THE STRUCTURE AND ENFORCEMENT OF JOB SAFETY REGULATION

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I

INTRODUCTION

For more than a decade, the Occupational Safety and Health Administration (OSHA) has been regulating the technology and work practices of employers. This governmental function is relatively new and is quite different from the usual governmental involvement in labor market policies. Some government efforts, such as job training and unemployment compensation, involve no direct impact on workplace operations, except that which may be induced indirectly through the incentives these policies generate. Even the minimum wage law does not directly lead to any governmental intrusion into the nature of the work relationship.

In contrast, OSHA regulations specify what safety guards must be on machines, the characteristics of a safe ladder, the permissible levels of exposure to various hazardous substances, and situations where protective equipment must be worn. Such policies are certain to generate resistance from management and, to the extent that these regulations are not well formulated, they will provoke widespread controversy. Indeed, OSHA policies have done just this. Although some controversy was inevitable, OSHA has been the object of particularly harsh criticism because of the ineptness of much of its original standards design and the ineffectiveness of its enforcement policies.

The enforcement policies, however, have undergone substantial alteration since the agency's creation. The original standards have been modified and new standards have been added. In particular, each of the last two presidential administrations has attempted to overhaul the enforcement policy through fundamental changes in the enforcement strategy.

This article will explore how these policies have evolved as well as whether these changes are desirable. Section II focuses on issues of standards design, and sections III and IV focus on the efficacy of the enforcement process. The fundamental issue discussed in those sections is whether or not OSHA is now more effective in promoting safety than it was at the time of its creation. Section V provides an overall assessment on OSHA's performance and suggestions for further reforms in the agency's operations.

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II

THE STRUCTURE OF OCCUPATIONAL SAFETY STANDARDS

A. The Evolution of OSHA Policy

The general approach OSHA has taken to regulating job safety is dictated at least in part by the Occupational Safety and Health Act of 1970.[1] The Act authorizes OSHA to set standards that will "assure so far as possible every working man and woman in the Nation safe and healthful working conditions."[2] OSHA's enabling legislation, however, did not specify what these standards should be, what general character they should take, or how stringent they should be. As is indicated below, one might characterize OSHA's general approach as adopting technology-based standards whose stringency is limited only by their affordability. The strategy advocated in this article and by many critics of OSHA is that the agency should pursue a more performance-oriented approach that recognizes the necessity of taking into account both the costs and risk reduction benefits in a comprehensive manner.[3]

Much of the policy-oriented debate over the safety standards has concerned their stringency. Those critics advocating a more balanced approach note that the Occupational Safety and Health Act does not require a risk-free workplace; it requires only that safety be promoted "as far as possible."[4] This and other qualifiers in the Act suggest that OSHA might have some leeway in taking costs into consideration. This view was bolstered somewhat by the U.S. Supreme Court's decision in *Industrial Union Department, AFL-CIO v. American Petroleum Institute,*[5] in which it overturned the safety standard set by OSHA because OSHA had not shown that the reduction in risks would be "significant." This significant risk criterion imposed a threshold benefit level, but did not impose a requirement that OSHA balance benefits and costs.

Indeed, such benefit-cost tests were explicitly ruled out in the 1981 U.S. Supreme Court decision regarding the OSHA cotton dust standard,[6] where the court upheld the standard and interpreted the feasibility provisions of the Occupational Safety and Health Act as requiring only what is "capable of being done."[7] It is the technical possibility of compliance rather than benefit-cost tradeoffs that should guide OSHA decisions. In fact, in this instance OSHA had based its standards on cost-effectiveness concerns, not simply affordability. More specifically, the standard is varied across different stages of processing because of differences in the severity of the risk in these areas

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1. 29 U.S.C. §§ 651-678 (1982).
2. 29 U.S.C. § 651(b) (1982).
3. *See, e.g.,* W. VISCUSI, RISK BY CHOICE 128-32 (1983); Nichols & Zeckhauser, *OSHA After a Decade: A Time for Reason,* in CASE STUDIES IN REGULATION: REVOLUTION AND REFORM 202 (1981).
4. 29 U.S.C. § 651(b) (1982).
5. 448 U.S. 607 (1980).
6. American Textile Mfrs. Inst. v. Donovan, 452 U.S. 490 (1981).
7. *Id.* at 508-09.

and differences in the cost of reducing the risk.[8] Further reductions in the risk were clearly "capable of being done," and in fact, many employers have already achieved cotton dust levels well below those specified in the standard.[9]

Clearly, technological feasibility cannot be divorced from cost considerations since almost any risk can be reduced for sufficiently large costs. Drivers, for example, would face a lower risk of injury in an auto accident if everyone drove full-sized cars, at speeds under thirty-five miles per hour. Such measures have not been undertaken because the safety benefits do not justify the loss in travel time and fuel efficiency. Similarly, OSHA varied the cotton dust standard because the severity of cotton dust exposures differs according to the stage of processing (since different types of fibers and dust are airborne at different stages) and because compliance costs differ.[10]

Indeed, under the Reagan Administration, OSHA now routinely calculates the costs and benefits of its proposed regulations.[11] The agency, however, does not explicitly compare the costs and benefits when discussing the reasons for its policy recommendations. Inevitably, such a comparison is made by OSHA, the Office of Management and Budget, or other players in the regulatory process. Ideally, either the Supreme Court should reverse its narrow and unrealistic interpretation of OSHA's mandate or Congress should amend the Act to explicitly require balancing of costs and benefits.

Such a change would permit these important policy trade-offs to be publicly considered within the context of the rulemaking process. In addition, a stronger mandate regarding the importance of balanced policies no doubt would lead to programs that reflect more accurately their relative costs and benefits. Under the present system, which places an undue emphasis on the level of risk reduction, regulations may impose costs that appear to be well out of line with any reasonable values. An example is the OSHA arsenic standard which has an estimated cost of almost $70 million per expected life saved.[12]

Because OSHA has adopted a narrow technology-based approach to safety regulation, its regulatory structure also has been overly restrictive. Ideally, OSHA should permit employers to achieve any given level of safety in the least expensive manner consistent with well-defined and enforceable regulations. Instead, OSHA has typically adopted uniform standards that attempt to prescribe the design of the workplace.

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8. *See* W. VISCUSI, *supra* note 3, at 124-26.

9. *See* CENTAUR ASSOC., TECHNICAL AND ECONOMIC ANALYSIS OF REGULATING OCCUPATIONAL EXPOSURE TO COTTON DUST at 1-4 (1983) (report prepared for the OSHA).

10. *See id.* at 3-1 to 4-42.

11. See, for example, the analysis of the proposed rulemaking for grain handling facilities, 49 Fed. Reg. 996, 1004-07 (1984).

