VOLUNTARY REGULATORY COMPLIANCE IN THEORY AND PRACTICE: THE CASE OF OSHA

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INTRODUCTION

Increasingly, regulatory agencies are hobbled in their efforts to protect the environment, consumers, and workers. "Ossification" of the rulemaking process has slowed the promulgation of rules to the point that agencies are hard pressed to produce more than a few, if any, regulations each year.\textsuperscript{1} The Occupational Safety and Health Administration (OSHA), for example, has promulgated only two contested standards substantially revising exposure limits since 1992.\textsuperscript{2} Further, OSHA has completed only a few rules in less than three years, and has taken between four and seven years to complete most rules.\textsuperscript{3}

In addition, diminished resources mean agencies are hard pressed to enforce regulations already on the books.\textsuperscript{4} OSHA’s inflation adjusted budget, for example, has remained constant since 1982, which means that it has lost about $100 million to inflation.\textsuperscript{5} One adverse impact is that OSHA has 200 fewer employees than in 1971, its first year in existence, and almost 800

\begin{footnotesize}
\begin{enumerate}
  \item See Thomas O. McGarity, \textit{Some Thoughts on "Deossifying" the Rulemaking Process}, 41 Duke L.J. 1385 (1992) (discussing how executive oversight, the imposition of regulatory impact statements, and non-deferential judicial review has slowed the rulemaking process).
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fewer employees than in 1980. As a result, according to the AFL-CIO, OSHA can inspect every American workplace only once each century. OSHA is typical of government agencies. Reductions in discretionary spending between 1992 and 1996 have reduced the number of federal employees by 250,000, and the rate of staff reductions will increase in the near future. As Professor Pierce has aptly noted, "the 'era of big government' really is over, at least as measured with reference to the resources available to agencies to perform their missions." 

The potential for voluntary industry efforts to reduce health and safety risks or protect the environment is of considerable importance in light of these constraints. Such efforts have been variously described as "private, voluntary self-regulation," private action," "industry self-regulation," "voluntary" or "private" standard-setting, "voluntary approaches," "voluntary over-compliance," "self-control," "mandated self-regulation" and "collaborative governance." These terminologies encompass two situations in which companies respond to incentives other than federal regulation. In one situation, firms achieve human or environmental protection levels greater than existing regulations require. No regulation or standard may

6. See id. at 646-47.
7. See Work is Changing But Observers Wonder if OSHA is Changing With It, O.S.H. Rep. (BNA) 1513, at 1537 (May 19, 1999).
8. See Pierce, supra note 4, at 66.
9. Id.
apply to the risk, firms voluntarily address, or the firms may exceed the protection required by an existing rule. In both circumstances, incentives to provide protection beyond that required by law may obviate the need for added regulation. In the second situation, firms comply with a legally binding rule or standard in circumstances where violations are unlikely to be detected and punished. Although there is a legal obligation to obey in such cases, the lack of meaningful enforcement makes compliance effectively voluntary. For purposes of the following analysis, we consider both situations. For ease of reference, we refer to both situations as “voluntary regulatory compliance.”

Interest in voluntary regulatory compliance extends beyond its potential to plug the regulatory gap created by ossification and budget reductions. Analysts suggest that voluntary regulatory compliance may be more efficient than traditional command and control regulatory approaches because it can produce the same (or more) protection at lower cost. Moreover, because it is less intrusive than traditional regulation, it may constitute a new regulatory paradigm, a “third way” between traditional regulatory approaches and unregulated markets. Similarly, Professor Jody Freeman has proposed that public and private cooperation in standard-setting, implementation, and enforcement has reached the point where it is necessary to rethink the normative conceptions legitimizing regulatory government.

This Article evaluates the theory and practice of voluntary regulatory compliance. It constructs an economic model to analyze incentives that may induce an economic actor to engage in voluntary regulatory compliance. This model, which has not previously been presented in the literature, integrates the various incentives facing an economic actor, positive and negative, to engage in voluntary regulatory compliance. The Article then evaluates empirical evidence to see whether such incentives have induced voluntary action. Although this inquiry focuses on voluntary regulatory compliance in the OSHA context, it also considers evidence of voluntary compliance in other contexts, particularly environmental protection.

This analysis reveals in what situations voluntary regulatory compliance is more or less likely to occur in general and in the OSHA context. Specifically, it leads to three conclusions. First, while productive in some contexts, voluntary regulatory compliance cannot effectively replace traditional methods of regulation in other contexts. Moreover, as compared to

19. See, e.g., Elliot, supra note 11, at 1852 (noting “growing consensus” that non-regulatory incentives offer “distinct” advantages over traditional command and control regulation).


the Environmental Protection Agency (EPA), OSHA should expect less voluntary compliance because the forces that promote voluntary compliance work less effectively concerning occupational safety and health. Second, armed with the knowledge about when voluntary compliance is likely to occur, agencies should allocate their rulemaking and enforcement resources to areas where such compliance is unlikely to protect the environment, consumers, and workers. Third, agencies have a number of ways that they might strengthen the incentives to engage in voluntary regulatory compliance. They should experiment with which options are most likely to have this impact.

Our analysis proceeds in three steps. First, Section I develops a cost-based model incorporating existing economic incentives for firms voluntarily to protect the environment, workers, or consumers. This model includes positive and negative economic incentives for compliance, including abatement, market, regulatory and other costs of compliance. This model also suggests that incentives to protect workers are weaker than incentives to protect the environment. Second, Section II deduces from the model several principles agencies can use to predict when voluntary compliance is most likely to succeed. These principles can guide agencies, particularly OSHA, in deciding when regulations are necessary to induce compliance. Finally, in light of these principles, Section III critiques some strategies OSHA and other agencies have used to induce voluntary compliance and suggests other strategies agencies might try.

I. INCENTIVES FOR VOLUNTARY REGULATORY COMPLIANCE

A firm’s incentives for reducing health and safety risks can be analyzed as a function of four types of costs. Abatement costs (A) are a firm’s expenses of improving health and safety protection. Regulatory costs (R) are damages a firm pays to those injured by its actions and penalties it pays for failure to obey health and safety regulations. Market costs (M) are the higher costs and lost business opportunities (i.e., opportunity costs) caused by a firm’s failure to protect health and safety. According to economic theory, a firm should seek to minimize total costs (TC) or the sum of abatement, regulatory and market costs:

\[
\text{minimize } TC = A + R + M
\]

Economic theory predicts a firm reaches this goal by increasing its abatement costs until they exceed cost reductions the firm achieves from increased abatement spending regarding the three other costs.22

22. Our model assumes that economic actors behave perfectly rational when in fact
A. Abatement Costs

A firm has two types of abatement costs. It has "information costs," or the expense of acquiring knowledge about potential health and safety risks and effective controls for them.\(^{23}\) It also has "equipment and labor" expenses for the acquisition, installation, maintenance, and monitoring of abatement technologies, or the implementation of work practice or production rules. The amount of these costs is affected by four circumstances.

First, abatement costs are a function of the type of regulation an agency utilizes. Agency use of a specification standard may reduce a firm's information costs because the standard specifies a method of compliance. At the same time, a specification standard may increase a firm's equipment costs because it limits a firm's ability to rely upon less expensive compliance methods.\(^{24}\) Agency use of a performance standard frees firms to choose any compliance method that meets the regulatory goal established by the standard. Although a firm's labor and equipment costs might be lower under a performance standard, information costs may be higher, because the firm must independently determine how to reach the regulatory goal.\(^{25}\)

Second, the cost of information about health and safety risks or effective controls depends on whether the information is available from public and private sources. Trade associations and professional groups may provide such information.\(^{26}\) Professional standard-setting organizations, such as the...
American National Standards Institute (ANSI), establish voluntary standards, recommending specific levels of protection. Regulators often provide free (or reduced cost) consulting or related assistance, and publish information to help regulated entities understand current regulatory obligations. Agencies also publish guidelines recommending action. Firms need not follow these rules when they are adopted without notice and comment rulemaking.

Third, abatement costs depend on the extent to which health and safety spending increases a firm’s productivity. Gains from new, more efficient equipment and production or changes in work rules may partially (or even entirely) offset abatement costs. For example, a retrospective study of the cost of complying with OSHA’s cotton dust and vinyl chloride standards found that productivity improvements lowered actual compliance costs to one-half and one-quarter of OSHA’s pre-promulgation estimates. There is, however, no systematic evidence to indicate how widely such cost reductions occur.

27. See infra notes 187-216 and accompanying text (discussing standard setting organizations).


31. See CONGRESS OF THE UNITED STATES, OFFICE OF TECHNOLOGY ASSESSMENT, GAUGING CONTROL TECHNOLOGY AND REGULATORY IMPACTS IN OCCUPATIONAL SAFETY AND HEALTH: AN APPRAISAL OF OSHA’S ANALYTIC APPROACH 62 (1995) [hereinafter CONGRESS OF THE UNITED STATES] (industry compliance with vinyl chloride standard includes “unanticipated process innovations”). OSHA overestimated cotton dust compliance costs because it did not anticipate “textile industry’s aggressive retooling with modern production equipment.”

32. See Lyon & Maxwell, supra note 14, at 5 (citing only one example of company gain from compliance).
Fourth, abatement costs vary depending on the extent to which a firm can raise the price of its products or services to transfer health and safety costs to its customers.\textsuperscript{33} If competitive firms take similar precautions, all firms share the same interest in raising prices to offset abatement costs. The amount of revenue such firms may gain from price increases depends on the elasticity of demand for their products. "Elastic prices are those that respond with a greater percentage decrease in demand for every percentage increase in price."\textsuperscript{34} Similarly situated firms will gain little revenue from increased prices if demand is elastic because as prices are raised, fewer products will be sold.

A firm also is less likely to recoup its abatement costs if its competitors do not take similar safety or health precautions.\textsuperscript{35} These unwilling firms may attract customers from the more protective firm by offering lower prices. In a competitive market, a protective firm will lose business to an unprotective firm unless it can distinguish its product or service to justify its higher price. For example, if enough customers are willing to pay higher prices for organic foods or recycled products, a firm can recover its higher abatement costs.\textsuperscript{36}

\textbf{B. Regulatory Costs}

Whatever the amount of abatement costs, a business will pay such costs only if it believes other costs will be reduced by a greater amount. Regulatory costs constitute one such potential cost saving. Regulatory costs are of two types. If a firm's actions harm persons or their property, tort law or, in the case of a workplace injury, worker's compensation, may provide a remedy. Abatement efforts that decrease the likelihood or extent of injuries will reduce regulatory liabilities. If a firm violates a law or regulation, government fines or, in limited circumstances, jail sentences for firm managers, may be imposed. Abatement efforts that achieve regulatory compliance reduce the cost associated with these penalties. A firm's willingness

\textsuperscript{33} See United Steelworkers of Am. v. Marshall, 647 F.2d 1189, 1267 (D.C. Cir. 1980) ("OSHA can revise any gloomy forecast that estimated costs will imperil an industry by allowing for the Industry's demonstrated ability to pass through costs to consumers.").

\textsuperscript{34} Sidney A. Shapiro & Joseph P. Tomain, Regulatory Law and Policy 30 (2d ed. 1998).


\textsuperscript{36} See infra notes 85-92 and accompanying text (considering whether a firm that has a higher level of occupational safety and health than its competitors can take advantage of this record in its marketing efforts).
to incur abatement costs to avoid regulatory costs depends on the probability that tort suits or enforcement actions will succeed.

1. Personal and Property Injuries

A firm will prevent health and safety risks to the point where the cost of further risk reductions exceeds the expected compensation that the firm will pay for injuries or illnesses. The expected value of compensation varies by the probability that a firm will pay compensation and the amount of that compensation. Compensation is often less than the actual damages caused by the firm because some injured victims do not seek compensation, some who should receive compensation fail to prove their entitlement, others will lose despite having legitimate claims, and others recover less than the value of their injuries. Moreover, undercapitalized firms may simply ignore the possibility of paying significant compensation costs because their businesses would be bankrupted if damages were awarded.

When a firm insures against risks for which it might otherwise pay compensation, its incentive to abate the risk is further attenuated. A firm will insure only if its insurance costs are less than the expected compensation that the firm otherwise would owe; otherwise, the firm will self-insure. Because insurance is less expensive than paying compensation, it diminishes the incentive to take preventive actions. Since an insured firm likely will prevent harms only to the degree its premiums will rise if it does not do so, it may not seek to minimize the full impact of potential damage awards.

Firms have fewer incentives to prevent work-related injuries and illnesses than other harms. First, workers' compensation laws cap the amount of money that employers pay workers for occupational harms at levels less (and often far less) than the victims' damages. Second, workers' compensation insurance provides less incentive to engage in preventative actions than other types of insurance liability. The reason is that work-

37. Judgments about expected compensation costs must be made on the basis of perception, not reality, because compensation costs are not known until after decisions about incurring abatement costs are made.


39. This analysis assumes that insurance companies base their rates on a firm's health and safety record. When this is not true, insurance further weakens the firm's incentive to engage in the abatement of safety and health risks. See infra notes 41-42 and accompanying text.

ers' compensation premiums often fail to reflect, or only partially reflect, employer claims experience. Insurance companies do not charge small employers based on claims experience; insurance rates only for the largest employers are tied to experience. As a result of these practices, empirical studies confirm that the incentive effects of workers' compensation are "undetectable" for many firms.

This analysis suggests that laws would provide increased incentives to protect workers if injured workers received greater compensation, or if an increased use of experience rating in setting insurance rates was required. States, however, are generally moving in the opposite direction. Competition to attract new industry has created a political environment in which states have modified coverage in the last decade to reduce benefits and limit coverage.

The limited impact of compensation systems in reducing safety and health risks led Congress to conclude that the systems failed to provide adequate protection against such risks. Since the 1970s, Congress has enacted numerous statutes to protect individuals from many health and safety risks, including the Occupational Safety and Health Act (OSH Act).

2. Regulatory Enforcement

Regulators can require firms to meet specified levels of protection that provide consistent levels of safety and health protection to workers, whereas duties imposed in tort vary widely. Obedience to these rules depends on the likelihood that regulatory costs will be imposed and the magnitude of those costs. Regulatory costs consist of fines, or the costs to a firm that are related to criminal prosecution or any jail sentence imposed on a manager.

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41. Insurance rates for small firms are based on claims experience of all similarly sized businesses (pure community rating) or all similar kinds of business (manual rating). In either case, a small firm lacks the same insurance pricing incentive as a firm whose insurance rates are based on its actual accident experience (experience rating). See McGarity & Shapiro, supra note 40, at 602; Emily A. Spieler, Perpetuating Risk? Workers' Compensation and the Persistence of Occupational Injuries, 31 Hous. L. Rev. 119, 189-93 (1994).


