

# Structuring an Effective Occupational Disease Policy: Victim Compensation and Risk Regulation

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Controlling occupational disease is now at the forefront of the debate over occupational health and safety. Although workplace injuries have received attention from labor, government, and insurance officials for many years, the general public has only recently become aware of the magnitude of the occupational disease problem. The surge in asbestos-related diseases has fostered greater public awareness and concern about the issue,<sup>1</sup> as has the recent Johns-Manville bankruptcy.<sup>2</sup>

This Article analyzes the current approaches to the occupational disease problem, and proposes a new strategy for responding to the problem. Section I of this Article describes the dimensions of the occupational disease problem. Sections II and III then discuss the inability of market forces, direct regulation, workers' compensation, products liability lawsuits, and proposed legislation to solve this problem. Section IV presents guidelines for reformulating our occupational disease policy and outlines a proposal implementing these guidelines.

Three key principles emerge from the analysis. First, compensation plans should be coordinated with direct regulation of workplace risk because both influence employers' decisions affecting workplace health conditions. Second, compensation plans should provide similar levels of income support to similarly situated victims. Third, occupational disease policy should clearly distinguish between diseases that have already been contracted and those that will be contracted in the future. Implementation of these principles would be an important step toward achieving the dual goals of fair compensation and efficient health risk levels.

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1. See generally P. BRODEUR, *EXPENDABLE AMERICANS* (1974) (an early exposé of asbestos hazards).

2. *In re Johns-Manville Corp.*, Nos. 82B 11,656-676 (Bankr. S.D.N.Y. filed Aug. 26, 1982). See Note, *The Manville Bankruptcy: Treating Mass Tort Claims in Chapter 11 Proceedings*, 96 HARV. L. REV. 1121 (1983).

## I. The Occupational Disease Problem

Occupational disease is a problem of staggering proportions, both in its effects on workers and on industry. Approximately 162,000 occupational illnesses are documented each year by the Bureau of Labor Statistics.<sup>3</sup> These figures probably understate the disease problem,<sup>4</sup> however, since other Department of Labor statistics indicate that there are now two million people severely or partially disabled by occupational disease, of whom 700,000 suffer long-term total disability.<sup>5</sup> Other estimates indicate that there are currently 85,000 victims of asbestos-related diseases alone.<sup>6</sup>

Several factors make it difficult to estimate precisely the scope of the occupational disease problem. In part, it is impossible to know the exact number of disease victims because some occupational illnesses have long latency periods (i.e., their symptoms do not appear until many years after the exposure to the hazard). In instances where disease victims can be identified, it may be difficult or impossible to ascertain the cause or causes of their diseases. Although well-defined scientific relationships exist in some instances,<sup>7</sup> most diseases may be caused by exposure to any one of several substances, or by participation in any one of several activities. Lung cancer, for example, may be attributed to inhalation of cigarette smoke, asbestos, or numerous other carcinogens.<sup>8</sup> Thus, it may be quite difficult to determine whether someone's disease is the result of occupational hazards.

Whatever the precise scope of the problem, any occupational disease compensation plan will have important financial effects on various industries. During the past decade, for example, workers have filed numerous

3. See BUREAU OF LABOR STATISTICS, OCCUPATIONAL INJURIES AND ILLNESSES IN THE UNITED STATES BY INDUSTRY, 1981, BLS BULLETIN 2164 (1983). The shortcomings of these data collection methods are discussed in U.S. DEP'T OF LABOR, AN INTERIM REPORT TO CONGRESS ON OCCUPATIONAL DISEASES 39-40 (1980) [hereinafter cited as INTERIM REPORT].

4. INTERIM REPORT, *supra* note 3, at 1, 39. The Bureau of Labor Statistics bases its statistics on employers' reports to the Occupational Safety and Health Administration (OSHA) on workplace ailments. These reports may miss chronic illnesses caused by workplace exposures if the illness appears after the worker has changed jobs. *Id.* at 39.

5. *Id.* at 2.

6. See Wall St. J., Sept. 15, 1982, at 7, col. 2.

7. Mesothelioma, for example, is closely linked to asbestos exposure. Selikoff, Churg & Hammond, *Relation Between Exposure to Asbestos and Mesothelioma*, 272 NEW ENG. J. MED. 560, 565 (1965). Mesothelioma is a form of cancer that originates in the lining of the lung or abdominal wall and has been principally linked to asbestos. *Id.*

Asbestos exposure has been linked to a number of diseases, including asbestosis, mesothelioma, and lung cancer. See generally Selikoff, Bader, Bader, Churg & Hammond, *Asbestosis and Neoplasia*, 42 AM. J. MED. 487 (1967) (discussion of asbestosis and its effect on industrial workers); Selikoff, Churg & Hammond, *Asbestos Exposure and Neoplasia*, J. A.M.A., Apr. 6, 1964, at 22 (discussing the link between asbestos exposure and the growth of tumors).

8. Nichols & Zeckhauser, *OSHA After a Decade: A Time for Reason*, in CASE STUDIES IN REGULATION 202, 216 (L. Weiss & M. Klass ed. 1981).

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suits against manufacturers of hazardous products used in the workplace in order to circumvent the restrictions of workers' compensation systems, and thus obtain additional compensation for job-related disease.<sup>9</sup> The potential liability of manufacturers through such suits is enormous.<sup>10</sup> This rapid growth in the number of products liability suits may threaten the viability of entire industries. For instance, the estimated value of valid claims against the asbestos industry exceeds the combined financial resources of all asbestos producers and their insurers.<sup>11</sup> The bankruptcies resulting from liability for asbestos-related disease, moreover, could preclude subsequent suits by workers who later discover that their illnesses are asbestos-related.<sup>12</sup>

It is thus indisputable that occupational disease is a serious national problem.<sup>13</sup> The next section explains why market forces cannot be relied upon as a solution.

9. Note, *Compensating Victims of Occupational Disease*, 93 HARV. L. REV. 916, 921-26 (1980). See *infra* text accompanying notes 73-98 for further discussion of the products liability approach to occupational disease compensation.

10. The recent asbestos litigation illustrates the magnitude of the products liability problem. Manville Corp. (formerly Johns-Manville), one of the leading asbestos producers, had 16,500 suits pending against it in 1982. Epstein, *Manville: The Bankruptcy of Products Liability Law*, REGULATION, Sept.-Oct. 1982, at 14, 14. At that time, the potential cost of Manville's liability for suits pending was estimated to be \$660 million. GOVERNMENT RESEARCH CORP., VICTIM COMPENSATION: THE POLICY DEBATE 12 (1983). More than 100,000 additional suits against Manville are anticipated in the next decade. *Id.* In all, some 30,000 claims against approximately 260 asbestos manufacturers and suppliers were filed through mid-1982. Wall St. J., Aug. 27, 1982, at 1, col. 6.

The settlements in asbestos-related death cases averaged \$72,000 over the period from 1967 to 1976. I. SELIKOFF, DISABILITY COMPENSATION FOR ASBESTOS-ASSOCIATED DISEASE IN THE UNITED STATES 11 (1982) (report prepared for U.S. Dep't of Labor). An average of \$28,500 of this amount was spent to cover legal fees. *Id.* The total price tag to the industry as of 1982 for compensation payments and legal expenses was approximately \$1 billion, with one-third paid by asbestos producers and two-thirds paid by insurance firms. J. KAKALIK, P. EBENER, W. FELSTINER & M. SHANLEY, COSTS OF ASBESTOS LITIGATION, at v (1983) [hereinafter cited as J. KAKALIK]. As significant as these amounts may seem, the major costs of asbestos-related disease will come from future cases. One study estimates that the present value of all future liability is approximately \$38.2 billion. P. MacAvoy, J. Karr & P. Wilson, The Economic Consequences of Asbestos-Related Disease 76 (Jan. 1982) (Yale School of Organization and Management Working Paper No. 27) (paper on file with the *Yale Journal on Regulation*) [hereinafter cited as P. MacAvoy].

11. Asbestos industry liability, expressed in current dollars, is estimated to be \$38.2 billion. P. MacAvoy, *supra* note 10, at 76. The net worth of the asbestos industry is approximately \$25.6 billion. *Id.* at 78. The combined net worth of the insurance companies that have been involved in asbestos claims so far is \$11.5 billion. *Id.* at 76.

12. Note, *supra* note 2, at 1122.

13. Despite its potentially enormous dimensions, the occupational disease problem looks less formidable when placed in proper perspective. For example, most reliable studies of the many suspected causes of cancer suggest that occupational exposures play a relatively small role, accounting for less than five percent of all cancer cases. See Doll & Peto, *The Causes of Cancer: Quantitative Estimates of Avoidable Risks of Cancer in the United States Today*, 66 J. NAT'L CANCER INST. 1191, 1240 (1981). About four percent of U.S. cancer deaths result from occupational exposures to carcinogens. *Id.* at 1245, 1256.

The small role played by occupational exposure in causing cancer highlights the potential inequity of compensating occupational disease victims separately from non-occupational disease victims. On one hand, the cost of fully compensating all cancer victims, regardless of cause, may be prohibitive. On the

## II. The Market Paradigm and Why It Fails

When market forces can provide efficient and equitable results, government intervention should be avoided. Theoretically, in the case of occupational disease, market transactions between employers and employees could lead to efficient levels of health hazards and equitable compensation for diseased workers. In practice, however, imperfect information and constraints on employee mobility prevent this outcome. This market failure justifies government action to regulate health risks and compensate disease victims. Such intervention must be guided, however, by sound principles and common sense.