12. W. VISCUSI, *supra* note 3, at 124.

This orientation derives in part from the pattern set in OSHA's initial standard-setting activity.[13] Shortly after beginning operations, OSHA issued over 4,000 general industry standards for health and safety, most of which were safety-related. These standards, which continue to comprise most of OSHA's safety policies, were derived from the national consensus standards of the American National Standards Institute, the National Fire Protection Association, and some existing federal standards for maritime safety.[14] In issuing its standards, OSHA converted these discretionary guidelines into mandatory prescriptions for workplace design.

The upshot of this effort was to establish OSHA as an object of ridicule for its seemingly trivial standards, such as requiring portable toilets for cowboys.[15] Perhaps more significant than these well-publicized OSHA horror stories was the overly specific character of the regulations in general. The OSHA handrail regulation, for example, specifies a required height (thirty to thirty-four inches), spacing of supporting brackets (not to exceed eight feet), thickness (at least two inches for hardwood and one and a half inches for metal pipe), and clearance with respect to the wall or any other object (minimum of three inches).[16] Similarly, in its requirements for band guards for abrasive wheels OSHA specifies the guards' required thickness, the minimum diameter of rivets, and the maximum distance between the centers of rivets.[17]

In each case, the specification standard approach may have imposed greater costs than equally effective alternatives. To provide guidelines for achieving flexibility in standards, President Ford's Task Force on OSHA designed a model standard for machinery and machine guarding that indicated, for example, several alternative ways to guard a punchpress.[18] The model standard has not yet been adopted, but it is an example of how OSHA could achieve greater flexibility in its regulatory approach. The present OSHA specification standards are so narrowly defined that they pertain to only fifteen percent of all machines.[19]

B. Efforts to Reform OSHA Standards

The primary emphasis during the Carter Administration was not on a general restructuring of the standards approach, but on eliminating those portions of the standards that were most extraneous and ill-conceived. The

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13. For a more detailed discussion of the development of OSHA, see generally L. BACOW, BARGAINING FOR JOB SAFETY AND HEALTH (1980); J. MENDELOFF, REGULATING SAFETY: AN ECONOMIC AND POLITICAL ANALYSIS OF OCCUPATIONAL SAFETY AND HEALTH POLICY (1979); R. SMITH, THE OCCUPATIONAL SAFETY AND HEALTH ACT: ITS GOALS AND ITS ACHIEVEMENTS (1976); W. VISCUSI, *supra* note 3; Nichols & Zeckhauser, *supra* note 3.

14. W. VISCUSI, *supra* note 3, at 10.

15. *See id.* at 11.

16. 29 C.F.R. § 1910.23(e)(5)-(6) (1984).

17. 29 C.F.R. § 1910.215, at 479 (1984).

18. OSHA SAFETY REGULATION: REPORT OF THE PRESIDENTIAL TASK FORCE 21-26 (P. MacAvoy ed. 1977).

19. *Id.* at *preface.*

Assistant Secretary of Labor for Occupational Safety and Health, Eula Bingham, eliminated or modified 928 OSHA regulations in October 1978.[20] In many cases these changes were only editorial and had no major substantive impact. Nevertheless, the net effect of the elimination of the "nitpicking" features from OSHA regulations was to reduce some of the harsher criticisms of the agency's regulatory approach.

Perhaps because of the uncertainty created by the judicial battles over the benzene and cotton dust standards, there was little other regulatory activity in the safety area during the Carter Administration. A principal regulatory initiative was the OSHA chemical labeling regulation, which was proposed at the end of the Carter Administration and was subsequently revised by the Reagan Administration.[21] This regulation represents an effort to utilize market forces to promote safety by encouraging employers to provide workers with risk information and to train them in the handling of chemicals. Much of the impetus for this regulation came from the inability of direct regulatory controls to address the entire range of chemical hazards. Although the regulation's principal impact is on long-term health effects, acute health effects (for example, skin rashes from chemical exposures) and accidents from fires and explosions are also affected.

In addition to providing an innovative approach to regulation, the chemical labeling standard is also a strongly performance-oriented regulation. Employers are permitted to design their own labeling system because different formats may be appropriate in different contexts. This flexibility, for example, permits the paint and coating industry to retain the labeling system that has been adopted on an industry-wide basis. The standard's opportunity for discretion contrasts with the approach OSHA took in its standard for radiation hazard warnings, which specify the sign's shape, the background color, the words and location of the warning, and the size and color of all letters.[22]

The chief new safety standard proposed by the Reagan Administration is a set of extensive rules intended to decrease the risks associated with grain handling.[23] These hazards are often well publicized since explosions in grain handling facilities may lead to the deaths of dozens of workers.[24] Perhaps in part because of the publicity and the safety incentives created by the market and workers' compensation, there were no deaths from such explosions in 1983.[25]

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20. These changes are discussed in the unpublished briefing notes prepared for OSHA officials. *See* W. VISCUSI, *supra* note 3, at 11 & n.10.

21. 29 C.F.R. § 1910.1200 (1985).

22. 29 C.F.R. § 1910.96(f) (1984).

23. Grain Handling Facilities, 49 Fed. Reg. 996 (1984) (to be codified at 29 C.F.R., § 1910, 1917) (proposed Jan. 6, 1984).

24. This notoriety is reflected in the academic literature as well. See the opening paragraph of L. BACOW, *supra* note 13, at 3.

25. Office of Management and Budget, OSHA's Proposed Standards for Grain Handling Facilities 17 & n.12 (1984) (unpublished memorandum). Because of the random nature of major explosions, however, one should not conclude that the risk has been eliminated.

The 1984 OSHA proposal is intended to reduce the risk further by decreasing the dust levels in grain elevators, which in turn will reduce the risk of explosions. What is noteworthy about this standard, which was the outcome of substantial collaboration between OSHA and the Office of Management and Budget, is that employers are given several alternatives to decrease the dust level:

> (i) to clean up the dust whenever it exceeds one-eighth of an inch;
> (ii) to clean up the dust at least once per shift; or
> (iii) to use pneumatic dust control equipment.[26]

This flexibility provides an opportunity for employers to select the most cost-effective option and will lead to lower compliance costs than would a uniform specification standard.

Although the standard is innovative in its structure, the scope of the standard is not ideal. By including all grain elevators, this proposed regulation would also apply to the segment of the industry with low throughput ratios.[27] Such facilities are primarily used for grain storage operations rather than for grain handling, and the associated risks are consequently quite different. Notwithstanding this limitation, OSHA's effort to utilize the advantage of a performance-oriented approach represents a significant, constructive contribution to OSHA policy development.