43. See Spieler, supra note 41, at 193-201.

44. See McGarity & Shapiro, supra note 3, at 22-23; see also McCluskey, supra note 40, at 711-15.

45. See Shapiro & Tomain, supra note 34, at 82 (discussing legislation passed during consumer and environmental era).

a. Fines

Regulatory agencies normally assess civil fines to punish a failure to comply with regulations.\(^{47}\) The expected fine is the product of the probability (p) the government will detect violations times the amount of the fine (f) it will assess.\(^{48}\) A firm will comply with regulations when the gain (g) it expects from noncompliance exceeds the expected fine for a violation:

\[ g > pf \]

Thus, if a firm will gain a substantial sum of money (or avoid substantial costs) from noncompliance, it will not comply with rules if the risk of being caught is minimal or the potential fine is small.\(^{49}\) In cases where there is a small probability of detection and a great reward for law breaking, the government may not be able to assess a fine large enough to deter the conduct.\(^{50}\)

Budget limitations circumscribe an agency’s ability to detect violations, and if violations are detected, budget constraints may encourage case settlements for less than the fines originally assessed.\(^{51}\) In many instances,

\(^{47}\) In addition, Congress has authorized criminal sanctions of corporations, usually payment of a fine in some circumstances. See, e.g., 42 U.S.C. § 6903(15) (1994) (noting definition of “person” under RCRA includes corporations); see also 42 U.S.C. § 6928(d) (1994) (authorizing criminal indictment of “persons” under RCRA). Criminal sanctions differ from civil sanctions in two ways: the fines are usually higher, and criminal sanctions are more likely to increase a firm’s market and labor costs, as we discuss in later sections. See infra notes 74-78 and accompanying text (discussing relationship of corporate criminal fines and market costs); infra notes 141-43 and accompanying text (discussing relationship of corporate criminal fines and labor costs).

\(^{48}\) See W. Kip Viscusi, Reforming OSHA Regulation of Workplace Risks, in REGULATORY REFORM: WHAT ACTUALLY HAPPENED 234, 259 (Leonard W. Weiss & Michael W. Klass eds., 1986) (employer’s incentive to obey regulations is a function of the likelihood that OSHA will detect violations and the amount of the fines it will assess).

\(^{49}\) For example, if it would cost a firm $100,000 to obey a regulation, it should comply only if the expected fine is more than $100,000. If the firm has only one chance in ten of being caught, the firm will initiate abatement only if the fine exceeds $1 million.

\(^{50}\) Moreover, in assessing fines, the government is subject to a “deterrence trap.” If the rewards of wrongdoing yield millions of dollars, but the probability of detection is small, the government will have to impose a fine that totals billions of dollars to deter the behavior. If the government has good economic and political reasons to hold back from punishments that harm innocent workers, communities, and credits in this manner, its efforts to obtain compliance are weakened.

\(^{51}\) An agency, however, may gain additional compliance to the extent regulated entities do not realize how low the expected penalty is for noncompliance. See JAMES K. HAMMIT & PETER REUTER, MEASURING AND DETERRING ILLEGAL DISPOSAL OF HAZARDOUS WASTE: A PRELIMINARY ASSESSMENT 18-19 (1988) (citing survey evidence that small
agency regulations are under-enforced in the following sense: agencies could induce additional compliance if they detected more violations (or assessed higher penalties) because the cost of abatement would be less than the expected value of the fines.

OSHA faces this problem. OSHA has about 1,000 inspectors to cover more than 6.5 million employers.\(^{52}\) Although it concentrates its inspections on the most dangerous industries,\(^{53}\) this strategy still leaves significant enforcement gaps. OSHA has resources to visit high-hazard workplaces only once every thirteen years and every workplace once every eighty-seven years.\(^{54}\) As a result, "seventy-five percent of the sites where workers suffered serious accidents in 1994 and early 1995 had not had a federal safety inspection since 1990."\(^{55}\) When OSHA does find a violation, it often settles it for one-half or less of the assessed amount.\(^{56}\) Research indicates that when OSHA concentrates its enforcement efforts on certain hazards, e.g., protection against falls, and the chance of detecting violations therefore increases, so does compliance.\(^{57}\)

OSHA enforcement creates fewer incentives for compliance than enforcement by other agencies for two reasons. First, OSHA is less likely than other agencies to detect rule violations because other agencies have more inspectors. The Mine Safety and Health Administration (MSHA), for example, has jurisdiction over far fewer employers, but it has about two hundred more inspectors than OSHA. One study suggests these increased resources improve MSHA's effectiveness.\(^{58}\) In addition, unlike private

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52. See McGarity & Shapiro, supra note 3, at 212-13.
53. See id. at 213 (finding OSHA inspections based on statistics indicating most dangerous industries and responses to employee complaints and accidents).
54. See H.R. Rep. No. 103-825, pt. 1, at 33-34 (1994); Clyde Summers, Effective Remedies For Employment Rights: Preliminary Guidelines and Proposals, 141 U. Pa. L. Rev. 457, 504-05 (1992). An additional 100,000 inspections are conducted each year in states that run their own OSHA programs, but the vast majority of employers remain un inspected in those jurisdictions as well.
56. See, e.g., McGarity & Shapiro, supra note 3, at 217 (stating OSHA collects less than one-half of the fines it assesses). If OSHA fines are contested, employers are not required to abate the violation. See 29 U.S.C. § 666(d) (1994). OSHA settles so many cases to encourage prompt abatement of violations. See McGarity & Shapiro, supra note 3, at 217; General Accounting Office, Occupational Safety And Health: Penalties For Violations Are Well Below Maximum Allowable Penalties 7 (1992).
58. See Mary Jane Bolle, Congressional Research Service, OSHA Safety
rights of action that exist for environmental enforcement, no private right of action exists to enforce the OSH Act. A private right of enforcement substantially increases the odds that violations are detected because it authorizes private parties who find them to sue for enforcement.

Second, after OSHA detects violations, it is more limited than other agencies in its ability to assess large fines. Since 1990, the agency has had the authority to impose a maximum fine of $70,000 for a willful or repeat violation and $7,000 for a serious violation. OSHA has found a way to increase these penalties when an employer has engaged in "egregious conduct." For such conduct, OSHA assesses separate penalties for each employee exposed to violative conditions. This can result in "mega-fines" totaling a million dollars or more. This policy increases the incentive to comply with OSHA regulations, but it does not apply in circumstances where there is only one hazard to be abated, even if the violation causes multiple fatalities. By comparison, fines are much higher under the environmental laws. EPA is authorized, for example, to impose fines of up to $25,000 per day for negligent violations of the Clean Water Act (CWA) and up to $50,000 per day for repeat negligent and knowing violations. Similarly, fines are higher for the equivalent of egregious conduct under the environmental laws. For example, EPA can impose civil fines of $250,000 per day and a criminal fine of up to $1 million for violations of the CWA that knowingly endanger the public.

Even when detection and punishment of violations seem unlikely, a firm may have an incentive to comply with rules if its failure to do so may have one of four potential consequences. First, regulators may monitor for future violations more closely or increase subsequent penalties after viola-


62. See Reich v. Arcadian Corp., 110 F.3d 1192 (5th Cir. 1997) (holding that, under general duty clause, penalties may be assessed only for each hazard requiring abatement); Secretary of Labor v. Caterpillar, Inc., 15 O.S.H. Cas. (BNA) 2153 (O.S.H. Rev. Comm. 1993), available in 1993 WL 44416 (O.S.H.R.C.) (authorizing per employee penalties for record keeping violations).


64. See id.
tions are found. For this reason, managers may calculate the probability of detection as including the regulator's behavior after the first violation is identified. Second, because corporate non-compliance can influence community attitudes concerning additional regulation, a firm may seek to prevent accidents and injuries to forestall future, more stringent regulation. Prevention also saves money for a related reason. When a business receives unwanted public attention due to an accident or other incident, it must significantly increase the resources devoted to its public relations and intergovernmental relations functions. Third, a firm may self-report a violation if enforcement officials offer a significant incentive to do so.

65. See Jon D. Harford & Winston Harrington, A Reconsideration of Enforcement Leverage When Penalties Are Restricted, 45 J. PUB. ECON. 391, 394 (1991) (remarking that re-inspecting firms which commit a violation increases the level of compliance for a given level of monitoring or expected penalties); Winston Harrington, Enforcement Leverage When Penalties Are Restricted, 37 J. PUB. ECON. 29, 34 (1988) (discussing firm's compliance related to its expectation that inspection will occur).

66. See Lyon & Maxwell, supra note 14, at 13 (noting firms may engage in voluntary environmental investments in order to commit to higher compliance levels with existing regulations and thereby win lower monitoring rate); Paul B. Downing & James N. Kimball, Enforcing Pollution Control Laws in the United States, 11 POL'Y STUD. J. 55, 62 (1982) (explaining that similar violations receive higher penalties provides impetus for risk adverse managers to comply instead of risking additional future monitoring).

67. See Tomer, supra note 23 and accompanying text, at 132, 135 (stating the failure of a firm to meet such expectations constitutes a "legitimacy costs" because community pressure may lead to additional regulation). Tomer analyzes the impact of a firm's behavior on the political behavior of citizens as a prisoner's dilemma. See id. at 145. In this analysis, the firm has the choice of cooperating or not cooperating with the community, while the community has the choice of cooperating or not cooperating with the firm. Id. For the firm, cooperation means compliance with standards that, for example, reduce pollution. For the community, cooperation means actions that are non-controlling and non-penalizing, while not cooperating means actions that are controlling and penalizing. If the firm is not cooperative, its managers can anticipate that the community will shift to non-cooperation, with the ultimate result being a prisoner's dilemma solution (non-cooperation by the firm and community), a jointly disadvantageous solution. Id.

68. See Lyon & Maxwell, supra note 14, at 8 ("[Firms] may be able to preempt future regulation altogether by 'self-regulating' with just enough stringency to placate environmentalists and head off the demand for government regulation."); John W. Maxwell et al., Self-Regulation and Social Welfare: The Political Economy of Corporate Environmentalism (March 1998) (unpublished paper, on file with author) (presenting empirical evidence suggesting that, as the threat of regulation grows, self-regulation becomes more stringent because of reductions in consumers' information and organizational costs).


Finally, managers may obey safety and health regulations to reduce the potential for accidents or illnesses that raise the firm’s costs in markets in which it operates or that cause its managers anxiety or a loss of prestige. The extent to which managers actually take the previous consequences into account is unknown. Moreover, even if they do so, they may discount these future costs, reducing present incentives to respond to them.

b. Jail Sentences

Potential jail sentences for corporate officials who violate regulations create an additional incentive for compliance. When punishment consists of a jail sentence, firm managers will consider both the expected value of jail sentences, which equals the probability (p) that a violation will be detected, the length of the sentence (t) and the disutility (λ) to the employee who will serve that time. According to economic theory, the firm will consider potential jail sentences because an employee will demand to be compensated for undertaking such a risk. Thus, a firm will commit a violation with potential criminal penalties if and only if the gain (g) exceeds the expected value of the cost of any fines and imprisonment:

\[ g > p (f + \lambda t) \]

As the formula indicates, an agency can increase a company’s incentive to comply with its regulations by increasing the potential for prosecutions and by seeking longer jail sentences.

At OSHA, however, this formula is unlikely to hold true. Criminal penalties seldom come into play. A firm acts criminally only if its “willful” violation of an OSHA standard causes an employee’s death. Only corpo-

71. See infra notes 80-92 and accompanying text (discussing impact of violations in consumer, producer, and capital markets).

72. See infra notes 124-35 and accompanying text (discussing relationship between social norms, violations, and the anxiety and prestige of managers).

73. See Tomer, supra note 23, at 131 (indicating a firm’s “patience” in sacrificing short-term for long-term gains “corresponds roughly to the rate of discount . . . .”). For example, a firm may choose not to comply with health precautions that reduce the number of employees who become ill 20 years from now. The reason is that the present value of future savings in compensation costs is less than the cost of compliance. See Elinor P. Schroeder & Sidney A. Shapiro, Responses to Occupational Disease: The Role of Markets, Regulation, and Information, 72 GEO. L.J. 1231, 1244-56 (1984) (discussing employer incentives to prevent occupational illnesses). Moreover, the analysis assumes that managers accurately calculate future liabilities, but they might employ an abnormally high discount rate that will dilute the present value of future penalties. See STONE, supra note 38, at 16.

74. 29 U.S.C. § 666(e) (1994); Lynn K. Rhinehart, Would Workers Be Better Protected If They Were Declared an Endangered Species? A Comparison of Criminal Enforcement
rate officers are subject to a criminal penalty; thus, lower level managers who may have been directly responsible for a workplace fatality are exempt. By comparison, the EPA jailed 228 people between 1987 and 1993 for violating federal environmental laws. Moreover, federal law authorizes longer sentences for environmental violations, while OSHA criminal violations are misdemeanors. For example, a person who violates the Clean Air Act by knowingly endangering others can be jailed for up to fifteen years.

The limited availability of criminal penalties under the OSH Act robs the agency of a potentially powerful enforcement tool. Even when the possibility of prosecution is remote, criminal penalties can create a significant incentive to comply with agency rules. If a manager is extremely risk adverse (i.e., has a high disutility), the manager will strongly disfavor violation of regulations that could lead to a jail sentence, even if the probability of detection is low. In such cases, managers treat the probability of detection as one hundred percent. Besides the disutility of serving a jail sentence, criminal penalties impose large social costs on managers. This loss of prestige occurs regardless of the length of sentence.

This analysis suggests that Congress can gain greater compliance by broadly authorizing criminal prosecutions. For example, if OSHA operated under the same standard as EPA uses under the CWA — knowing endangerment — more managers would be potentially subject to a jail sentence. Even if the actual probability of prosecution remained low, the change could still promote additional compliance.

C. Market Costs

A firm's regulatory cost is a function of the nature and degree of regulatory enforcement. A firm can decrease its regulatory costs by complying with applicable laws and regulations. Increased prevention can reduce a firm's "market" costs. A market cost is a cost that occurs in a firm's product, supply, capital, and labor markets and is impacted by the firm's level of prevention.

75. See United States v. Doig, 950 F.2d 411 (7th Cir. 1991) (holding that an employee who is not a corporate officer, and thus not an employer, cannot be the subject of a criminal sanction).
76. See McGarty & Shapiro, supra note 3, at 219.
77. See id.
1. Product and Service Markets

A firm’s safety and health compliance may determine whether ordinary and industrial customers purchase its product. A firm with a poor compliance record may lose customers or, conversely, may fail to attract consumers who prefer to purchase goods and services from businesses with a responsible record for human and environmental protection.

Consumers are most likely to stop purchasing an unsafe product or service once they become aware of the defect. Besides engaging in such self-protection, they might decline to purchase a firm’s products where its poor safety and health record puts others at risk or where the firm fails in some other manner to act responsibly. This “exit” from a market allows a consumer to indirectly “bargain” over a firm’s commitment to prevention without incurring high transaction costs. Activists may seek to prompt this response by announcing a consumer boycott in the media. Examples include the widespread protests against companies doing business in South Africa, and against Nestle Corporation for its practices of marketing unhealthful products in the Third World. A firm may also lose industrial or business customers if they view a poor safety or environmental record as evidence the firm is poorly managed and unreliable. A firm can reduce the (direct and indirect) loss of business by improving its performance.


