

# DEPICTION OF THE REGULATOR-REGULATED ENTITY RELATIONSHIP IN THE CHEMICAL INDUSTRY: DETERRENCE-BASED VS. COOPERATIVE ENFORCEMENT

ROBERT L. GLICKSMAN\* AND DIETRICH H. EARNHART\*\*

## ABSTRACT

*For years, scholars and environmental policymakers have conducted a spirited debate about the comparative merits of two different approaches to enforcement of the nation's environmental laws: the coercive (or deterrence-based) and cooperative approaches. Supporters of the coercive model regard the deterrence of violations as the fundamental purpose of enforcement. They regard the imposition of sanctions, which make it less costly for regulated entities to comply with their regulatory responsibilities and avoid enforcement than to fail to comply and run the risk of enforcement, as the most effective way for inducing regulated entities to comply with their regulatory obligations. Proponents of the cooperative approach to environmental enforcement focus more on compliance than deterrence. The cooperative approach emphasizes the provision of compliance assistance and incentives by regulatory agencies. They contend that a coercive approach to enforcement may even be counterproductive if it engenders intransigence and ill will on the part of regulated entities.*

*Few studies empirically test these competing theories about how best to induce environmental compliance. Our study, which is based on a survey of chemical manufacturing facilities that are regulated under the federal Clean Water Act ("CWA"), represents an effort to begin addressing the paucity of information on the effects of the two enforcement approaches on environmental compliance and behavior. Although most of the respondents to our survey describe the relationships they have with their CWA regulators as generally either cooperative or coercive, they also report that some particular aspects of their relationships are more consistent with one enforcement approach, while other aspects are more*

---

\* Robert W. Wagstaff Professor of Law, University of Kansas. Professor Glicksman thanks Erica Dew, University of Kansas School of Law, Class of 2003, for her valuable research assistance.

\*\* Associate Professor, Economics, University of Kansas. Professor Earnhart thanks Dylan Rassier for his valuable research assistance.

*consistent with the other enforcement approach. Our study calculates and interprets the correlations between all of the various aspects of the regulator-regulated entity relationship, especially the overall type of relationship: coercive versus cooperative. The results reveal only weak correlation between the various measures capturing the relationship between the regulator and the regulated entity. Cross-tabulation of the responses to all possible pairs of relationship aspects also reveals less than complete overlap between the various measures capturing the relationship between the regulator and the regulated entity. We conclude that the relationship between a regulator and a regulated entity consists of multiple dimensions. Environmental scholars and policymakers should recognize the nuanced nature of these relationships if they are to provide the most meaningful contributions to the ongoing debate over the impacts of coercive and cooperative enforcement approaches on the behavior and performance of regulated entities.*

#### INTRODUCTION<sup>‡</sup>

According to the U.S. Environmental Protection Agency, “[e]nvironmental laws and regulations are designed to protect human health and safeguard the environment. But they can achieve their purpose only when companies and facilities comply with requirements.”<sup>1</sup> Assuring

---

<sup>‡</sup>The research described in this Article was conducted as part of a larger project financed by the U.S. Environmental Protection Agency (“EPA”) pursuant to STAR Research Assistance Agreement No. R-82882801-0. A copy of the final report delivered to EPA under that Agreement, U.S. ENVTL. PROT. AGENCY, SHAPING CORPORATE ENVIRONMENTAL BEHAVIOR AND PERFORMANCE: THE IMPACT OF ENFORCEMENT AND NON-ENFORCEMENT TOOLS (2006), as well as an Executive Summary of the report, can be found at <http://www.ku.edu/pri/CEP/EPA/>. This Article has not been formally reviewed by EPA. The views expressed in this Article are solely those of Robert Glicksman and Dietrich Earnhart. EPA does not endorse any products or commercial services mentioned in this manuscript. The authors thank Donald Haider-Markel, Associate Professor of Political Science, Policy Research Institute, University of Kansas, and Tatsui Ebihara, Senior Engineer at LFR Levine Fricke (formerly at the University of Kansas, Department of Civil and Environmental Engineering), for their participation in the EPA STAR grant research project. The authors also thank Chris Drahozal, Joel Mintz, and Cliff Rechtschaffen for their very helpful comments on drafts of this Article.

<sup>1</sup> U.S. ENVTL. PROT. AGENCY, 2003-2008 STRATEGIC PLAN 111 (2003). See also David L. Markell, *The Role of Deterrence-Based Enforcement in a “Reinvented” State/Federal*

compliance with environmental statutes, regulations, and permit provisions by individual regulated entities is therefore “a key operational goal of EPA and state environmental agencies.”<sup>2</sup> Unless regulated entities comply with the obligations imposed on them by the environmental laws, or are forced to answer for noncompliance, those laws will represent an impressive-looking edifice that in reality is little more than an empty lot fronted by a flimsy facade.