Other recent safety initiatives have consisted primarily of modifications of existing regulations: oil and gas well drilling standards,[28] electrical standards for construction,[29] powered platform standards,[30] crane and derrick regulations,[31] and tunnel and shaft construction requirements.[32]

While these proposals did not break new ground in terms of their regulatory approach, in a few instances they raised noteworthy issues. In the case of oil and gas well drilling, OSHA was revising the earlier standards because the specification standard approach may have had a deleterious effect on safety: "It was apparent that the general industry standards either did not address or inadequately addressed a number of hazards unique to the oil and gas well drilling and servicing industry, possibly even contributing to this higher injury and illness incidence rate."[33]

Because of their narrow orientation, specification standards may have a potentially adverse effect on safety. The proposed standards, however, would consist primarily of a series of technical requirements. This engineering control emphasis is somewhat surprising in view of OSHA's own retrospective

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26. *Id.* at 5-6.
27. *Id.* at 2-3. As pointed out in this report, the OSHA analysis is also highly deficient in a variety of technical aspects.
28. 48 Fed. Reg. 57,202 (1983) (to be codified in 29 C.F.R. § 1910) (proposed Dec. 28, 1983).
29. 29 C.F.R. § 1926.800(l) (1985).
30. 29 C.F.R. § 1910.66-.70 (1985).
31. 49 Fed. Reg. 6280 (1984) (to be codified in 29 C.F.R. § 1926) (proposed Feb. 17, 1984).
32. 29 C.F.R. § 1926.800(l) (1985).
33. 48 Fed. Reg. 57,202 (1983).

assessment of the causes of oil and gas well drilling fatalities.[34] OSHA's report attributed only one-sixth of all deaths to the equipment and facilities, whereas over half were due to workers' poor operating procedures.[35] To address the primary source of the safety problem, the OSHA standards should emphasize training and education of workers rather than engineering requirements.

The revised electrical standards for construction raised a similar specification standard issue. This revision was directed primarily at incorporating the latest changes in the National Electrical Code (many of which were made in 1981) into the OSHA standard.[36] The lag between the state-of-the-art approach and the OSHA standard highlights the possibly discouraging effect that design standards may have on innovative approaches to safety. A performance standard orientation would have encouraged firms to adopt new safety techniques that may be far more effective and less costly than those detailed in the periodic revisions of OSHA guidelines.

Overall, there has not been a dramatic change in the structure of OSHA safety standards since OSHA's initial standard-setting efforts. Some of the extraneous and more frivolous standards have been pruned, other standards have been updated to take into account technological changes, and a few new standards have been added. There is likely to be little further reform in standards already promulgated because there is not a strong constituency for such changes. To the extent that more employers comply with the revisions of the OSHA standards, any impetus for relaxation or modification of existing regulations will be diminished.

Some progress may be made with respect to future standards, both in recognizing the costs of the regulations and in introducting innovative approaches to regulation. Recent OSHA efforts, such as the chemical labeling and grain handling standards, represent significant advances in OSHA's regulatory approach. More policies of this type should be encouraged. Overall, however, the level of activity in the safety standard area has not been great over the past decade, as OSHA has done little to alter its original focus.

III

AN OVERVIEW OF OSHA'S ENFORCEMENT STRATEGY

In order to design and enforce its standards, OSHA has assembled one of the largest staffs of any risk regulation agency. OSHA now has over 2,300 employees, second only to the Environmental Protection Agency among social regulation agencies.[37] The total represents a drop of more than twenty

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34. OCCUPATIONAL SAFETY AND HEALTH ADMIN., U.S. DEP'T OF LABOR, SELECTED OCCUPATIONAL FATALITIES RELATED TO OIL/GAS WELL DRILLING RIGS AS FOUND IN REPORTS OF OSHA FATALITY/CATASTROPHE INVESTIGATIONS (1980).

35. *See* W. VISCUSI, *supra* note 3, at 26-27.

36. 48 Fed. Reg. 45,872, 45,875-878 (1983).

37. Occupational Safety and Health Admin., History of Appropriations and Positions (1984) (unpublished memorandum on file with author).

percent from the peak employment under President Carter,[38] as a result of the Reagan Administration's budget cuts. The staff, in conjunction with the inspectors from states that choose to enforce OSHA regulations with state inspectors, go to the workplace, ascertain whether there are violations, and impose penalties for the violations. The inspectors may return for follow-up inspections, and may assess additional penalties until compliance is ensured.

While this enforcement strategy has always been the OSHA approach, there are other possible enforcement techniques. For example, OSHA might impose penalties for safety violations to create incentives for compliance with its standards, but not require compliance if the employer chooses to incur a fine rather than make the investments needed to meet the standards.[39] The employer, in effect, would decide independently if the costs of meeting the standard exceed the safety benefits. An alternative safety incentive mechanism is to impose an injury tax which would have a safety-enhancing impact without requiring the use of inspectors.[40] This policy has the additional advantage of creating financial incentives for safety that are more strongly correlated with accident-generating activities than are specific workplace characteristics.

It is important to recognize that there are alternative approaches to generating safety incentives if the current enforcement strategy is ineffective. As is indicated below, the current OSHA enforcement effort cannot be judged a success; therefore, in examining its merits it is necessary to consider not only possible incremental changes but also more sweeping overhauls.

Employers will choose to comply with OSHA standards if OSHA establishes effective financial incentives for doing so. The employer, consequently, must find it more attractive financially to make the safety improvements than to risk an adverse OSHA inspection. The penalties that result include fines levied by OSHA as well as any possible adverse effect on the employer's reputation, which may in turn affect worker turnover or wages. To assess whether these safety incentives are strong, each link in the OSHA enforcement process will be examined.

A. Determinants of Safety Inspections

Before OSHA will have an effect on an employer, it either must inspect the employer or create an effective threat of possible enforcement. OSHA undertakes four types of inspections in this order of priority: (1) inspections of imminent dangers, (2) investigations of fatalities and catastrophies, (3) investigations of worker complaints and referrals, and (4) programmed inspections.[41] This priority ranking has remained virtually unchanged over

38. *Id.*

39. This is similar to the approach advocated in W. VISCUSI, *supra* note 3, at 114-17, except that firms would self-assess penalties in the framework suggested there.

40. The principal advocate of this approach is Robert Smith. *See* R. SMITH, *supra* note 13, at 78-83.

41. ASSISTANT SECRETARY FOR OCCUPATIONAL SAFETY AND HEALTH, U.S. DEP'T OF LABOR, OSHA REVISED FIELD OPERATIONS MANUAL at II-3 (1984).

the past decade, with the only modification being that the fourth category, programmed inspections, includes what were formerly the fourth and fifth categories—special programs and random general inspections.[42]

The frequency of these types of inspections is inversely related to their priority ranking.[43] Roughly eighty-six percent of all inspections are general programmed inspections, with complaint inspections comprising another nine percent.[44] Somewhat surprisingly, complaint inspections produce few violations per inspection, which suggests that disgruntled workers may be using the OSHA inspection threat as a means of harassing the employer.[45] This pattern is unfortunate because of the potentially instrumental role of workers and unions in promoting safety. The third most frequent inspection category—follow-up inspections—also generates few violations, which may be a sign of the efficacy of OSHA's enforcement efforts.[46] Even though follow-up inspections generate few violations, the threat of a follow-up inspection may nevertheless be important.