81. See ALBERT O. HIRSHMAN, EXIT, VOICE, AND LOYALTY: RESPONSES TO DECLINE IN FIRMS, ORGANIZATIONS, AND STATES 86 (1970) (suggesting that “exit” or refusal to buy products is a form of consumer protest against business actions). Those leading a boycott may seek direct negotiations with a firm.

82. See JOEL MAKOWER, THE E-FACTOR: THE BOTTOM LINE APPROACH TO ENVIRONMENTALLY RESPONSIBLE BUSINESS 103-06 (1994) (discussing how relatively small number of individuals have created significant amount of media attention and bad publicity for a firm).


84. In addition, a poor safety and health record may cause a loss of supplier confidence, which could result in an increase in the price of raw materials and other supplies. The purchasing firm can obtain lower prices by taking precautions that reduce the likelihood of accidents or environmental injuries. See Wærneryd & Lewis, supra note 80, at 6 (sug-
A firm’s compliance record can have the opposite effect as well: it might encourage consumers to buy the firm’s products or services. As noted earlier, some consumers are willing to pay higher prices for products that are less likely to injure the environment. For example, Star Kist’s sales and profits went up after the company raised its prices to cover the added cost of purchasing tuna only from suppliers who used dolphin-safe nets. More generally, consumers may favor firms with a good reputation for environmental protection or social responsibility. There is evidence, for example, that Ben and Jerry’s sells more ice cream because of its Amazon rain forest preservation efforts, and that McDonalds sells more hamburgers because it supports parents of seriously ill children. If consumers react in this manner, the failure to engage in protection is a cost to the firm (i.e., opportunity cost) because it results in lost sales.

The general significance of these market forces in the areas of environmental and social responsibility is unknown. Besides the type of anecdotal evidence described above, there is only “sparse” empirical evidence of the impact of product markets on prevention levels. After a literature review, Lyon and Maxwell conclude, for example, that there is no empirical basis for predicting when such market forces are likely to prompt voluntary reductions in pollution. Some studies show that firms dealing directly with

gesting that suppliers might decline to deal with unethical firms).

85. See Lyon & Maxwell, supra note 14, at 6 (stating that shifts in marketplace make environmental activity more profitable).

86. See Arora & Gangopadhyay, supra note 15, at 292-93 (proposing an economic model in which a firm will decrease its emissions more than the government requires in order to differentiate itself from less environmentally conscious companies and thereby attract consumers who are willing to pay more for cleaner products).


88. See Frank, supra note 87, at 95 (“many people have come to develop a taste for socially responsible behavior” by business); P.N. Grabosky, Regulation by Reward: On the Use of Incentives As Regulatory Instruments, 17 L. & Pol’y 257, 261 (1995) (suggesting that a firm can generate “reputational capital” by regulatory compliance).

89. See Frank, supra note 87, at 95.

90. See Lyon & Maxwell, supra note 14, at 14, 20 (noting “sparse” literature and lack of consensus). Similarly, Professor Steinzor observes that “in all but the most consumersensitive industries . . . there is no consensus regarding the economic opportunities presented by pollution prevention, waste minimization, or the development of environmentally beneficial products.” Steinzor, supra note 16, at 166.
consumers are more likely to engage in such efforts, but other studies contradict this result.

The significance of market forces in promoting safer workplaces is likewise unknown, but several reasons suggest that workers are not likely to be the beneficiaries of these incentives. The public normally has little or no information about a firm's workplace safety and health record, and most workplace accidents go unreported in the media. Moreover, because occupational risks pose no direct threat to consumers, they notice them less often, except when a catastrophic incident occurs. In addition, consumers may not be able to reduce purchases from unsafe employers because the goods and services they produce are not sold directly to the public. Finally, although there are readily identifiable examples of "green marketing" (i.e., firms advertising their environmental achievements), it is more difficult to find efforts by firms to advertise workplace safety and health records. This fact suggests that businesses believe workplace safety and health are not factors considered in consumer purchasing decisions.

It is more likely that a firm's safety and health record will impact its costs in situations where its actions adversely affect third parties other than consumers. For example, the suppliers of equipment or raw materials may be liable to employees of their customers if a workplace injury or illness is related to defects in such equipment or raw materials. These suppliers will establish the price for their products based in part on the likelihood of such liability. Firms that protect employees from injuries from such equipment and materials can charge suppliers lower prices. Similarly, a contractor (or the general contractor) may be liable for a construction accident that injures

91. See, e.g., Seema Arora & Timothy N. Cason, Why Do Firms Volunteer To Exceed Environmental Regulations? Understanding Participation in EPA's 33/50 Program, 72 LAND ECON. 413, 426 (1996) (finding firms in industries with higher advertising to sales ratios were more likely to join the 33/50 program): Lyon & Maxwell, supra note 14, at 20, citing Madhu Khanna & Lisa Dammon, EPA's Voluntary 33/50 Program: Impact on Toxic Releases and Economic Performance of Firms (1998) (unpublished paper, on file with author) (concluding final goods producers in the chemical industry were more likely to join 33/50 program than intermediate goods producers).


93. See Phil Primack, We All Work, Don't We?, COLUM. JOURNALISM REV., Sept.-Oct. 1992, at 56 (expressing concern about the lack of media coverage of workplace issues, especially occupational safety issues). Industrial customers, instead of consumers, are more likely to detect a firm's poor safety and health record. If a firm is worried about a source of supply, it is an economic incentive to monitor the supplier's performance. Still, the literature offers no empirical evidence to suggest this is so or the extent to which suppliers lose industrial customers in this manner.
the employee of another company. In such circumstances, the failure of the firm to engage in safe practices will raise its liability costs.

2. Capital Markets

A firm that improves its safety and environmental record may retain existing customers and attract new ones. A firm’s safety and health record can also impact the price of a firm’s stock. Economic theory predicts that security prices in an efficient capital market provide the best, unbiased estimate of a company’s assets.94 Under this efficient market hypothesis, a firm’s stock price will decrease when investors obtain information that indicates its future earnings are likely to decline.95 If investors regard new information about a firm’s environmental or safety and health record as indicative of lower future earnings, the announcement of such information should be associated with a decline in the firm’s stock price. Conversely, a firm can avoid a loss in value of its stock by taking preventative actions that reduce the likelihood of safety or environmental problems.

Investors might regard negative news about a firm’s safety or environmental record as indicating lower future earnings for several reasons.96 If a firm is likely to be (or has been) fined by regulators or has to pay (or has paid) tort damages, investors may anticipate a decline in future earnings, particularly if these payments are likely to cost millions of dollars. Similarly, if the news is likely to lead to a decline in sales, investors can expect a decline in earnings. When a firm is accused (or convicted) of consumer fraud, for example, investors may predict there will be a decline in consumer demand for its products or services. Investors may also anticipate a loss of earnings for more indirect and general reasons. For example, they might decide that a firm with a poor reputation for environmental protection is generally poorly managed, which means that it is likely to earn less in the future. Or, investors may decide that such a firm is likely to have


95. New information is incorporated into the price of a firm’s stock because it creates arbitrage opportunities. If the new information indicates that the cash flow is likely to decrease, the firm’s stock is over-valued. Investors aware of this opportunity will sell the firm’s stock, which will change its price and the return that investors can expect from their ownership.

96. See Lyon & Maxwell, supra note 14, at 20-21 (identifying reasons).
higher costs, such as lost sales because of a poor social reputation, additional regulatory scrutiny, or more risk of liability for spills or accidents.

Economists have studied investors’ reactions by testing whether an event, such as a news story about a firm’s failure to protect the environment or consumers, produced an “abnormal return” on or after the day of the event. Studies have established a correlation between abnormal returns, the publication of information about environmental enforcement actions, or other measures of environmental performance. Other studies have shown a correlation between abnormal returns and the publication of information about business frauds and other corporate illegality, product recalls, and liability suits.

97. This method compares the actual price of the firm’s stock on the day of or after the announcement with a prediction of the price based on prior movements in the price of the stock. When there is a statistically significant difference between the actual and predicted price, a correlation exists between the “abnormal return” and the announcement of the firm’s failure to protect the environment or consumers. See Eugene F. Fama et al., The Adjustment of Stock Prices to New Information, 21 INT’L ECON. REV. 98 (1995); Stephen J. Brown & Jerald B. Warner, Using Daily Stock Returns: The Case of Event Studies, 14 J. FIN. ECON. 3 (1985).

98. See, e.g., Benoit Laplante & Paul Lanoie, The Market Response to Environmental Incidents in Canada: A Theoretical and Empirical Analysis, 60 S. ECON. J. 657, 666-69 (1994) (finding abnormal losses between 1.65-2.0% in Canada after firm was adjudicated to be liable to pay a fine, but no losses when lawsuit was filed); Michael Muoghalu et al., Hazardous Waste Lawsuits, Stockholder Returns & Deterrence, 57 S. ECON. J. 357, 362, 364 (1990) (pointing out statistically significant loss of 1.2% in market value after Superfund law suit filed against a firm, with an average loss of $33.3 million, but no significant abnormal returns at disposition).

99. See, e.g., James T. Hamilton, Pollution As News: Media and Stock Market Reactions to the Toxics Release Inventory Data, 28 J. ENVTL. ECON. & MGMT. 98, 108-12 (1995) (finding negative significant abnormal returns between 0.2-0.3% on first day after publication of EPA’s Toxic Release Inventory (TRI), producing average loss of $4.1 million in stock value for 436 firms; firms with larger number of chemicals on list had larger losses); see also Konar & Cohen, supra note 94, at 115-16 (providing statistically significant evidence of negative abnormal returns for firms with large emissions of toxic chemicals on day TRI information was published); Philip B. Shane & Barry H. Spicer, Market Response to Environmental Information Produced Outside the Firm, 53 ACCT. REV. 521, 530-34 (1983) (noting significant net decrease in security prices of firms in several industries after publication of a report by the Council of Economic Priorities identified firms as highly polluting).

100. See, e.g., Jonathan M. Karpoff & John R. Lott, Jr., The Reputational Penalty Firms Bear From Committing Criminal Fraud, 36 J. L. & ECON. 757, 758-59 (1993) (determining that announcement of alleged or actual corporate fraud, on average, corresponds with a statistically significant loss in the market value of the common stock of the firm).

The two studies of the impact of OSHA enforcement actions on stock market returns are consistent with these findings. A 1989 study by Fry and Lee tested whether the announcement of twenty-eight OSHA enforcement actions affected the value of the affected firms. They found an "immediate and adverse" decline in the value of the firms on the announcement date and during the three-day period surrounding it. A 1994 study by Davidson, Worrell and Cheng tested the stock market reaction to sixty-three announcements of OSHA penalties in four national newspapers. Their results established that the "stock market reacts significantly [negatively]" to announcements of OSHA penalties in the time period immediately surrounding the announcement day. That reaction, however, was unrelated to the relative size of the penalty, the number of non-record-keeping violations, and to whether the sanctions were imposed because of employee death or injury.

These studies suggest that capital markets have the potential to raise the short-run capital costs of firms with poor safety and health results. It is unclear how long this effect lasts. It is less clear whether the decline in the price of a firm's stock constitutes a "reputational" penalty. Such a penalty would exist if the firm's loss in stock market value exceeds its expected (or actual) liability for fines or tort liability. In other words, it is not clear whether investors anticipate that a firm's environmental or safety record will cause a loss of earnings attributable to consumer reaction or poor management. Two recent studies concluded that there is a negligible reputational penalty for environmental violations.

102. See W. Kip Viscusi & Joni Hersh, The Market Response to Product Safety Litigation, 2 J. REG. ECON. 215, 221-22 (1990) (stating announcement of law suit against manufacturers of Agent Orange associated with significant abnormal returns, amounting to a loss of 3.76% for Dow Chemical over a 10 day period which totaled $220.68 million); id. at 223-25 (arguing announcement of DES law suits associated with abnormal return of negative 7.28% for Merck & Co., which equaled a loss of $362 million, and with a negative return of 4.01% for Eli Lilly, which equaled a loss $188 million).


104. See id. at 607 (finding a statistically significant 0.95% abnormal negative return on the day the fine was announced and with a statistically significant 2.1% cumulative abnormal excess negative return).


106. There was a statistically significant 2.86% abnormal negative return on the day the fine was announced and a statistically significant 2.95% cumulative abnormal excess negative return from the period one day before the announcement to two days after it. Id. at 290-91.

107. See id. at 294.

108. See Kari Jones & Paul H. Rubin, Effects of Harmful Environmental Events on
3. Labor Markets

A firm with a poor safety or environmental record may lose customers, pay higher prices for machinery, and suffer a decline in the value of the price of its stock. Economic theory predicts that a firm may also have higher labor costs of two types. Employees exposed to workplace risks may demand compensation (i.e., a risk premium) for being exposed to the risk of injury or disease. Executives who are subject to social sanctions or personal discomfort because of a firm’s poor safety or environmental record may demand compensation (i.e., a reservation pay premium) for enduring this discomfort. Although these are hardly equivalent situations — the worker may be exposed to the risk of serious bodily injury or death and the executive may be subject to psychological discomfort — in theory both present an incentive to the firm to engage in preventative efforts. In reality, these costs appear to create only weak incentives in many situations.

a. Risk Premiums

Economic theory predicts that workers will seek safer jobs unless employers compensate them for workplace risks. If so, an employer will calculate whether it is less expensive to reduce a workplace hazard or pay workers a risk premium. Firms should reduce occupational risks until the marginal cost of making the next risk reduction is more than the extra compensation workers demand. Consistent with this theory, some studies have found that workers in dangerous jobs receive higher wages after adjusting for education, experience, and other market characteristics of safety hazards.

Reputations of Firms (unpublished paper, on file with author) (finding insignificant stock market response to a sample of all negative environmental incidents — regulatory and non-regulatory — over a 22 year period involving oil firms and electrical power companies); Jonathan M. Karpoff et al., Environmental Violations, Legal Penalties, and Reputation Costs (Oct. 23, 1998) (unpublished paper, on file with author) (finding no reputational penalty because the stock market losses of firms were of similar magnitude to their legal penalties for environmental violations).