This section first examines the manner in which an efficiently operating market would compensate occupational disease victims and regulate health risks. It then discusses the reasons for market failure and the consequent need for government intervention.

### A. *Efficient Health and Compensation Levels: The Market Paradigm*

The economic theory of efficiency provides a useful standard for evaluating occupational disease policies. Health risks will be at an "efficient" level whenever the incremental cost of an extra health precaution is exactly offset by the social value of that precaution.<sup>14</sup> At this theoretical optimum, the marginal cost of additional precautions will exceed the marginal benefits of such precautions and the marginal savings of reduced precautions will be less than the social cost of the added risk. The efficient level of health precautions will also be the point at which the sum of the social cost of occupational disease and the cost of avoiding occupational disease is minimized.<sup>15</sup> Ordinarily, the decentralized operation of the market economy—the "invisible hand"—allocates resources most efficiently. Hence, before imposing government solutions, policy makers should first determine whether market transactions between employers and employees can provide efficient health levels and fair compensation.

Under ideal conditions of full information and voluntary job choice, workers will demand and receive a wage premium for risky jobs.<sup>16</sup> For the worker at the margin, this risk premium should just offset the worker's valuation of the job risk.<sup>17</sup> If the risk premium were lower, then

other hand, occupational disease victims are no more deserving of compensation than other disease victims.

14. See W. VISCUSI, *RISK BY CHOICE* 38-42 (1983).

15. See Nichols & Zeckhauser, *supra* note 8, at 210. The general question of what is an efficient level of precaution is discussed more fully in the accident avoidance context in G. CALABRESI, *THE COSTS OF ACCIDENTS* 68-94 (1970).

16. See W. VISCUSI, *supra* note 14, at 37-58.

17. Assuming all workers are paid the same wage, inframarginal workers may receive more risk

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the marginal worker would not take the job. If it were higher, the number of applicants would increase and drive the wage premium down. Risk premiums also encourage firms to achieve a socially optimal level of workplace hazards.<sup>18</sup> Employers will lower health risks whenever the cost of extra health precautions is less than the savings in reduced risk premiums that result from the extra safety measures.

In an efficient market, moreover, a worker could invest his risk premiums in insurance if he wanted protection against the risk of economic losses due to occupational disease. Each worker could purchase coverage up to the point at which the benefit of additional insurance was exactly equal to its cost.<sup>19</sup> Alternatively, the employer could take out insurance for the worker and decrease wages by the amount of the insurance premium. If all markets were operating efficiently, the resulting combination of risk premiums and insurance coverage would provide socially optimal levels of workplace health quality and occupational disease compensation.

### B. *Why Markets Fail*

As the previous discussion indicates, the occupational disease problem would be largely eliminated if workers could make fully-informed, voluntary job choices. Unfortunately, this assumption does not represent the way the labor market actually works. Informational inadequacies and externalities<sup>20</sup> associated with occupational disease make the free market

compensation than they would need to accept the job.

18. Much of the discussion in this Article focuses on the relationship between public policy and the incentives for employers to behave in ways that reduce the workplace health risks faced by their employees. Employees also exercise some control over the risks they face. However, there are two reasons why employees are a poor target for public policy designed to reduce occupational disease. First, employees have relatively poor information about workplace risks and little control over them. Most workers facing toxic exposures do not understand the risks or the manner in which their own behavior can affect those risks. Furthermore, because of the nature of the employer-employee relationship, the worker may have little control over work practices or the types of materials or safety equipment used in his plant. Second, employees already have sufficient incentives to minimize the risks they face to the fullest extent possible. Low compensation levels ensure that workers have no incentive to expose themselves intentionally to unnecessary risks. Therefore, this article will focus on creating proper incentives for employers, and not employees.

19. See generally W. VISCUSI, *EMPLOYMENT HAZARDS: AN INVESTIGATION OF MARKET PERFORMANCE* 16-17 (1979) (discussing the optimal level of insurance coverage for workers). Insurance benefits will not always fully restore the worker's welfare. Even with perfectly competitive and accessible insurance markets, a worker will always be better off before he contracts an occupational disease than after he receives insurance payments as compensation, if he suffers a permanent health impairment which causes more than simple economic losses. The non-economic damages that accompany permanent disability are not adequately compensated by insurance benefits.

20. Externalities are costs associated with an activity that are not borne by the decision maker undertaking the activity and that thus are not fully considered. In this case, if compensation for an employee's occupational disease is paid by the government's general fund rather than by the employer, then the employer will not consider fully the costs of occupational disease in making operating decisions. See *infra* text accompanying note 33.

particularly ineffective in reducing occupational disease risks and compensating disease victims.<sup>21</sup>

The standard economic model of job choice and insurance decisions rests primarily on the assumption that workers perceive and understand the risks they face in the workplace.<sup>22</sup> The occupational disease problem, however, is replete with informational inadequacies for all parties concerned. Workers may be unaware of the risks associated with current and future exposures to chemicals and other health hazards.<sup>23</sup> The medical access rules<sup>24</sup> and recent chemical labeling standards<sup>25</sup> promulgated by the Occupational Safety and Health Administration (OSHA) may improve worker knowledge somewhat, but awareness of the contents of chemical containers is unlikely to give workers much useful information about the nature or health impact of workplace exposures.

Even with some information about the hazards of workplace materials, the worker is still in a poor position to assess the health risk he faces and to evaluate that risk in monetary terms. Workplace risk assessments are very complex; the unsophisticated worker cannot be expected to understand the ongoing debates in the scientific community over the relationship between exposure and health risk.<sup>26</sup> Risk may be affected by factors that the worker would not suspect to be relevant. For instance, different demographic groups have different susceptibilities.<sup>27</sup> Workers may not realize that health risks are compounded by their non-work behavior patterns,

21. See W. VISCUSI, *supra* note 14, at 40-41. Although informational shortcomings also may limit the effectiveness of the free market in regulating and compensating victims of occupational accidents, the greater informational inadequacy with regard to occupational disease makes market failure in this area particularly difficult to overcome. There is some evidence that market forces are at work in the health and safety area, albeit somewhat imperfectly. According to my research, workers receive as much as \$69 billion in risk premiums for hazardous jobs. *Id.* at 44. This wage compensation amounts to about \$500,000 per fatality for workers facing large risks and \$3 million or more per fatality for workers in safer jobs. *Id.* at 106.

There is also some less tangible evidence that workers perceive and understand some of the risk of occupational disease. More than half of all blue-collar workers are aware of at least some hazards of the job. W. VISCUSI, *supra* note 19, at 246. Two-fifths of the hazards cited were health rather than safety hazards. *Id.* at 264. More specifically, workers tend to recognize the risk of exposure to radiation, dust, and communicable diseases. For those health risks that workers perceive, the amount of compensation demanded is similar to that received for comparable safety risks. These perceptions of risk will no doubt be enhanced by the new OSHA labeling standards. Hazard Communication, 48 Fed. Reg. 53,280 (1983) (to be codified at 29 C.F.R. § 1910.1200). Recent joint research suggests that workers will respond to such warnings by demanding higher wage premiums. W. Viscusi & C. O'Connor, *Adaptive Responses to Job Hazard Information* (1983) (Center for the Study of Business Regulation Working Paper No. 83-9, Duke University) (forthcoming in 74 AM. ECON. REV. (1984)).

22. See W. VISCUSI, *supra* note 14, at 59-63.

23. See *id.* at 59.

24. Access to Employee Exposure and Medical Records, 29 C.F.R. § 1910.20 (1983).

25. 48 Fed. Reg. 53,280 (1983) (to be codified at 29 C.F.R. § 1910.1200).

26. See, for example, NATIONAL RESEARCH COUNCIL, ASSEMBLY OF LIFE SCIENCES, BYSSINOSIS: CLINICAL AND RESEARCH ISSUES 2-3 (1982), for a summary of the debate over the health effects of cotton dust exposure.

27. See W. VISCUSI, *supra* note 14, at 132-35.

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such as cigarette smoking.<sup>28</sup> Even when the risk relationships are well understood, workers face difficulties in converting the risk into monetary terms that could be used in bargaining in the job market. Workers cannot predict the precise effects of health risks on longevity and quality of life once a disease has manifested itself. Finally, individuals tend to misassess the risk of low probability/high cost events,<sup>29</sup> such as occupational disease.

These informational problems will lead workers to demand lower wage premiums and less insurance than if they were fully cognizant of the risks of occupational disease. Employers will consequently have less financial incentive to reduce workplace health hazards. Failures in the insurance market will exacerbate these problems.<sup>30</sup>

Collective action by unionized workers can mitigate some of these difficulties. For example, many large unions have specialized expertise on risk issues and possess the bargaining power to exact wage premiums and health precautions from employers.<sup>31</sup> Unions can have only a limited effect on the occupational health problem, however, since they represent only about twenty percent of the nation's workers.<sup>32</sup>

Market transactions between individual workers and employers also fail to account for externalities associated with occupational disease. Currently, neither workers nor employers pay the full cost of occupational illness. Instead, other segments of society, such as social security taxpayers and members of industry-wide insurance pools, bear much of the cost of treating occupational disease.<sup>33</sup> Indeed, the costs of products liability suits have very broad ramifications. At the extreme, liability awards that force companies out of business harm all uncompensated victims of occupational disease by substantially reducing their chances of receiving full

28. Data showing the link between cigarette smoking and asbestos-related cancer was presented in Selikoff, Hammond & Churg, *Asbestos Exposure, Smoking and Neoplasia*, J. A.M.A., Apr. 8, 1968, at 104, 106.