The summary of the enforcement effort in table 1 highlights the three different eras of OSHA enforcement. The Nixon and Ford Administrations established the general inspection approach. There was little change in emphasis during this period except for a gradual expansion in the enforcement effort. The Carter Administration attempted to eliminate some of the less productive aspects of the enforcement policy. The number of inspections and less important violations declined, but the penalties for violations increased. The Reagan Administration marked the start of a less confrontational approach and a more conscious targeting of inspections. The biggest change was that the magnitude of penalties assessed for OSHA violations plummeted.

The specific components of table 1 reflect these shifts in emphasis. The total number of inspections rose steadily through fiscal year 1976, after which it dropped by one-third as a result of the Carter Administration's attempt to reduce the less productive inspections. The present level of inspections, less than 70,000 annually, may seem substantial but it covers very few workplaces. At this rate of inspection a particular enterprise could expect to be be inspected less than once every two centuries.

Since many employers are small businesses with few employees, a more suggestive index of coverage is the inspection rate per worker. As the fourth line of table 1 indicates, almost three million employees were covered by OSHA inspections. This figure represents the number of workers at sites

42. OCCUPATIONAL SAFETY AND HEALTH ADMIN., THE PRESIDENT'S REPORT ON OCCUPATIONAL SAFETY AND HEALTH 3-4 (1973).

43. The numbers cited are based on OSHA, Federal Compliance Activity Report, Reporting Period Oct. 1982 to Sept. 1983 (Feb. 7, 1984) (unpublished report).

44. *Id.*

45. *See generally* ASSISTANT SECRETARY FOR POLICY, EVALUATION, AND RESEARCH, U.S. DEP'T OF LABOR, COMPLIANCE WITH STANDARDS, ABATEMENT OF VIOLATIONS, AND EFFECTIVENESS OF OSHA SAFETY INSPECTIONS 15 (1980) (Technical Analysis Paper No. 62).

46. *See id.* at 21.

TABLE 1

CHARACTERISTICS OF OSHA ENFORCEMENT

	Fiscal Year											
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Inspections (thousands)	28.9	47.6	78.1	80.9	90.3	59.9	57.2	57.9	63.4	57.0	61.2	68.9
Construction Inspections (thousands)	a	13.2	26.8	23.4	34.5	15.6	14.6	17.8	26.3	25.9	29.3	34.0
Manufacturing Inspections (thousands)	a	21.9	33.5	36.8	47.4	31.3	30.0	27.4	27.2	22.6	18.0	29.4
Employees covered by inspections (millions)	a	5.4	6.4	6.2	8.1	5.3	4.5	4.3	3.7	2.7	2.2	2.9
Proportion of health inspections	a	.05	.06	.07	.08	.15	.19	.19	.19	.19	.15	.15
Proportion of inspections with serious citations	a	a	.04	.04	.07	.19	.26	.29	.31	.29	.21	.22
Violations (thousands)	89.6	153.2	292.0	318.8	380.3	181.9	134.5	128.5	132.4	111.4	97.1	111.7
Proportion of serious violations	a	a	.01	.02	.02	.11	.25	.29	.34	.29	.23	.38
Penalties (millions of dollars)	2.1	4.2	7.0	8.2	12.4	11.6	19.9	23.0	25.5	10.8	5.6	6.4
Penalty per violation (dollars)	23.4	27.4	24.0	25.7	32.6	63.8	148.0	179.0	192.6	97.1	57.7	57.3
Proportion of penalties for serious violations	a	a	.37	.44	.39	.61	.58	.56	.56	.64	.78	.72

Source: Based on calculations by the author using OSHA computer printouts.
a. Data are not available or are not reliable.

covered by inspections, not the number of workers whose particular job conditions were analyzed. Yet even this generous estimate of OSHA coverage does not suggest a large-scale inspection effort because the average site will be inspected by OSHA only once every thirty-four years.

The mix of OSHA inspection activities has also undergone significant modifications. Manufacturing inspections have traditionally comprised about half of all inspections, but this relative emphasis has declined since the advent of the Reagan Administration. The mix has shifted toward inspections of the construction industry. Whereas manufacturing inspections outnumbered construction industry inspections by over two to one at times during the Carter Administration,[47] during the Reagan Administration there have been more construction industry than manufacturing inspections.

This relative emphasis is to some extent misleading because of the manner in which construction inspections are tallied. Suppose an OSHA inspector examines a construction site where there are five contractors performing work. This single inspection will count as five inspections for purposes of OSHA records, whereas a manufacturing firm visit will count as a single inspection. Although the statistics consequently overstate the number of construction inspections, the importance of the inspections has nevertheless increased. The change is attributable to Thorne Auchter, a former construction firm president, who, as Reagan's OSHA director, emphasized construction inspections.

The shift to the multiple-count construction industry inspections also masks a very substantial decline in the number of employees covered by inspections. During fiscal years 1981 to 1983 OSHA averaged only 2.6 million workers at worksites covered by OSHA inspections—a drop of over forty percent from the level for the preceding four fiscal years. The number of workers covered by recent inspections is also down because fifteen percent of all inspections now involve only checks of the employer's safety records without any entry into the workplace. The reasons for this policy shift will be discussed below.

The drop in employee coverage may also reflect the failure of OSHA to sufficiently target large employers. During the early period of OSHA operations, OSHA was criticized for focusing on small employers where few workers could be protected as a result of OSHA inspections.[48] The focus on small employers changed somewhat as OSHA began to cite an equal number of violations per hour of inspection time in small employers as in large employers.[49] Since more workers are affected per violation in large employers than small employers, however, the shift toward larger employers was still not sufficient. Under the Reagan Administration, the small number

47. OSHA, Federal Compliance Activity Report, Reporting Period October 1976-September 1977 (Sept. 14, 1982) (unpublished report).

48. W. Oi, On Evaluating the Effectiveness of the OSHA Inspection Program (1975) (unpublished manuscript).

49. ASSISTANT SECRETARY FOR POLICY, EVALUATION, AND RESEARCH, U.S. DEP'T OF LABOR, *supra* note 45, at 15.

of employees covered by inspections suggests a continued failure to target inspections by employer size in an ideal manner.

Two aspects of inspections that reflect desirable changes are the emphasis on health rather than safety and the emphasis on serious violations. Health violations merit relatively greater attention since there are greater inadequacies in the treatment of these risks. Safety risks are often well known to workers and generate compensating wage differentials, higher quit rates, and larger workers' compensation premiums—all of which establish incentives for employers to promote safety.[50] In contrast, health hazards are less well understood and, because of difficulties in monitoring causality, are not covered as effectively by workers' compensation.

The number of health inspections doubled under the Carter Administration in part because the decline in overall inspections in fiscal year 1977 primarily represented a drop in safety inspections.[51] The pattern through fiscal year 1981 shows a gradual rise in the absolute number of health inspections.[52] This increase was reversed under the Reagan Administration, not so much because of a conscious decision to abandon the health area, but because of the shift toward construction inspections, which are primarily safety-related and are subject to multiple counting. The real total inspection effort has declined, and the health inspection level reflects this.

