men should read nameplates, but in practice reasonable men whose employers have habituated them to particular risks may not read them. The warnings made available to the employer were not regarded as relevant to the issue.<sup>45</sup> Even more clearly different, in 1976 in *Haugen v. Min-*

44. 160 F. Supp. 399 (E.D.Pa. 1957).

45. 111 Cal. Rptr. 535 (Ct. App. 1973).

*nesota Mining and Manufacturing Company*, a court affirmed a judgment against a manufacturer in a case in which a grinding wheel exploded, striking in the eye a worker who was not wearing safety glasses. The court ruled that the manufacturer was strictly liable for failing to warn the worker of the need to wear impact-resistant safety goggles.<sup>46</sup>

These decisions, too, show dramatic differences between judgments based on negligence and strict liability, and they show substantial distance between the careful evaluation of marginal prevention costs necessary for optimal accident prevention. Weighing costs and benefits in warning cases is inherently difficult because effective methods of transferring information and securing its reception are poorly understood. But the respective courts made little effort to formulate efficient incentives. The decisions under both standards were formulaic. In *Oettinger*, under the negligence standard, the worker wearing safety goggles was held contributorily negligent for failing to act on information appearing in pamphlets provided to his employer. There is little concern with relative abilities to provide or receive information. The court's ruling was simply that the manufacturer fulfilled its duty by giving the employer pamphlets. The strict liability decisions, however, are no more sensitive to relative prevention costs. In *Young*, although the manufacturer had installed a plate warning of proper wheel speed, the court overturned the jury verdict for the manufacturer on grounds that in some circumstances victims might not read the plates, yet it did so without reference to alternative warning methods the manufacturer might practicably have adopted. Similarly, in *Haugen* the court affirmed a verdict against the manufacturer, apparently to give manufacturers incentives to warn grinding wheel workers to wear safety goggles, a warning that seems obvious and hardly necessary.

It is too strong to conclude definitively that all these decisions were inefficient. But they certainly departed significantly from the conditions defined by the standard economic analysis for efficient accident prevention. Under both negligence and strict liability, courts devoted little attention to the marginal costs and benefits of accident prevention and none to the careful weighing of costs and benefits necessary for establishing optimal accident reduction incentives.

Moreover, these decisions are typical of negligence and strict liability decisions in the products field. They strongly suggest that the effectiveness of modern products liability law in controlling the accident rate is

blunt at best. And they provide additional grounds for confirming the empirical finding that there has been no substantial reduction in the accident rate despite the extraordinary increase in products liability litigation.

A final implication of these cases is perhaps more important. They show, at the least, that products liability law could have a much greater effect on the accident rate. The doctrines of the law only crudely address accident prevention. They could be substantially reformed to focus more carefully on accident reduction.

### Reforming Products Liability Law

This part describes the principal doctrines of modern products liability and shows more carefully why they are largely ineffective in controlling the rate of product accidents. It also suggests how these doctrines could be reformed to achieve more successfully the accident reduction goal. Again, it is uncontroversial that the accident rate can be reduced to the level optimal for society by determining at trial whether there was a specific cost-effective action that either party could have taken to prevent the accident and by placing liability on the party that could have prevented the accident more effectively. Assigning liability in this manner will create incentives for optimal future accident reduction.

The doctrinal foundation of modern products liability law is the *Restatement (Second) of Torts*, section 402A, which was adopted by virtually all state courts in the decade following its adaptation in 1965.<sup>47</sup> Under section 402A a manufacturer is liable for a product-related injury only when a product is found to be both unreasonably dangerous and defective. That the injured consumer must demonstrate that the product is unreasonably dangerous establishes a limitation of manufacturer liability short of absolute liability. The requirement that the product also be defective is redundant in many cases, but serves to distinguish a product such as a chain saw that is inherently dangerous but fully and adequately operational.

Although the distinction was only vaguely understood in 1964, it is the common view today that a product can be defective and unreasonably dangerous in three ways: it can deviate from the standard production run (a manufacturing defect); it can be misdesigned in a way that makes all items of the production run equally defective (a design defect); or it

47. See Priest, "Invention of Enterprise Liability," for a discussion of this history.

can be inadequately labeled or explained in terms of characteristics that could be harmful (a defect in product warning). Section 402A appears to establish strict liability for injuries resulting from each of these types of defects. Following section 402A, all jurisdictions have adopted strict liability for manufacturing defects. Some have quibbled over whether the standard for design and warning defects is negligence or strict liability,<sup>48</sup> but regardless of the nominal standard, virtually all jurisdictions have shifted design and warning standards by focusing principal attention on the role of the manufacturer and away from preventive actions of the consumer and by openly disregarding as irrelevant the actions of the manufacturer in place of evaluating the alleged dangerous character of the product.<sup>49</sup>

### *Defects in Manufacturing*

Liability for manufacturing defects today is absolute, a principle that was Prosser's most important objective in drafting section 402A. The principle is an extension of nineteenth century warranty liability, in particular of the implied warranty of merchantability. Indeed, it was Prosser's conception that the chief effect of section 402A would be to expand warranty liability beyond the express obligations offered voluntarily by manufacturers.<sup>50</sup>

Absolute liability for manufacturing defects, however, has no clear relation to accident reduction. In most cases involving manufacturing defects, there is no justification for manufacturer liability in terms of potential accident prevention. For this purpose the issue is not whether the product deviated from the manufacturer's own specifications but whether the manufacturer could have efficiently prevented the deviation. It is important to establish incentives for manufacturers to adopt those production methods and systems of quality control that do most to reduce the accident rate. But all manufacturing processes will necessarily involve some deviations from the standard run. As consumers, we want manufacturers to make all practicable efforts to reduce the incidence of such deviations, and we reward them in the marketplace if they are

48. See Louis R. Frumer and Melvin I. Friedman, *Products Liability* (New York: M. Bender, loose-leaf service), for a review of this case law.

49. See George L. Priest, "The Disappearance of the Consumer from Modern Products Liability Law," in E. Scott Maynes, ed., *The Frontier of Research in the Consumer Interest* (Columbia, Mo.: American Council on Consumer Interests, forthcoming).

50. See George L. Priest, "Section 402A: The Original Intent," unpublished manuscript (Yale Law School, 1987).

successful in doing so: reliability is a very highly regarded product characteristic. But no manufacturer can make the production process perfect, nor is it worthwhile to consumers for manufacturers to do so—consumers are typically not willing to pay for perfection.

Landes and Posner, following Calabresi and Hirschhoff, have argued that absolute liability for manufacturing defects is efficient because only the manufacturer can influence the manufacturing process; with respect to manufacturing defects above all, consumers are powerless to prevent injuries.<sup>51</sup> This proposition ignores the factual difficulty in many cases of distinguishing manufacturing from design defects. More importantly, absolute liability for manufacturing defects ignores adverse insurance effects. When a manufacturer has made all practicable investments in the manufacturing process and in quality control, liability for remaining defects involves only insurance. Absolute liability for manufacturing defects is an insurance doctrine. The only issue in such cases is who should insure for losses attributable to the manufacturing process that cannot be efficiently prevented.<sup>52</sup>

It is increasingly clear that consumers are harmed when social policy attempts to provide insurance through the tort system.<sup>53</sup> It follows that absolute liability in cases involving manufacturing defects should be relaxed. In terms of accident prevention, the legal distinction between manufacturing and design defects is no longer tenable, and the problem of manufacturing defects should be addressed by applying standards for design defects. Optimal quality control or the best choice of manufacturing materials or components of the manufacturing process is a design question. The accident rate from manufacturing defects can be effectively controlled without adverse insurance effects by adopting a rule that holds manufacturers liable only when there are alternative methods of manufacture that could have efficiently prevented the accident.

### *Design Defects*

The standard for evaluating design defects is central to modern products liability. Initially, the drafters of the *Restatement (Second) of Torts* saw strict liability as an extension of warranty law, although this view

51. Landes and Posner in "Positive Economic Analysis," pp. 555-56; and Calabresi and Hirschhoff, "Strict Liability in Torts." See also Schwartz, "Products Liability Reform," who supports absolute liability for manufacturing defects to save litigation expenses.

52. Landes and Posner, "Positive Economic Analysis," explicitly ignore insurance effects.

53. See Priest, "Current Insurance Crisis."

is obsolete today. Nevertheless, the interpretive "Comments to the Restatement," which are far from obsolete, define the design defect standard in terms that resemble contract law principles of agreement and consent, that is, in terms of the interests and preferences of the relevant product consumers. "Defective condition" is defined in comment (g) as "a condition not contemplated by the ultimate consumer, which will be unreasonably dangerous to him." Similarly, "unreasonably dangerous" is defined in comment (i) as "dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics."

**THE CONSUMER EXPECTATION STANDARD.** In the first years following the *Restatement*, many courts looked to consumer expectations as a standard for the definition of defective design. Problems arose immediately, however, because it was unclear under a consumer expectation standard how courts could differentiate the new doctrine of strict liability from negligence. Most troublesome were cases in which the dangerous characteristics of the product were fully obvious to the user. The safety characteristics of these products could not be claimed to violate the user's expectations. Rather the claim was that the products should have been designed with greater safety protections. If the consumer expectation standard were to be taken seriously, manufacturers would be exonerated when the dangerous character of the product is obvious, in exactly the manner that the "open and obvious danger" defense had exonerated manufacturers under negligence.<sup>54</sup>

It is not surprising that courts generally, although not universally, have rejected the consumer expectation standard. The rejection coincides with judicial efforts to better achieve control over the accident rate by employing risk-utility analysis, discussed later. In some jurisdictions, however, the standard has survived, either exclusively or as part of a multipronged test.