29. See Kunreuther, *Limited Knowledge and Insurance Protection*, 24 PUB. POL'Y 227 (1976). See generally Arrow, *Risk Perception in Psychology and Economics*, 20 ECON. INQUIRY 1 (1982) (arguing that many markets involving uncertain future costs or benefits evidence economically irrational individual behavior).

30. Insurance markets will fail to provide adequate compensation in four situations: if workers do not have full information about various insurance options; if workers in only the riskiest jobs take out insurance (adverse selection); if insured workers exercise less caution (moral hazard); or if access to insurance was blocked by excessive cash payment requirements or some other form of discrimination. See generally W. VISCUSI, *supra* note 14, at 78-79 (market level of insurance will not be adequate if workers misperceive risks to be insured against or if workers in low-risk jobs choose not to participate because of cost).

31. The importance of unions is reflected in the much higher risk premiums received by unionized workers. See W. VISCUSI, *supra* note 19, at 254-59. See also L. BACOW, *BARGAINING FOR JOB SAFETY AND HEALTH* 56-102 (1980), for a detailed discussion of the bargaining advantages unions possess in negotiating health and safety improvements and in enforcing health and safety rules.

32. BUREAU OF THE CENSUS, U.S. DEP'T OF COMMERCE, *STATISTICAL ABSTRACT OF THE UNITED STATES*: 1984, at 439 (1983).

33. See Nichols & Zeckhauser, *supra* note 8, at 208-09.

compensation in the future.<sup>34</sup> Products liability suits have the added effect of creating congestion in the courts.<sup>35</sup> These externalities lead workers and employers to undervalue the true social cost of occupational disease and thus to put too little emphasis on risk reduction and disease insurance.

### III. A Critique of Regulatory and Compensation Policies

The above-mentioned market failures require that the government implement programs to address the occupational disease problem. Many such programs have been implemented or proposed. OSHA regulations are designed to lower disease risk, and workers' compensation and products liability suits provide a potential source of compensation for disease victims. In addition, various legislative proposals address the problem of compensating occupational illness. Unfortunately, these haphazard approaches have failed to provide a comprehensive strategy for achieving efficient levels of health risk and fair compensation for all disease victims.

#### A. *Direct Regulation of Disease Risks*

OSHA, created in 1970, has responsibility for ensuring that, "so far as possible every working man and woman in the Nation [has] safe and healthful working conditions."<sup>36</sup> Although OSHA has issued many regulations designed to reduce workplace exposure to hazardous substances, these rules have been inefficient and largely ineffective.<sup>37</sup> In addition, OSHA regulations do not, and cannot, provide a comprehensive compensation system or prevent existing compensation programs from inefficiently influencing the overall level of workplace health risk.

OSHA has taken a number of steps to regulate exposure to hazardous substances in the workplace. For instance, OSHA has regulated asbestos, the leading workplace carcinogen, since 1972.<sup>38</sup> The agency recently issued an emergency standard that will reduce permissible asbestos levels to twenty-five percent of the previous standard.<sup>39</sup> OSHA also regulates cotton dust in textile plants,<sup>40</sup> which is a major cause of byssinosis, a potentially disabling lung disease. Although the agency regulates a variety of

34. See Note, *supra* note 2, at 1122.

35. Manville Corp. expects that at least 50,000 asbestos-related products liability suits will be filed against it. *Id.* at 1122 n.7.

36. Occupational Safety and Health Act of 1970, Pub. L. No. 91-596, § 2, 84 Stat. 1590, 1590 (1971) (codified at 29 U.S.C. § 651 (1983)).

37. See W. VISCUSI, *supra* note 14, at 32-36.

38. See 29 C.F.R. § 1910.1001 (1983).

39. 48 Fed. Reg. 51,086 (1983) (to be codified at 29 C.F.R. § 1910.1001(k)) (amending 29 C.F.R. § 1910.1001 to reduce permissible exposure levels from an eight hour time-weighted standard of 2 fibers per cubic centimeter to 0.5 fibers per cubic centimeter).

40. 29 C.F.R. § 1910.1043 (1983).



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other workplace carcinogens,<sup>41</sup> it has promulgated workplace standards for only a small fraction of the more than 2000 occupational carcinogens that have been identified.<sup>42</sup> To fill this gap, OSHA recently issued a hazard communication regulation that would require worker education programs and labeling of hazardous chemicals.<sup>43</sup> OSHA estimates that this regulation eventually will eliminate roughly one-fifth of all cases of occupational cancer.<sup>44</sup>

In recent years, however, OSHA has been sharply criticized for issuing rigid command-and-control regulations, which reduce employers' flexibility to meet health goals in the most cost-effective manner.<sup>45</sup> The agency also has been castigated for its failure to measure the costs and benefits of its rules<sup>46</sup> and for its dismal enforcement record.<sup>47</sup> Not surprisingly, most studies show that OSHA has had only marginal success in improving workplace health and safety.<sup>48</sup>

Some tactical reforms could improve OSHA's effectiveness. In many cases, OSHA's rules could be more cost-effective if the agency issued performance standards rather than mandating specific technological methods to reduce exposure. In the case of cotton dust, for example, OSHA could allow a firm to reduce the risk of byssinosis through the use of disposable cotton dust masks<sup>49</sup> or through rotation of workers who have displayed early signs of the disease.<sup>50</sup> OSHA enforcement could be improved by delegating more enforcement authority to unions and other certified labor organizations.<sup>51</sup>

Even if these reforms were adopted, OSHA regulation would address only part of the occupational disease problem. The agency has no author-

41. See 29 C.F.R. §§ 1910.1000-1050 (1983).

42. W. VISCUSI, *supra* note 14, at 14.

43. 48 Fed. Reg. 53,280 (1983) (to be codified at 29 C.F.R. § 1910.1200).

44. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, U.S. DEPT OF LABOR, DRAFT REGULATORY ANALYSIS AND ENVIRONMENTAL IMPACT STATEMENT FOR THE HAZARDS IDENTIFICATION STANDARD I-43 (1981).

45. See Nichols & Zeckhauser, *supra* note 8, at 214-16.

46. See W. VISCUSI, *supra* note 14, at 16-28; Nichols & Zeckhauser, *supra* note 8, at 214-21.

47. The agency has been criticized for focusing on trivial violations and taking an adversarial attitude towards the firms it regulates. In addition, OSHA penalties are generally too low to induce compliance. See W. VISCUSI, *supra* note 14, at 6-36.

48. See, e.g., *id.* at 32-35; Nichols & Zeckhauser, *supra* note 8, at 216-19.

49. See W. VISCUSI, *supra* note 14, at 126.

50. Rotation will be effective only if there is some threshold point below which exposures are not risky, or if frequent exposures to small doses of hazardous substances cause less overall risk than a single large exposure.

Cytogenetic testing (testing of changes in human chromosome structure) can be used as a means of detecting cancer susceptibility in individual workers. Note, *Occupationally Induced Cancer Susceptibility: Regulating the Risk*, 96 HARV. L. REV. 697, 698-700 (1983). Such tests could be used to determine more precisely when a worker should be pulled off a job that exposes him to hazardous substances.

51. See L. BACOW, *supra* note 31, at 103.

ity to compensate disease victims, and it cannot control the effects of existing compensation programs on levels of health risk. A separate compensation system is clearly needed, one which will not interfere with OSHA attempts to regulate health hazards and which will still provide a minimally acceptable level of income support to disease victims. As the following discussion shows, current compensation policies fail to achieve these goals.

### B. *Workers' Compensation Programs*

Prior to the advent of workers' compensation programs, workers who were injured on the job or who contracted a job-related disease could bring tort actions against their employers. If the worker could prove that the employer was negligent in a way that caused the injury or disease, and that the worker had not contributed to his own injury or disease, then he would have a good chance of receiving a judgment.<sup>52</sup> Because of the difficulties in proving negligence and causation,<sup>53</sup> however, all states have established workers' compensation systems to replace tort suits against employers.<sup>54</sup>

Under the workers' compensation system, the worker does not have to prove employer negligence. This makes it easier—and less costly—to obtain an award. However, unlike tort recovery, workers' compensation does not attempt to restore to the claimant what he has lost.<sup>55</sup> Instead, a workers' compensation award consists of no more than two-thirds of the worker's lost earnings and makes no allowance for non-economic losses such as pain and suffering. Thus an award is usually significantly smaller than the potential recovery from a successful tort suit.<sup>56</sup> In addition, workers' compensation statutes prevent employees from bringing tort suits against their employers for workplace injuries or diseases.<sup>57</sup>

This discussion focuses first on the barriers to winning workers' compensation claims. It then highlights the equity concerns presented by workers' compensation programs. The third part of the discussion demonstrates that these plans are inefficient because workers' compensation premiums often are not linked to the riskiness of particular workplaces.

52. See generally 1 A. LARSON, WORKMEN'S COMPENSATION LAW §§ 4.00-40 (1984).

53. See *id.* at § 4.30.

54. For a summary of the history of workers' compensation in the United States, see *id.* at §§ 5.20-30. For a comparison of workers' compensation benefits and product liability settlements, see Viscusi, *Alternative Approaches to Valuing the Health Impacts of Accidents: Liability Law and Prospective Evaluations*, LAW & CONTEMP. PROBS., Autumn 1983, at 49, 62-67.

55. See 1 A. LARSON, *supra* note 52, at § 2.40.

56. *Id.* at § 2.50.