Ideally, inspections also should identify serious violations rather than less consequential threats to worker safety. This emphasis on serious violations escalated considerably under the Carter Administration, as almost one-third of all inspections began to discover serious violations. The drop in the frequency of serious violations under the Reagan Administration reflects the downward shift in the real inspection effort.

B. Violations and Penalties

Upon entering the workplace, the OSHA inspector attempts to identify violations of OSHA standards for which he will assess penalties. In determining whether or not an employer is in compliance, an OSHA inspector cannot consider costs of meeting standards, only technical feasibility. More specifically, it is "the existence of general technical knowledge" that guides the compliance judgment.[53]

In fiscal year 1977, when OSHA eliminated less important inspections and citations for trivial violations, there was a dramatic drop in the number of OSHA violations. There has since been a gradual and steady decline in the number of violations, with a slight acceleration in the downward shift under the Reagan Administration in fiscal years 1981-1983. At present, the average inspection discovers less than two violations of OSHA standards. A welcome change has been the emphasis upon violations that pose serious threats to

50. *See* W. VISCUSI, *supra* note 3, at 42-45, 63, 67-69, 78-79.
51. *Id.* at 18.
52. *Id.*
53. 6 OSHA, INDUSTRIAL HYGIENE FIELD OPERATIONS MANUAL at I-10 to I-11 (1980).

worker health which, as the data in table 1 suggest, now comprise over one-third of all standards violations.

The ultimate determinant of the financial impact of an OSHA inspection is the dollar amount of the penalties that are assessed for noncompliance. Notwithstanding the widespread notoriety of the enforcement effort, these penalty levels have been consistently inconsequential. Annual penalties have always been below $26 million and are now down to $6 million. One change in the penalty structure occurred in the reforms of fiscal year 1977 when, at the insistence of Congress, OSHA eliminated penalties for employers with fewer than ten nonserious violations.[54] The overall level of penalties, however, increased under the Carter Administration to more than double its earlier level.

Under President Reagan's Administration, OSHA has adopted a less confrontational approach in which penalties are well below their earlier levels. Some penalty levels remain unchanged; willful and repeated violations, for example, continue to be assessed at amounts not to exceed $10,000 each.[55] Other penalties are now governed by complex formulas pertaining to the severity of the associated violations.[56] A particularly noteworthy change is that employers can obtain reductions of up to thirty percent in the assessed penalties if they comply with the standards.[57] Finally, no employer can now be assessed penalties in excess of $10,000 without the formal approval of the OSHA director—a change that has led to an eighty percent reduction in the penalties in excess of that amount.[58]

The resulting financial incentives for safety are inconsequential. Penalties now average fifty-seven dollars per violation, and annual OSHA penalties total just over $6 million. In contrast, higher worker wages generated by job risks are $69 billion, and workers' compensation premiums are in excess of $10 billion.[59] OSHA enforcement efforts comprise an inconsequential addition to policies intended to promote workplace safety.

The OSHA penalties are also dwarfed by the anticipated costs of compliance. OSHA regulations proposed between 1975 and 1980 alone have a price tag of $100 to $500 billion; the costs of compliance are well above the possible threat of OSHA sanctions. For OSHA's regulations to be effective, there should be a dramatic expansion in the enforcement effort. Instead, OSHA enforcement has declined, and this has been accompanied by a fundamental change in its character. Because of the reduction in penalties for employers that remedy OSHA violations, there is little threat from a random OSHA inspection. An employer need do little to promote safety; it can simply

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54. This change was mandated by a rider to the fiscal year 1977 OSHA appropriations bill. Act of Sept. 30, 1976, Pub. L. No. 94-439, 90 Stat. 1418, 1421.

55. ASSISTANT SECRETARY FOR OCCUPATIONAL SAFETY AND HEALTH, U.S. DEP'T OF LABOR, *supra* note 41, at VI-15.

56. *Id.* at VI-1 to VI-21.

57. *Id.* at VI-11.

58. P. SIMON, REAGAN IN THE WORKPLACE: UNRAVELING THE HEALTH AND SAFETY NET 64 (1983).

59. W. VISCUSI, *supra* note 3, at 44.

await the arrival of the OSHA inspector. The employer will avoid correcting safety problems that the inspector may not identify, and it will face minimal penalties if it makes the suggested changes. The elimination of the expected losses from penalties suggests that OSHA will have little impact on the great majority of employers that are not inspected since the possible deterrence value of inspections has been sacrificed. Since the expected penalties were quite low, however, this loss may not be significant.

IV

ENFORCEMENT TARGETING AND IMPACT

A. Efforts to Improve the Efficacy of OSHA Inspections

Perhaps the most controversial recent change in OSHA enforcement policies was the introduction of records check inspections in October 1981. In these programmed safety inspections, the OSHA inspector first examines the employer's lost workday accident rate for the past two years (three years for very small employers).[60] If this rate is below the most recently available national manufacturing lost workday rate, the employer is not formally inspected. For example, an employer inspected in 1984 would have its 1982 and 1983 lost workday accident rates available. These could be compared with the 1982 manufacturing rate, since there is a two-year lag in publishing the Bureau of Labor Statistics data.

The records check procedure has been criticized because OSHA counts these as inspections even though the inspector never enters the workplace.[61] Such misrepresentations of the total inspection effort have generated criticism that is in many respects justifiable since, along with the multiple counting of construction industry inspections, the misrepresentations obscure the real decline in the OSHA enforcement effort. As the data in table 2 suggest, records check inspections constitute one-seventh of all OSHA inspections and excluding these from the inspection total leads to a slight drop in inspections under the Reagan Administration.

The shortcomings in OSHA's miscounting of the real inspection level does not, however, imply that records check inspections are a bad idea. Ideally, OSHA should target its efforts toward riskier employers. Inspecting an employer with a poor safety record provides greater opportunities for safety gains than does inspecting a very safe firm. One might expect that OSHA would simply examine the injury reports submitted by the employer each year to the Bureau of Labor Statistics and use this information to target the inspections. In what appears to be a parochial dispute within the U.S. Department of Labor, the Bureau of Labor Statistics has refused to give OSHA access to the individual employer data on the grounds that doing so would undermine the confidentiality of the data, possibly tainting their

60. ASSISTANT SECRETARY FOR OCCUPATIONAL SAFETY AND HEALTH, U.S. DEP'T OF LABOR, *supra* note 41, at II-15, III-26.

61. *See* P. SIMON, *supra* note 49, at 8 & n.6.