The question of how best to improve compliance rates by regulated entities, however, is not easily answered. As a group of researchers studying environmental compliance has put it, “[c]ompliance assurance is . . . among the most contentious issues in the post-2000 EPA policy agenda.”<sup>3</sup> One component of any credible effort to assure regulatory compliance is a strong governmental enforcement presence.<sup>4</sup> As Professor David Markell, an expert on environmental enforcement, has indicated, “EPA has long held, and continues to hold, the view that traditional, deterrence-based enforcement is an essential element of an effective environmental regulatory scheme.”<sup>5</sup> Professor Joel Mintz, another expert on environmental enforcement, posits that “[e]nforcement is critical both as a control on firms and individuals who violate environmental standards and as a defense of the legitimacy of the governmental intervention that sustains voluntary compliance.”<sup>6</sup>

---

*Relationship: The Divide Between Theory and Reality*, 24 HARV. ENVTL. L. REV. 1, 5 (2000) [hereinafter Markell, *Deterrence-Based Enforcement*] (reporting the view of EPA’s Deputy Assistant Administrator of the Office of Enforcement and Compliance Assurance that “the importance of an effective compliance effort to the productive functioning of our environmental regulatory system is difficult to overstate”).

<sup>2</sup> Mark Stoughton et al., *Toward Integrated Approaches to Compliance Assurance*, 31 ENVTL. L. REP. (Envtl. Law Inst.) 11,266, at 11,266 (2001).

<sup>3</sup> *Id.* See also ROBERT L. GLICKSMAN ET AL., ENVIRONMENTAL PROTECTION: LAW AND POLICY 1000 (4th ed. 2003) (describing “increasing debate about ‘what works best’ in promoting compliance with environmental requirements”).

<sup>4</sup> See *infra* notes 33-53 and accompanying text.

<sup>5</sup> Markell, *Deterrence-Based Enforcement*, *supra* note 1, at 10. See also David Markell, “Slack” in the Administrative State and its Implications for Governance: The Issue of Accountability, 84 OR. L. REV. 1, 22 (2005) [hereinafter Markell, *Slack in the Administrative State*] (“Traditionally, compliance has been nearly synonymous with enforcement.”) (quoting ENVTL. L. INST. ET AL., BEYOND ENFORCEMENT?: ENFORCEMENT, COMPLIANCE ASSISTANCE, AND CORPORATE LEADERSHIP PROGRAMS IN FIVE MIDWEST STATES 2 (2003)).

<sup>6</sup> JOEL A. MINTZ, ENFORCEMENT AT THE EPA: HIGH STAKES AND HARD CHOICES 2 (1995). See also Clifford Rechtschaffen, *Promoting Pragmatic Risk Regulation: Is Enforcement Discretion the Answer?*, 52 U. KAN. L. REV. 1327, 1361 (2004) [hereinafter Rechtschaffen, *Pragmatic Risk Regulation*] (contending that “enforcement resonates so strongly with the

Congress has made an array of tools available to EPA to assist it in enforcing the federal pollution control laws.<sup>7</sup> These tools include the authority to require regulated entities to keep records and submit reports to EPA<sup>8</sup> and the right to inspect regulated facilities to gather information that may assist the agency in enforcement actions.<sup>9</sup> If the government believes that noncompliance is occurring, it may initiate enforcement action, either through administrative proceedings or in court, in which it may seek to enjoin future noncompliance, impose civil or criminal penalties, or both.<sup>10</sup> State environmental agencies typically have the same kinds of tools at their disposal.<sup>11</sup>

At the same time, some research on environmental enforcement has discerned "broad agreement at the federal and state levels that the traditional, exclusive reliance on penalty-based enforcement approaches to compliance assurance is inadequate."<sup>12</sup> That premise fueled a shift in emphasis during the 1990s by both federal and state environmental agencies to "a more partnership-focused, less adversarial approach" that uses "multiple tools to advance compliance assurance."<sup>13</sup> EPA, for example, concluded that a penalty-based approach is reactive rather than proactive and is incomplete because it fails to reward voluntary compliance.<sup>14</sup> Regulated entities and state officials joined in "sound[ing] the theme that an approach based on cooperation is more likely to produce compliance in many cases than an approach based on deterrence."<sup>15</sup> During the 1990s, EPA responded to these calls for greater cooperation between the agency and regulated entities by adopting enforcement policies designed to provide a more flexible approach to inducing compliance with regulatory obligations by offering "compliance incentive[s]" and "compliance assistance" to regulated facilities.<sup>16</sup> The results of EPA's response are evident.

---

public because it is central to the legitimacy of the law. Enforcement is perceived as fundamental to the orderly working of the legal regime.").

<sup>7</sup> See, e.g., 33 U.S.C. § 1318 (2007); 42 U.S.C. § 7414 (2007).

<sup>8</sup> See, e.g., 42 U.S.C. § 7414(a)(1).

<sup>9</sup> See, e.g., 33 U.S.C. § 1318(a); 42 U.S.C. § 7414(a)(2).