57. See 2A A. LARSON, *supra* note 52, at §§ 65.00-39.

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### 1. *Barriers to Recovery*

Two features of workers' compensation systems impede adequate recovery. First, to qualify for workers' compensation, a claimant must show that he suffered an injury arising out of and in the course of employment.<sup>58</sup> This causation requirement is fairly straightforward in cases involving work-related injuries, but is much more problematic in occupational disease cases. Most workers' compensation statutes require that a disease be "peculiar to the worker's occupation"<sup>59</sup> and not simply one of the "ordinary diseases of life."<sup>60</sup> The problem, as discussed above, is that the precise cause of a disease may be extremely difficult to diagnose.<sup>61</sup> Even if a medical basis exists for determining the cause of a disease, records may not be available to describe the worker's history of exposure to hazardous substances. Moreover, a long gestation period increases the likelihood that only limited evidence will be available to prove that a disease is job-related.

The second impediment to adequate recovery is the requirement that the worker report the injury and file a claim within a specified period. Thus, even if a worker can satisfy the other requirements under the workers' compensation statute, he may still fail to collect if the statute of limitations has expired.<sup>62</sup> In a few states, the period during which claims must be filed starts at the time of the "accident." In cases involving latent injuries, some courts have interpreted "accident" to mean the initiating incident (e.g., exposure to chemical hazards), rather than the onset of the disability.<sup>63</sup> In such states, the statute of limitations may run before the worker realizes that he is the victim of a compensable disability.<sup>64</sup>

58. Note, *supra* note 9, at 921. See, e.g., VA. CODE § 65.1-46 (1980); OR. REV. STAT. § 656.802(a) (1981).

59. Note, *supra* note 9, at 921. See, e.g., ALA. CODE §§ 25-5-110, 25-5-111 (1975); MICH. COMP. LAWS ANN. § 418.401(b) (West Supp. 1984).

60. Note, *supra* note 9, at 921. See, e.g., GA. CODE ANN. § 34-9-280(3) (1982); VA. CODE § 65.1-46 (1980).

61. For example, a disease may have numerous potential causes, several of which may have actually contributed to the manifestation of the illness. Thus, a worker may not know what factors caused his disease or whether workplace hazards were involved. The job-relatedness requirement is sometimes coupled with an explicit requirement that a worker be exposed to the hazard for a specific length of time, such as five to ten years, before becoming eligible for compensation, even though the disease may have been caused by a briefer exposure. See Note, *supra* note 9, at 923. See, e.g., KAN. STAT. ANN. § 44-5a10 (1973) (pertaining to silicosis).

62. For a discussion of the application of workers' compensation claim periods, see 3 A. LARSON, *supra* note 52, at §§ 78.41-.42, 78.52.

63. *Id.* at § 78.42(b).

64. *Id.* at § 78.42(b)-.42(c). In some states, workers' compensation for occupational diseases is available only if disability or death occurs within a specified period after the last injurious exposure to the hazard. For example, the Georgia statute disallows claims unless the death or disability occurs within three years, for asbestosis or silicosis, or within one year, for all other occupational diseases, of the last exposure to the workplace hazard. GA. CODE ANN. § 34-9-281(b) (1982).

## 2. Equity Concerns

Statistics on actual compensation reflect the inequities that result from the causation and reporting requirements of workers' compensation plans. They show that workers' compensation systems often do not provide comparable levels of compensation to equally deserving victims. For instance, victims of occupational injuries have had more success securing workers' compensation benefits than have victims of occupational disease.<sup>65</sup> Employers are six times more likely to contest a disease claim than an accident claim.<sup>66</sup> A disabled worker with an occupational disease must wait an average of one year before receiving benefits, while workers bringing injury claims wait an average of only two months.<sup>67</sup> Statistics also show that victims of occupational illnesses receive lower benefits, on average, than victims of occupational accidents.<sup>68</sup> This discrepancy occurs in part because of the greater likelihood that disease victims will negotiate settlements and in part because it is more difficult to demonstrate that an occupational disease is job-related.<sup>69</sup>

In addition, these statistics record only the outcomes of claims actually filed. Because of the difficulty in proving job-relatedness, many workers suffering from occupational disease never file compensation claims. When job-relatedness is less difficult to prove, however, the success rate for compensation increases dramatically.<sup>70</sup> The asbestos situation provides a good example: Sixty-one percent of the workers' compensation claims filed for asbestos-related deaths are fully awarded, twenty-five percent receive modified compensation levels, three percent are denied, and one percent are dropped.<sup>71</sup>

65. In 1974, 15% of victims of workplace injuries received workers' compensation benefits, but only 5% of occupational disease victims received compensation benefits. INTERIM REPORT, *supra* note 3, at 61.

The difficulty in winning disease claims is mitigated, to a certain extent, by the fact that other forms of social insurance supplement workers' compensation programs. In 1974, only 5% of occupational disease victims received workers' compensation, whereas 53% received social security, 21% received pensions, 17% received veterans benefits, 16% received public welfare, and 1% received private insurance benefits. *Id.* at 61. Thirty-four percent of workers disabled by occupational disease received support from more than one source; about 20% got support from none of these sources. *Id.* at 58-59. Overall, public and private compensation for severely disabled victims of occupational disease replaces 40% of all lost wages. *Id.* at 56-57.

Compensation under some other insurance programs is fairly automatic. Social security disability insurance, for example, provides income support to disabled workers regardless of cause, with the level of compensation hinging on a formula linked to the worker's past earnings. 42 U.S.C. §§ 415, 423 (1983). See *infra* text accompanying notes 130-135 for further discussion of the advantages of social security as a form of compensation for occupational disease victims.

66. See Note, *supra* note 9, at 923; INTERIM REPORT, *supra* note 3, at 3.

67. INTERIM REPORT, *supra* note 3, at 3.

68. *Id.* at 57.

69. See Note, *supra* note 9, at 922; INTERIM REPORT, *supra* note 3, at 3, 75.

70. INTERIM REPORT, *supra* note 3, at 70.

71. I. SELIKOFF, *supra* note 10, at 425.

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In addition to producing discrepancies between diseased and injured workers, the job-relatedness requirement of workers' compensation programs ensures that some equally deserving diseased workers will receive dramatically different levels of compensation. That is, some victims will receive full workers' compensation awards while other victims will come away empty-handed. Workers' compensation programs also create a disparity between workers and non-workers. Because of workers' compensation, diseased workers have an advantage over people who contract similar diseases from non-occupational sources. Policy makers rarely address whether this discrepancy is justified.

### 3. *Efficiency Concerns*

Besides creating numerous inequities, workers' compensation programs also fail to promote efficient levels of health risk. The compensation plans are funded by employer premiums that are often only loosely based on workplace health and safety conditions.<sup>72</sup> The premiums therefore have relatively little effect on firms' incentives to provide a healthful work environment. Accordingly, even when workers' compensation premiums do influence health risk levels, they influence risk levels in a less efficient way than do direct taxes on hazardous operations.

To sum up, workers' compensation programs are deficient in that they substantially impede adequate recovery, fail to provide comparable compensation to equally deserving victims, and fail to influence risk levels efficiently. In response to the inadequacies of workers' compensation as a compensation mechanism, disease victims have flooded the courts with products liability suits. Unfortunately, as discussed next, this development has only made a bad situation worse.

### C. *Products Liability Suits*

As already noted, workers' compensation programs forbid private actions against employers and provide a limited level of compensation.<sup>73</sup> Over the past decade, however, disease victims have attempted to circumvent the restrictions of workers' compensation programs by bringing products liability claims against the manufacturers of hazardous materials used in the workplace.<sup>74</sup> Depending on the state where the lawsuit is filed, workers can seek relief under a negligence or strict liability theory of

72. See Nichols & Zeckhauser, *supra* note 8, at 209. The link between workplace conditions and workers' compensation costs is strongest for large employers and self-insured firms.

73. See *supra* text accompanying notes 56-57.

74. See Epstein, *supra* note 10, at 16. The shortcomings of the products liability system as a compensation scheme have been dramatically illustrated by the asbestos experience. See *id.* at 44-46.

tort.<sup>75</sup> Because of the wide acceptance and use of strict liability lawsuits,<sup>76</sup> this discussion focuses on the effectiveness of such lawsuits in compensating victims and providing incentives for workplace health improvements. This section first examines the barriers to recovery in products liability suits. It then shows that such suits create serious inequities among disease victims. Finally, it argues that tort suits provide a poor mechanism for promoting efficient levels of health risk.

### 1. *Barriers to Recovery*

To prevail under a strict liability theory, a victim must establish that the product was defective, that the defect proximately caused the injury, and that the defendant was the manufacturer of the defective product.<sup>77</sup> A plaintiff in an occupational disease case encounters uniquely difficult proof problems with each of these three elements.

Under strict liability doctrine, a defective product is one that is unreasonably dangerous.<sup>78</sup> Consumer products are typically found to be unreasonably dangerous because of a manufacturing flaw or an unsafe product design.<sup>79</sup> However, a product also may be unreasonably dangerous if the manufacturer fails to give warnings or directions to users of the product as to its safe use.<sup>80</sup> Failure to warn has been the basis for holding manufacturers liable in most cases in which a product was alleged to have caused an occupational disease.<sup>81</sup> The victim must establish that the manufacturer knew or should have known about the hazards at the time of the failure to warn<sup>82</sup>—a difficult task given that the link between many products and occupational diseases has been established only recently.<sup>83</sup> As a

75. For a description of these possible approaches and their shortcomings, see SUPERFUND SECTION 301(E) STUDY GROUP, SENATE COMM. ON ENVIRONMENT AND PUBLIC WORKS, 97TH CONG., 2D SESS., INJURIES AND DAMAGES FROM HAZARDOUS WASTES — ANALYSIS AND IMPROVEMENT OF LEGAL REMEDIES, pt. 1 at 96-132 (1982) [hereinafter cited as SUPERFUND STUDY GROUP REPORT].