110. See id.

111. See id. at 74-79 (describing results of studies); see also W. Kip Viscusi, Fatal Tradeoffs: Public and Private Responsibilities for Risk 40-41 (1992) (showing results of Viscusi’s research); id. at 61-63 (showing a table of results of other studies). Viscusi, for example, has found that annual compensation for all job risks totals about $400. Id. at 40. Although compensation is only $400, Viscusi estimates that workers receive a premium of $1 to $1.5 million per fatality and $10,000 per injury in 1969 dollars. Id. The actual amount that workers receive is only $400 because, according to Viscusi’s statistics, they
Despite such empirical data, it is unlikely that workers receive wage premiums that fully compensate them for work-related risks. For wage premiums to be fully compensating, workers (or at least some workers) must be fully informed about work-related risks. The existence of wage premiums indicates that workers have some knowledge of workplace risks, but survey research by James Robinson indicates that the extent of that knowledge is limited.\textsuperscript{112}

Even workers with some knowledge of workplace risks must be able to discern marginal differences in risks to bargain effectively for appropriate hazard pay. Such distinctions are especially difficult to make in the context of occupational illness, where huge uncertainties befuddle attempts to predict the precise effects of health risks on longevity and the quality of life once a disease has manifested itself.\textsuperscript{113}

Workers must also be free of psychological defects that distort the way in which individuals process risk information, but individuals commonly misperceive the degree of risk that they face.\textsuperscript{114} Finally, the additional compensation that a worker can obtain for hazardous work is a function of the worker's bargaining power. In those situations in which employees can be easily replaced and for whom alternative jobs are not readily available, an employee cannot be very demanding in seeking hazard pay.\textsuperscript{115}

There are also reasons to distrust the empirical data establishing that wage premiums exist. Existing studies of wage premiums likely overstate the amount of hazard pay because such studies rely on accident data that understates the extent of workplace fatalities and injuries. If the accident rate is higher than existing data indicate, then wage premiums compensate less than studies indicate.\textsuperscript{116} In addition, studies of wage premiums are have only a small chance of being killed or injured.

\begin{itemize}
\item \textsuperscript{112} Using national survey data, Robinson found that 33\% to 50\% of workers in occupations with high rates of disabling injuries and illnesses reported that they faced no significant safety or health hazards. \textit{James C. Robinson, Toil and Toxics: Workplace Struggles and Political Strategies for Occupational Health} 21-24 (1991). Although workers were more likely to recognize cancer risks in industries where such risks were high, only 13\% to 33\% recognized that they were exposed to a significant risk. \textit{Id.} at 24. Workers may have more knowledge about other less dangerous health risks. See Viscusi, \textit{supra} note 111, at 62.
\item \textsuperscript{113} McGarity & Shapiro, \textit{supra} note 40, at 606.
\item \textsuperscript{114} See Nicholas A. Ashford & Charles C. Caldart, Technology, Law, and the Working Environment 227 (1991) (summarizing research that shows that individuals commonly misperceive safety risks).
\item \textsuperscript{115} See McGarity & Shapiro, \textit{supra} note 3, at 19; Schroeder & Shapiro, \textit{supra} note 73, at 1241 (stating employers pay wage premiums only if employees are mobile and can easily take less risky jobs).
\item \textsuperscript{116} See McGarity & Shapiro, \textit{supra} note 40, at 591-92 (citing studies finding that existing statistics underestimate workplace risks). For example, Viscusi estimates that workers receive a $1 to $1.5 million premium per fatality and a $10,000 premium per injury is
limited to the risk of accidental injury and death. There is little empirical
evidence that workers receive wage premiums for occupational health
risks.\footnote{117}

Further, the evidence of wage premiums found by analysts may be at-
tributable to labor market conditions other than accident risks. Many fac-
tors affect wage levels, including the risk of injury or death, and higher
wages in dangerous industries may be attributable to these other factors.
Although risk studies have taken into account some of these characteristics,
they have not tested for other factors that might explain higher wages.
Studies that test for such factors have found that higher risk levels do not
necessarily explain the higher wages paid to employees.\footnote{118} For example,
Dorman and Hagstrom, after accounting for multiple factors that might ex-
plain higher wages, found no evidence that workers receive compensation
for the risk of fatal and nonfatal injuries except for one measure of fatality
risk.\footnote{119} As a result, they conclude, "[t]hese results cast doubt on the very
existence of compensating differentials for all workers, union and nonunion
alike."\footnote{120}

Finally, there is evidence that wages are lower, not higher, in some dan-
gerous occupations. Dorman and Hagstrom found evidence of a negative
correlation (i.e., relatively high risk and low wages) for nonunion workers
in risky occupations.\footnote{121} James Robinson likewise has found that because
hazardous jobs paid twenty to thirty percent less than safe employment,
persons with education and training will avoid such jobs.\footnote{122} This evidence

\footnote{117. The data are so poor regarding the risks of occupational disease that economists
have been unable to test whether employees receive compensation for such risks. The
findings about risk compensation are based on occupational accidents. \textit{McGarity & Shapiro}, \textit{supra} note 3, at 271.

118. \textit{See Dorman}, \textit{supra} note 109, at 94-97 (citing and reviewing studies).
119. \textit{See Peter Dorman & Paul Hagstrom, Wage Compensation For Dangerous Work
Revisited}, 52 \textit{Indus. & Lab. Rel. Rev.} 116, 133 (1998); \textit{see also Dorman, supra} note 109,
at 98-99. Further, they argue that the measure of risk associated with compensating wages
"is the one that possesses the least plausibility" in terms of measuring the actual risk that
workers confront. Dorman & Hagstrom, \textit{supra}, at 121.
120. \textit{Dorman & Hagstrom, supra} note 119, at 133.
121. They explain, "[i]n plain terms, nonunion workers in dangerous jobs are, in many
cases, simply unlucky: they have found their way into situations of high risk and low pay
and would presumably move to a better job if they could." \textit{Id}.
122. \textit{See Robinson, supra} note 112, at 93. According to Robinson, the labor pool for
hazardous jobs therefore often consists of "disadvantaged workers [who are] willing to ac-
cept health and safety risks in return for very modest amounts of compensation." \textit{Id} at 94.
Not surprising, this means minority workers are more likely to suffer disabling injuries or}
supports the conclusion that workers are unlikely to obtain wage premiums when they have little bargaining power.

If they exist, wage premiums may create a limited incentive for some employers to reduce occupational risks. Once labor market conditions are considered, pay differences attributable to risk compensation are small. Poor, unorganized workers in dangerous industries are unlikely to have the capacity or information needed to obtain wage premiums for safety risks. There is little evidence that workers obtain compensation for the risk of becoming ill from occupational disease.

b. Reservation Pay Premiums

Economic theory predicts that a firm will have to compensate its managers for any loss of prestige or anxiety they suffer from the firm’s failure to protect safety and health. A manager may be subject to these reactions when a safety and health standard becomes a behavioral norm.

Norms “specify what actions are regarded by a set of persons as proper or correct, or improper or incorrect.” They are “ordinarily enforced by sanctions,” which are either rewards for proper behavior or punishments for improper behavior, imposed by other persons. Thus, managers who fail to conform to a safety norm may experience “discomfort or harassment, as well as reduced prestige and prominence, . . . as a result of pressure from activist community groups or others external to the firm.” A norm may also be “internal to the individual carrying out the action, with sanctions applied by that individual to his own actions.” Internalization occurs through socialization, including professional training. When a norm is

illnesses than others. Id. at 97-98.

123. In addition to a wage premium, employers have another incentive to protect workers. When workplace injuries or illnesses cause employees to miss work, a firm’s productivity will decline if their replacements are less experienced or skilled. Conversely, attention to safety can increase the loyalty of employees, which has a positive impact on productivity. See, e.g., A Gift From the Heart, WHARTON ALUMNI MAG., Fall 1998, at 11 (attributing low turnover to employee loyalty generated by, in part, firm dedication to safety). There is only anecdotal evidence, however, concerning the extent to which employers respond to this incentive.


126. Tomer, supra note 23, at 136 (citing HENRY G. MANNE & HENRY C. WALLICH, THE MODERN CORPORATION & SOCIAL RESPONSIBILITY 27 (1972)).

127. COLEMAN, supra note 124, at 243.

128. See Robert Cooter, Normative Failure Theory of Law, 82 CORNELL L. REV. 947, 954 (1997) (“Internalization especially occurs through socialization, which teaches young people the conventional virtues at the core of morality.”).
internalized, an "individual feels internally generated rewards for performing actions that are proper according to [the] internalized norm or feels internally generated punishments for performing actions that are improper according to [the] internalized norm." Thus, a manager, who acts inconsistently with an internalized safety norm might incur costs in the form of anxiety.

Economic theory predicts that a manager who is (or will be) subject to social sanctions or personal discomfort because of a firm's failure to abide by safety and health norms will demand compensation (i.e., a "reservation pay premium") as compensation for these costs. There is some survey and labor market evidence that employees demand such premiums. A firm would reduce these premiums as long as additional safety and health improvements were less costly than paying additional compensation to managers.

i. Norms and Behavior

If executives do demand higher compensation to work for companies that flout social norms, the existence of such norms would create an incentive for firms to engage in preventative efforts. Economists have only recently begun to study how norms affect compliance with the law, a subject of long interest to sociologists and other disciplines. Although the new economic literature has not focused on compliance with safety and health regulations per se, two insights from it are relevant here.

129. See Coleman, supra note 124, at 295 ("Professional schools and graduate schools socialize a candidate into a profession or discipline . . . ").
130. Id. at 243.
131. See Frank, supra note 87, at 96 (suggesting that less "altruistic" employers have to provide premiums to attract quality personnel).
132. See Pierce, supra note 42, at 565 n.132 (reporting a survey of Cornell University graduating seniors that found they demanded a substantial wage premium to accept a job with a firm that has a bad reputation for social responsibility; those surveyed indicated that they would take a job with Exxon in the wake of the Valdez oil spill only if it paid about $13,000 more than the Peace Corps).
133. See Frank, supra note 87, at 96-100 (citing evidence of reservation pay premiums).
First, the public is likely to obey a law despite the low probability of
government enforcement if it mirrors a widely held norm. For example,
there is little probability that the police will arrest someone for violating a
smoking ban, but social pressure causes almost all smokers to obey such
restrictions.\textsuperscript{136} For norms to function in this manner, most people must
comply with a norm. When there is low compliance, there will be less
community pressure to obey the norm,\textsuperscript{137} and individuals are less likely to feel “guilty” about not obeying the norm. The latter reaction occurs be-
cause most persons “loathe being taken advantage of.”\textsuperscript{138} For example, a
taxpayer’s decision to pay taxes is influenced more by the person’s percep-
tion of whether others in the same situation are paying their taxes than by
the tax burden or the person’s perception of potential penalties for non-
compliance.\textsuperscript{139}

In theory, social norms might compel compliance with occupational
safety and health regulations in situations where OSHA is unlikely to detect
noncompliance. In practice, social norms probably do not have this impact.
Unlike the smoking example given above, the public is unlikely to become
aware of noncompliance with workplace safety and health rules, thereby
inhibiting the imposition of social sanctions.\textsuperscript{140} Nevertheless, a manager
might feel compelled to obey OSHA regulations because the person feels a
general duty to obey the law or because the manager has internalized a
norm to follow safety and health rules as part of his or her professional
training.

Second, criminal sanctions can promote greater compliance than civil
penalties. Because a society signals the seriousness of a law violation by

\textsuperscript{136} See Robert A. Kagan & Jerome H. Skolnick, Banning Smoking: Compliance With-
out Enforcement, in SMOKING POLICY: LAW, POLITICS, AND CULTURE 69, 78-80 (Robert L.
Rabin & Stephen D. Sugarman eds., 1993) (documenting impact of social pressures on en-
forcement of smoking bans).

\textsuperscript{137} See Dan M. Kahan, Social Influence, Social Meaning, and Deterrence, 83 VA. L.
REV. 349, 357 (1997) (“The more prevalent criminal activity is in a particular community
the less likely someone is to be condemned for it by either those with criminal records or
those without.”).

\textsuperscript{138} Id. at 358.

\textsuperscript{139} See id. at 354; Steven M. Sheffrin & Robert K. Triest, Can Brute Deterrence Back-
fire? Perceptions and Attitudes in Taxpayer Compliance, in WHY PEOPLE PAY TAXES 193,
212-14 (Joel Slemrod ed., 1992) (finding that “tax gap” stories can cause greater evasion
even when information about noncompliance is accompanied by publicity of stepped up en-
forcement).

\textsuperscript{140} As noted earlier, the public has little or no information about a firm’s workplace
safety and health record, and most noncompliance (e.g., accidents) goes unreported in the
media. See supra note 93 and accompanying text (consumers unlikely to boycott firm with
poor safety and health record because of lack of information).
establishing criminal penalties, there is a greater loss of prestige associated with a criminal indictment than with civil enforcement. When law violators are subject to criminal penalties, they have a greater incentive to comply than they do when violations are only subject to civil enforcement. Compliance with OSHA regulations is therefore inhibited by the lack of criminal sanction for noncompliance.

Worse, workers’ compensation laws may send the wrong signal to managers about social norms surrounding job accidents. A legal norm can dilute the impact of social norms (and thereby reduce economic incentives to take preventative actions). Workers’ compensation has this impact because it eliminates the notion that managers are “at fault” for workplace injuries. It assumes instead that a substantial number of employment accidents are inevitable, rather than the responsibility of the employer to prevent. The law creates this belief because it does not require employers to reimburse workers for all, or often even most, of the damages arising from occupational accidents and illnesses. The fact that workers and employers share the cost of accidents suggests that workers and employers are jointly responsible for these costs. Yet, the idea of joint responsibility is patently inconsistent with the employer’s exclusive right to control most decisions affecting workers’ health and safety. Workers compensation

141. See generally Kenneth G. Dau-Schmidt, An Economic Analysis of the Criminal Law as a Preference-Shaping Policy, 1990 DUKE L.J. 1, 2-3. Professor Kahan explains:

Economists speak of criminal law as a mechanism for pricing misconduct, but ordinary citizens think of it as a convention for morally condemning it. Against the background of that expectation, the positions that the law takes become suffused with meaning. What it punishes (drug possession, sodomy) can tell us what kind of life the community views as virtuous; how it punishes (imprisonment, corporal punishment, fines) can tell us what forms of affliction it views as appropriate to mark wrongdoers’ disgrace; how severely it punishes (the death penalty for killers of whites, imprisonment for killers of blacks) can tell us whose interests it values and how much.

Kahan, supra note 137, at 362 (citations omitted).

142. See Kahan, supra note 137, at 357 (“Most people refrain from engaging in crime not because they fear formal penalties but because they fear damage to their reputation and loss of status.”).

143. See supra notes 74-79 and accompanying text (describing the dearth of criminal penalties in OSHA-related statutes and the near complete lack of criminal convictions for OSHA violations).

144. See McAdams, supra note 125, at 348 (indicating norms “sometimes undermine each other by obligating inconsistent behavior”).

145. See Spieler, supra note 41, at 164-65, 167, 182-84 (discussing historical and contemporary presumptions that workplace accidents are inevitable in the industrial age).

146. See supra note 40 and accompanying text (describing caps on damages in workers’ compensation).

147. In light of such control, the outcome of workers’ compensation is to shift the cost
therefore constitutes a "normative" conclusion about how the costs of workplace accidents should be distributed between employers and workers. Workers' compensation hardly constitutes a strong social statement that workers should be protected from the dangers of the workplace.

ii. Norms and Corporate Culture

The previous analysis assumes that firms compensate managers for their personal costs arising from the firm's failure to abide by safety and health norms. As in the case of wage premiums, actual practices vary from economic theory predictions. One reason that actual practice varies is because managers may be subject to norms resistant to safety and health protections. There may be a culture of resistance among executives belonging to the same trade association, or the corporate culture inside a firm may resist regulatory efforts to promote safety and health. For example, peers outside or inside the corporation may believe that cooperation with government regulators is undesirable and contrary to the best interests of business and society. In addition, people often resort to psychological defense mechanisms, such as rationalization, when their actions are inconsistent with important norms. For example, a manager may blame employees for a workplace accident or attribute the accident to forces beyond the person's control.