Some courts enforce pure consumer expectation standards, delegating to the jury all questions of the appropriateness of product design based on the jury members' appreciation of community standards.<sup>55</sup> The Supreme Court of Connecticut, for example, affirmed a jury verdict against a manufacturer by finding the design of a two-year-old auto unreason-

54. See the discussion of *Murphy* and *Messina* earlier.

55. See, for example, *Heaton v. Ford Motor Company*, 435 P.2d 806 (Or. 1967); and *Holm v. Sponco Mfg., Inc.*, 324 N.W.2d 207 (Minn. 1982).

ably dangerous. At the time of the accident allegedly caused by the design, the car had been driven 46,000 miles, was alleged by two previous owners to pull to the left, but was described by a mechanical engineer as having broken spot welds. According to the court, this evidence was sufficient for the jury to have concluded that the design was defective because the consumer expectation standard allows "the jury [to] draw its own reasonable conclusions as to the expectations of the ordinary consumer and the knowledge common in the community at large."<sup>56</sup>

Other courts have adopted standards that resemble a consumer expectation standard. The Supreme Court of Oregon evaluates claims of design defects by examining whether a reasonable person would have put the product into the stream of commerce knowing of its harmful characteristics.<sup>57</sup> According to the court, this standard of manufacturer judgment coincides with what consumers might expect.

Still other courts retain elements of a consumer expectation standard within a multifaceted standard. The Supreme Court of California allows the plaintiff to establish defective design either by showing that the product design deviates from consumer expectations or that product risk exceeds its utility.<sup>58</sup> In jurisdictions employing multifaceted standards, the implementation of the consumer expectation element closely resembles that in the pure consumer expectation jurisdictions. For example, in a case involving a claim of a defectively designed bus the Supreme Court of California held that there was sufficient evidence to support a verdict for the plaintiff by the introduction of nothing more than photos of the bus and the victim's account of the injury. A rider who had fallen out of her seat alleged that the bus was defectively designed because there was no grab bar. According to the court, "the need for a 'grab bar' or pole to steady oneself when a bus turns a sharp corner is a matter within the common experience of lay jurors. . . . Since public transportation is a matter of common experience, no expert testimony was required to enable the jury to reach a decision."<sup>59</sup>

56. *Slepski v. Williams Ford, Inc.*, 364 A.2d 175, 178 (Conn. 1975). See also *Giglio v. Connecticut Light and Power Company*, 429 A.2d 486 (Conn. 1980).

57. *Phillips v. Kimwood Machine Company*, 525 P.2d 1033 (Or. 1974).

58. *Barker v. Lull Engineering Company, Inc.*, 573 P.2d 443 (Cal. 1978).

59. *Campbell v. General Motors Corporation*, 649 P.2d 224, 232-33 (Cal. 1982). For a similar decision, see *Moorer v. Clayton Manufacturing Corporation*, 627 P.2d 716 (Ariz. Ct. App. 1981). For other cases of the same nature, see *Brady v. Melody Homes Manufacturer*, 589 P.2d 896 (Ariz. Ct. App. 1978); and *Hohlenkamp v. Rheem Manufacturing Company*, 655 P.2d 32 (Ariz. Ct. App. 1982).

As these examples illustrate, the consumer expectation standard pays no careful attention to the determinants of the accident rate. And because consumer expectations are largely insensitive to safety design potential except, perhaps, with respect to grossly dangerous product features, the standard is likely to have no coherent influence on the rate of product-related accidents. Even if one were to presume that consumer expectations were an important measure of optimal product design—a presumption, incidentally, at odds with most of defective-product warning law—the standard is not presented to juries in a way that allows informed design evaluation. Juries in these cases are given nothing in the way of research on the operation of consumer product markets. Nor are they instructed in how to consider the formation of consumer expectations, the determinants of consumer product selection, or the influences on consumer product use, all factors relevant to optimal product design.

**THE RISK-UTILITY STANDARD.** Except for the small number adopting the consumer expectation standard, jurisdictions have adopted a variation of the risk-utility standard for determining whether a product's design is defective. The risk-utility standard is widely advocated as establishing efficient incentives for accident reduction on the grounds that it is equivalent to cost-benefit analysis, the dominant tool of modern governmental regulatory policy, and because it resembles the classic formulation in the law and economics literature for establishing efficient accident reduction incentives.<sup>60</sup> How well does the risk-utility standard control the accident rate?

The most widely adopted formulation of the standard is that of John Wade, one of the architects of the *Restatement*. Wade lists seven factors for determining whether a product design is abnormally dangerous:

1. The usefulness and desirability of the product—its utility to the user and to the public as a whole.
2. The safety aspects of the product—the likelihood that it will cause injury, and the probable seriousness of the injury.
3. The availability of a substitute product which would meet the same need and not be as unsafe.
4. The manufacturer's ability to eliminate the unsafe character of the product without impairing its usefulness or making it too expensive to maintain its utility.

60. See Landes and Posner, "Positive Economic Analysis," pp. 553–54. See also Posner, *Economic Analysis of Law*.

5. The user's ability to avoid danger by the exercise of care in the use of the product.

6. The user's anticipated awareness of the dangers inherent in the product and their avoidability, because of general public knowledge of the obvious condition of the product, or of the existence of suitable warnings or instructions.

7. The feasibility, on the part of the manufacturer, of spreading the loss by setting the price of the product or carrying liability insurance.<sup>61</sup>

Typically, courts allow parties to introduce evidence bearing on any of these seven factors and then refer some version of the list to the jury for the determination of whether the product design was defective and unreasonably dangerous. Of course, it is impossible to know exactly how juries employ the list. None of the factors can be said to be irrelevant to product design, yet the vague and overlapping character of the factors suggests a range of possible judgments that may only occasionally help establish incentives to reduce the accident rate. Even at the most basic level, for example, it can never be certain that the jury will be able to distinguish the statistical evaluation of risk and utility for the set of product consumers as a whole from the risk faced (and suffered) by a particular injured claimant.

Yet, though one cannot determine how juries are in fact applying Wade's seven factors, it is possible to evaluate how closely the seven factors themselves correspond analytically to what would be necessary to establish appropriate incentives for accident reduction. And here it is evident that the factors bring a level of analytical confusion to the issue of design defect that would make it extremely difficult for even the most diligent jury to establish coherent incentives to reduce the accident rate.

First, the seven factors are not equally relevant to all types of design defect cases. The first factor, product usefulness, and the second, product risk, for example, may help evaluate general product utility but are meaningless when a plaintiff claims that a specific alternative design should have been adopted. In the context of alternative designs there is no reason to calculate product utility net of product risk.

Factors 3 through 6 refer to alternative ways to prevent the accident by manufacturers and consumers. Factor 4 loosely suggests reference to alternative methods the manufacturer might have chosen to design the

61. John W. Wade, "On the Nature of Strict Tort Liability for Products," *Mississippi Law Journal*, vol. 44 (November 1973), pp. 837-38.

product to reduce the accident rate. Factors 3, 5, and 6 refer to alternative actions that consumers might take. Factor 5 most clearly addresses what efficiency analysis refers to as the consumer's contributory actions to the occurrence of the injury. Factor 6 addresses the information available to the consumer about the product. Factor 3, oddly, brings up the possibility of using a safer product to achieve the same end. Perhaps this was meant to suggest that the consumer might choose the wrong product for the intended use, much as in the claim in *Barker* that the high-lift loader was inappropriate for the job. Alternatively, factor 3 might be thought to duplicate factors 1 and 2, that is, to condemn products altogether if there are equally effective but safer products on the market.

Perhaps it might be thought that factors 3 through 6 together raise the considerations needed to evaluate whether the manufacturer or consumer could have taken some specific action to prevent the injury, the calculus that all commentators concede is appropriate. But Wade's formulation, again, is excessively diffuse. It is much more direct and effective to ask simply: could the manufacturer or consumer have taken some specific action that would have efficiently prevented the accident? The in part disconnected and in part redundant character of Wade's factors undoubtedly introduces significant variation into juries' decisions that weakens the influence of the law as an incentive for efficient design.

There is a further confusion in the list. It is difficult to know how a jury's evaluation of factors 3 through 6 will interact with its consideration of factors 1 and 2, which are broader and more general. Factors 1 and 2, in referring to the general utility and riskiness of products, are relevant only to the now-growing number of cases in which courts entertain allegations that a product is so dangerous that liability for injuries related to its use should be absolute. Very recently, several courts have defined liability categories of this nature. One has created a category of products unreasonably dangerous per se.<sup>62</sup> Another, somewhat more subtly, has allowed a jury to find a generic class of products unreasonably dangerous, which amounts to essentially the same result.<sup>63</sup> Other courts approach similar conclusions by employing hindsight standards of defectiveness, according to which all products that still function but whose design is obsolete can be found defective.<sup>64</sup> The judicial rejection of the state-of-the-art defense has the same

62. *Halphen v. Johns-Manville Sales Corporation*, 484 So.2d 110 (La. 1986).

63. *O'Brien v. Muskin Corporation*, 463 A.2d 298 (N.J. 1983).

64. *Barker v. Lull Engineering Company, Inc.*, 573 P.2d 443 (Cal. 1978).

effect.<sup>65</sup> Moreover, this category of cases is the subject of a rising number of claims against manufacturers of guns, alcohol, and cigarettes, among others. The claim of the Indian government that Union Carbide should be liable for all losses resulting from the Bhopal disaster on grounds of cost internalization is similar.

There is a fundamental incoherence in applying Wade's risk-utility factors to claims of generic product defectiveness. To illustrate the problem, imagine how the evaluation of utility versus risk of a generic product might proceed—that is, how a careful jury would implement Wade's factors 1 and 2.

First, though empirically difficult, it is conceptually straightforward to calculate generic product risk (Wade's factor 2). A jury must estimate the likelihood of injury from particular product uses and then estimate the expected costs of these injuries. The multiple will equal expected product risks.

Calculating product utility (Wade's factor 1) to set against risk, however, is substantially more difficult. The term *utility* typically refers to the subjective value or satisfaction that consumers obtain from product use. It is never possible to put a precise dollar value on absolute personal satisfaction from consumption. Economists routinely calculate relative consumption values by measuring marginal rates of substitution among commodities. But relative values equal absolute values only at the margin.

One possible measure of product utility is the maximum amount that any single person or the set of consumers as a whole would pay for the product, represented by the area under the economist's demand curve. This measure is not precise because utility does not equal willingness to pay but rather willingness to pay discounted by the marginal utility of income. Such a measure can serve as an approximation of product utility, however, on the assumption that the marginal utility of income equals 1 (surely an overestimate). A first approximation of product utility, then, is the area of an estimated demand curve, bounded by the quantity of the product actually sold.