76. See W. PROSSER & W. KEETON, *THE LAW OF TORTS* 694 (W. Keeton 5th ed. 1984).

77. See RESTATEMENT (SECOND) OF TORTS § 402A (1965) [hereinafter cited as RESTATEMENT].

78. See Wade, *Strict Tort Liability of Manufacturers*, 19 SW.L.J. 5, 14-15 (1965).

79. See, e.g., *Wagner v. Int'l Harvester Co.*, 611 F.2d 224 (8th Cir. 1979); *Simien v. S.S. Kresge Co.*, 566 F.2d 551 (5th Cir. 1978); *Barker v. Lull Eng'g Co.*, 20 Cal.3d 413, 573 P.2d 443, 143 Cal.Rptr. 225 (1978).

80. RESTATEMENT, *supra* note 77, § 402A, comment j.

81. See, e.g., *Borel v. Fibreboard Paper Products Corp.*, 493 F.2d 1076, 1089 (5th Cir. 1973), *cert. denied*, 419 U.S. 869 (1974).

82. W. PROSSER & W. KEETON, *supra* note 76 at 697. See, e.g., *Borel v. Fibreboard Paper Products Corp.*, 493 F.2d 1076, 1088 (5th Cir. 1973), *cert. denied*, 419 U.S. 869 (1974). *But cf.* *Beshada v. Johns-Manville Products Corp.*, 90 N.J. 191, 202-04, 447 A.2d 539, 545-46 (1982) (under strict liability theory, knowledge of a product's dangerous nature is imputed to the manufacturer and unknowability of the product's hazards is not a valid defense for failure to give adequate warnings).

83. For example, the first evidence suggesting the carcinogenicity of vinyl chloride was not reported until 1970. S. EPSTEIN, *THE POLITICS OF CANCER* 104 (1979).

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defense, the manufacturer can present evidence that the victim was aware of the risk and incurred it voluntarily.<sup>84</sup>

Under the second proof requirement, a plaintiff must show that the manufacturer's product was the proximate cause of his disease.<sup>85</sup> As discussed in connection with worker's compensation, proving what caused an occupational disease can be extremely difficult.<sup>86</sup> Uncertainties in the relationship between exposure levels and health effects, problems of multiple causes, and long latency periods between exposure and manifestation all significantly reduce the probability of establishing proximate cause.

Under the third proof requirement, the plaintiff must show that the defendant manufactured the hazardous product that led to his injury.<sup>87</sup> This burden is easily met in some situations, but very difficult to meet in others. Consider, for example, a worker who has been exposed to asbestos while working for several different employers, each of which used several different asbestos suppliers.<sup>88</sup>

Other problems can also prevent recovery. The relevant statute of limitations may expire before many disease victims know that they are ill or that their disease is related to exposures to particular products.<sup>89</sup> Even

84. RESTATEMENT, *supra* note 77, § 523; see also *id.* § 402A, comment n. Manufacturers of hazardous products can reduce their potential future liability by informing product users of the risks they face. Voluntary chemical hazard labeling by manufacturers is motivated largely by the desire to minimize potential liability.

85. RESTATEMENT, *supra* note 77, §§ 431, 433. Under strict liability theory, proximate cause is established when the product is shown to be a substantial factor in bringing about the disease.

86. See *supra* text accompanying note 61.

87. W. PROSSER & W. KEETON, *supra* note 76, at 713.

88. See SUPERFUND STUDY GROUP REPORT, *supra* note 75, at 56-62; Epstein, *supra* note 10, at 16. Even if the plaintiff can identify all the suppliers, join them as defendants, and convince the jury that they caused his disease, the court must still decide how to allocate liability among the various defendants. In addition, a producer that is held liable may be faced with its own set of liability allocation issues. Its liability may need to be allocated among several insurance companies, which in turn may have sold off much of the policy to excess carriers or reinsurance companies. See *Keene Corp. v. Insurance Co. of N. Am.*, 667 F.2d 1034, 1044-47 (D.C. Cir. 1981), *cert. denied*, 102 S.Ct. 1644 (1982). The terms of policies written decades ago may not make clear which party is responsible for occupational diseases that were unanticipated at the time.

Assignment of liability becomes particularly difficult when the worker has been exposed to hazards at a series of workplaces or when a single employer has been covered by a series of insurers. In such situations, the critical problem is determining which point in the exposure-latency-manifestation chain triggers liability. Under an exposure theory, the insurer at the time of the hazardous exposure is liable. Under a manifestation theory, the insurer at the time the worker became ill is liable. See *id.* at 1047 (holding that both exposure and manifestation trigger insurance policy coverage). Cf. *Eagle-Picher Indus., Inc. v. Liberty Mut. Ins. Co.*, 682 F.2d 12 (1st Cir. 1982) (favoring the manifestation theory), *cert. denied*, 103 S.Ct. 1279, 1280 (1983); *Insurance Co. of N. Am. v. Forty-Eight Insulations, Inc.*, 633 F.2d 1212 (6th Cir. 1980), *aff'd on rehearing*, 657 F.2d 814 (1981) (applying exposure theory under Illinois and New Jersey laws); *Porter v. American Optical Corp.*, 641 F.2d 1128 (5th Cir. 1981) (endorsing the exposure theory).

89. SUPERFUND STUDY GROUP REPORT, *supra* note 75, at 43. The time limits contained in the statutes vary, but they typically run from one to six years after the date of injury in negligence and strict liability lawsuits. Note, *supra* note 9, at 920. The effect of these statutes of limitations is especially onerous in those states where the time period begins on the date of exposure to the hazard. See

when the victim wins a jury award, his recovery may still be thwarted by a judgment-proof defendant. A firm faced with multiple, unanticipated tort claims may not have adequate resources to compensate all the victims and may have to declare bankruptcy.<sup>90</sup> Alternatively, mass tort claims against an insured manufacturer may exceed the resources of its insurance company.<sup>91</sup> Finally, workers exposed to risk in the manufacture of hazardous products cannot bring products liability suits against their employers because workers' compensation is their exclusive remedy.<sup>92</sup> Hence, products liability suits are available only to those industrial disease victims who can attribute their diseases to the products of manufacturers other than their employers. Despite these severe barriers to recovery, some categories of occupational disease victims rely heavily on the products liability system for compensation.<sup>93</sup>

## 2. *Equity Concerns*

There are inherent inequities in a policy relying on products liability law. First, suits by workers with comparable work-related diseases may have quite inconsistent outcomes because a plaintiff's success in a products liability suit often hinges on such unpredictable factors as the length of the latency period or the availability of evidence showing whose products caused the illness.

Second, the level of recovery in successful suits may vary widely among equally deserving victims. The variation in awards is explained in part by the method of calculating tort damages. A court uses a damage award to compensate the victim for the particular losses he has suffered because of the tort; consistency with awards won by similar plaintiffs is not a criterion.

Note, *The Fairness and Constitutionality of Statutes of Limitations for Toxic Tort Suits*, 96 HARV. L. REV. 1683, 1683 (1983).

Some states have tried to ease the harshness of these time limits by passing laws that toll the statute of limitations until a disease has manifested itself. SUPERFUND STUDY GROUP REPORT, *supra* note 75, at 44. Other states have gone further and passed laws which toll the running of the statute until the time when the individual has ascertained or reasonably could have ascertained the connection between exposure to the workplace hazard and the illness. *Id.* at 43-44.

90. Manville Corp., one of the world's leading producers of asbestos, filed for Chapter 11 protection in August 1982 because of products liability suits arising from asbestos production. Wall St. J., Aug. 27, 1982, at 1, col. 6. Two other asbestos producers, UNR Industries, Inc. and Amatec Corp., have filed Chapter 11 petitions largely because of asbestos suits. Note, *supra* note 2, at 1121 n.6.

91. See P. MacAvoy, *supra* note 10, at 76.

92. See 2A A. LARSON, *supra* note 52, at §§ 65.00-.39.

93. The most obvious example of this reliance is the current rash of products liability suits filed by asbestos applicators against the major manufacturers. As of August 1982, 30,000 such suits had been filed against Manville Corporation and other asbestos manufacturers and suppliers. Wall St. J., Aug. 27, 1982, at 1, col. 6. Manville expects a total of 120,000 suits by 1990. GOVERNMENT RESEARCH CORP., *supra* note 10, at 12.



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Third, because the products liability system is not coordinated with other forms of compensation, a successful plaintiff may not only receive a substantial judgment, but also may receive workers' compensation and social security payments. Such multiple awards limit the resources that those systems can distribute to victims who do not receive tort judgments.

### 3. *Efficiency Concerns*

Civil liability rules can lead to efficient levels of health risks only if workers have full information and transaction costs are insubstantial.<sup>94</sup> Under such conditions, a manufacturer would respond to the threat of products liability suits by reducing the dangers of its products in the long run and by settling claims with injured workers in the short run, as long as the extra cost of such actions did not exceed the manufacturer's expected savings in avoided liability judgments. An injured worker, on the other hand, would waive his right to sue (i.e., accept a settlement) as long as the manufacturer's offer was greater than the worker's expected tort judgment. Under ideal market conditions, such private transactions would be efficient in the sense that manufacturers would bear the full social cost of their production and workers would be adequately compensated for the injuries suffered.

Unfortunately, ideal market conditions, including perfect information and costless transactions, do not prevail in the market for workplace health. Products liability thus has not generated an efficient level of risk reduction. The efficiency benefits of the current tort liability system are constrained by high litigation costs, imperfections in the settlement process, insurance pooling, intertemporal effects, and the lack of coordination among risk reduction policies.