Once the possibility of other norms and defense mechanisms is taken into account, it is more probable that firms with the worst safety and health records may be able to avoid paying compensation to managers by seeking out executives who tolerate unlawful and antisocial behavior. They would seek to hire such persons because these managers would demand less compensation, or even no compensation, for the firm's failure to protect the safety and health of workers. In other words, such firms will hire executives who have low costs for being social pariahs.

of accidents and illnesses to workers and to create disincentives for employers to provide safer work places. See Speiter, supra note 41, at 205-10.
148. See McCluskey, supra note 40, at 734.
149. See John Braithwaite, Crime, Shame and Reintegration 127-28 (1989) (describing individuals who form subcultures of resistance to norms in corporations as engaging in rationalizations or "techniques of neutralization" to distance themselves from what has occurred).
150. See Fiona Haines, Corporate Regulation: Beyond "Punish or Persuade" 83-84 (1997). Ralph Nader suggests that corporate managers (and others) use "pitiless abstraction" as another defense mechanism. In this response, corporate managers stay far removed from the dangerous day-to-day activity of their businesses, which permits them to ignore the risks that workers face. Ralph Nader, Houston Law Review Address: Occupational Safety and Health Act, 31 Hous. L. Rev. 1, 4-5 (1994).
The impact of social norms then will depend on the strength of the norms, the extent to which corporate culture reinforces or contradicts such norms, and the psychological defense mechanisms of managers. A recent book by Fiona Haines studies the interplay of these factors in the context of thirty-seven Australian firms and government agencies responsible (at least in part) for a worker’s death at a multi-employer work site during 1987.\footnote{See Haines, supra note 150, at 42-44, 67.} Seven of the firms undertook a “virtuous” response that involved a reexamination of the organization’s safety levels, a reemphasis of current safety policy, and some alteration of their workplaces or practices.\footnote{See id. at 69-70. An article about Jon Huntsman, president of the Huntsman Corporation, a $5.2 billion chemical company, illustrates the “virtuous” approach: Safety for us is so critical, . . . Employees here know that for me to lose one of them would be like losing one of my children. I think the fact that we can focus on safety issues no matter what the cost, and not have to worry about quarterly earnings and dividends, gives us a very different sense of direction. The employee is the object of our attention, and not earnings per share. A Gift From the Heart, supra note 123, at 11.} The other firms engaged in a “blinkered response” that was unlikely to prevent future accidents.\footnote{Six firms made changes concerning the piece of equipment involved in the fatality, but made no additional efforts to stop future accidents. See Haines, supra note 150, at 74. The other 12 firms made only legal changes involving adoption of a new legal status, name, or insurance arrangements. Id. at 76.} After extensive interviews with the participants, Haines reached three conclusions.

First, Haines concluded that rationalization by firm managers could not satisfactorily explain the differing responses. She found that executives who undertook a “virtuous” response, as well as those that did not, tried to distance themselves psychologically from the deaths of workers.\footnote{See id. at 86, 91.} This suggested to her that such techniques are a method of “coping” with tragic events.\footnote{See id. at 87-88. As a result, [c]oping with tragedy in the context of health and safety involving ongoing threats to human life is a two-edged sword, with the possibility of distancing oneself and the company from the death so completely that individual managers are persuaded that either the incident was inevitable and therefore nothing could have prevented it, or the culpability of another organization exonerates them from any need to act. Id. at 91-92.} Second, Haines concluded firms that undertook a virtuous response had a corporate culture that averted the “organizational distancing process” that led to a “blinkered” response in the other firms.\footnote{See id. at 92-95.} She explains, “[t]he key element differentiating the two cultures was that the virtuous culture would
see safety as integral to organizational activity, while the culture lacking in virtue would tend to push safety into the background in order to focus on short-term demands.”

Finally, Haines found a correlation between a firm’s size and the nature of its response. Smaller firms were more likely to respond in a blinkered manner than large firms, leading to the conclusion that “the weak position of small business in the market-place as a whole constrains virtue . . .” However, some large firms, which had the size and power to respond in a virtuous manner, failed to do so. In these cases, top management failed to establish a safety culture within the organization.

II. THE PROBABILITY OF VOLUNTARY REGULATORY COMPLIANCE

A firm voluntarily complies with regulations when it engages in preventative efforts not required by government regulation or when it complies with regulatory requirements whose violation is unlikely to be detected. If agencies could predict when voluntary compliance is likely, they could concentrate resources on regulating non-complying businesses. This section builds on the prior analysis to identify what factors make it more likely that a firm will voluntarily comply with rules. We then consider two additional factors that impact the likelihood of voluntary compli-

157. Id. at 95. In the “blinkered” culture, workers were seen as “the major cause of injury and death, with carelessness and forgetfulness seen as the predominant reason for incidents occurring.” Id. at 96. Further, there would be an “‘us and them’ attitude which would breed suspicion of those outside the workplace; unions would be seen as interfering and self-interested, and regulators would be kept at bay.” Id. Other studies have found that an important determinant of a company’s response to new safety regulations is its existing safety culture. See, e.g., Alfred Marcus, Implementing Externally Induced Innovations: A Comparison of the Rule-bound and Autonomous Approaches, 31 ACAD. MGMT. J. 235 (1988) (finding that incident rates declined more sharply in initially safe nuclear plants than less safe plants after introduction of safety regulations); J. Saari et al., How Companies Respond to New Safety Regulations: A Canadian Investigation, 132 INT’L LAB. REV. 65, 74 (1993) (“companies that already have the best standards of occupational health and safety take new regulations more seriously and therefore benefit from them most.”).

158. HAINES, supra note 150, at 133-34. Haines notes, “[s]mall firms were essentially reactive, as proactive thinking about long-term risks and costs associated with safety in general become submerged under immediate needs.” Id. at 134.

159. Id. at 141.

160. See id. at 147.

161. See id. at 152.

162. A firm might obey a regulation despite a low probability of being apprehended for a violation if the fine to which it would be subject is large enough. As discussed, however, agencies, including OSHA, are often unable to assess fines of a sufficient magnitude to create an incentive to obey a regulation. See supra notes 61-64 and accompanying text.
ance: the size of a firm and the existence of private safety and environmental standards.

A. General Predictive Factors

According to the cost minimization model, a firm will spend money on reducing health, safety, or environmental risks when such expenditures reduce its regulatory costs and market costs by more than the amount spent on abatement. In the absence of regulatory enforcement, the following factors appear to predict when voluntary compliance will occur.

(i) Voluntary compliance is more likely when prevention costs are low. A firm’s incentive to reduce health, safety or environmental risks depends on the amount of its prevention costs as compared to potential savings in other costs. All other things being equal, it is more likely that the potential savings will exceed prevention costs when the latter are low because even small reductions in regulatory and market costs will justify voluntary compliance. The prior analysis indicates that prevention costs are related to two factors. One is whether a firm has low-cost access to information about risks and prevention. Such information may be available from trade associations, standard-setting organizations, or the government. The other is whether its competitors also engage in voluntary compliance. This circumstance makes it more likely that the firm is able to pass on prevention costs to the public.

(ii) Voluntary compliance is more likely when there is a good chance a firm will pay compensation for personal or property damage. In the absence of a credible threat of agency enforcement, a firm’s regulatory costs consist of potential personal and property damages that it must pay. All other things being equal, voluntary compliance to avoid liability costs is related to two factors. There should be greater compliance to the extent that damages are not limited. Since workers’ compensation caps damages, less voluntary compliance with occupational safety and health standards can be expected. Third parties, such as equipment manufacturers and general contractors, are likely to engage in greater voluntary compliance than employers, whose damages are capped by workers’ compensation. Greater abatement should occur when insurance rates are based on an employer’s actual accident experience. As this is not the case for many small and medium-size employers, insurance rating dilutes the already-diluted economic incentives of workers’ compensation systems.

163. See supra notes 26-29 and accompanying text.
164. See supra note 35 and accompanying text.
165. See supra notes 40-42 and accompanying text.
(iii) Voluntary compliance is more likely when there is a greater likelihood that a firm’s customers will take into account its compliance record in making purchasing decisions. Anecdotal evidence indicates that some consumers may decline to purchase goods or services from a firm that engages in activities objectionable to them, and that they will pay higher prices for goods or services from a firm that adheres to their social (i.e., policy) goals. There is some empirical evidence that, because investors recognize this phenomenon, a firm suffers a reputational penalty for its failure to protect the environment, although other studies fail to confirm this impact.166 Firms do not appear to suffer a reputational penalty concerning occupational safety, however, because occupational safety is not a salient issue for most consumers, there is little public information about the issue, and some firms with poor safety records do not sell goods or services directly to the public.

(iv) Voluntary compliance with occupational safety and health standards is more likely when there is a greater likelihood that employees will demand and receive wage premiums. A firm’s incentive voluntarily to comply is also related to the likelihood that it will have to pay its employees a risk premium if it fails to protect them from work-related risks. The reality is that some workers receive compensation for some risks, but many (perhaps most) workers do not receive wage premiums that fully compensate them for occupational risks. Thus, OSHA can expect more voluntary compliance, all other things being equal, when labor markets are not subject to the types of defects that limit the ability and capacity of workers to obtain wage premiums. In particular, OSHA should be wary of relying on voluntary compliance when workers are likely to have little knowledge about occupational risks, are likely to misunderstand the degree of risk, or are likely to lack the bargaining power necessary to act on their knowledge.167

(v) Voluntary compliance is more likely when there are clear and widespread social norms that compel protection of the environment, workers, and consumers. A firm’s incentive to engage in voluntary compliance is also related to the likelihood that it will have to pay its employees a reservation pay premium if it fails to protect the environment, workers, or consumers. There is only limited evidence, however, that firms with poor environmental or safety records are forced to pay these premiums. Regulators should be wary of relying on voluntary compliance when the public is unlikely to become aware of the lack of compliance, managers lack professional training so are unlikely to internalize environmental or safety norms, or the corporate (or industry) culture resists compliance.168

166. See supra note 108 and accompanying text.
167. See supra notes 112-115 and accompanying text.
168. See supra notes 140, 149-161 and accompanying text.
In particular, OSHA should be cautious about relying on voluntary compliance in response to social norms because few social norms regarding the protection of workers appear strong enough to induce such voluntary action. Social norms are weak because society sends mixed signals regarding the responsibility for protecting workers.\textsuperscript{169}

\textit{(vi) Voluntary compliance is more likely when it results in immediate cost savings than future cost savings.} A firm’s incentive to engage in voluntary compliance is related to how quickly protective activities generate cost savings. Managers will discount future savings because of the time value of money. Discounting also reflects the uncertainty that future cost savings will actually occur. As a result, the amount of future cost reductions must be larger than the reduction of current costs to justify the same level of abatement. Thus, other things being equal, a firm is more likely to engage in abatement that reduces the yearly cost of insurance and less likely to engage in abatement that reduces the long-term negative impact on consumer sales or stock market prices of having a poor safety record. This effect suggests voluntary compliance is more likely for immediate, acute hazards than for chronic, latent harms.

\textit{(vii) A concerted enforcement program, where feasible, is more likely to protect the environment, workers, or consumers than voluntary compliance.} Congress adopted environmental and safety and health legislation because voluntary compliance did not produce adequate protection. It remains true that a concerted enforcement program, where feasible, is more likely to protect the environment, workers, or consumers than voluntary compliance. A firm will react to economic incentives, but the various incentives discussed above may or may not operate in a given circumstance. An injured worker, for example, may fail to file a workers’ compensation claim or may fail to recover compensation although entitled to it. When OSHA promulgates a regulation, by comparison, the level of compliance does not depend on whether other incentives to protect workers actually operate consistent with economic theory. Instead, compliance depends on the probability OSHA will detect a violation and the size of the fine it imposes. OSHA can compel compliance if it is able to engage in frequent inspections and impose large fines (or a jail sentence) for violations. OSHA regulation will compel less compliance in circumstances where such a concerted enforcement program is not feasible because of resource limitations or the lack of legal authority to impose large fines (or jail sentences).

\textsuperscript{169} See supra notes 40-41 and accompanying text (describing aspects of workers’ compensation insurance, which limit employer liability for employee injuries and insurance premiums); see also supra notes 74-79 and accompanying text (noting the lack of criminal penalties and enforcement for OSHA violations).
B. Small Firms and Regulatory Compliance

Besides the previous factors, the firm size in an industry is another important predictor of voluntary compliance. For example, an industry whose output or employment is dominated by small employers is less likely to protect workers voluntarily than an industry composed primarily of large firms.\textsuperscript{170} More generally, empirical studies have correlated company size with the likelihood a firm will participate in voluntary compliance programs administered by EPA.\textsuperscript{171}

One reason company size correlates with voluntary regulatory compliance is that the incentives identified are stronger for large firms and may not exist for small businesses. First, smaller businesses lack the economies of scale available to large firms in the use of abatement technologies.\textsuperscript{172} Since the likelihood that a firm will undertake abatement is a function of its abatement costs, higher compliance costs make it less likely that small firms will take preventative actions. Second, as noted, workers’ compensation premiums for small employers are not experience rated because they have too few employees.\textsuperscript{173} Third, as Haines’ research suggests, small firms are less likely to act virtuously in response to workplace accidents and safety issues than larger companies because they are in a weaker business position.\textsuperscript{174} Finally, small firms may lack the resources to employ professionals who may have internalized safety norms.

Regulation also provides less incentive for small firms to protect workers. Very small firms can disregard OSHA enforcement because Congress has forbidden OSHA to inspect firms employing ten or fewer persons.\textsuperscript{175} When small firms are subject to inspection, OSHA enforcement reduces penalties based on firm size.\textsuperscript{176} Small firms are also less likely to reduce market costs associated with enforcement if they engage in abatement. Most small companies are not publicly owned, so announcement of OSHA penalties will not cause a decline in the value of their stock. Further, news

\textsuperscript{170} See Nelson, supra note 57, at 301.
\textsuperscript{171} See, e.g., Arora & Cason, supra note 91, at 430-31 (concluding company size, among other factors, predicts the likelihood that firms will participate in EPA’s 33/50 program); Seema Arora & Timothy Cason, An Experiment in Voluntary Environmental Regulation: Participation in EPA’s 33/50 Program, 28 J. ENVTL. ECON. & MGMT. 271 (1995) (same).
\textsuperscript{172} Pierce supra note 42, at 563.
\textsuperscript{173} See supra notes 41-42 and accompanying text (finding that insurance companies do not charge small employers based on claims experience); Pierce, supra note 42, at 569.
\textsuperscript{174} See supra notes 158-59 and accompanying text.
media are less likely to focus on violations by small firms. Small firms also suffer less reputational cost as compared to large firms.\textsuperscript{177}

It is therefore no surprise that studies of the relationship between size and the incidence of occupational injuries indicate small firms expose their employees to much higher risks of on-the-job injuries.\textsuperscript{178} Simply, the cost to small businesses of failing to protect workers is less than costs to larger firms, and they therefore have less incentive to react to regulatory and non-regulatory incentives.