An alternative, lower-bound estimate of consumer utility can be obtained by looking at the actual amounts paid by consumers for the product. This is a lower-bound estimate because, of course, all consumers place a higher value on the product than its price or they would not

65. See, generally, Commerce Clearing House, *Products Liability Reporter* (1987, looseleaf service).

buy it. The difference between full product value to consumers and product price is referred to as consumer surplus, which again is measured by subtracting the price consumers have paid from the area under the product demand curve. The alternative estimate of product utility, then, is total sales revenues, which again is a lower bound because it ignores consumer surplus.

There is some ambiguity when social utility is at issue in looking even at total sales revenues because some philosophers and many judges question whether corporate profits should enter into the measure of social utility.<sup>66</sup> To some, profits are a return for taking entrepreneurial risks. To others, profits are only transfers of assets from one group (consumers) to another (shareholders) and do not reflect a gain in social utility.

If profits are not to be considered, then the best lowest-bound approximation is production costs.<sup>67</sup> Production costs include wages, taxes, and capital asset investment. There is a further, more substantial conceptual foundation for using production costs as a surrogate for consumer utility. In perfect competition, economic profits (returns higher than those necessary to generate continued investment) are negligible; price equals marginal costs. Thus the aggregate lowest-bound level of consumer utility is equal to the sum of production costs. Again, the relevance of evidence on production costs is not that production benefits measure utility but that they are one of the measures to be referred to when precise estimates of consumer satisfaction are unavailable.

These three measures, then—the area under the demand curve, total sales revenues, and production costs—seem to be the only possible coherent measures of product utility for which any empirical basis might exist. But each measure would lead to a seriously erroneous conclusion if employed to determine product utility to be set against product risk. With respect to product risks, each is a measure of net consumer utility, not gross utility as anticipated by the risk-utility test. The price a person is willing to pay for a product represents the utility of the product to the person net of expected ancillary costs, such as the expected risk of injury or the expected risk of damage to health. Injury or health costs associated with product use, obviously, are meant to enter into the calculation of product risks considered in Wade's factor 2, not in product utility, Wade's factor 1.

66. *Cippolone v. Liggett Group, Inc.*, 644 F. Supp. 283 (D.N.J. 1986).

67. Of course, if manufacturer profits are ignored, then it would be conceptually inconsistent to give credit to consumer surplus.

Yet, if we measure utility by willingness to pay or by total sales volume, then to the extent consumers are informed about expected product or health risks, the risks of the product have already been taken into account. The product demand curve is defined with respect to consumer expectations of product risks. The value of the product to consumers incorporates the deduction of product risks. To then again subtract the cost of product risks pursuant to the risk-utility standard would count product risks twice. Put differently, for products alleged to be unreasonably dangerous per se, factor 1 is all that is necessary for the analysis. Factor 2 is redundant.

The point is that consumers themselves engage in risk-utility analysis of generic products. If I refuse because of concerns for safety to allow my teenage son to purchase a motorcycle, I am concluding that the expected risk of the product exceeds its expected utility. Similarly, if I decide to forgo the pleasures of hang gliding, I am concluding that the expected risk of the product exceeds its expected utility. Those consumers who choose to buy such products are making different calculations. As long as they have information about expected product risks, their continuing purchase represents the best estimate of the utility of a product relative to its risk.

Of utmost importance to this point, of course, is that consumers be informed of product risks to make effective risk-utility calculations. Consumer product demand is an accurate measure of product utility net of product risks only when consumers are well informed about risks. This qualification, however, does not justify the use of Wade's seven (or even his first two) factors in the evaluation of generic product risk-utility. The issue in cases in which consumers lack information about product risks is one of appropriate product warning, an issue entirely different from that of appropriate product design or manufacture. When consumers lack product risk information, the accident rate can be reduced only if incentives are created for the dissemination of appropriate product warnings. It follows that there are no circumstances in which the risk-utility calculation can be effectively implemented with respect to claims of generic product dangerousness.

### *Defects in Warnings*

Current doctrines defining the manufacturer's duty to provide warnings about product dangers seem, perhaps, the most congruent with the liability standard that I have proposed to control the accident rate.

Many jurisdictions today hold manufacturers liable when the court believes that a warning could have been offered that would have prevented the accident.<sup>68</sup> Warning law, however, has also been greatly influenced by the insurance goal of modern law and by the empirical presumption that the manufacturer is almost always in the best position to prevent injuries. As a consequence, although the doctrinal foundation of warning law is consistent with the accident reduction objective, the implementation of the law could be greatly reformed to better establish accident prevention incentives.

The leading cases of modern warning law have employed the duty to warn to fulfill insurance objectives. The furthest reach of warning law is *Beshada v. Johns-Manville*, in which the Supreme Court of New Jersey held the manufacturer liable for failing to warn, despite the court's admission that it was impossible for the manufacturer to have known of the product danger at the time it breached its warning duty.<sup>69</sup> The court explicitly justified its conclusion on insurance grounds (although it alluded vaguely to research and development incentives). Because it is inconceivable that a manufacturer can actually warn of some danger that it does not know about, and of which it is impossible to know, the *Beshada* rule can have no important influence on actual accident reduction.<sup>70</sup> Indeed, the Supreme Court of New Jersey has itself retreated from the rule, although hardly in a principled fashion.<sup>71</sup>

Modern warning law departs from the objective of defining effective incentives for accident prevention in many additional respects. Courts have struggled mightily to define a distinctive strict liability standard for warning cases. Toward this end, legal presumptions have been adopted that impair accident prevention incentives. For example, many courts presume that manufacturers have or should have knowledge of all product dangers, of which they must inform consumers.<sup>72</sup> This presumption deflects attention from the judicial inquiry as to how manufacturers can effectively obtain and impart information about product dangers. There are no effective incentives created for accident reduction by holding manufacturers liable for failing to take actions that they could not in

68. *McCormack v. Hanksraft Company*, 154 N.W.2d 488 (Minn. 1967).

69. *Beshada v. Johns-Manville Products Corporation*, 447 A.2d 539 (N.J. 1982).

70. See Alan Schwartz, "Products Liability, Corporate Structure, and Bankruptcy: Toxic Substances and the Remote Risk Relationship," *Journal of Legal Studies*, vol. 14 (December 1985), pp. 689-736.

71. See *Feldman v. Lederle Laboratories*, 479 A.2d 374 (N.J. 1984), apparently limiting *Beshada* to asbestos-like circumstances.

72. For example, *Phillips v. Kimwood Machine Company*, 525 P.2d 1033 (Or. 1974).

fact have taken. Thus the presumption of manufacturer knowledge provides no important accident reduction effects.

In a similar effort to articulate a strict liability standard for warning cases, some courts have adopted the legal presumption that, had a warning been provided, the consumer would have read it and acted on it.<sup>73</sup> This presumption too detracts from the effort to create realistic incentives for accident prevention. In many circumstances, consumers have limited capacities to read and comprehend warnings. Manufacturer liability for failing to provide a warning in such circumstances achieves no effective preventive function. The presumption also ignores the complicated issue of the definition of the consumer group to which a particular product warning should be directed. The most important issue in warning cases is identifying the appropriate consumer groups, since most modern products are used in many different ways. Except for the simplest products, one cannot presume a single warning will be equally effective for all consumers or for all uses.

It is a similar error to presume that complicated or multivariate warnings—designed to warn of wide ranges of product danger—will be effective. Many modern warning cases involve accidents in which the product was used in such an unusual manner or in a manner so distinctly within the control of the injured consumer that manufacturer liability for the failure to warn serves no effective accident reduction purpose. Manufacturers, for example, have been held liable for breach of the warning duty where teenage girls were injured from pouring cologne on a lighted candle, where a bystander was hit by a champagne cork exploding from a bottle, and where a four-wheel-drive vehicle was being driven on a slope so extreme that the vehicle flipped end to end.<sup>74</sup> In such cases the accident would probably not have been prevented if the respective manufacturers had issued more specific warnings. Put differently, the respective product users would probably not have been sufficiently sensitive to warnings detailed enough to incorporate notes of caution about these and the wide range of analogous unusual uses to reduce the likelihood of injury significantly.

The multiple presumptions that the manufacturer has all knowledge about product dangers, that it may warn of these dangers easily and cheaply, and that all consumers will read, comprehend, and act on the

73. See Schwartz, "Products Liability."

74. *Moran v. Faberge, Inc.*, 332 A.2d 11 (Md. 1975); *Shuput v. Heublein, Inc.*, 511 F.2d 1104 (10th Cir. 1975); and *Leichtamer v. American Motors Corp.*, 424 N.E. 2d 568 (Ohio 1981).

warnings lead warning law toward absolute liability. Except with respect to intentionally self-inflicted injuries, all product-related losses can be regarded as deriving from insufficient information about product risks. Initial cases in the warning field involved injuries in contexts where no warnings at all were provided. Thus it may have seemed plausible that courts could improve accident prevention incentives by adopting these presumptions. But it is a short step from the presumption that some warning is better than none to the presumption that the existing warning can easily be made more effective. If a court presumes that a consumer will always respond to warnings, yet the consumer is injured despite an existing warning, the warning must have been inadequate. Thus these presumptions propel the duty to warn toward absolute liability for all but intentionally self-inflicted injuries.<sup>75</sup>

This expansion of the duty to warn serves no helpful accident reduction purpose. Crucial to every warning case is a causation issue: whether any effective warning, or a warning drafted in some particular way, would have led this particular consumer to have avoided the injury. Without the rigorous evaluation of warning content, courts are only providing insurance by expanding manufacturer liability, an insurance function that is counterproductive. Moreover, such action blunts the instructive function that courts can serve in guiding manufacturers to develop clear and effective warnings. Thus courts must examine with greater care and rigor exactly which warnings would have been effective for which consumer product uses.

### *The Standards Evaluated*

There are, then, significant discrepancies between each of the basic standards of modern products liability law and rules that would create incentives for optimal accident prevention. The standard of absolute liability for manufacturing defects extends liability far beyond what is necessary for accident control. The consumer expectation standard for design defects is likely to exert no systematic influence on the accident rate. The risk-utility test, though suggesting the flavor of cost-benefit analysis, is formulated so loosely and in some contexts so incoherently that its effect on the accident rate is likely to be minimal. The presumptions of warning law lead toward absolute liability and not toward an

75. Indeed, some courts have ruled that assumption of risk is inapplicable in an action involving duty to warn. See *Heil Company v. Grant*, 534 S.W. 2d 916 (Tex. Civ. App. 1976).

effective focus on how to draft warnings to prevent accidents. It is, therefore, little surprise that aggregate statistics show no substantial reduction in product-related accidents since 1970 despite the enormous expansion of products liability.