The high transactions costs inherent in the tort liability system are illustrated by a recent study suggesting that only 37.5% of premiums paid for products liability insurance eventually goes to compensate victims.<sup>95</sup> Insurance companies, attorneys, expert witnesses, investigators and courts retain the remaining 62.5%.<sup>96</sup>

Although the settlement process reduces litigation costs, it raises a different set of problems. The manufacturer may not enter into serious settlement negotiations until a suit has been filed or the worker has demonstrated a reasonable chance of success in litigation. Many injured

94. For a fuller discussion of the allocative effects of civil liability rules, see Coase, *The Problem of Social Cost*, 3 J. LAW & ECON. 1 (1960); Demsetz, *When Does the Rule of Liability Matter?*, 1 J. LEGAL STUD. 13 (1972).

95. Note, *supra* note 9, at 928.

96. *Id.*

workers may be frustrated by this initial hurdle. Even when settlements are reached, the level of compensation is likely to fall below full compensation for two reasons. First, the expected value of the right to sue, which forms the theoretical basis for the settlement, is less than full compensation because it incorporates the probability that the worker would not prevail in court. Second, workers often lack the information and resources necessary to make an accurate monetary valuation of their right to sue; as a consequence, they may fail to extract a fair settlement offer from a manufacturer.<sup>97</sup>

Insurance pooling creates an additional source of inefficiency. Manufacturers often purchase insurance and thus spread the risk of large liability judgments over a pool of manufacturers. Such risk spreading dilutes the incentives for particular firms to reduce the hazards of their products in response to tort liability.

Products liability also fails to create efficient incentives for workplace safety decisions because of the timing of the judgment relative to the tort. Tort liability creates the most efficient incentives when the judgment and the tortious behavior are nearly contemporaneous. Such immediate feedback allows the manufacturer to consider *all* costs in reaching product safety decisions. In contrast, many occupational diseases involve long latency periods between exposure to the workplace hazard and the manifestation of the resultant disease. In such cases, the manufacturer is held liable for diseases caused by products marketed many years ago. Such results provide only a crude incentive to consider future liability in analyzing current product lines.

Finally, some inefficiency is created by the lack of coordination between tort liability and other policies influencing occupational health risks, such as OSHA regulations and workers' compensation premiums.<sup>98</sup>

In short, products liability law strives both to compensate disease victims and deter workplace health risks. The inability of the products liability system to achieve either goal suggests that the objectives of compensation and reduced health risk must be addressed separately if both are to be achieved.

#### D. *Federally Administered Compensation Programs*

Several federally administered compensation programs have been implemented or proposed to augment or replace the hodgepodge of existing occupational disease policies. The black lung program currently in effect

97. For a general discussion of the disadvantages of settlement as a method of dispute resolution, see Fiss, *Against Settlement*, 93 YALE L. J. 1073, 1076 (1984).

98. See *infra* text accompanying note 127.

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provides income support to coal mine workers disabled by black lung disease.<sup>99</sup> An occupational disease compensation bill, recently proposed in the House of Representatives, would provide benefits for disease victims and exempt manufacturers of hazardous substances from products liability suits.<sup>100</sup> Unfortunately, these compensation systems fail to separate the objectives of fair compensation and efficient health risks and thus promise to achieve neither. Furthermore, the costs of these programs are enormous.

### 1. *Black Lung Program*

The Black Lung Benefits Act, originally enacted in 1969,<sup>101</sup> was a response to the failure of many states to provide benefits to coal miners or their survivors for disability or death resulting from black lung disease.<sup>102</sup> The program created by the Act compensates victims of pneumoconiosis,<sup>103</sup> defined as “a chronic dust disease of the lung . . . arising out of coal mine employment.”<sup>104</sup> To receive benefits, the miner must show that he is totally disabled, that the disability is caused by pneumoconiosis and that the pneumoconiosis resulted from exposures to coal dust.<sup>105</sup> The benefit provided is an annuity that is independent of the particular claimant’s wages.<sup>106</sup>

In contrast to state workers’ compensation plans, the black lung program eases the claimant’s burden of proof by incorporating rebuttable presumptions in favor of the worker. Under the original Act, black lung disease was presumed to be the cause of death if a diseased miner had worked in a coal mine for at least ten years.<sup>107</sup> Furthermore, a worker was presumed to be totally disabled by black lung disease if he had worked as a miner for ten years and presented medical evidence of lesions in the lung.<sup>108</sup> In 1972, the presumptions were expanded so that all respiratory and pulmonary impairments were considered to be pneumoconio-

99. Black Lung Benefits Act, 30 U.S.C. §§ 901-945 (1982). See INTERIM REPORT, *supra* note 3, at 85-91.

100. H.R. 3175, 98th Cong., 1st Sess. (1983), reprinted in *The Occupational Disease Compensation Act of 1983: Hearings on H.R. 3175 Before the Subcomm. on Labor Standards of the House Comm. on Education and Labor*, 98th Cong., 1st Sess. 3 (1983).

101. Federal Coal Mine Health and Safety Act of 1969, Pub. L. No. 91-173, tit. IV, 83 Stat. 742, 792 (1970) (codified as amended at 30 U.S.C. §§ 901-945 (1982)).

102. See 30 U.S.C. § 901(a) (1982).

103. *Id.* § 921(a).

104. *Id.* § 902(b).

105. See *id.* §§ 902(b), 921(a).

106. See *id.* § 922(a).

107. Pub. L. No. 91-173, § 411(c)(2), 83 Stat. 742, 793 (1970) (codified as amended at 30 U.S.C. § 921(c)(2) (1982)).

108. Pub. L. No. 91-173, §§ 411(c)(1), 411(c)(3), 83 Stat. 742, 793 (1970) (codified as amended at 30 U.S.C. §§ 921(c)(1), 921(c)(3) (1982)).

sis for workers with fifteen years of coal mining employment.<sup>109</sup> In 1981, these presumptions were cut back severely.<sup>110</sup>

The annual costs associated with the black lung program mushroomed from \$150 million in 1970 to more than \$1 billion by the late 1970's, in part because of a sizable increase in the number of claims filed.<sup>111</sup> This unexpectedly rapid growth should caution policy makers of the uncertainty in forecasting the cost of comprehensive compensation efforts. Ironically, the danger of such unanticipated growth in cost should have been relatively small in the coal mining industry because there is good information about miners and black lung risks. The black lung experience suggests that it will be very difficult to estimate accurately the cost of broader compensation schemes which must track large, mobile populations of workers exposed to minute but harmful amounts of hazardous substances in many different workplaces.

The black lung program is funded by a tax on coal production: one dollar per ton for underground mines and fifty cents per ton for surface mines.<sup>112</sup> The tax is inefficient because it is not explicitly linked either to workplace conditions or to the incidence of disease. Instead of providing direct incentives for employers to improve workplace health quality, the production tax creates incentives to reduce overall output.

The black lung program, moreover, raises equity concerns. Although its system of presumptions eliminates many of the inequities created by the need to prove causation, the mere existence of a black lung program creates an undesirable disparity between victims of black lung disease and victims of comparable illnesses.

## 2. Occupational Disease Legislation

Congress has not yet enacted any of the legislative attempts<sup>113</sup> to establish a comprehensive federal compensation plan for disabled asbestos workers, in part because of their tremendous expected costs. The most

109. Black Lung Benefits Act of 1972, Pub. L. No. 92-303, § 4(c), 86 Stat. 150, 154 (1973) (codified as amended at 30 U.S.C. § 921(c)(4) (1982)).

110. See Black Lung Benefits Amendments of 1981, Pub. L. No. 97-119, §§ 202(b)(1), 202(b)(2), 95 Stat. 1635, 1643 (1982) (amending 30 U.S.C. § 921). Currently, two presumptions remain. Pneumoconiosis is presumed to result from coal mine exposures if the miner has been employed in a coal mine for ten years. 30 U.S.C. § 921(c)(1) (1982). Medical evidence of lesions in the lung is presumed to be evidence of total disability due to pneumoconiosis. 30 U.S.C. § 921(c)(3) (1982).

111. INTERIM REPORT, *supra* note 3, at 86-88.

112. 26 U.S.C. § 4121(e) (1982). The original tax rates, which were in effect until the "temporary increase" in 1981, were 50 cents per ton of coal produced by underground mines and 25 cents per ton of coal produced by surface mines. 26 U.S.C. § 4121(a) (1982).

113. See Comment, *Relief for Asbestos Victims: A Legislative Analysis*, 20 HARV. J. ON LEGIS. 179, 186-200 (1983), for a discussion of three bills addressing the asbestos-related disease problem that were considered, but not enacted, by the 97th Congress.

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recent proposal is H.R. 3175,<sup>114</sup> introduced by Rep. George Miller. This bill seeks to use public concern about asbestos exposure to create broader support for a comprehensive national occupational disease compensation system. The contemplated scope of the bill, however, appears to be so broad that the plan may not be economically feasible. In its present form, moreover, the proposed legislation would do little to promote efficient levels of health risk.