TABLE 2

CHARACTERISTICS OF OSHA INSPECTIONS

	Fiscal Year											
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Record check inspections (thousands)	0	0	0	0	0	0	0	0	0	0	8.4	10.4
Inspections excluding record checks (thousands)	28.9	47.6	78.1	80.9	90.3	59.9	57.2	57.9	63.4	57.0	52.8	58.5
Safety inspection time (hundreds of thousands of case hours)	a	5.0	4.4	6.8	11.9	8.1	7.9	7.9	8.2	7.4	5.7	5.9
Health inspection time (hundreds of thousands of case hours)	a	0.7	0.4	1.0	2.8	3.5	4.4	4.7	5.2	4.6	3.5	3.4
Case hours per safety inspection	a	11	6	9	12	16	17	17	16	16	13	10
Case hours per health inspection	a	23	11	18	30	38	41	42	44	43	38	33
Citations per safety inspection (per 100 hours)	a	4.8	11.3	7.9	6.7	5.0	4.6	4.9	5.2	5.2	6.1	6.8
Citation per health inspection (per 100 hours)	a	2.2	6.3	3.7	2.3	1.4	1.4	1.4	1.4	1.4	1.6	1.9
Percent of inspection with outcomes contested	a	6	5	6	9	12	18	21	21	11	5	3

Source: Based on calculations by the author using OSHA computer printouts.
a. Data are not available or are not reliable.

quality. Since the Internal Revenue Service uses data submitted by taxpayers to enforce tax policies, and federal wage and price control efforts have used similar information to enforce these income policies, it would not be unprecedented to use such risk data for purposes of enforcement. The present practice of, in effect, gathering the data manually under the guise of a records check represents a highly inefficient means of acquiring pivotal information regarding accident rates.

Once the risk information has been acquired, the data should be used to target OSHA inspections. The present procedure, however, is an overly simplistic approach to doing so. Ideally, risky employers should be identified relative to what is achievable within a particular industry; this will be based on the industry's costs of compliance. OSHA's procedure of targeting firms on the basis of whether their record is better than the national manufacturing average fails to incorporate this heterogeneity in the costs of promoting safety.

Table 3 includes representative ratios of the average lost workday record compared to the overall manufacturing lost workday rate. A worker may be at a chemical firm or a petroleum product company that is almost twice as hazardous as the industry average, yet it will be exempt from inspection. A worker in a comparatively safe sawmill or fabricated metal factory will be at a workplace that will be a prime candidate for OSHA inspection. Most employers will fall in such extreme groups since there are very few industries whose accident records are within ten percent of the manufacturing average.

The present procedure exempts too many "bad actors" from safe industries and leads to the inspection of too many good performers in risky industries. If the ultimate objective is to achieve the greatest risk reduction, one should take into account performance relative to the industry since that will be an index of the potential gains that can be achieved from improvements in the workplace technology.

Standard criticisms of the use of records check inspections appear to have been misplaced. Records checks are a useful and potentially valuable tool. The deficiency lies instead in the targeting procedure. Because of the introduction of records check inspections and the increased emphasis on construction inspections, the overall inspection total provides a misleading index of inspection activity. A more instructive measure is the total number of inspection hours. As indicated by the data in table 2, there has been a substantial drop of about one-third in inspector effort between fiscal year 1980 and fiscal year 1983. Somewhat surprisingly, the drop is greater for health inspections. The decline in health inspections should be unaffected by the rise of records check inspections, which pertain only to safety inspections, and instead seems due to the increased emphasis on construction.

The case hours devoted per inspection also declined under the Reagan Administration after having increased under the Carter Administration. Health inspections traditionally are more time-consuming because of the nature of the tests that must be performed. The reduction in time devoted to

TABLE 3

RATIO OF 1981-1982 AVERAGE LOST WORKDAY RATE TO 1981 MANUFACTURING LOST WORKDAY RATE

Finance, insurance, and real estate	.38
Apparel and other textiles	.42
Services	.45
Instruments and related products	.49
Chemicals and allied products	.52
Petroleum and coal products	.52
Electric and electronic equipment	.53
Printing and publishing	.59
Textile mill products	.59
Wholesale and retail trade	.61
Tobacco manufacturing	.70
Miscellaneous manufacturing	.83
Transportation equipment	.84
Machinery, except electrical	.91
Leather and leather products	.94
Paper and allied products	1.01
Furniture and fixtures	1.15
Primary metal industries	1.19
Construction	1.21
Stone, clay, and glass products	1.27
Rubber and miscellaneous	1.29
Fabricated metal products	1.36
Food and kindred products	1.63
Lumber and wood products	1.70

Source: Calculations by the author using Bureau of Labor Statistics lost workday rate data.

safety inspections is due in large part to the rise of records check inspections, but the drop in hours per health inspection suggests an overall reduction in effort per inspection.

The citations issued during each inspection provide a more meaningful measure of the productivity of inspections than does case hour time, which is an input measure. In the case of both safety and health inspections, the citation rate has risen to levels that are only exceeded by the early OSHA years when trivial violations were often cited. The recent increase reflects the beneficial effect of better targeting of inspection resources. Indeed, once records check inspections are excluded from the safety inspection total, the citation rate for safety inspections would be almost twenty percent greater than the thirty percent citation rate increase between fiscal years 1980 and 1983. Improved inspection targeting may consequently have led to as much as a fifty percent increase in the citation rate per inspection.

A fundamental shift in the approach taken in OSHA inspections was the effort to reduce the confrontational character displayed in OSHA policies.[62] Rather than the policeman of the workplace, OSHA assumed the role of a

62. For a detailed discussion and critique of the new approach, see P. SIMON, *supra* note 49, at 44-69.

consultant on workplace issues. This shift is reflected in the substantial drop in OSHA penalties. A related change was the drop in inspection outcomes contested by employers. The decline from a twenty-one percent contested rate to a three percent rate—which is the lowest rate in OSHA history—was the outcome of a policy decision to attempt to settle disagreements with employers in order to reduce the number of contested cases. Whether the nonconfrontational OSHA will be more effective is unclear.

The changing character of the OSHA enforcement effort also is exemplified by the change in the mix of violations cited by OSHA inspectors. Although the OSHA standards have not changed dramatically over the past decade, the role of different violation categories has undergone many significant modifications. In the initial years of OSHA operations, violations for walking and working surfaces (such as misplaced exit signs) constituted about one-fifth of all violations, as indicated in table 4. Many of these violations were for less important risks, some of which were readily visible to workers as well. The drop of roughly fifty percent in this category suggests that OSHA's resources have been redirected to more profitable areas.

Somewhat surprisingly, the other chief violations category—machinery and machine guarding—has exhibited an increase in violations, so that now over one-third of all violations are in this group. Since these standards have been enforced by OSHA for over a decade, the continued high violations rate appears to reflect a lack of compliance with OSHA standards. In contrast, there has been a dramatic improvement in electrical hazard violations.

The two categories of violations displaying the most important increases are health-realted. The number of health and environmental control violations (for example, noise, ventilation, and radiation) has risen to eight percent, and violations for toxic and hazardous substances (such as asbestos and coke oven emissions) now comprise a similar percentage. Although some of these increases are the result of an increase in the number of health standards, there has been a noteworthy upward shift in the number of health violations. OSHA enforcement policies remain primarily safety-related, but health hazards no longer constitute a trivial portion of the enforcement effort.