C. Private Standards and Voluntary Regulatory Compliance

We noted earlier that trade associations and professional groups identify potential hazards and issue recommendations on risk reduction.\textsuperscript{179} Many such recommendations are widely available in industries to which they pertain. Since the recommendations can stimulate voluntary regulatory compliance, we consider when they are likely to have this effect.

Trade associations and professional groups issue two types of recommendations. "Consensus" standards are standards "created by a variety of organizations after persons with many interests have an opportunity to participate in the formulation of the standard and reach a substantial consensus regarding the desirability of the proposed standard."\textsuperscript{180} "Industry" or "professional" standards are "created by trade or professional associations for the practices, systems, processes, or raw materials of their members."\textsuperscript{181} We will refer to both types as "private standards."

\begin{itemize}
  \item \textsuperscript{177} Pierce \textit{supra} note 42, at 564-66 (noting that the significantly lower risk of reputational injury to small businesses from regulatory violations reduces incentives for small businesses to comply with regulations).
  \item \textsuperscript{178} See \textit{id.} at 557-59.
  \item \textsuperscript{179} See \textit{supra} note 28 and accompanying text (describing OSHA's program providing free or low-cost consulting services to private employers); see also \textit{infra} notes 197-200 and accompanying text (describing the Chemical Manufacturers Association's Responsible Care Program).
  \item \textsuperscript{180} Hamilton, \textit{supra} note 13, at 1336-37. Professor Hamilton's article, based on a study undertaken for the Administrative Conference of the United States, remains the most exhaustive study of the development of voluntary standards despite its age. Congress recognized the importance of "consensus standards" in adopting the OSH Act. See Senate Subcomm. on Labor of the Comm. on Labor and Public Welfare, 1st Sess., Legislative History of the Occupational Safety and Health Act of 1970 (S. 2193, P.L. 91-596) 2-146 (Comm. Print 1971).
  \item \textsuperscript{181} Hamilton, \textit{supra} note 13, at 1336. Congress referred to these standards as proprietary, but it viewed them as having "gained wide acceptance by American industry." See Senate Subcomm. on Labor of the Comm. on Labor and Public Welfare, 1st Sess., Legislative History of the Occupational Safety and Health Act of 1970 (S. 2193, P.L. 91-596) 2-146 (Comm. Print 1971).
\end{itemize}
Private standards, as noted earlier, might prompt voluntary compliance because they lower a firm’s abatement costs. In the OSHA context, such standards alert firms to potential occupational hazards and recommend responsive actions. At the same time, a private standard may increase the cost to a firm of failing to take preventative actions in several ways.

1. Potential Impact of Private Standards

A private standard can increase a firm’s regulatory costs if its violation is negligent. Because of this potential liability, firms may adhere to the standard before the courts adopt it as the standard of care. Because workers’ compensation does not use a fault standard, a private standard would not operate in this fashion in claims between employers and their employees.

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182. See infra notes 188-194 and accompanying text.

183. According to Professor Baram, private standards will have this impact when “the technologies and the risks involved are well understood, and the potential liability . . . is significant enough to force a responsible industrial approach to reducing risks through voluntary standards.” By comparison, “experience offers little to support the notion that private standards would be an efficacious approach to certain risks (for example, of toxic chemicals) when such conditions were not present.” BARAM ET AL., supra note 10, at 56.

184. OSHA, however, may be able to enforce a private standard under the “general duty clause” of the Occupational Safety and Health Act, which requires an employer to protect workers against “recognized hazards that are causing or are likely to cause death or serious physical harm.” 29 U.S.C. § 654(a)(1) (1994). An employer violates the general duty clause when it has constructive notice of a danger and there is a practicable method for abating the hazard. See National Realty & Constr. Co. v. Occupational Safety & Health Review Comm’n, 489 F.2d 1257, 1265 n.32, 1265 (D.C. Cir. 1973). An employer has constructive knowledge when the existence of a hazard is “recognized” in an industry. A hazard is recognized when it is “common knowledge of safety experts who are familiar with the circumstances of the industry or the activity in question.” Id. at 1265 n.32. The courts have held private standards, industry publications, and manufacturer’s warnings, among other sources, can demonstrate that a hazard was recognized in an industry. See MARK A. ROTHSTEIN, OCCUPATIONAL SAFETY AND HEALTH LAW §§ 122-123, 185 (3d ed. 1990); OCCUPATIONAL SAFETY AND HEALTH LAW § 122-123 (Stephen A. Bokat & Horace A. Thompson III eds., 1988). OSHA also takes the position that a health hazard is recognized if a substance is deemed hazardous by nationally recognized standards-setting associations. See id. at 123. The potential impact of the general duty clause, however, is limited. Employers can prevent OSHA from enforcing a private standard under the general duty clause by disputing the scientific basis for it. See, e.g., Secretary of Labor v. Kastalon, Inc., 12 O.S.H. Cas. 1928 (BNA) (Rev. Comm., July 23, 1986). Moreover, even when OSHA can establish that a hazard is recognized, it must prove the feasibility of abatement measures on a case-by-case basis. See Pepperidge Farms, 17 O.S.H. Cas. 1993, 2003 (BNA) (Rev. Comm., Apr. 26 1997). This heightened standard of proof means general duty clause litigation is resource-intensive and likely to be initiated too infrequently to create long-lasting incentives.
Private standards can also increase a firm’s market and labor costs. If the publication of a private standard prompts consumers at some point to boycott firms that fail to adhere to the standard, or favor firms that do comply, the failure of a firm to conform to the standard will raise its market costs.\textsuperscript{185} If the standard alerts workers to unabated workplace risks, the firm might have to pay a wage premium to compensate the workers for the firm’s failure to prevent the hazard.\textsuperscript{186} If a private standard operates as a protective norm, the failure of a firm to comply with the standard may cause distress or discomfort for firm managers. The reputation of a firm’s safety officers, for example, may suffer if it fails to comply with widely accepted professional standards concerning occupational safety. This should lead to demands by the officers for a reservation wage premium for the reasons discussed earlier.\textsuperscript{187}

2. Actual Impact of Private Standards

Although a firm’s failure to comply with a private standard can increase its costs in several ways, available evidence suggests that private standards do not prompt significant voluntary regulatory compliance. Moreover, even if there is compliance, private standards typically offer limited protection for the environment, workers, and consumers.

a. Level of Compliance

Despite the potential of private standards to prompt firms to comply voluntarily, OSHA’s experience indicates that they often do not do so. Before Congress created OSHA, it was aware that private consensus organizations had developed approximately thirteen percent of the then existing safety standards, and that proprietary organizations had adopted an extensive set of toxic exposure limits.\textsuperscript{188} Seeking to take advantage of these private standards, Congress directed OSHA to promulgate them as mandatory regulations, without notice and comment, unless doing so would not improve worker safety and health.\textsuperscript{189} Shortly after OSHA was created in 1971,

\textsuperscript{185} See supra notes 80-89 and accompanying text (discussing potential for consumer boycotts and preferences).
\textsuperscript{186} See supra notes 109-123 and accompanying text (discussing potential for wage premiums).
\textsuperscript{187} See supra notes 124-133 and accompanying text (discussing potential for reservation pay premiums).
\textsuperscript{189} 29 U.S.C. § 655(a) (1994).
it adopted hundreds of private standards pursuant to this requirement.\textsuperscript{190} When OSHA sought to enforce the formerly private standards soon after they were adopted as mandatory requirements, it found widespread non-compliance.\textsuperscript{191} This experience suggests the formerly private standards did not create sufficient incentives for employers voluntarily to comply. Indeed, OSHA still finds noncompliance, indicating that none of the incentives identified in our model together are sufficient to prompt compliance with these formerly private, and now regulatory, standards.\textsuperscript{192}

There is more evidence that firms do not react to private standards. In 1989, OSHA attempted to update its toxic exposure limits by substituting new private standards for the out-of-date limits then in effect.\textsuperscript{193} OSHA standards were out of date because they were based on private standards that OSHA adopted in 1971 in response to a legislative mandate. Because OSHA had failed to update the 1971 regulations, modern private standards required greater protection. To build a record for the adoption of the more protective recent private standards, OSHA conducted a compliance survey. It found that fifty-nine percent of firms surveyed complied with OSHA's out-of-date regulations, while twenty-two percent of the firms voluntarily adopted the newer, more protective private standards.\textsuperscript{194} In other words, the newer, more protective private standards had prompted only about one-fifth of the firms surveyed to engage in more protection than they were legally required to do.

The lack of compliance may appear surprising in cases where private standards are enforced by a trade association. Presumably, a firm that fails to comply with an industry or professional standard faces an additional cost — loss of membership in a trade or professional association — which itself should spur compliance.\textsuperscript{195} Yet, the prospect that trade or professional associations will revoke membership for failure to comply with voluntary standards appears remote.\textsuperscript{196} In 1988, for example, the Chemical Manu-

\textsuperscript{190} These standards still form the bulk of OSHA regulatory requirements.
\textsuperscript{191} In its early years, OSHA issued several hundred thousand violations per year. See Frederick B. Siskind, Twenty Years of OSHA Enforcement, at Table 4 (1993).
\textsuperscript{192} The OSH Review Commission recognized that many employers have difficulty complying with consensus standards. See, e.g., Dun Par Engineered Form Co., 12 O.S.H. Cas. 1949 (BNA) (Rev. Comm., July 30, 1986).
\textsuperscript{193} Industry successfully blocked OSHA's effort, objecting that the agency had not adequately considered the economic impact of mandating compliance with these voluntary standards. See AFL-CIO v. OSHA, 962 F.2d 965 (11th Cir. 1991).
\textsuperscript{195} Presumably, firms join associations because they reap a benefit. Safety information provided by an association, as noted earlier, is one such benefit. Loss of membership, if likely, might be a significant cost of non-compliance with voluntary standards.
\textsuperscript{196} An association is most likely to police a lack of compliance when self-regulation
facturers’ Association (CMA) launched its Responsible Care Program. Responsible Care requires, as a condition of CMA membership, firms to implement six environmental safety and health codes of practice.\textsuperscript{197} Firms, however, self-report compliance\textsuperscript{198} and few CMA members have enrolled in its voluntary third-party audit program.\textsuperscript{199} Firms who lag behind on compliance goals receive “gentle reminders” from CMA.\textsuperscript{200} We can find no evidence that any CMA member has been expelled for failing to comply with Responsible Care.

\textit{b. Level of Protection}

Even when firms comply with private standards, they may provide limited protection for the environment, workers, and consumers. One problem is that private standard-setting organizations tend to be “business-oriented” and “industry-dominated,”\textsuperscript{201} and private standards therefore reflect “the lowest common denominator of acceptance by interested private groups.”\textsuperscript{202} Thus, while better than nothing, the level of protection that is achieved is normally less than comparable rules adopted by regulatory agencies. Another problem is that many industry codes do not require a firm to achieve a particular level of protection. Instead, they oblige a firm to establish systems to meet internal goals. Again, such standards make a contribution to protecting the environment, workers, and consumers, but because they do not require any specific level of protection, they are unlikely to generate the level of protection that EPA or OSHA generally requires when it regulates.

enhances its reputation and, therefore, consumer demand for the industry’s products and services. See Heidt, supra note 12, at 1556-57 (giving example that FTD’s exclusion of member suspected of overcharging or providing for inferior flowers rests on potential damage to group’s reputation and concomitant reduce in demand for group’s products).


198. CMA officials agree that they lack a method to measure Responsible Care’s progress. See Judy Stringer, Responsible Care: CMA Members Struggle with Verification, CHEMICAL WK., May 8, 1996, at 52.

199. See id.


201. Nicholas Ashford, Crisis in the Workplace 250 (1976); David Hemenway, INDUSTRYWIDE VOLUNTARY PRODUCT STANDARDS 90-91 (1975).

In a 1978 study for the Administrative Conference, Professor Robert Hamilton identified two related reasons for the inadequacy of substantive private standards. First, Professor Hamilton found little non-industry representation in the development of consensus standards, including very limited participation by labor representatives in the development of workplace standards. Unions were reluctant to participate because they had limited technical resources, and they anticipated committee decisions would be dominated by management. Thus, unions were reluctant to give legitimacy to the process in light of this domination. As one would predict, Hamilton could find no representation of non-unionized labor in the consensus process. Second, he found the industry-orientation of committees led them to balance the level of safety and health protection against cost considerations:

Because [of] the ... industry orientation of most technical committees, the costs and complexity of increased safety or purity will almost certainly be weighted more heavily by these committees than by an individual whose primary concern is safety or health. The welter of legislative enactments vesting issues of safety or health in the governmental agencies suggests that for most people the balance provided by the private sector often fails to accommodate health or safety considerations satisfactorily.

Shapiro and McGarity discuss the operation of industry influences on the "threshold limit values" developed by the American Conference of Governmental and Industrial Hygienists (ACGIH). They note that ACGIH standards in many cases provide limited protection for workers because industry-dominated committees are more reluctant than OSHA to characterize a substance as a carcinogen and less likely to rely on published scientific data instead of industry supplied information.

When standards set by private organizations are perceived as having regulatory implications, consensus becomes harder to reach. ACGIH delayed a vote on lowering its recommended exposure limit for formaldehyde after the industry trade association threatened a lawsuit. Similarly, industry opponents to ergonomics regulation have raised procedural objec-

203. See Hamilton, supra note 13, at 1379-83.
204. See id. at 1353, 1381-83.
205. See id. at 1382-83.
206. See id. at 1381.
207. Id. at 1378.
208. McGARTY & SHAPIRO, supra note 3, at 283.
209. See id.
tions to development of a consensus standard. Although these claims have been rejected, the objections have delayed publication of a consensus rule.

The standards issued by organizations like ACGIH recommend specific levels of protection for the environment, workers, or consumers. By comparison, other standards simply recommend that firms adopt a management process integrating environmental or other social concerns. For example, CMA’s Responsible Care program, discussed earlier, does not impose quantitative performance standards. Instead, as Jody Freeman notes, “compliance . . . commits firms only to management practices and internal accountability mechanisms (such as auditing and reporting) which are designed to integrate environmental considerations into every aspect of firm decision making, from production design through distribution and sale.”

The same is true for the international environmental standards published by the Institute for Standards Organization (ISO) in Geneva, which are a set of environmental management standards. Compliance with the ISO’s 14000 series of standards is widely cited as a good illustration of voluntary regulatory compliance. Yet, like Responsible Care, the adoption of an environmental management standard satisfying ISO 14000 “is not a commitment to achieving specific performance standards.”

III. OPTIONS TO INCREASE VOLUNTARY REGULATORY COMPLIANCE

A firm will reduce occupational safety and health risks as long as it is reducing the sum of its abatement, regulatory, and market costs. In light of this model, the last section considered what factors agencies such as OSHA can use to predict when a firm is likely to engage in voluntary compliance, including the impact of firm size and the existence of private environmental standards.


214. The ISO based the 14000 standards on its earlier 9000 series total quality management standards. See id. at 21.


216. Private Parties, Public Functions, supra note 17, at 21.
or safety and health standards. This section considers how agencies can strengthen existing incentives to protect the environment, workers, and consumers. In light of the cost-minimization model, regulators can increase a firm’s protective incentives by reducing its abatement costs or increasing it regulatory or market costs. This section considers information, regulatory, and third-party strategies that potentially have this impact.