The failure of the basic doctrines of products liability law to control the accident rate is peculiar because commentators universally agree that accident reduction is a central goal of the law, and economists, lawyer-economists, and policy analysts agree that rigorous cost-benefit analysis is the most effective way to achieve it. This failure should be attributed to the misleadingly simplistic claims of efficiency-of-the-law scholarship. These claims have diverted the attention of economists and lawyer-economists from the dismal economic performance of modern products liability law.

The program for reform is straightforward. If courts want to work seriously to create incentives for accident prevention, they must adopt standards that place liability on manufacturers only when it can be shown that there was some practicable method for the manufacturer to have prevented the accident. If there was nothing the manufacturer could have done, manufacturer liability will serve only an insurance effect, an effect that has been shown to harm consumers, and poor and low-income consumers most of all.<sup>76</sup> At the most basic level, this standard can be implemented by adopting rigorous cost-benefit analysis in every products case. The distinction between manufacturing and design defects must be abandoned. The risk-utility test may survive, but only if it is substantially sharpened and its focus made more precise. The causation issue in warning cases must not be presumed away.

Some might object that a simple standard asking whether it is possible to identify any specific cost-effective action that either the manufacturer or consumer could have taken that would have prevented the accident closely resembles the negligence or fault standard, which virtually every court has repudiated in most products liability contexts. But such a conclusion is grossly incorrect and again betrays the unfortunate influence of the efficiency-of-the-law school. As the many negligence cases described earlier demonstrate, the standard in force in the products field until the early 1960s was crude and paid no careful attention to the determinants of the accident rate. There is little reason to believe that the negligence standard required even cost-effective investments by manufacturers. The adoption of the strict liability standard may very likely

76. See Priest, "Current Insurance Crisis."

have improved accident prevention incentives. But modern strict liability itself can be improved. To the extent that courts are seriously interested in accident reduction—as they should be—they must strive to create rules and standards more sensitive to the determinants of the accident rate.

### The Stakes in Products Liability Law

This chapter has attempted to show that modern products liability law fails to provide adequate control over the accident rate involving products because it fails to establish sensible and effective incentives for accident prevention. There is no empirical evidence whatsoever of an effect of the tremendous expansion of products liability on the number or rate of product-related accidents. Judicial decisions under either the negligence or strict liability standard have been insensitive toward the determinants of the accident rate. And the basic doctrines of modern law largely neglect the most effective methods of accident control.

The implications of these failings are extremely unfortunate. Manufacturer and consumer investments in accident prevention are complements over some range but substitutes at the margin. It follows that erroneous decisions in cases involving manufacturing and design defects increase the rate of product-related accidents.<sup>77</sup> Increasing manufacturer liability may lead to products that, in some mechanical sense, are safer, products that, if they were accompanied by a constant level of consumer safety investment, would generate a decrease in the accident rate. But courts cannot guarantee the constancy of consumer safety or care investments. Many studies have shown that consumers respond to an increase in manufacturer safety investments by conserving on investments of their own.<sup>78</sup> That the expansion of liability increases the accident rate is a direct implication.

Our society has a stake not in a unidirectional expansion of manufacturer liability but in creating incentives to optimize safety investments. The more rigorous formulation of cost-benefit standards for products liability law is essential to this objective.

77. For an elaboration, see George L. Priest, "Punitive Damages and Enterprise Liability," *Southern California Law Review*, vol. 56 (November 1982), pp. 123–32.

78. See, for example, Viscusi, *Regulating Consumer Product Safety*; and Peltzman, "Effects of Automobile Safety Regulation."

## *Policy Options*

Robert E. Litan and Clifford Winston

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THE POLICIES proposed to address the recent crisis in the insurance and liability systems fall into three major categories: modifying regulation of the property-casualty insurance industry; limiting compensation through the tort system, popularly labeled "tort reform"; and augmenting or replacing the tort system with new compensation devices, coupled with alternative measures for deterring accidents.

Based on the analyses in the foregoing chapters, none of the proposals unambiguously solves the problems of rising liability insurance premiums and cutbacks in coverage. John Calfee and Clifford Winston demonstrated in chapter 2 that on theoretical grounds it is extremely difficult to identify the mix of institutions that best achieves both the deterrence and compensation objectives of the liability system. Moreover, there are no comprehensive empirical estimates of the costs and benefits of the current system. The total costs of the tort system, for example, are not known: although premium costs for insurance are available and estimates of the administrative cost of the tort system exist, we do not know the magnitude of liability costs for those individuals and corporations who self-insure nor the costs of steps they may take to avoid or prevent injury. Even less is known about the benefits of the current tort system in terms of costs saved through deterrence. Consequently, it is difficult to assess the comparative costs and benefits of supplementing or replacing the current system with other compensation and deterrence mechanisms.

Nevertheless, certain recommendations are supported by the data and theoretical research that are available. Equally important, a number of proposals clearly are not advisable and could even be counterproductive.

## Modifying Insurance Regulation

Given the explosion in insurance costs and cutbacks in availability, it is not surprising that many critics have directed their reform proposals at the property-casualty insurance industry itself. One class of suggestions, advanced at the state level where property-casualty insurers are regulated, would strengthen regulation of premiums and policy cancellations, or at a minimum impose additional requirements on insurers to report data. Table 8-1 summarizes these types of reforms enacted by various states just since 1986. The premise for more extensive regulation is that the industry is imperfectly competitive; only with vigilant control will consumers be protected against excessive premium increases or cancellations.

A second possible reform, currently being considered in Congress, is to repeal or significantly scale back the antitrust exemption afforded property-casualty insurers by the McCarran-Ferguson Act.<sup>1</sup> Since 1944 the act has immunized from the antitrust laws the joint activities of insurers—primarily the sharing of loss-collection data and analysis—provided that the business of insurance is regulated by the states. The premise underlying proposed reform is that insurance markets are inherently competitive but that antitrust immunity enables insurers to act collusively to set rates at excessive levels or to withdraw coverage that would otherwise be made available. Indeed, several major property-casualty insurers have recently been charged with conspiring with their rating bureau to limit the coverage available to policyholders. A definite resolution of the issues raised in these lawsuits may not occur for many years, if ever. In the meantime, it is prudent to make policy on the basis of the information that is available.

Harrington demonstrates in chapter 3 that the conventional indicators of market behavior and performance—many competitors, low levels of market shares, and the absence of abnormally high profits—indicate that the property-casualty insurance industry is highly competitive. The limited evidence available suggests that, at least in auto insurance markets, insurers tend to set rates independently despite the sharing of loss data. Rating bureaus do influence rates charged by smaller auto insurers, but these

1. S. 80, introduced in the One-hundredth Congress by Senator Howard Metzenbaum of Ohio, would repeal the McCarran-Ferguson Act but grant a two-year moratorium on civil antitrust litigation against insurers to give them time to adjust to the new legal environment.

Table 8-1. *State Insurance Reforms, January 1986–May 1987*

| State          | Data collection <sup>a</sup> | Rate setting and review <sup>a</sup> | Notice requirements (cancellation or nonrenewal) <sup>a</sup> |
|----------------|------------------------------|--------------------------------------|---------------------------------------------------------------|
| Alabama        | ...                          | 2                                    | ...                                                           |
| Alaska         | ...                          | ...                                  | 1                                                             |
| Arkansas       | 1                            | 2                                    | 1                                                             |
| California     | 1                            | ...                                  | 2                                                             |
| Colorado       | 2                            | 1                                    | 1                                                             |
| Connecticut    | 2                            | ...                                  | 1                                                             |
| Delaware       | 3                            | ...                                  | 1                                                             |
| Florida        | ...                          | 1                                    | 1                                                             |
| Georgia        | ...                          | 1                                    | 1                                                             |
| Hawaii         | ...                          | 1                                    | 1                                                             |
| Idaho          | ...                          | ...                                  | 1                                                             |
| Illinois       | ...                          | ...                                  | 1                                                             |
| Indiana        | ...                          | ...                                  | 1                                                             |
| Kansas         | 1                            | 2                                    | 2                                                             |
| Louisiana      | ...                          | ...                                  | 3                                                             |
| Maine          | ...                          | ...                                  | 1                                                             |
| Massachusetts  | ...                          | 2                                    | ...                                                           |
| Michigan       | 2                            | 1                                    | ...                                                           |
| Minnesota      | ...                          | 1                                    | ...                                                           |
| Mississippi    | ...                          | 1                                    | ...                                                           |
| Missouri       | ...                          | 1                                    | 1                                                             |
| New Hampshire  | ...                          | 2                                    | 1                                                             |
| New Mexico     | ...                          | 2                                    | 1                                                             |
| New York       | ...                          | ...                                  | 1                                                             |
| North Carolina | 1                            | ...                                  | ...                                                           |
| North Dakota   | ...                          | 1                                    | 1                                                             |
| Ohio           | 1                            | ...                                  | ...                                                           |
| Pennsylvania   | 1                            | ...                                  | 1                                                             |
| Tennessee      | ...                          | 1                                    | ...                                                           |
| Vermont        | 1                            | ...                                  | ...                                                           |
| West Virginia  | ...                          | 1                                    | 2                                                             |
| Wisconsin      | 1                            | ...                                  | 2                                                             |
| Wyoming        | ...                          | ...                                  | 1                                                             |

Sources: Rand Corporation, draft (Rand Corporation, 1987), pp. 77–78; and National Conference of State Legislatures, *Liability Insurance* (Denver and Washington, D.C., 1986 summary and May 1987 summary).

a. 1 is applicable to almost all insurance suits; 2 is applicable only to particular types of cases; and 3 is applicable to most insurance suits and specifically to particular parties and types of cases.

carriers also benefit most from the cost savings produced by the joint activities allowed by the exemption.