B. An Assessment of the Impact of OSHA Enforcement

Employers will choose to make the necessary investments in health and safety if the OSHA enforcement policy makes it in the employer's financial self-interest to do so. As the discussion above indicates, the three links in establishing these incentives—inspections, violations, and penalties—are all relatively weak. An employer has less than one chance in two hundred of being inspected in any given year. If inspected, the average employer will be found guilty of less than two violations of the standards, and for each violation the average penalty will be under sixty dollars. Overall, the violation cost per worker is only fifty-seven cents. In contrast, market forces, through compensating differentials in combination with workers' compensation

TABLE 4

DISTRIBUTION OF VIOLATIONS OF GENERAL INDUSTRY STANDARDS, 1972-1983

Category	Percentage of violations in calendar year											
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Walking and working surfaces, means of egress, and powered platforms	20.9	19.8	19.5	19.0	17.1	16.0	15.8	14.6	12.9	12.0	11.2	10.7
Health and environmental control	2.3	2.1	1.6	1.5	1.4	1.8	2.2	2.7	2.6	3.8	8.5	8.0
Hazardous materials	6.0	7.1	7.4	8.0	8.5	8.2	8.3	8.5	7.9	9.1	9.0	9.3
Personal protective equipment	2.7	2.3	2.5	2.7	3.1	4.1	5.5	5.7	6.5	8.5	8.4	8.3
General environmental controls	3.1	2.2	2.1	3.0	3.8	2.9	2.2	2.5	2.3	1.8	1.7	2.0
Medical and first aid	1.3	1.3	1.5	1.4	1.3	1.3	1.4	1.5	1.6	1.7	1.6	1.7
Fire protection	7.5	7.3	8.3	8.6	6.8	5.2	2.7	2.4	2.3	2.0	2.4	2.5
Materials handling and compressed gas	7.7	6.6	6.4	5.5	6.3	7.1	7.4	7.5	7.0	7.3	7.5	7.0
Machinery and machine guarding	27.5	29.6	28.6	26.2	26.7	28.3	27.3	27.9	28.4	32.5	33.9	34.7
Hand-held equipment	2.3	2.4	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.2	2.4
Welding and brazing	4.7	4.5	4.3	3.9	3.8	3.8	3.8	3.8	3.7	3.6	3.9	3.6
Special industries	3.8	2.1	1.0	0.9	1.3	1.3	1.3	1.2	1.3	1.3	1.0	1.5
Electrical	9.9	12.3	13.8	16.6	16.9	16.5	17.5	16.2	15.4	5.8	0.1	0.0
Toxic and hazardous substances	0.3	0.4	0.3	0.4	0.8	1.3	2.4	3.4	5.8	8.7	8.8	8.3
Other	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0

Source: Based on unpublished computer printouts generated by OSHA for this study. Percentages may not sum to 100.0 due to rounding error.

premiums, impose costs in excess of $800 per worker.[63] Quite simply, OSHA's enforcement effort is too modest to create truly effective financial incentives for safety.

Even if these incentives were strong, not all risks could be eliminated because many accidents stem from aspects of the work process other than the specific technological characteristics regulated by OSHA. Chief among these contributors are worker actions. The estimates of the role of the worker in causing accidents vary in part because of the difficulty in attributing responsibility for accidents caused jointly by worker actions and technological deficiencies. It is clear, however, that worker actions play a substantial role. OSHA found that over half of all fatal accidents on oil and gas well drilling rigs were due to poor operating procedures.[64] Worker actions also have been found to be a major contributor to sixty-three percent of the National Safety Council's accident measure,[65] ninety-five percent of Pennsylvania workers' compensation cases,[66] forty-five percent of Wisconsin workers' compensation cases,[67] and the majority of accidents among deep sea divers in the North Sea.[68]

Recent studies reinforce the view that at best OSHA regulations could have a significant but not dramatic effect on workplace safety. One recent statistical analysis estimated that if there were full compliance with OSHA standards, workplace accidents would drop by just under ten percent.[69] A recent detailed analysis of workplace accidents in California had somewhat more optimistic conclusions. At most, fifty percent of all fatal accidents were contributed to by violations of OSHA standards that potentially could have been detected by an OSHA inspector visiting the day before the accident.[70]

Because of these limitations and the weakness of the OSHA enforcement effort, it is not surprising that a substantial impact of OSHA on workplace safety is not readily apparent. Table 5 summarizes the injury rate trends for the 1972-1981 period for both the manufacturing industry and the entire private sector. The two risk measures are the overall workplace injury rate and the rate for cases that involved at least one lost workday. During the initial years of OSHA operations, employers tended to over-report injuries because they had to adapt to a new reporting system. Nevertheless, the

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63. This estimate was based on the risk premium estimates in W. VISCUSI, *supra* note 3, at 44, and the number of workers employed, and was taken from the BUREAU OF THE CENSUS, U.S. DEP'T OF COMMERCE, STATISTICAL ABSTRACT OF THE UNITED STATES, 1982-1983, at 376 (1982).

64. *See* OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, U.S. DEP'T OF LABOR, *supra* note 34.

65. NATIONAL COMM'N ON STATE WORKMEN'S COMPENSATION LAWS, COMPENDIUM ON WORKMEN'S COMPENSATION 287-88 (1973).

66. *Id.*

67. *See* ASSISTANT SECRETARY FOR POLICY, EVALUATION, AND RESEARCH, U.S. DEP'T OF LABOR, *supra* note 45, at 16.

68. *See* U.S. COUNCIL ON WAGE AND PRICE STABILITY, COMMENTS ON THE PROPOSED OSHA DEEP SEA DIVERS STANDARD (1977).

69. A. Bartel & L. Thomas, Direct and Indirect Effects of Regulation: A New Look at OSHA's Impact 23 (1983) (unpublished manuscript).

70. Mendeloff, *The Role of OSHA Violations in Serious Workplace Accidents*, 26 J. OCCUP. MED. 353, 356 (1984).

overall trend is clearly downward in the case of overall injuries. Such a decline is not unexpected since worker accident rates have been declining by about two percent annually over the past half century.[71]

TABLE 5

INJURY RATE TRENDS, 1972-1981

	All Manufacturing		All Private Sector	
	Overall Injury Rate	Lost Workday Injury Rate	Overall Injury Rate	Lost Workday Rate
	(Incidence Rates per 100 Full Time Workers)		(Incidence Rates per 100 Full Time Workers)	
Year				
1972	15.6[1]	4.2[1]	10.9[1]	3.3
1973	15.3	4.5	11.0	3.4
1974	14.6	4.7	10.4	3.5
1975	13.0	4.5	9.1	3.3
1976	13.2	4.8	9.2	3.5
1977	13.1	5.1	9.3	3.8
1978	13.2	5.6	9.4	4.1
1979	13.3	5.9	9.5	4.3
1980	12.2	5.4	8.7	4.0
1981	11.5	5.1	8.3[2]	3.8
1982	10.2	4.4	7.7[2]	3.5
1983	9.7	4.2	7.5	3.4

Data for 1972-1981 from BUREAU OF LABOR STATISTICS, U.S. DEP'T OF LABOR, HANDBOOK OF LABOR STATISTICS, BULLETIN 2175 (1983). Data for 1982 from U.S. Dep't of Labor, Occupational Injuries and Illnesses 1982, microfiche 83-471 (released Nov. 4, 1983). Data for 1983 are from a press release of the Bureau of Labor Statistics, U.S. Department of Labor, on November 14, 1984.