A. Information Strategies

Regulators may induce additional voluntary compliance by providing information of three types. First, they can provide information about risks and prevention. Second, they can provide abatement strategies, which should lower a firm’s abatement costs. Third, regulators can provide information to the public about a firm’s level of compliance with existing regulations. This may stimulate public and market pressure for firms to raise their compliance levels. This section describes and evaluates these approaches in the OSHA context.

1. Risk Information

OSHA has experimented with a variety of information solutions, providing employers and employees with information about hazards and controls when regulations are not in place. The most significant source of hazard information is provided by manufacturers of chemicals who are required, under OSHA’s hazard communication standard, to provide material safety data sheets (MSDS) describing chemical hazards and to label chemical containers with warnings about health effects.\(^{217}\) These warnings must be provided even if employee exposure may be below levels viewed as hazardous.\(^{218}\)

There is another method for OSHA to provide risk information. To regulate, OSHA must compile information about the risk posed by a hazard and how to mitigate it. Since rulemaking is time-consuming, this information may be available for some period of time before it is used to support the promulgation of a rule. OSHA might be able to prompt greater worker protection by publishing risk and abatement information when it is received. In other words, OSHA might engage in segmented rulemaking: publishing risk and abatement information in one phase and using this information to write and defend a rule in the next phase. This section considers the potential impact of the publication of risk information.


\(^{218}\) See Durez Div. of Occidental Chem. Corp. v. OSHA, 906 F.2d 1 (D.C. Cir. 1990) (stating manufacturers must warn of chemical hazards without regard to the likely exposure level of downstream employee users).
section considers the potential impact of the publication of abatement information.

A firm's abatements costs include the search costs necessary to identify potential risks. By alerting employers about current scientific information concerning a risk, OSHA may reduce a firm's abatement costs. As noted earlier, the lower a firm's abatement costs, the more likely that it will engage in voluntary compliance.219 A firm, however, would still need to incur abatement expenses, which may discourage it from voluntarily acting to protect workers, particularly if abatement costs are significant. Thus, it is unknown whether merely providing risk information will result in additional voluntary compliance.

The provision of risk information may also spur voluntary compliance if it empowers workers to obtain additional wage premiums. Risk compensation, as explained earlier, provides an incentive for employers to reduce workplace hazards,220 but workers require information about workplace risks to seek such compensation. If OSHA published and circulated risk assessments as they became available, it might reduce this problem. Whether the publication of risk assessments would lead to additional risk compensation, and hence, create an incentive to reduce risks, depends on other conditions in a labor market. The absence of information is not the only impediment that prevents employees from obtaining wages that fully compensate them for occupational risks,221 and no empirical evidence shows the extent to which increased information spurs employers voluntarily to reduce employee exposure.222 OSHA anticipated that promulgation of the hazard communication standard would "produce market-oriented responses by employers and employees that translate into lower incidence of chemically-related injury and illness on the job..."223 but no evaluation of actual benefits from hazard disclosure has been made.

Finally, publication of risk information can lead to general duty clause enforcement actions. Since the general duty clause requires employers to protect workers from recognized hazards, policy statements describing unregulated hazards and recommending corrective action can trigger general duty clause compliance obligations.224 When relying on the general duty

219. See supra notes 23-45 and accompanying text (explaining the relationship of abatement cost and voluntary compliance).
220. See supra notes 163-64 and accompanying text (discussing theory of risk compensation).
221. See supra notes 109-10 and accompanying text (finding that because hazardous jobs pay less than safe ones, persons with education and training avoid such employment).
223. Id. at 53,327.
clause, OSHA must demonstrate that employees are exposed to significant risks — the same showing it would be required to make before promulgating a standard.\textsuperscript{225} Publication of hazard information together with a risk assessment would increase the prospect of general duty clause citations for employers who failed to take responsive action. Of course, each general duty clause prosecution requires OSHA to prove the existence of a hazard. When OSHA promulgates a standard, the existence of a hazard is presumed.\textsuperscript{226}

In summary, OSHA’s situation suggests the publication of risk information may have limited efficacy in some (or even many) situations, but the availability of such information may assist, and is unlikely to harm, workers. In addition, the publication and circulation of risk information should be relatively inexpensive for OSHA. Similarly, other agencies should be able to disseminate to the public readily available risk information. Moreover, as long as an agency reserves the right to change a risk assessment at a later time, the courts should consider the assessment to be a policy statement.\textsuperscript{227} Thus, the agency does not have to use notice-and-comment rulemaking to issue the assessment\textsuperscript{228} and it is not subject to judicial review.\textsuperscript{229}

2. Abatement Information

Besides risk identification information, agencies can also publicize abatement information. By providing this type of information, an agency can lower a firm’s prevention costs and make it more likely that a firm will protect the environment, workers, and consumers without the spur of regu-


\textsuperscript{226} United Steelworkers of Am. v. Marshall, 647 F.2d 1189, 1263-73 (D.C. Cir. 1980).

\textsuperscript{227} See Jeffrey S. Lubbers, A Guide to Federal Agency Rulemaking 69 (3d ed. 1998) (emphasizing policy statement that advises the public prospectively of the manner in which an agency proposes to exercise a discretionary power in a subsequent adjudication or through rulemaking).

\textsuperscript{228} See id. at 56, 70 (discussing policy statements do not require notice and comment rulemaking because the statements are not legally binding).

\textsuperscript{229} See Administrative Procedure Act (APA), 5 U.S.C. § 704 (1994) (noting APA restricts judicial review to final agency action and “preliminary, procedural, or intermediate agency action” is non-final action according to section 704). One court has held that the EPA’s risk assessment of second-hand smoking was final agency action subject to judicial review, but the court’s decision was related to the fact that Congress had ordered the EPA to produce such a study. See Flue-Cured Tobacco Coop. Stabilization Corp. v. EPA, 4 F. Supp. 2d, 435 (M.D.N.C. 1998).
Moreover, like the publication of risk information, this should be a low-cost strategy if an agency can use information that it has already compiled for rulemaking purposes.

Since OSHA's implementation of the hazard communication standard, it has published policy statements describing hazards or alerting employers to preferred methods of abating hazards. National Institute for Occupational Safety and Health (NIOSH), too, publishes such alerts. OSHA could extend this activity by publishing abatement information describing methods of preventing safety and health hazards prior to promulgating a rule requiring the use of such preventative efforts. The agency might pursue this option in cases where it has identified appropriate abatement, but the completion of a rulemaking is likely to be delayed.

Like the publication of risk information, however, this strategy may have limited efficacy. In the past, publication of guidelines has not induced substantial compliance with OSHA's goals. For example, before OSHA promulgated a standard regulating exposure to bloodborne pathogens, the Centers for Disease Control had published guidelines governing the same topic. An OSHA survey found compliance rates varied widely among affected health care sectors. Moreover, even if some employers follow the guidelines, OSHA's experience suggests it has little power to force employers who lag behind to take preventive action. Potential general duty clause citations create some incentive for employers to abide by guidelines. But, where employers perceive the guidelines as imposing compliance obligations, as they do when used as the basis for general duty clause citations, they will oppose publication of the guidelines. While OSHA le-

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230. See supra note 23 and accompanying text (indicating compliance costs include information costs).

231. OSHA has published guidelines for protecting employees from violence in the night retail and health care sectors. In the mid-1980s, when OSHA first began citing employers for ergonomic hazards, OSHA published meatpacking guidelines. These guidelines described recommended approaches for employers to abate ergonomic hazards.

232. NIOSH publishes current intelligence bulletins that alert employers to new scientific information indicating serious workplace hazards and recommends control strategies.

233. See Occupational Exposure to Bloodborne Pathogens, 56 Fed. Reg. 64,004, 64,060 (1991) (to be codified at 29 C.F.R. pt. 1010, 1030). Compliance variations were noted even though health care professional's failure to follow these infection control procedures could result in malpractice liability to patients. Compliance was highest in hospitals and much lower in small medical or dental offices.

234. Congress recognized that some employers would not take preventive action unless all were required to do so and required the promulgation of standards to avoid placing employers who protect employees at a competitive disadvantage compared with employers who fail to take preventive action.

gally may publish such guidelines without employer participation, active opposition by interested stakeholders decreases the likelihood that they will engender compliance. If OSHA seeks employer input, the staff resources needed to prepare for and coordinate public meetings and incorporate stakeholder suggestions might be better used to develop regulatory proposals.

A more promising strategy may be for OSHA to engage in post-rulemaking consultation about compliance. After OSHA promulgates a standard, it can hasten compliance by providing technical assistance to employers before the effective date for implementation of engineering controls arises. Because OSHA must cite violations of standards it observes, its ability to provide technical assistance to employers once a standard has become effective is limited. After the effective date of a standard, consultants provide compliance assistance.  

3. Compliance Information

A firm that fails to prevent environmental or other accidents may incur two potentially significant, but difficult to measure, costs. The firm may incur higher market costs if retail customers boycott its products as a form of social protest, or industrial customers may make alternative purchasing arrangements because they regard the firm as an unreliable source of supply. The firm also incurs opportunity costs if it fails to attract consumers willing to pay a premium for products produced by socially responsible companies. The firm may have higher capital costs if investors regard its failure as an indication of a future loss of earnings.

Agencies can potentially increase these costs by using two types of publicity. They can publicize the names of firms who do not comply with regulations to raise the market and social costs associated with their poor performance. They can also recognize firms with superior performance to stimulate the market rewards associated with environmental, worker, and consumer protection. The effects of publicity require a pre-existing regu-

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238. See supra notes 80-85 and accompanying text (discussing consumer boycotts).
239. See supra note 84 and accompanying text (discussing reaction of business customers).
240. See supra notes 86-89 and accompanying text (discussing opportunity costs).
241. See supra note 96 and accompanying text (commenting that investors may react to news of an accident or regulatory enforcement action or to information that indicates the firm's general reputation for preventing environmental damage or other anti-social results).
latory compliance obligation. Thus, publicity is not a substitute for regulation, but a means of supplementing compliance with rules, particularly in circumstances where enforcement is unlikely.

OSHA has some experience with publicity effects. When it issues citations with large penalties, OSHA often issues press releases announcing its actions. Newspapers often report these large penalty assessments. OSHA also recognizes firms with the best safety and health performance through its Voluntary Protection Program (VPP).

OSHA can extend these efforts by publishing a yearly index or listing of those employers that have the best and worst compliance records. This effort could be modeled on EPA’s toxic release inventory, and the ranking could be based on a firm’s compliance and worker’s compensation record. In devising a ranking scheme, OSHA should adopt procedures to ensure the accuracy of its information and protect firms from unfair injury.242

The ranking of firms could be combined with a challenge to poorly performing firms to do better. Former EPA General Counsel, Donald Elliot, endorses this approach because it offers “positive rewards — as opposed to negative threats — in terms of public recognition” and provides “useful tools in the form of information, but not mandating the details of how to achieve pollution reduction.”243 Elliot cites a government report that finds firms identified as significant polluters in the EPA’s Toxic Release Inventory have undertaken voluntary pollution control programs to gain “improved public acceptance.”244

Elliot’s endorsement of challenge programs assumes that market incentives are sufficient to encourage firms to act in the manner he describes. While there are numerous examples of such behavior, our analysis reveals there is no firm evidence linking such incentives to voluntary prevention efforts.245 Moreover, as noted earlier, the fact that businesses respond to publicity — favorable or unfavorable — by increasing environmental protection does not necessarily mean that they will act in the same manner concerning publicity about occupational safety and health.246 Still, the con-

243. Elliot, supra note 11, at 1850.
244. Id. at 1851 (citing QUALITY ENVIRONMENTAL MANAGEMENT SUBCOMMITTEE, PRESIDENT’S COMMISSION ON ENVIRONMENTAL QUALITY, TOTAL QUALITY MANAGEMENT: A FRAMEWORK FOR POLLUTION REDUCTION 9 (1993)).
245. See supra notes 90-92 and accompanying text (discussing significance of market incentives). In a footnote, Elliot admits that some observers are “skeptical” about the extent to which challenge programs have reduced pollution, contending, among other arguments, that claimed reductions are spurious or would have been made anyway for other reasons. Elliot, supra note 11, at 1843 n.15.
246. See supra note 93 and accompanying text (discussing why firms may have less in-
cept of a challenge program offers an organized way for OSHA to build on the concept of positive and negative publicity to attempt to gain greater protection of workers. Since challenge programs have had at least some success in the environmental field, OSHA might experiment with similar approaches.

B. Regulatory Strategies

Regulators may be able to publish information in a manner that creates incentives for firms to engage in voluntary compliance. They also can employ four regulatory strategies that might have a beneficial impact. In each strategy, the agency agrees to make some concession in return for which employers agree to engage in voluntary compliance. For example, an agency can agree to postpone rulemaking (or the promulgation of a rule) if regulated entities agree to engage in certain specified protective activities. Alternatively, an agency can agree to vary regulatory requirements as part of a bargain with a firm or group of firms to engage in protection activities. Or an agency might empower intermediate institutions to implement voluntary regulatory compliance. An agency also can (and already does) trade reduced penalties for an agreement by a regulated entity to undertake voluntary compliance activities. Finally, where feasible, an agency can seek to make regulatory compliance a precondition for government contracting. This section describes and evaluates these approaches in the OSHA context.

1. Postponing Rulemaking

Businesses engage in voluntary compliance as a strategy to forestall government regulation (or more stringent regulation) that they perceive would be more costly. The willingness of an industry to take such actions opens the door for OSHA or other agencies to bargain for this result. For example, an industry may want to avoid having its product labeled a carcinogen. To avoid this finding, it might voluntarily agree to protect the environment, the public, or workers. In this manner, an industry may postpone a government finding that its product is hazardous while workers receive needed protections. OSHA’s recent agreement with the fiberglass industry illustrates the potential of this strategy. Some observers believe fiberglass is as hazardous to respiratory health as asbestos, but fiberglass

247. See supra notes 67-68 and accompanying text (discussing business strategy of forestalling regulation).

manufacturers dispute this claim and have gone to great lengths to avoid the cancer label. To avoid threatened OSHA regulation, the industry agreed to a voluntary program to reduce workplace exposures.249

The problem with this strategy is that it is likely to result in less protection of workers than the level of protection mandated by an OSHA regulation. After all, the employers’ incentive is to obtain lower abatement costs than they would have incurred under an OSHA regulation. Moreover, unless OSHA can mount a credible threat that it will regulate unless an industry agrees to engage in voluntary compliance, it may be difficult to get industry agreement to engage in any additional protection of workers.