The eligibility standards for compensation under H.R. 3175 are relatively liberal. The bill would establish a series of presumptions for asbestos-related diseases that would make the proof of causation much simpler than it is under worker's compensation or products liability.<sup>115</sup> H.R. 3175 would grant workers an *irrebuttable* presumption that their diseases—whether asbestosis or mesothelioma—were caused by exposure to asbestos.<sup>116</sup> The program would also presume that lung cancer was caused by asbestos exposure, but this presumption would become irrebuttable only if there were evidence showing that asbestos had caused changes of the lung or pleura.<sup>117</sup>

H.R. 3175 may do much more than compensate diseased asbestos workers. Most notably, the bill contains a provision authorizing expansion of its coverage, by administrative rulemaking, to other disease-causing substances and to other classes of workers.<sup>118</sup> In addition, the proposed program would provide an exclusive remedy for diseased workers with respect to all "toxic substance market participants," including both employers and hazardous product manufacturers.<sup>119</sup> Consequently, all firms participating in the program would be immune from products liability suits.

114. H.R. 3175, *supra* note 100.

115. *Id.* at § 6.

116. *Id.* at § 6(c)(1)-(2).

117. *Id.* at § 6(c)(3). Many critics have attacked similarly strong presumptions in the black lung program, claiming that exposure to coal dust was not a significant factor in the disabilities of many workers compensated under that program. See, e.g., Solomons, *A Critical Analysis of the Legislative History Surrounding the Black Lung Interim Presumption and a Survey of its Unresolved Issues*, 83 W. VA. L. REV. 869 (1981). See also *Occupational Diseases and Their Compensation, Part I: Asbestos-Related Diseases: Hearings on H.R. 2740 Before the Subcomm. on Labor Standards of the House Comm. on Education and Labor*, 96th Cong., 1st Sess. 548 (1979) (statement of Rep. John Erlenborn) ("[This is] just like . . . black lung. The man who has a broken back through a roof fall and is a quadraplegic [sic] is getting less compensation than someone who may have emphysema from smoking who, because of assumptions, or presumptions in the act, is getting black lung benefits; and social security disability; and State workers' compensation.").

118. H.R. 3175, *supra* note 100, at § 16.

119. *Id.* at §§ 3(17), 10, 11. Although H.R. 3175 does not clearly state whether the claimant could bring an action against a "toxic substance market participant" that contributed to the compensation pool, the implication of sections 10 and 11 read together is that the claimant would be precluded from bringing such an action.

Compensation levels offered by H.R. 3175 are high compared to other compensation schemes, with the exception of damages awarded in successful products liability cases. The current version of the bill would provide medical benefits as well as two-thirds wage replacement for partial disability, eighty percent of the national average manufacturing or construction wage for total disability, and five years of total disability compensation for the victim's survivors in the event of death.<sup>120</sup> H.R. 3175 would impose both administrative and compensation costs on participating firms and their insurers; the government would contribute nothing.<sup>121</sup>

The liberal presumptions could have an enormous economic effect. Under H.R. 3175, the present value of the total cost of compensating fatalities resulting from asbestos exposure is estimated to be between \$16 billion and \$30 billion.<sup>122</sup> It might be impossible, however, to determine which cases of lung cancer in asbestos workers were caused by asbestos and which were caused by other factors. As a result, all lung cancer in asbestos workers could be compensable under the program, raising the present value of the total cost of the program to between \$54 billion and \$108 billion.<sup>123</sup> In contrast, estimates of the present value of the total cost of asbestos products liability suits range between \$8 billion and \$91 billion under comparable assumptions.<sup>124</sup> Thus, if its presumptions were applied liberally, H.R. 3175 might create greater liabilities for industry than the current products liability law.<sup>125</sup> If manufacturer liability levels actually increased under H.R. 3175, many firms might be forced out of business. In short, the disease compensation promised by the present language of H.R. 3175 may not be economically viable.

The effect of the proposal on health risks remains uncertain because the details of the funding mechanism are not specified. The bill would give

120. *Id.* at § 5. These benefit provisions are more generous than those of workers' compensation systems. The usual workers' compensation limit is two-thirds of workers' wages up to a specified ceiling. EMPLOYMENT STANDARDS ADMINISTRATION, U.S. DEP'T OF LABOR, STATE WORKERS' COMPENSATION LAWS tables 6-7 (1984). Combined workers' compensation and social security disability benefits cannot exceed 80% of the worker's "average earnings." 42 U.S.C. § 424a (1982).

One report estimates that the present value of benefits paid to a typical disabled worker and surviving spouse under the H.R. 3175 formulae is \$220,000 to \$250,000. F. Siskind, *The Cost of Compensating Asbestos Victims under the Occupational Disease Compensation Act of 1983*, at 32 (Mar. 1984) (paper on file with the *Yale Journal on Regulation*).

121. H.R. 3175, *supra* note 100, at § 11.

122. F. Siskind, *supra* note 120, at 32. This is an estimate of the cost of compensating "excess" fatalities. Excess fatalities is a statistic used to denote the difference between the fatality rate observed in asbestos workers and the fatality rate expected in a similar group not exposed to asbestos.

123. *Id.*

124. *Id.* at 5.

125. Firms have used bankruptcy to avoid tort liabilities. H.R. 3175 contains provisions, however, that attempt to prevent participating companies from avoiding liability through corporate reorganization. H.R. 3175, *supra* note 100, at § 11(f)(3). In particular, the bill holds a firm liable for the "total amount" due under the program, without regard to whether the company's liability has been discharged or reduced by a bankruptcy court. *Id.* at § 11(f)(3)(B)(i).

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the Secretary of Labor a high degree of discretion in allocating financial responsibility among firms. But the Secretary, out of economic and administrative necessity, probably would follow the black lung and "Superfund"<sup>126</sup> models and resort to an output tax. A tax on production would reduce the output of the affected firms and thereby reduce total risk somewhat. However, the tax would have little direct influence on overall health risks because it does not vary with workplace health conditions.

The overall success of an approach such as H.R. 3175 will depend on its precise funding mechanism and the overall level of compensation it requires. In its current form, H.R. 3175 puts little emphasis on achieving an acceptable level of health risk and threatens to impose unmanageable costs on its industrial participants—a result that will not serve the interests of future disease victims.

### IV. A Proposed Strategy

As the previous discussion shows, existing and proposed occupational disease policies suffer from many defects. This section presents the outlines of a proposal that attempts to avoid these inadequacies. It begins with a discussion of three general guidelines and then describes how these guidelines might be implemented.

#### A. *Guidelines for Government Intervention*

A more effective occupational disease policy would observe the following principles. First, it would recognize the effect of compensation systems on health risk levels and coordinate these systems with regulatory programs. Second, it would provide at least an acceptable minimum level of compensation to all disease victims. Finally, it would distinguish between past and current exposures.

##### 1. *The Incentive Effect of Compensation Plans*

The various elements of an occupational disease policy must be coordinated to provide efficient levels of health risk. Such coordination is possible only if policy makers recognize that compensation schemes not only provide income support to disease victims, but also can affect workplace health risks through their funding mechanisms. For example, suppose that

126. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 26 U.S.C. §§ 4611-4682, 42 U.S.C. §§ 9601-9657 (1982), created a government trust fund, known as "Superfund," to be used for cleanup of hazardous waste and compensation of related damages. The fund is financed in part by per unit volume taxes on chemical feedstock manufacturing, petroleum refining, and commercial hazardous waste disposal. 26 U.S.C. §§ 4611-4682 (1982).

the combination of market transactions and OSHA health regulations provides the optimal level of risk reduction; in other words, the cost of additional efforts to reduce health risk just equals the marginal social benefits of those efforts. In that case, an additional compensation program funded by a tax based on the riskiness of present operations will cause employers to provide too much health protection. Taxes might be necessary, but to the extent possible should be collected without upsetting the conditions that lead to optimality.<sup>127</sup> Conversely, if market transactions and OSHA regulations fail to provide enough health protection to workers, a compensation scheme should not only pay illness claims but also encourage employers to take additional health precautions. In short, occupational disease policy should account for the incentive effects of compensation plans on risk levels and coordinate these effects with regulatory programs.

## 2. *Fair Compensation*

Occupational disease policy also should monitor overall levels of compensation to ensure that all victims are receiving at least acceptable minimum payments and that compensation levels are similar among comparable groups of victims. Under current policies, similarly situated disease victims often receive widely different levels of compensation. As discussed previously, one person may win a multi-million dollar judgment in a products liability suit, while an equally deserving victim may have his claim dismissed by a court or rejected by a workers' compensation board because of difficulties in proving causation.<sup>128</sup> Similarly dramatic inequities arise between victims of occupational injuries and victims of occupational illnesses.<sup>129</sup> Policy makers also should consider whether victims of occupational diseases deserve to receive more generous compensation than victims of non-occupational diseases.

## 3. *Past Versus Future Diseases*

Finally, decision makers must distinguish between diseases that already have been contracted and those that will be contracted in the future. A penalty tax linked to present exposure levels, for example, will encourage employers to reduce workplace health risks until the marginal cost of additional precautions is equal to the tax. In contrast, a penalty tax on past exposures will not directly induce reductions in current risk levels, though it might indirectly reduce overall health risk by lowering a firm's profits

127. I use the phrase "to the extent possible" because even a lump sum tax may lower overall output and thus reduce the total level of health hazards.

128. See *supra* text accompanying notes 58-61.

129. See *supra* text accompanying notes 65-69.



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and output. However, this output reduction effect is a far less effective means of regulating health risk than establishing an incentive scheme designed specifically to optimize risk reduction investments.

### B. *A Proposal for Implementing the Guidelines*

To implement these guidelines, I propose that victims be compensated from a social insurance fund financed by a general payroll tax. Current workplace conditions should be regulated with a combination of minimum standards and penalty taxes based on the current hazards of the taxpayer's workplace. This approach provides a strategy for achieving both fair compensation and efficient levels of health risk. Because of the analytical distinction between diseases resulting from past exposure to workplace hazards and those caused by current hazards, this section addresses them separately.