[1]Data for agricultural production, all of mining except oil and gas extraction, and railroads were not included in 1972 estimates.

[2]Excludes firms with fewer than 11 employees.

The pattern exhibited by lost workday accident rates is more uneven. These more serious accidents increased throughout the 1970's, but they have since declined. Although some observers have pointed to the recent declines as evidence of OSHA's effectiveness, much of the decline is no doubt due to cyclical factors. The years 1981 and 1982 were periods of escalating unemployment, as total civilian unemployment rates climbed to 7.5% and then to 9.5%.[72] Since workplace accidents are less frequent during cyclical downturns, the recent declines do not stem primarily from the change in OSHA policy but are primarily the result of shifts in macroeconomic policy.

Econometric studies of OSHA's performance through the mid-1970's have failed to identify any substantial impact of the OSHA enforcement effort.[73] An update of these analyses through the 1982 period[74] indicates, somewhat

71. *See* W. VISCUSI, *supra* note 3, at 30.
72. COUNCIL OF ECONOMIC ADVISORS, ECONOMIC REPORT OF THE PRESIDENT 255 (1984).
73. W. VISCUSI, *supra* note 3, at 6-36.
74. These exploratory results are reported in W. Viscusi, The Impact of Occupational Safety and Health Regulation, 1973-1982 (1985) (unpublished manuscript).

surprisingly, that there is a statistically significant impact of OSHA enforcement on workplace safety even after taking into account cyclical factors and industry-specific conditions.

The most effective OSHA enforcement tool appears to be the rate of inspections. It is the inspection coverage rather than the penalty level that is most influential: the impact of OSHA inspections on workplace safety has an effect on worker injury rates that increases with the severity of the injury. Although the absolute magnitude of the impact of OSHA is not large, when viewed in percentage terms the effects appear to be more substantial. More specifically, OSHA enforcement efforts have reduced the overall injury and illness rate by two to three percent and the rate of injuries involving a lost workday by three to four percent.[75]

These exploratory results for manufacturing industries may be refined after analysis of the 1983 experience is completed, but they suggest that OSHA enforcement efforts are finally beginning to have a beneficial impact on workplace safety. An improvement over the early OSHA experience should be expected, as the standards have been refined and there is more systematic targeting of the inspection effort. The overall impact continues to be relatively modest, however, as job risks continue to be largely dictated by forces other than government regulation.

V

TOWARD SOUND OSHA POLICIES

In some fundamental respects, OSHA safety policies have not changed their general character. Most of the safety regulations were originally issued in the first year of the agency's existence. The enforcement policy remains a fairly weak effort whose essential character of workplace inspections and penalties for standards violations has remained unaltered.

Nevertheless, there have been some significant changes, some of which are beneficial. In terms of the structure of the safety standards, there was a substantial improvement under the Carter Administration through the elimination of many of the more extraneous features of the standards. The major achievements under the Reagan Administration have been the proposed grain handling facility standard, which would incorporate a desirable performance-oriented feature, and the OSHA chemical labeling standard, which would utilize risk information rather than technological controls to promote safety.

Notwithstanding these beneficial additions and the pruning of OSHA regulations, the bulk of the regulations that remain in force are the same as those that have been in place since the advent of OSHA operations. There has been no systematic review of these standards to ensure that the safety benefits are significant in comparison with the costs they impose. Even if OSHA does not adopt a cost-benefit criterion and focuses instead on some

75. W. VISCUSI, *supra* note 3, at 28.

other index of a policy's efficacy, it would be useful to review standards periodically to assess whether they are pertinent.

The outdated features of the electrical standards and the oil and gas well drilling standards that led to their revision may have parallels in other standards as well. Some needed changes will be highlighted by private actions, such as changes in the National Electrical Code. To ensure that similar revisions are undertaken where necessary, OSHA should establish a formal process to review the standards in place and to encourage sunset actions for outmoded standards.

The flexibility offered by the OSHA grain handling standard could serve as a performance-oriented model for other OSHA standards. Ideally, OSHA should examine the set of existing standards to ascertain which standards can be profitably modified to take a more performance-oriented approach. Some revisions of this type could be the subject of future OSHA rulemaking activity. In addition, the OSHA inspectors could attempt to take a more performance-oriented approach by not citing those workplace violations that represent alternative mechanisms for promoting safety. In recent years much emphasis has been placed on the consultative function of OSHA. A beneficial use of OSHA's consultative services would be to advise employers seeking the least costly manner to promote safety.

For OSHA standards to have an impact, the enforcement effort must be much more vigorous than it now is. Some rudimentary targeting efforts have been undertaken, and these should be refined. Most importantly, the scale of OSHA's enforcement policy should be increased. A substantial increase in the number of inspectors and an increase in the penalty level would create much stronger incentives for safety.

While OSHA's enforcement has always been weak, fewer penalties are now being assessed because recent enforcement reductions have been almost completely in terms of penalties. Such retrenchment may not greatly affect the enforcement program's efficacy since the starting point was also very low. It is OSHA inspections, rather than penalties, that appear to be most instrumental in encouraging compliance. If the cost of individual penalties were boosted by a factor of 100 or more, however, OSHA's penalties would become a significant enforcement factor.

Although it is difficult to recommend more stringent enforcement in the absence of any reform of the standards, if the safety standards were put on a sounder basis, an expanded enforcement policy would be desirable. It should be recognized, however, that not all employers may find it feasible to come into compliance. Some changes in technology may be inordinately expensive. In these instances, the objective of OSHA penalties should not be to compel compliance but to provide efficient incentives for safety. In extreme cases of costly compliance, it would be preferable to permit employers to pay the

penalty rather than make substantial investments that offer few health benefits.[76]

Even without such a fundamental shift in the character of the enforcement policy, much can be done to improve the effectiveness of OSHA's efforts to promote safety. Greater flexibility in standards design and more stringent enforcement are chief among these possible reforms. OSHA has, and will continue to have, a legitimate role to play in the promotion of job safety, but a continuation of the present policies will not enable the agency to fulfill its potential.

76. This policy proposal is detailed in W. VISCUSI, *supra* note 3, at 160-61.