The objective indicators of the competitive nature of the property-casualty insurance industry weaken the case for more stringent state regulation of premiums and policies. Stricter regulation of rates may, of course, hold premiums down, as it apparently has done in states where auto

insurance rates have been regulated. But in a nation in which state regulation of insurance has long been a tradition, tighter regulation by some states will only induce carriers in those states to reduce the coverage they offer or even to withdraw entirely.<sup>2</sup> The recent attempt by Florida, for example, to limit premiums charged by insurance companies has apparently driven almost all providers of medical malpractice insurance from the state. Moreover, it is far from clear whether the repeal of McCarran-Ferguson would even have a significant impact on the behavior of insurers. Under the "state action" doctrine, the states could choose to exempt the joint activities of insurers from the antitrust laws.<sup>3</sup>

The only way in which regulation of the property-casualty industry might be significantly improved is to strengthen solvency regulation by state insurance agencies. Like banks, insurance companies are typically required to maintain specific levels of surplus (equivalent to capital) and to operate in a sound manner. State insurance departments supervise insurers to make certain these standards are met. In recent years, however, insolvencies in the property-casualty insurance industry have risen sharply; indeed, 59 out of 140 insolvencies from 1969 to 1986 occurred after 1983.<sup>4</sup> While the trend in insolvencies has paralleled the recent deterioration in the industry's financial performance, questions have long been raised about the quality of supervision conducted by state insurance departments, many of which lack the staff to adequately fulfill their mission.<sup>5</sup> Rather than institute stiffer rate or policy regulation, states should improve supervision of the financial and business practices of the insurers they regulate.

2. Resa W. King, "The Damage Is Mounting in Property and Casualty," *Business Week* (August 10, 1987), p. 32.

3. In *Southern Motor Carriers Rate Conference, Inc. v. United States*, 471 U.S. 48 (1985), the Supreme Court held that state regulation of collective ratemaking by intrastate motor carriers exempted the joint activities of the participants in the rating bureau from the antitrust laws. By the same reasoning, state supervision or regulation of the collective ratemaking practices in the insurance industry could be sufficient to insulate those functions from the antitrust laws under the state action doctrine even if the McCarran-Ferguson exemption were removed.

The removal of the antitrust exemptions for collusive ratemaking in the motor carrier industry in 1980 offers some instructive lessons in the context of property-casualty insurance. There is some evidence that restoring the motor carrier exemption would reduce information costs to shippers, while competition would keep rates from rising. See Jerry A. Hausman, "Information Costs, Competition, and Collective Ratemaking in the Motor Carrier Industry," working paper (Massachusetts Institute of Technology, August 1982).

4. U.S. General Accounting Office, *Insurer Failures: Property/Casualty Insurer Insolvencies and State Guaranty Funds*, GAO/GGD-87-100 (Washington, D.C., 1987).

5. King, "Damage Is Mounting."

## Tort Reforms

The most widely discussed solutions to the insurance crisis involve reforms of the tort system: statutory changes in liability doctrines and limits on the damages juries can award. These suggestions respond to the contention, generally supported in this volume, that insurance costs have spiraled upward because compensation provided through the tort system has both increased and become more uncertain. But before identifying some sound proposals, it is useful to review the full range of reforms that have been advocated at both the federal and state levels.

### *Federal Reform Proposals*

To date, Congress has concentrated its tort reform efforts on product liability laws. Early proposals, such as the legislation introduced by Senator Robert Kasten of Wisconsin in the Ninety-seventh Congress (S. 666), would have created a new system of products liability at the federal level, one based largely on negligence rather than standards of strict liability, that would have preempted state law. Manufacturers could have escaped liability if their products met applicable federal safety standards. In addition, punitive damages would have been limited, joint and several liability would have been eliminated for noneconomic damages (unless defendants acted in concert), and the statute of limitations would have required the dismissal of cases brought more than two years after the plaintiff reasonably could have discovered both the harm and its cause. Although the Kasten bill was vigorously supported by the business community and the liability insurance industry, it was strongly opposed by consumer organizations, the organized bar, and political interests favoring states' rights. The opponents prevailed; Senator Kasten's proposal never emerged from the Senate Commerce Committee.

Senate advocates of product liability reform have attempted to combine proposed revisions in various Kasten-type bills with the introduction of an expedited alternative to products liability litigation for plaintiffs who choose to forgo major awards for pain and suffering. The most recent product of this marriage was the Product Liability Reform Act of 1986 (S. 2760), which the Senate Commerce Committee approved in 1986 by a vote of 16 to 1 but which was never voted on by the full Senate.<sup>6</sup>

6. Proposals similar to S. 2760 were introduced in 1987 and referred to the Senate Judiciary Committee, including S. 687 and S. 688 (sponsored by Senator John Danforth

The liability proposals given most attention in the House generally take a somewhat different tack. At one extreme are bills that would modify products liability standards only for specific products. An example is H.R. 2238 sponsored by Congressman Dan Glickman of Kansas, which would apply only to aircraft manufacturers. At the other extreme are generic product liability reform proposals in the Kasten mold, now most prominently represented by the Uniform Product Safety Act of 1987 (H.R. 1115) introduced by Congressman Bill Richardson of New Mexico. Unlike the Kasten bill, however, the Richardson proposal would retain strict liability for product defects, though it would allow a number of defenses. Manufacturers would not, for instance, be liable if they used state-of-the-art production methods or if the harm were caused by an inherent characteristic of the product. They would also be exempt from liability if the plaintiff were under the influence of alcohol or drugs when using the product and if that condition were responsible for more than 50 percent of the plaintiff's injury. At this writing the Richardson bill had been marked up by the House Energy and Commerce Committee but had not yet been voted on by the full House.

It is unclear whether, based on current approaches, Congress will be able to fashion a compromise on products liability reform legislation. Private-sector support for federal reform originally came mainly from the liability insurance industry. But with the recent improvements in the financial condition of the industry and the apparent leveling off of premium increases, the urgency appears to have gone. Moreover, the property-casualty insurance industry has itself become a target for legislation, weakening both the intensity of the industry's interest in tort

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of Missouri). Among other things, S. 2760 would have established a new settlement procedure for products liability claims by authorizing expedited resolution if a defendant manufacturer offers the plaintiff payment for his or her economic losses (net of compensation from other sources) and up to \$100,000 for noneconomic (or dignitary) losses. If the plaintiff refuses such an offer and proceeds with litigation, he or she would bear costs and attorneys' fees if the final award were less favorable than the settlement offer. Although the bill would not preempt liability standards applicable to manufacturers, it would make clear that any seller (other than a manufacturer) could be held liable only for negligence or breach of warranty. The bill would also raise the evidentiary standards for granting punitive damage awards, impose a two-year statute of limitations running from the time a party discovers both the harm and the cause, require payments received under workers' compensation to be deducted from damage awards, and eliminate joint and several liability for noneconomic damages (instead allocating damages by degree of responsibility among the various defendants).

reform and the receptivity of legislators to the industry's arguments favoring reform.

### *Tort Reform in the States*

Table 8-2 summarizes tort system reforms adopted by the states between January 1986 and May 1987. Among the more popular are the elimination of joint and several liability (primarily for noneconomic damages), limits on contingency fees collected by plaintiffs' attorneys and sanctions on attorneys for filing frivolous lawsuits, and limits on the liability of governmental entities and their employees. Less widespread are amendments to the collateral source rule, which currently prohibits juries and judges from decreasing tort damage awards by the amount of compensation the plaintiff receives from other sources; permission for defendants to pay judgments over time rather than in lump sums; and so-called dram shop legislation limiting the liability of liquor store owners or individuals serving alcoholic beverages in their homes.

Table 8-3 lists states that have imposed statutory ceilings on damage awards. Most of the amendments apply to all awards for noneconomic damages in tort cases, but a few states have imposed damage caps for medical malpractice awards only. As discussed later in this chapter, it is unclear if damage caps will survive constitutional challenges that they deprive citizens of due process of law.

### *Assessment*

Virtually all the tort reform measures would reduce compensation available through the system. In fact, there is evidence, at least for medical malpractice cases, that tort reforms have already reduced the frequency of claims and the growth rate of insurance premiums.<sup>7</sup> But deterring injury is also an objective of tort law, and reducing compensation could weaken deterrence. The problem facing policymakers is that relatively little empirical information is available to indicate how tort compensation could be modified without compromising deterrence.

Nevertheless, the foregoing chapters suggest that certain reform measures are more likely to meet this concern than others. They are most usefully summarized in three categories: those affecting plaintiffs'

7. See chapter 5; and Tort Policy Working Group, *An Update on the Liability Crisis* (Washington, D.C., 1987), pp. 91-96.