#### 1. *Diseases Resulting from Past Exposures*

Victims whose disease results from past exposure should be compensated from a social insurance fund, such as social security, financed by a general payroll or income tax. There are several reasons why this is superior to alternative policies. First, in situations where the disease has already been caused, consideration of risk reduction incentives is irrelevant, and risk-based taxes are therefore inappropriate. The disease-inducing activities have already occurred and the only remaining issue is how much to compensate victims.

Second, with generally available benefits, inequitable distinctions could be avoided. Victims of occupational disease would be treated the same as victims of diseases of unknown origin or victims of diseases caused by contact with hazardous waste sites. Society has the same impulse to provide a minimum level of income support and medical care to a disease victim whether the cause of that person's affliction is occupational, environmental, or unidentifiable.<sup>130</sup> From an equity standpoint, then, the appropriate level of compensation should not hinge on how the victim contracted the disease or whether the illness is job-related. In general, the compensation decision should depend instead on the effects of the disease on the victim's well-being and his consequent need for income support.

130. One possible justification for distinguishing occupational disease victims from others might stem from an inquiry into whether the victim incurred the disease risk voluntarily. For example, if a heavy cigarette smoker contracts lung cancer, he may be less deserving of assistance than a non-smoking asbestos worker. People who voluntarily incur large risks thereby reveal that they place a relatively low value on their health. In practice, though, such refined distinctions cannot be drawn easily. Volition is difficult to define or detect and thus is not a good criterion for determining disease compensation levels.

Thus, I recommend that similarly situated disease victims be eligible for similar levels of public compensation, regardless of the cause of their illnesses. I also recommend that the social security disability compensation system<sup>131</sup> be used as the principal mechanism for income support. Under my proposal, moreover, workers receiving social security compensation would still be able to bring products liability suits against manufacturers, but the amount of any resulting judgments would be reduced by the amount of disability compensation already received.<sup>132</sup>

Using the social security program has several advantages. It is already in existence and, unlike workers' compensation, does not require a showing of causality. In addition, social security disability insurance provides income support for workers with long-term disabilities whether the cause is occupational or non-occupational.<sup>133</sup> The program thus treats victims of similar diseases similarly.<sup>134</sup>

The social security disability program also has the crucial advantage of being funded through a broad-based payroll tax rather than through a tax targeted at particular firms. In one sense, this type of funding is unfair, because firms not responsible for causing a worker's disease will be treated the same as those that were responsible. On the other hand, this perceived inequity only arises in cases where responsible firms can be identified. It is often impossible to make a precise causal connection between one's job and the resulting occupational disease.<sup>135</sup>

In sum, compensating victims of past diseases through the social security system will provide fair levels of income support without penalizing firms for conditions that can no longer be changed.

## 2. *Diseases Caused by Current Hazards*

The government has broader goals in formulating a policy response to the problem of diseases caused by current hazards. This policy should be designed to influence not only the level of compensation, but also the level of disease risk. These two factors still must be addressed separately, how-

131. 42 U.S.C.A. §§ 401-433 (1983). See generally CONGRESSIONAL BUDGET OFFICE, DISABILITY COMPENSATION: CURRENT ISSUES AND OPTIONS FOR CHANGE 8-10 (1982) (brief description of the social security disability compensation system).

132. A more ambitious alternative would be to preclude all products liability suits by recipients of administrative compensation. See Epstein, *supra* note 10, at 46. Such an exclusive remedy rule would parallel workers' compensation, which prohibits suits against one's employer, and H.R. 3175, which would prohibit suits against participating employers and manufacturers.

133. See 42 U.S.C.A. §§ 423(a), 423(d) (1983).

134. Of course, it may be desirable to augment these benefits above their present levels. This would be a political judgment hinging primarily on the extent of society's general altruism toward disease victims rather than on any efficiency or causality-based arguments.

135. For example, asbestos workers who smoke cigarettes may find it impossible to identify which agent was the "cause" of lung cancer.

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ever, to provide fair compensation without creating inefficient health risk levels.

My proposal for preventing and compensating future diseases includes: 1) a compensation system such as the social security disability program, funded primarily by its broad-based payroll tax; 2) a set of informational requirements to inform workers more fully about workplace hazards; and 3) a direct regulation scheme that integrates minimum performance standards and graduated hazard penalties. OSHA would oversee and administer the various elements of the program. As with persons whose diseases have already been caused, those receiving compensation from this plan would still be able to bring products liability suits against firms, but the level of such awards would be reduced by any disability compensation.

The first element of the proposal is grounded in both equity and efficiency. From an equity standpoint, victims of disease resulting from future hazards deserve compensation from social security disability funds as much as current disease victims do. Moreover, the social security option would provide fair compensation without distorting incentives to reduce workplace health risks.

The second element of the proposal would make market forces work more effectively by providing workers and employers with better information about hazardous substances. The information would be similar to that mandated by the recently promulgated OSHA hazard communication regulation.<sup>136</sup> If workers are better informed about the health risks they face, they can make more rational choices about risk assumption, protective equipment, compensation, and insurance.<sup>137</sup> Informed decisions will in turn influence industry costs and procedures and thus will push risk levels and production closer to efficient levels.

However, improving the amount of information available to workers will not, by itself, solve the problem. Direct regulation still will be necessary to control occupational risks. Specification standards<sup>138</sup>—the predominant method of OSHA regulation in the past—should be replaced by minimum performance standards<sup>139</sup> and graduated hazard penalties.<sup>140</sup>

136. 48 Fed. Reg. 53,280 (1983) (to be codified at 29 C.F.R. § 1910.1200).

137. There is some evidence that increasing the amount of information about workplace hazards will not necessarily lead to alterations in worker attitudes and behavior. See Adler & Pittle, *Cajolery or Command: Are Education Campaigns an Adequate Substitute for Regulation?*, 1 YALE J. ON REG. 159, 165-70 (1984).

138. Specification standards are regulations requiring specific safety equipment (e.g., machine guards, ventilators) to be installed. See Nichols & Zeckhauser, *supra* note 8, at 214.

139. Performance standards are regulations that require provision of certain healthful conditions without requiring use of a specific technology. For example, the current regulation limiting airborne asbestos concentrations to 0.5 asbestos fibers per cubic centimeter is a performance standard, allowing the employer to achieve the standard "by any feasible combination of engineering controls, work practices, and personal protective equipment and devices." 48 Fed. Reg. 51086, 51139 (to be codified at 29

Such performance standards and hazard penalties would be based on risk-related characteristics of the workplace (e.g., concentrations of cotton dust fibers in the air) or of the workers (e.g., lead levels in workers' blood) which could be easily monitored. Performance standards are superior to specification standards because they increase the employer's flexibility without sacrificing workplace safety. Expansion of the employer's range of options for protecting the health of his workers will improve the economic efficiency of the resulting investment in workplace hazard reduction. Hazard penalties allow the employer to avoid making unreasonably inefficient investments in hazard reduction by instead paying penalties reflecting the social cost of the foregone risk reduction. Hazard penalties should be considerably larger than those currently assessed by OSHA for noncompliance with regulatory standards in order to approximate the social cost of occupational disease risk and thus create efficient incentives for health and safety precautions.

The third element of my proposed policy is a risk regulation system that combines performance standards and hazard penalties. Under this proposal, all firms would be required to meet certain minimum health and exposure standards. Beyond these minimum levels, however, further risk reductions would be rewarded by diminishing hazard penalties. A firm could comply with the strictest standards and pay no penalty, comply only with the minimum standards and pay the full penalty, or choose an intermediate level and pay the corresponding portion of the graduated penalty. In essence, each employer would be free to determine the most efficient means of compliance for his operation and, as long as the minimum standards were met, could choose not to improve workplace conditions when he believes it would be unduly expensive to do so.

The proceeds from the penalty system could be used to provide additional resources for the compensation system. In the interest of efficiency, however, the compensation element of this proposal should rely primarily on the social security disability program, with funds generated through a general payroll tax. In any event, the choice of the level of compensation must be made independently of the level of resources generated through hazard penalties; this will ensure equitable treatment of all disease victims and avoid over-penalizing risky workplaces. Tying the risk reduction and compensation objectives together too closely will only eliminate the flexibility and freedom needed to accomplish both goals.

C.F.R. § 1910.1001(k)).

140. Hazard penalties are not a new idea. See generally Ruff, *The Economic Common Sense of Pollution*, 19 PUB. INTEREST 69 (1970) (discussing the economics of an environmental tax); Nichols & Zeckhauser, *supra* note 8, at 228-30 (discussing the efficiency of a workplace injury tax).

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### Conclusion

Occupational disease presents a compelling public policy problem. It affects the health and well-being of a substantial portion of this nation's work force, as well as the vitality of important elements of the manufacturing sector. Both equity and efficiency must be considered in order to address the problem effectively. Similarly situated victims of occupational disease must be treated similarly, and acceptable minimum levels of compensation must be established. At the same time, disease policies must be designed to create efficient levels of health risks.

A coordinated approach should be adopted to accomplish these goals. My proposal responds to the compensation and health risk issues with separate, but coordinated, programs. Compensation should come largely from social security disability funds, and performance standards and hazard penalties should replace rigid command-and-control regulations. Adoption of this proposal would cure the principal defect in the current policies by ensuring that the funding mechanism for the compensation program would not inefficiently distort the incentives produced by the risk regulation program.

The strategy set forth in this article is not a cure-all; the problem is too complex to be solved so simply. Nevertheless, the analysis provides a framework for attacking the occupational disease problem in an efficient and equitable manner.