2. Regulatory Variances

Agencies may also be able to induce firms to engage in voluntary regulatory compliance if they agree to regulatory variances in return for a commitment to engage in certain specified protective actions. EPA’s “Project XL” is often cited as a good example of the benefits of this form of collaboration.250 EPA established Project XL (eXcellence and Leadership) in 1995 to provide regulated entities “the opportunity to develop and implement alternative strategies to produce superior environmental performance.”251

Under Project XL, an applicant commits itself to exceed current emissions regulations in return for which EPA alters regulatory requirements to reduce the company’s compliance costs.252 For example, EPA may approve a single comprehensive permit instead of requiring multiple permits that the applicant would otherwise have to submit to obtain regulatory permission to pollute the air or water.253 The goal is to reduce regulatory costs and pollution by adopting “customized” protection strategies for individual facilities.254 To gain EPA approval of proposals, applicants must involve local stakeholders, including state and local governments and environ-


250. See, e.g., Freeman, supra note 18, at 55.


252. See id. at 19,872 (giving criteria for “superior environmental performance”).


mental and public interest organizations, in the development of the plans.\textsuperscript{255} After a plan is adopted, EPA reserves the right to apply traditional regulation if the plan does not produce the promised level of environmental protection.\textsuperscript{256}

Although Project XL has been popular with some commentators,\textsuperscript{257} other analysts have been less enthusiastic. The critics claim that EPA failed to attract significant industry support, has not placated its “most powerful critics” in Congress, and has not obtained the endorsement of most environmental groups.”\textsuperscript{258} EPA itself has admitted frustration with the pace of Project XL. The agency confessed that the project has attracted fewer applications than it expected, the applicants have proposed fewer innovations than EPA had hoped, the approval process has taken longer than expected, and the project lacks clear legal authority to adopt some proposals.\textsuperscript{259}

The basis of Project XL — modification of EPA’s permit process — can not be replicated at OSHA where regulated entities are not required to apply for permits before workers are exposed to occupational risks. OSHA, however, does have the authority to vary the requirements of standards, so long as employee protections are not reduced.\textsuperscript{260} OSHA rarely uses its variance authority, perhaps because formal proceedings are required. Nevertheless, OSHA could use its variance authority to modify specific compliance obligations to better suit particular industry categories. Similarly, it can use its authority to grant variances to groups, not individual firms, meeting specified criteria.\textsuperscript{261}

OSHA has another option to vary compliance requirements. When OSHA promulgates a standard, it predicts the technology that the industry will use to comply and its cost. The accuracy of that prediction varies, depending on the detail of OSHA’s feasibility analysis during rulemaking.\textsuperscript{262}

\begin{footnotesize}

\textsuperscript{256} See id. at 19,877.

\textsuperscript{257} See, e.g., E. Donald Elliot, Toward Ecological Law and Policy, in THINKING ECOLOGICALLY: THE NEXT GENERATION OF ENVIRONMENTAL POLICY 180, 183 (Marian R. Chertow & Daniel E. Esty eds., 1997) (claiming a “bipartisan consensus” exists in favor of Project XL and similar programs that include regulatory flexibility).

\textsuperscript{258} Steinzor, supra note 16, at 200.

\textsuperscript{259} See EPA, Notice of Modifications to Project XL, 62 Fed. Reg. at 19,875-76.


\textsuperscript{262} See United Steelworkers of Am. v. Marshall, 647 F.2d 1189, 1267, 1270 (D.C. Cir.)
\end{footnotesize}
Instead of attempting to find a level of protection that is feasible for every firm subject to a regulation, OSHA could simply issue a regulation that not all firms can meet in all operations.\textsuperscript{263} It could then work with labor and industry to develop compliance manuals that describe feasible control options for various operations. Agreed upon control strategies impose lower information costs on employers. They also limit OSHA's ability in the enforcement arena to insist on controls other than those described. In this way, once a standard is in place, OSHA negotiates with the industry on specific compliance strategies. OSHA tried this approach to resolve compliance issues after the lead standard was affirmed.\textsuperscript{264} Labor and industry requested that OSHA use this approach to implement the methylene chloride standard, but so far OSHA has not done so.

If OSHA varies the technical requirements of standards using the previous methods, industry would have less reason to fight inclusion of such detail in standards. Now, however, the prospect of getting a variance is slim, so details in OSHA standards portend compliance difficulties even for firms who take protective actions.

3. \textit{Intermediary Institutions}

Professor Jody Freedman proposes that OSHA rely on "intermediate institutions" as another method of promoting voluntary compliance.\textsuperscript{265} As an example, she discusses the potential of a certification program under which OSHA would certify companies for steel erection on the basis of a number of criteria, including worker training and safety precautions.\textsuperscript{266} Under this approach, Freedman notes, OSHA would

\begin{footnotesize}
\begin{enumerate}
\item[263.] See \textit{id.} at 1266.
\item[264.] See 27 OSH Current Report 244 (July 23, 1997) (describing cooperative compliance program under OSHA's lead standard).
\item[265.] Freeman, \textit{supra} note 18, at 31.
\item[266.] See \textit{id.} at 52. According to Freeman:
\begin{quote}
A certification scheme might look something like this: certification is performed by an independent auditor like the AISE or by the OSHA. To be certified, companies would have to guarantee that they can meet a standard of safety. The standard might simply be a best practice standard that promises "to provide both security and mobility for workers." Certification would also require the company to file a safety plan detailing worker training, safety practices, and the quality of the steel used on the job, among other things. Companies that are incapable of meeting the standard would have to explain why and embark on a mandatory improvement program. The OSHA could require companies capable of meeting the standard to share information with those that could not. Debates over safety factors and the considerations that ought to be taken into account in the certification scheme would then be the focus of discussion rather than inflexible, numerical tie-off rules.
\end{quote}
\textit{Id.}
\end{enumerate}
\end{footnotesize}
play a number of roles in this imagined scheme: convening relevant parties, requiring and facilitating information exchange, and certifying plans or accrediting the independent certifiers. The agency could establish criteria for certifying bodies to meet and set minimal safety floors by dictating the minimal elements required of any proposed safety plan. It could retain ultimate authority to impose more stringent regulations if the certification scheme failed to produce desired safety levels, which could be closely monitored through mandatory disclosure of fatal and nonfatal injury rates.\textsuperscript{267}

Certification, or other similar "intermediary institutions" would be a useful adjunct to traditional standards if their implementation required fewer resources than traditional rulemaking and if they provided the same or greater level of protection for workers. OSHA would have to commit the resources necessary to develop a generic certification rule. After the rule was promulgated, it could then invite industries or groups of firms to propose specific certification programs, which would save the agencies from the necessity of developing such plans, at least initially. The real potential for cost savings exists in using certification in lieu of traditional standards in multiple situations.

EPA's experience with Project XL, however, suggests OSHA should be cautious about how easily it can implement certification. First, as with Project XL, regulated entities will participate only if this approach promises recognizable cost savings. This may require OSHA to prove the "efficacy" of this alternative to drum up interest in it.\textsuperscript{268} Second, like EPA, OSHA should involve stakeholders in the development of any plan, which may be difficult in contexts where employees are represented by unions. Third, OSHA, like EPA, would have to verify that proposed programs offered sufficient levels of protection, which may not be easy to do.

4. Reducing Penalties

OSHA, like other regulators, can (and already does) induce additional compliance by reducing penalties it has levied against an employer in return for the firm's agreement to undertake additional actions to protect workers.\textsuperscript{269} OSHA has successfully persuaded cited employers to agree to

\textsuperscript{267} See id. at 53.
\textsuperscript{268} Critics of Project XL attribute the lack of industry interest to EPA's failure to demonstrate the potential savings to industry of this approach. See, e.g., Steinzor, supra note 16, at 201 (commenting that industry views Project XL as "marginally relevant" to its short- and long-term goals because of the absence of "convincing" evidence that such voluntary efforts save them money).
\textsuperscript{269} To induce additional compliance, OSHA must have a rule in place or seek enforcement under the general duty clause. If it tries to pressure the industry to do more than its regulations require, it will be viewed as regulating, and notice and comments are required. See Chamber of Commerce v. United States Dep't of Labor, 174 F.3d 206 (D.C.
abate violations throughout a corporation in exchange for reduced penalties and extended compliance schedules.270 This tactic can be particularly helpful when OSHA cites a firm under the general duty clause for failing to protect workers from an unregulated hazard. The corporate-wide agreement provides detailed compliance obligations to protect against hazards for which no standard exists. OSHA was able to induce several major corporations to adopt company-wide ergonomics programs to avoid plant-by-plant citations under the general duty clause. This is a very resource intensive strategy for controlling widespread hazards.

5. Government Procurement

As a final regulatory option, agencies might attempt to establish regulatory compliance as a condition of government contracting. Since the 1930s, the federal government has used its buying power to obtain a variety of social and economic goals including the protection of workers.271 The Walsh-Healy Act,272 enacted in the 1930s, requires contractors to comply with safety and health standards recommended by the Bureau of Labor Standards. In 1960, the Department of Labor (DOL) issued a set of mandatory standards under Walsh-Healy, but DOL rarely used its inspection authority and only a handful of contractors were ever debarred from further contracting.273 In other areas where compliance with a legal norm is made a condition for government contracting, the government has been reluctant to debar non-complying contractors.274 Therefore, the threat of losing government contracts is so remote as to be unlikely to influence compliance. However, a system where some penalty short of debarment can be imposed, such as providing less reimbursement to non-complying contractors, might induce greater compliance because of the greater likelihood of impo-

270. See OSHA Instruction CPL 2.90 (describing corporate-wide settlement procedures).
271. Office of Technology Assessment, Preventing Illness and Injury in the Workplace 11 (1985); see id. at 112 (describing the use of government purchasing to achieve economic and social goals).
273. See id. at 213.
sition. Resources needed to monitor contractor compliance would be similar to those needed to inspect firms, so it is unclear what further advantage would result from such a system. Tying compliance to procurement likely would be very controversial. 275

The commitment of the federal government to promoting safety and health in workplaces would have symbolic importance, which would help promote a social norm of making the same commitment. As discussed earlier, social norms can influence behavior, including the promotion of occupational safety and health. 276

OSHA should also consider how government procurement affects employers’ compliance costs. In circumstances where an employer can obtain reimbursement for its safety or health actions, OSHA should be able to obtain a voluntary agreement from employers to take preventative actions. 277

For example, federal contractors receive reimbursements for all bona fide overhead expenses, such as regulatory compliance. Therefore, increased compliance costs of federal contractors are passed forward to the U.S. government. This suggests that where hazards affect employees of government contractors, economic feasibility considerations are not as great as with other hazards. Further, contractors can voluntarily agree to increased protections for workers without adverse financial consequences if the government accepts the costs as legitimate overhead expenses.

C. Third Party Solutions

As a final strategy, a regulator may be able to create incentives for protecting the environment, workers, and consumers by identifying firms with an economic incentive to pressure other firms to protect the environment, workers, or consumers. Until recently, for example, financial institutions faced potentially massive liability for any toxic waste contamination for which their debtors were potentially responsible parties under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Faced with this threat, banks and other lending institutions developed programs to assist their clients in adopting environmental management systems and in training their employees. 278 This section discusses the potential of such third party approaches in the OSHA context.

276. See supra notes 124-33 and accompanying text (discussing role of social norms in promoting compliance with legal rules).
277. In such circumstances, the employers’ abatement costs are reduced significantly, which makes it more likely that a firm’s other costs will fall by more than the cost of abatement.
278. See Private Parties, Public Functions, supra note 17, at 35.
1. *Tort Liability*

The threat of tort liability creates incentives for firms to prevent accidents and illnesses. Workers' compensation liability poses less threat because it does not fully compensate for injuries and employers insure against such losses. The impact of tort law on employers is limited because workers' compensation is exclusive. Tort law, however, still has an impact on workplace safety and health. Third parties may be liable to injured or ill workers in some situations. An employee, for example, may be able to sue an equipment manufacturer for the faulty design of a machine that injured the worker. Manufacturers who fail to warn employees of known toxic dangers may face strict liability. A third party may have a greater incentive to reduce a worker's occupational risks than the person's employer may because the third party's insurance premiums are more likely to be impacted by the threat of tort liability.

Two recent examples illustrate the power of threatened tort liability to improve safety and health conditions. After learning that asphalt fumes posed a potential cancer threat to workers, OSHA was under pressure to regulate it as a carcinogen. Industry objected to the characterization and efforts to regulate stalled. OSHA later began working with equipment manufacturers to redesign paving equipment so it captures asphalt fumes, limiting emissions. The technology is eighty percent effective. This voluntary agreement provides protection to workers by relying on manufacturers—the most likely focus of tort suits—to improve the safety of their products.

A similar example of rulemaking initiated at the behest of product manufacturers is the standard-regulating training of power industrial truck operators. Manufacturers of such equipment had sought immunity from tort liability together with an OSHA standard specifying mandatory train-

280. See *id*.
283. *Id*.
ing from Congress. When Congress failed to act, manufactures persuaded OSHA to issue the rule. Manufacturers presumably believe the rule will shield them from liability for failure to warn of safety defects in their equipment.

In other instances, potential liability to customers or patients can induce firms to take action that also protects workers. For example, hospitals generally complied with Center for Disease Control recommendations for infection control procedures before OSHA’s bloodborne pathogen standard was published. The hospitals faced the potential of malpractice liability and loss of accreditation for failure to do so.

These examples suggest that potential liability concerns other than regulatory fines can prompt action to protect workers. OSHA can harness these incentives best by identifying the parties with economic incentives to take protective action without a regulatory spur. These may be the parties most at risk of tort judgments. Once those parties are identified, OSHA can tailor its policies to maximize the leverage it gets from other compensation costs a firm may face.

2. Technological Innovation

OSHA also can spur technological innovation in situations where a third party may not have potential tort liability. For example, the agency could identify and encourage use of alternatives to toxic substances in consultation with chemical or substance manufacturers. If sellers are able to sell the new product as a replacement for the older, more dangerous chemical or substance, workplaces will be safer. If the new product is the same price as the old one, employers should adopt it to reduce its abatement costs. If the new product is sold for a higher price, an employer may still buy it as long as the additional cost is offset by a reduction in its regulatory, market, or social costs.

OSHA’s failure to analyze innovative compliance technologies has been criticized. According to the former Office of Technology Assessment (OTA), OSHA “devotes relatively little attention to examining the potential of advanced technologies or the prospect of regulation-induced innovation to provide technologically and economically superior options for hazard control.” OTA concluded that “a good case can be made that a lack of continuing insights on the potential of leading-edge technology hinders the


287. See CONGRESS OF THE UNITED STATES, supra note 31, at 11.
agency in performing its mission.” Analysis of OSHA rulemakings indicate that technological innovation eased compliance with OSHA’s vinyl chloride, cotton dust, and formaldehyde standards.

CONCLUSION

Many agencies, including OSHA, and commentators have enthusiastically embraced voluntary compliance as a means around the “ossification” of rulemaking. They have done so with little analysis of whether voluntary compliance is likely to induce greater protection of the environment, workers, or consumers. Our analysis suggests agency efforts would benefit from greater precision in choosing between traditional regulation and reliance on voluntary compliance. Voluntary compliance has the potential to induce greater protection of the environment, workers, or consumers, but only in narrowly circumscribed circumstances. Even when voluntary compliance is effective, it is likely that it provides less protection than does regulation. And, incentives for voluntary compliance are weakest in inducing protection of workers, so they should be relied on with greater caution in that sphere.

288. Id.
289. Id. at 59-60.