Table 8-2. *State Tort Reforms, January 1986–May 1987<sup>a</sup>*

| <i>State</i>  | <i>Comparative and contributory negligence</i> | <i>Joint and several liability</i> | <i>Punitive damages</i> | <i>Attorney's fees and miscellaneous sanctions</i> | <i>Collateral source rule changes</i> | <i>Interest and taxes on judgments</i> | <i>Periodic payment of judgments</i> | <i>Dram shop liability</i> | <i>Government liability</i> |
|---------------|------------------------------------------------|------------------------------------|-------------------------|----------------------------------------------------|---------------------------------------|----------------------------------------|--------------------------------------|----------------------------|-----------------------------|
| Alabama       | ...                                            | ...                                | ...                     | ...                                                | ...                                   | ...                                    | ...                                  | ...                        | 2                           |
| Alaska        | ...                                            | 1                                  | ...                     | ...                                                | 1                                     | 1                                      | 1                                    | ...                        | ...                         |
| Arizona       | ...                                            | 1                                  | ...                     | 1                                                  | ...                                   | ...                                    | ...                                  | 2                          | ...                         |
| Arkansas      | ...                                            | 1                                  | ...                     | ...                                                | ...                                   | ...                                    | ...                                  | ...                        | ...                         |
| California    | ...                                            | 1                                  | ...                     | ...                                                | ...                                   | ...                                    | ...                                  | 2                          | 2                           |
| Colorado      | ...                                            | 1                                  | 1                       | ...                                                | 1                                     | ...                                    | ...                                  | 2                          | 2                           |
| Connecticut   | 1                                              | 1                                  | ...                     | 1                                                  | 1                                     | ...                                    | 1                                    | ...                        | ...                         |
| Delaware      | ...                                            | ...                                | ...                     | ...                                                | ...                                   | ...                                    | ...                                  | ...                        | ...                         |
| Florida       | ...                                            | 1                                  | 1                       | ...                                                | 1                                     | ...                                    | 1                                    | ...                        | ...                         |
| Georgia       | ...                                            | ...                                | ...                     | 1                                                  | ...                                   | ...                                    | ...                                  | ...                        | 2                           |
| Hawaii        | ...                                            | 1                                  | 1                       | 3                                                  | 1                                     | ...                                    | 2                                    | ...                        | 2                           |
| Idaho         | ...                                            | 1                                  | ...                     | 1                                                  | ...                                   | ...                                    | ...                                  | 2                          | ...                         |
| Illinois      | 1                                              | 1                                  | 1                       | 1                                                  | 1                                     | ...                                    | ...                                  | ...                        | 2                           |
| Indiana       | ...                                            | ...                                | ...                     | 1                                                  | 1                                     | 1                                      | ...                                  | 2                          | ...                         |
| Iowa          | ...                                            | ...                                | 3                       | 1                                                  | ...                                   | ...                                    | 1                                    | 2                          | 2                           |
| Kansas        | ...                                            | 1                                  | ...                     | 3                                                  | ...                                   | ...                                    | 2                                    | ...                        | ...                         |
| Louisiana     | ...                                            | ...                                | ...                     | ...                                                | ...                                   | ...                                    | ...                                  | 2                          | ...                         |
| Maine         | ...                                            | ...                                | ...                     | 2                                                  | ...                                   | ...                                    | 2                                    | 2                          | 2                           |
| Maryland      | ...                                            | ...                                | ...                     | ...                                                | ...                                   | ...                                    | 1                                    | ...                        | ...                         |
| Massachusetts | ...                                            | ...                                | ...                     | 2                                                  | 2                                     | ...                                    | ...                                  | ...                        | ...                         |
| Michigan      | ...                                            | 1                                  | ...                     | 1                                                  | 3                                     | 1                                      | 1                                    | 2                          | 2                           |

|                |     |     |     |     |     |     |     |     |     |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Minnesota      | ... | ... | 1   | 1   | 1   | 1   | ... | ... | ... |
| Mississippi    | ... | ... | ... | ... | ... | ... | ... | ... | 1   |
| Missouri       | ... | ... | ... | ... | ... | ... | ... | ... | 2   |
| Montana        | ... | ... | ... | ... | ... | ... | ... | ... | 2   |
| Nebraska       | ... | ... | 1   | ... | ... | 1   | ... | ... | ... |
| Nevada         | ... | ... | ... | 3   | ... | ... | ... | ... | 1   |
| New Hampshire  | ... | 3   | 1   | 1   | ... | ... | ... | 2   | 2   |
| New Mexico     | ... | 2   | ... | 2   | ... | ... | ... | 2   | ... |
| New Jersey     | ... | ... | ... | 1   | ... | ... | ... | ... | ... |
| New York       | 1   | 1   | ... | 1   | 1   | ... | 1   | ... | ... |
| North Dakota   | ... | ... | ... | 1   | ... | ... | ... | ... | ... |
| Ohio           | ... | ... | 1   | 1   | ... | 1   | ... | ... | ... |
| Oklahoma       | ... | ... | ... | 2   | 2   | ... | ... | ... | ... |
| Rhode Island   | ... | ... | ... | ... | ... | ... | ... | ... | 2   |
| South Carolina | ... | 2   | 1   | ... | ... | ... | 1   | ... | 2   |
| South Dakota   | ... | 1   | ... | 1   | 1   | ... | ... | 2   | 1   |
| Tennessee      | ... | 1   | ... | ... | ... | ... | 2   | 2   | 1   |
| Utah           | ... | ... | 2   | ... | ... | 2   | ... | ... | 2   |
| Virginia       | ... | 1   | ... | 1   | ... | ... | 1   | ... | 2   |
| Washington     | ... | 3   | ... | 2   | ... | ... | ... | ... | 2   |
| West Virginia  | ... | ... | ... | 3   | ... | ... | ... | ... | 3   |
| Wisconsin      | ... | 1   | ... | ... | ... | ... | ... | 2   | 2   |
| Wyoming        | ... | ... | ... | ... | ... | ... | ... | ... | ... |

Source: National Conference of State Legislatures, *Liability Insurance* (May 1987 summary), pp. 173-80.

a. 1 denotes most insurance and liability suits; 2 applies only to particular types of cases; and 3 applies to most suits and specifically to particular parties and types of cases.

Table 8-3 (continued)

| State      | Noneconomic damages generally                                                                                                                                                                                                                 | Medical malpractice                                                                                             |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Virginia   | \$25,000 cap in damages by an uninsured motor vehicle if serious injury is inflicted<br>Recovery of noneconomic damages limited to 3 times the amount awarded for economic damages, or \$350,000, in personal injury and wrongful death cases | ...<br>Recovery of noneconomic damages limited to 3 times the amount awarded for economic damages, or \$350,000 |
| Washington | \$117,000 to \$493,000 cap according to the formula:<br>$0.43 \times \text{expected annual wage} \times \text{plaintiff's life expectancy}$                                                                                                   | ...                                                                                                             |
| Wisconsin  | \$1 million cap<br>\$250,000 cap on damages recoverable for negligent operation of municipally owned vehicle                                                                                                                                  | ...<br>...                                                                                                      |

Sources: National Conference of State Legislatures, *Liability Insurance* (1986 summary and May 1987).

eligibility for damages through tort law, those relating to the amount of damages plaintiffs receive, and those tending to reduce the heavy transactions costs of the system.

**ELIGIBILITY CRITERIA: FINE-TUNING TORT DOCTRINES.** Not everyone who files a tort action deserves compensation. Over time, judges and legislatures have established certain standards for screening worthy plaintiffs from those less deserving. But critics of recent trends in tort law argue that these standards have become too porous and too removed from the objective of encouraging safety and deterring injury.

For example, critics have charged that judges are increasingly moving away from the principal screening device, the negligence doctrine, and toward a standard of strict liability. The analysis in chapter 2 is sympathetic with this criticism. Nevertheless, the discussion in the later chapters suggests that the gains from moving toward a negligence standard are uneven.

As Patricia Danzon explains in chapter 4, while medical malpractice cases purportedly have long been governed by the negligence doctrine, concern has arisen that some courts are in effect using a strict liability standard. Danzon urges that the use of the negligence standard be made

clear and, in particular, that the relevant standard of care should be the customary or usual practice at the time of the allegedly wrongful conduct. A state-of-the-art rule would ensure that courts are not imposing liability with twenty-twenty hindsight, which may provide compensation to unfortunate plaintiffs but produces no deterrence—precisely the kind of result the tort system should avoid.<sup>8</sup>

The authors of chapters 5 through 7, however, provide somewhat less sanguine assessments of the value in practice of returning to a negligence standard. In chapter 5, for example, Peter Huber shows that the major expansion of liability in toxic tort cases has arisen primarily from expansive notions of causation rather than the adoption of strict liability standards by judges. Yet Huber is skeptical that judges or legislatures will be amenable to tightening causation tests by imposing rigorous standards of proof. Moreover, he points out that at a sufficiently aggregated level, given all of the external costs imposed by industrial activities, even the current liberal attitudes toward causation may result in too little environmental liability rather than too much.

Kip Viscusi in chapter 6 notes that in cases of injury on the job, the negligence standard has long been supplanted by strict liability in the form of workers' compensation. Here the adoption of strict liability standards appears to have had the expected effects: a diminution of employers' incentives to implement safety measures. Nevertheless, there is little realistic prospect that workers' compensation laws are going to be repealed. The more problematic issues for occupational injury relate to worker exposure to toxic substances such as asbestos. But as just noted, Peter Huber documents that the principal issue in toxic tort litigation is the standard of causation rather than the doctrinal differences between negligence and strict liability. Viscusi does provide some support for allowing defendants to be excused from liability when their conduct, products, or equipment meets applicable government regulations. But he also correctly notes that such a defense may have limited

8. An effective state-of-the-art rule or defense would also significantly mitigate the insurance problems associated with the newer statutes of limitation, which run from the time of discovery rather than from occurrence of the injury. As Danzon points out, these liberal statutes create the risk that courts will impose new standards of liability on defendants retroactively, resulting in compensation that has no deterrence value. However, if defendants are permitted a state-of-the-art defense—that is, if they can show that their conduct was reasonable judged by the standards applicable at the time it occurred—this risk of retroactive application would be substantially reduced.

application: while most regulations are written to cover a broad class of factual circumstances, many tort suits involve highly fact-specific hazards or situations that are often not precisely covered by a particular regulation.

In chapter 7 George Priest argues that neither the negligence nor the strict liability doctrines, as they have been applied by judges and juries in products liability cases, have efficiently deterred behavior that causes accidents. He suggests that judges abandon the old negligence and strict liability terminology and require juries to decide products liability cases by weighing the costs and benefits of the specific type of behavior. Producers would thus be liable for injuries only when plaintiffs could establish that there was some practicable way producers could have prevented the accident at a lower cost than the plaintiff.

**LIMITATIONS ON DAMAGES.** A major reason for the increase in costs of liability-related litigation is an apparent rapid rise in jury awards, especially for noneconomic damages. One logical reform, therefore, would be to limit noneconomic damages, as a number of states have already done (see table 8-3). But as Patricia Danzon points out in chapter 4, flat caps on noneconomic damages are discriminatory because they tend to penalize the younger, more severely injured parties who often receive little compensation from other sources. In addition, a number of state courts, including those in Florida, Kansas, and Virginia, have struck down flat caps as inconsistent with constitutional guarantees of due process of law.

Danzon offers a better alternative: *scheduled* limits on noneconomic damages in malpractice awards, based on the age of the plaintiff and the severity of the injury. To take account of inflation and growing real incomes, these limits could be indexed to increases in medical costs, wages, or the GNP. There may be good grounds for applying this suggestion to all tort cases. Scheduled limits for pain and suffering would remove much of the lottery element that now characterizes the tort system; damage awards would become more predictable, thus removing much of the uncertainty that has plagued liability insurers. But would scheduled limits on noneconomic damages stand any better chance of surviving constitutional challenge than flat caps? One reason they might is that they would take into account the relevant differences in injuries and potential suffering among plaintiffs. In this respect, they are much like the new federal guidelines for criminal sentencing that estab-

lish sentences according to a defendant's past criminal record and the severity of the crime.<sup>9</sup> Still, there is no way of stating with certainty that scheduled limits would be deemed constitutional in all states.

There are good arguments both for and against most of the other commonly discussed reform proposals. One popular suggestion is to eliminate the collateral source rule, which currently allows claimants to recover costs from public or private insurers as well as from tort defendants. But as Danzon notes, eliminating this rule would weaken deterrence because it would permit defendants to escape liability for some portion of the damage caused by their risk-creating behavior. A possible alternative would give all public and private insurers the right to recover from successful tort plaintiffs the amount of compensation the insurers had previously paid. This would preserve the deterrence objective of the system because the defendant would still be obligated to pay in full, but it would also result in further litigation, adding to the already heavy transactions costs of the system.

Another suggestion often mentioned is to allow or require tort awards to be paid periodically as annuities rather than in a lump sum. Such a requirement clearly would cushion the financial burden on unsuccessful defendants, but it would not lower the total cost of tort awards if heirs of successful plaintiffs have rights to the unpaid balance of the annuities.

Yet another proposal would limit punitive damages, perhaps by tightening the standard of evidence required to prove the bad faith that normally triggers a punitive award or by placing a flat cap on punitive damage awards. It is not clear that tightening the evidentiary standard would make a difference in decisions to award or withhold punitive damages. There is a stronger case for a cap, since these damages are analogous to civil or criminal fines, which are subject to statutory limits. In addition, there are grounds for channeling the proceeds of any punitive damages assessed against defendants to state or federal governments rather than to plaintiffs. Awarding such damages to successful plaintiffs provides excess compensation. Giving them to the government would preserve both the compensation and deterrence objectives of tort law.

Finally, many have urged the elimination of the doctrine of joint and

9. For a description of these new rules, see Jon O. Newman, "Federal Sentencing Guidelines: A Risk Worth Taking," *Brookings Review* (Summer 1987), pp. 29-33. The sentencing guidelines were struck down by a federal appeals court in 1988, not for substantive reasons but instead on the grounds that the commission that developed them violated the constitutional doctrine of separation of powers.

several liability, which has led to the "deep pockets" problem: wealthy defendants responsible for a disproportionate amount of the damages in cases involving multiple defendants, some of whom are less wealthy. Clearly, this doctrine excessively deters wealthy businesses because it promotes accident avoidance measures that must account for costs beyond those for which the firm may be responsible. However, eliminating the doctrine could leave many successful plaintiffs uncompensated. Primarily for this reason, most of the relevant proposals would remove joint and several liability only for noneconomic damages, ensuring that successful plaintiffs are at least compensated for their medical costs and lost income.

**REDUCING TRANSACTIONS COSTS.** One of the few subjects on which proponents and critics of tort reform agree is that the current system is extremely expensive to administer. There is also a growing consensus about certain measures that would reduce costs. For example, some judges have shown interest in requiring opposing litigants in complex cases to complete a minitrial before proceeding. At these minitrials, lawyers summarize their arguments to juries without presenting witnesses. Nonbinding judgments are then rendered. There is some evidence that such proceedings perform a valuable educational function for the parties and thus tend to promote less costly settlements.<sup>10</sup>

It is also widely recognized that attorneys must be discouraged from filing frivolous lawsuits. The federal discovery rules were recently amended to require stiffer sanctions for such suits.<sup>11</sup> Table 8-2 indicates that many states have adopted similar measures.

Other proposals to reduce high transactions costs are more controversial, however. A number of states have placed limits on the percentage of a tort recovery that plaintiffs' attorneys may receive as a contingency fee, and the Justice Department's Tort Policy Working Group has suggested a schedule.<sup>12</sup> Clearly, such caps would discourage lawsuits with smaller potential damages and those resting on untested, innovative legal theories, which would reduce both the total transactions

10. See *Wall Street Journal*, December 1, 1986.

11. Thus under the amended rule 11 of the Federal Rules of Civil Procedure, federal courts may award expenses, including attorneys' fees, to a litigant whose opponent acts in bad faith in initiating or conducting litigation.

12. The group recommends that contingency fees be limited according to a sliding scale: no more than 25 percent of the first \$100,000 of a verdict or settlement, 20 percent of the next \$100,000, and so on down to a 10 percent ceiling on any increments above \$300,000. See Tort Policy Working Group, *Update on the Liability Crisis*, p. 87.

costs of the tort system and the amount of compensation processed through it. But there is no reliable empirical research indicating how significant these benefits might be; we simply do not know how the volume of litigation or its deterrence effects respond to attorneys' fees.

Ultimately, the most effective way of avoiding much of the transactions cost would be to provide ways of compensating injured parties that do not require the high fact-finding expenses often characteristic of tort litigation. This suggests a trade-off: relaxed standards for eligibility but limits on compensation, especially for noneconomic damages. The Product Liability Reform Act of 1986 (S. 2760) offers the trade-off within the tort system itself by giving plaintiffs incentives to accept manufacturers' settlement offers that have limited noneconomic damage components.

The approach in S. 2760 could be generalized to all types of tort cases. By penalizing plaintiffs who fail to obtain jury verdicts as generous as defendants' settlement offers, S. 2760 would clearly raise the stakes for any plaintiff who desires to continue a case. Compensation and transactions costs would thus probably go down. But at the same time, because the expedited settlement alternative in S. 2760 also offers a way for defendants to minimize their exposure to loss, it might encourage them to settle poorly justified lawsuits. Given current information about plaintiffs' and defendants' behavior, however, it is difficult to determine whether an expedited settlement process would result in net savings.

### Alternative Compensation Mechanisms

A final set of proposals seeks a more efficient method of compensating injured parties outside the tort system. The method would perhaps be modeled on workers' compensation programs, which entitle persons injured on the job to recover for medical costs and a portion of their lost wages without proving that their employers are at fault. The workers' compensation system is largely administrative, and relatively few cases land in court.

Other countries have experimented with even more ambitious nontort compensation devices. New Zealand's, perhaps the most comprehensive, provides medical insurance for all residents. In addition, three major programs compensate residents for lost income and, to a limited

extent, for pain and suffering caused by accidents. An earner's program financed by a tax on employers compensates all workers for accidents occurring on or off the job. A motor vehicles program financed by a flat tax on all automobile owners compensates nonearners injured in auto accidents. And a supplementary compensation program financed by general revenues compensates nonearners injured in accidents not involving automobiles.<sup>13</sup>

There are no comprehensive assessments of how New Zealand's programs have worked—specifically whether they have reduced the compensation and transactions costs of the tort system the programs replaced in 1967. In any event, New Zealand's experience is likely to be of limited value to the United States, which is far larger and has a much more heterogeneous population. Moreover, New Zealand's compensation programs do not cover disease or sickness. Yet as both Peter Huber and Kip Viscusi point out in their chapters, the potential sums that may eventually be required to compensate individuals in the United States through the tort system is staggering—an estimated \$38 billion for product liability claims related to asbestos alone.

Precisely for this reason, Huber anticipates that compensation for diseases plausibly due at least in some respect to environmental causes ultimately will be processed outside the tort system, perhaps through an expansion of the Superfund program (the program does not currently cover personal injury lawsuits). But as he, Viscusi, and Danzon point out, any broad effort to provide compensation for disease is likely to be highly susceptible to cost explosion; the expansion of eligibility criteria over time could increase costs far more than any attempt to limit the amount of damages per claim.

If alternative compensation programs were to replace significant elements of the tort system, it is far from clear whether more intensive regulation could efficiently deter the risky behavior that would be created. Much of the environmental, health, and safety regulation in the United States has been carried out through detailed rules rather than through marketlike techniques such as taxes or performance standards. As numerous commentators have observed, detailed commands and controls tend to be inefficient because they do not permit private actors to search for and implement the cheapest methods of reducing the risks

13. For a description of New Zealand's system, see Sheila A. M. McLean, "Accident Compensation Liability Without Fault: The New Zealand Experience," *Journal of Social Welfare Law* (January 1985), pp. 31-45.

that regulatory programs are designed to reduce.<sup>14</sup> Even where performance standards have been established, they have often entailed substantial costs relative to their desired objectives, as Viscusi demonstrates for many Occupational Safety and Health Administration regulations.

The tort system also performs a valuable informational function that regulators often cannot duplicate. The virtue of tort law is that it provides a decentralized mechanism for determining the hazards in substances, product designs, or behavior that in many situations may be superior to relying on centralized government regulation. The judicial reporting services are littered with cases in which lone individuals, not governmental agencies, induced significant changes in private behavior through successful litigation—cases involving defects in automobile and airplane design, asbestos, and dangerous medical practices, to name just a few. In short, we simply do not know whether society would be better off if the process of identifying risks and hazards were further centralized by replacing the tort system with more intensive regulation.

## Conclusion

Obviously the problems caused by the recent explosion in insurance premiums for certain types of liability have no easy solutions. This book shows that the recent trends in these markets reflect the more intensive use of the liability system by plaintiffs, judges, and juries to compensate individuals for their misfortunes. Although many states have recently enacted reform measures that may slow these trends, it is unlikely that they will be fundamentally reversed.

Policymakers at both state and federal levels must struggle against imperfect information about the economic effects of the current liability system. We know roughly how many dollars flow through the tort system and how much it costs to process tort claims. But we know little about how much deterrence the system provides and ultimately whether the benefits of deterrence outweigh the costs. Clearly, research in this area is far from complete.

Even with this limited empirical base, however, it is possible to reach some conclusions. First, stiffer regulation of liability insurance rates or policies will not solve the liability crisis and conceivably could be coun-

14. See Charles L. Schultze, *Public Use of Private Interest* (Brookings, 1977).

terproductive. Second, judges should encourage juries to evaluate the costs and benefits of the behavior of both plaintiffs and defendants in tort cases in deciding which parties should bear the loss from the accident or event at issue. Third, there is a strong case for limiting noneconomic damages in tort cases, but only in a way that takes into account the age of the injured party and the severity of the injury. Finally, while some may be disappointed by the failure of Congress to enact comprehensive tort reform legislation, the experiments now being conducted by the states may prove more useful in the long run. Given the uncertainties about the economic effects of different legal rules, we may one day be grateful that reform proceeded in the relatively uncoordinated fashion that it has in recent years. Today we simply know too little to be confident that any major overhaul of the U.S. tort system would produce more benefit than harm.

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# Index

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- Adverse selection, 2, 46-47  
Agent Orange litigation, 7, 137, 138, 139, 142, 143, 145, 149, 151, 174  
AIDS litigation, 138  
Akerlof, George A., 47n  
*Allen v. United States*, 137n, 144n  
American Law Institute, 175  
American National Standards Institute, 161  
American Red Cross, 138  
Anderson, Dan Robert, 55n, 56i.  
Anesthesiologists, malpractice claims, 103  
Ansley, Craig F., 55n  
Arthurs, Rich, 137n  
Asbestos claims and compensation, 178-79, 181, 239  
Assaf, George B., 28n  
*Ayers v. Township of Jackson*, 134n, 145n  
  
Bailey, William E., 7n  
Balcarek, R. J., 55n  
Bamberg, Günther, 45-46n  
Banfield, Carole, 73n  
*Barker v. Lull Engineering Company, Inc.*, 204-05, 211n, 214n  
*Bashada v. Johns-Manville*, 218  
Bergman, Henry, 125  
Bird, Michael, 185n  
Black, Bert, 149n  
Black lung program, 14, 180-81  
Blumenthal, Ralph, 137n  
  
*Brady v. Melody Homes Manufacturer*, 211n  
Break-even prices, Myers-Cohn model, 86, 96-99  
Breyer, Stephen, 78n  
Broder, Ivy E., 7n  
Brown, Charles, 160n  
Brown, John Prather, 17n, 20n, 23n, 26n, 28n, 36n, 196n, 201n  
  
Calabresi, Guido, 156n, 186n, 195, 197, 200n, 209  
Calfee, John E., 21n, 22n, 26n, 27n, 29n, 120n  
*Campbell v. General Motors Corp.*, 211n  
Cancer: asbestos exposure and, 178, 181-82; environmental hazards and, 131, 133, 142-43, 149-50  
Capital structure, property-liability insurance industry, 49-53, 60, 80  
Carroll, Chris, 12n  
Carson, Rachel, 131  
Cause and effect linkages in litigation: environmental liability, 141-45, 147-48; occupational accident and illness liability, 167-68, 170; products liability, 175-76  
Chelius, James R., 166n  
*Cippolone v. Liggett Group, Inc.*, 216n  
Claims, 7; asbestos-related, 179; medical malpractice, 102-07, 109-10; occupa-

- tional accidents and illnesses, 177;  
products liability, 177  
Cohn, Richard A., 60n, 82n  
Cole, Robert J., 138n  
Comprehensive Environmental Re-  
sponse, Compensation, and Liability  
Act (CERCLA), 139-40, 151, 152,  
153, 154, 180  
Consumer Product Safety Commission,  
173-74, 184, 192-93  
Cook County, Illinois, jury awards, 8-9,  
10; for medical malpractice, 106; for  
products liability, 188-89  
Cook, Philip J., 17n, 156n  
Costs: black lung program, 180-81; liti-  
gation transactions, 13, 237-38; med-  
ical malpractice insurance, 107-10;  
medical malpractice tort system, 110-  
14; workers' compensation, 166  
Craswell, Richard, 27n, 29n, 120n  
Cummins, J. David, 60n, 65n, 67n, 70n,  
77n, 80, 86n  
Curran, Christopher, 28n
- Danforth, John, 227-28n  
Daniels, Stephen, 9  
Danzon, Patricia M., 19n, 20n, 34n,  
35n, 40n, 45n, 46n, 102n, 103n,  
104n, 105n, 107n, 113n, 115n, 116n,  
117n, 119n, 122n, 123n, 124n, 186n  
*Darling v. Charleston Community  
Memorial Hospital*, 125n  
Deaths and injuries, accidental, 190-91  
de Courcy Hinds, Michael, 138n  
Defects. *See* Design defects; Manufac-  
turing defects; Warnings defects  
Derrig, Richard A., 66n, 86n, 96n, 99n  
Design defects, 209-17; consumer ex-  
pectation standard, 210-12; risk-util-  
ity standard, 212-17  
Deterrence, medical malpractice, 116-  
17, 119, 124-25  
Deterrence theory, 3  
DiPerna, Paula, 142n  
Doherty, Neil A., 80  
Doll, Richard, 142n, 149-50  
*Drinkard v. Independent Chemical  
Corp.*, 134n  
Dutton, Benson L., Jr., 108n  
Dworkin, Terry Morehead, 145n
- Eckert v. Geurdon Industries*, 138n  
Economic losses. *See* Monetary losses  
Efron, Edith, 131  
Engel, Margaret, 138n  
Environmental liability, 31-32, 128-54;  
cause and effect linkages, 141-45,  
147-48; diffusion, 132-39; *Fletcher v.  
Rylands*, 129-30; legislative initia-  
tives, 139-41; origins, 129-30; social  
perceptions of, 131  
Environmental Protection Agency, 129,  
140, 151  
Environmental Response and Liability  
Act (Minnesota), 140  
Epstein, Richard A., 24n, 186n, 195n,  
196n  
Epstein, Samuel, 131  
Evans, William N., 48n, 157n
- Fairley, William B., 60n, 86n  
Farley, Pamela J., 12n  
Federal Tort Claims Act of 1946, 6  
*Feldman v. Lederle Laboratories*, 218n  
Financial condition, property-liability  
insurance industry, 49-53  
Finch, Johnny C., 62n  
Finsinger, Jörg, 45n, 80n  
First-party liability, 19-23; monetary  
losses, 19-21, 35-37; nonmonetary  
losses, 21-22, 37-40  
Flanigan, George B., 44n  
Forbes, Stephen, 55n  
Fried, Joseph P., 137n  
Friedman, Melvin I., 208n  
Fromm, Gary, 46n  
Frumer, Louis R., 208n
- GAAP. *See* Generally accepted account-  
ing principles  
Gahin, Fikry S., 77n  
Gandhi, Narwar M., 60n, 62n  
Generally accepted accounting principles  
(GAAP), 49n, 61, 91-96  
*Giglio v. Connecticut Power and Light  
Co.*, 211n  
Glickman, Dan, 228  
Gottheimer, George M., Jr., 52n, 81n  
Government regulation of insurance in-  
dustry, 224-26  
Gulf Resources and Chemical Corp.,  
134n

- Grabowski, Henry, 48n  
 Grace, W. R., and Co., 135, 142  
 Graham, Daniel A., 17n, 156n  
 Grasso v. B. F. Goodrich Co., 135n  
 Gray Brothers, Inc., 135n  
 Great Lakes Container Corp. v. National Union Fire Insurance Company of Pittsburgh, Pennsylvania, 146n  
 Green, Jerry, 22n  
 Greenman v. Yuba Power Products, Inc., 202n  
 Gruson, Lindsey, 134n  
 Gude, Gilbert, 132n
- Haddock, David, 28n  
 Halphen v. Johns-Manville Sales Corp., 214n  
 Hardeman County, Tennessee, hazardous substance case, 134  
 Harrington, Scott E., 45n, 46n, 48n, 60n, 65n, 86n  
 Haugen v. Minnesota Mining and Manufacturing Co., 205-06  
 Hausman, Jerry A., 226n  
 Health insurance, 11-12, 125-26  
 Heaton v. Ford Motor Co., 210n  
 Heil Company v. Grant, 220n  
 Henderschott, Patric H., 96n  
 Hill, Raymond D., 86n  
 Hirschhoff, Jon T., 197, 209  
 Hohlenkamp v. Rheem Manufacturing Co., 211n  
 Holm v. Sponco Mfg., Inc., 210n  
 Hooker Chemical Co., 133-34  
 Huber, Joel, 22n  
 Huber, Peter W., 132n, 143n, 152n, 153n
- Insolvencies, property-liability insurance industry, 52  
 Insurance policy dividends, 61-62  
 Insurance premiums, 42-43, 52-53, 67-77; general liability, 82-89; medical malpractice, 101, 109-10, 113-14; workers' compensation, 165-66  
 Insurance Services Office (ISO), 59-60  
 Insurance underwriting cycles, 77-82
- Jackson Township, New Jersey, hazardous substance case, 134, 143, 145, 146
- James, Kaye D., 77n  
 Johnson, Joseph E., 44n  
 Joskow, Paul L., 43n, 44n, 45n  
 Jury awards, 7-10, 235-37; medical malpractice cases, 106-07, 115-16; toxic tort cases, 137, 148
- Kakalik, James S., 11n, 13n, 177n, 179n  
 Kang, Han Bin, 80  
 Kasten, Robert, 171, 227, 228  
 Keeton, W. Page, 164n, 165n, 171, 173n  
 Kellogg, Idaho, hazardous substance case, 134  
 King, Resa W., 226n  
 Kleindorfer, Paul, 44n  
 Kneisner, Thomas J., 166n  
 Koch, Timothy W., 96n  
 Kunrether, Howard, 44n
- Lacey, Nelson J., 65n  
 Landes, William M., 17n, 24n, 195, 197-98, 199-200, 209, 212n  
 Leeth, John D., 166n  
 Legal fees: asbestos-related cases, 179; products liability cases, 177-78  
 Leichtamer v. American Motors Corp., 219n  
 Lilienfield, David E., 149n  
 Lillard, Lee A., 107n, 115n  
 Limits of coverage, medical malpractice insurance, 108  
 Litan, Robert E., 5n  
 Long, John D., 67n, 77n  
 Lopatto, John S., 14n  
 Losses, insurance industry, 73-77; medical malpractice, 109, 114-15  
 Love Canal hazardous waste litigation, 133-34, 139, 143, 149  
 Luque v. McLean, 202, 203, 204
- MacAvoy, Paul, 177n, 179n, 181  
 McCarran-Ferguson Act, 45, 48, 90, 224-25  
 McCarthy, Donnamarie, 152n, 153n  
 McCormack v. Hanksraft Co., 218n  
 McGee, Robert T., 77n, 79, 81n  
 McLean, Sheila A. M., 239n  
 McManus, Michael F., 46n  
 Maeroff, Gene I., 142n