<sup>10</sup> See, e.g., 33 U.S.C. § 1319; 42 U.S.C. § 7413.

<sup>11</sup> See GLICKSMAN ET AL., *supra* note 3, at 950-52.

<sup>12</sup> Stoughton et al., *supra* note 2, at 11,266.

<sup>13</sup> *Id.*

<sup>14</sup> Markell, *Slack in the Administrative State*, *supra* note 5, at 52-53 (citing Michael M. Stahl, *Enforcement in Transition*, ENVTL. FORUM, Nov.-Dec. 1995, at 19).

<sup>15</sup> GLICKSMAN ET AL., *supra* note 3, at 1000.

<sup>16</sup> Markell, *Deterrence-Based Enforcement*, *supra* note 1, at 14. Professor William Andreen explains the shift as follows:

Before the adoption of this new flexible approach, an environmental enforcement expert wrote that “it seems most accurate to describe EPA’s enforcement practices as constituting, in the main, a deterrence system.”<sup>17</sup> Today, EPA describes its “enforcement efforts [as] focus[ed] on assisting businesses and communities with compliance training and guidance.”<sup>18</sup>

Similarly, “many states have actually, to one extent or another, replaced traditional enforcement mechanisms with some form of cooperation-based strategy.”<sup>19</sup> One explanation of this shift is the states’ desire to

---

In the early 1990s, EPA began to recognize a more explicit role for a cooperation-based approach to compliance. In doing so, EPA expanded its ability to provide compliance assistance to regulated entities. This has involved such things as workshops, seminars, on-site assistance, compliance guides, as well as the development of ten internet-based compliance assistance centers and the launch of a compliance assistance clearinghouse. At about the same time, EPA began to initiate a number of compliance incentive programs designed to encourage dischargers to self-audit their facilities and correct violations before they are discovered by government inspectors.

William L. Andreen, *Motivating Enforcement: Institutional Culture and the Clean Water Act*, 24 PACE ENVTL. L. REV. (forthcoming 2007). See also Rechtschaffen, *Pragmatic Risk Regulation*, *supra* note 6, at 1332 (discussing EPA’s placement, beginning in the mid-1990s, of “greater emphasis on compliance assistance and compliance incentive methods and on integrating these tools with traditional enforcement methods,” including, in addition to the techniques referred to by Andreen, “compliance assistance tools” such as sector notebooks, hotlines, audit protocols, and checklists, and compliance incentives tools such as a policy to encourage compliance by small business); Markell, *Slack in the Administrative State*, *supra* note 5, at 53-54. “EPA defines compliance incentive policies as those policies that ‘encourage regulated entities to voluntarily discover, disclose and correct violations or clean up contaminated sites before they are identified by the government for enforcement investigation or response,’” while it defines compliance assistance as consisting of “information and technical assistance provided to the regulated community to help it meet the requirements of environmental law.” Markell, *Deterrence-Based Enforcement*, *supra* note 1, at 14 nn.46-47 (quoting U.S. ENVTL. PROT. AGENCY, OPERATING PRINCIPLES FOR AN INTEGRATED EPA ENFORCEMENT AND COMPLIANCE ASSURANCE PROGRAM 8-9 (1996)). Compliance assistance includes “outreach,” “response to requests for assistance,” and “on-site assistance.” *Id.* at 14 n.47.

<sup>17</sup> MINTZ, *supra* note 6, at 103.

<sup>18</sup> Environmental Protection Agency, Compliance and Enforcement, <http://www.epa.gov/ehtpages/complianceenforcement.html> (last visited Apr. 15, 2007).

<sup>19</sup> Andreen, *supra* note 16. See also Markell, *Slack in the Administrative State*, *supra* note 5, at 22 (concluding that the states have surpassed the EPA in shifting from deterrence-based enforcement to an “‘integrated compliance program’ in which deterrence-based enforcement is only one piece in a large tool box of compliance-promotion approaches”).

retain and attract business by holding out the promise of less rigorous, or at least less confrontational, enforcement.<sup>20</sup>

A cooperative relationship is one in which government regulators provide flexibility to regulated facilities, including the provision of a variety of forms of compliance assistance.<sup>21</sup> This assistance is designed to induce facilities to address noncompliance pro-actively.<sup>22</sup> Within the coercive approach, regulators deter facilities from noncompliance by imposing sanctions without flexibility.<sup>23</sup>

For all the debate that the recent emphasis on cooperative approaches to assuring compliance with the environmental laws has engendered, relatively little empirical research has been directed at a comparison of the traditional, deterrence-based (or coercive) enforcement approach and the cooperative enforcement approach to inducing compliance with environmental regulatory obligations.<sup>24</sup> This Article is designed

---

<sup>20</sup> See, e.g., Richard Webster, *Federal Environmental Enforcement: Is Less More?*, 18 FORDHAM ENVTL. L. REV. (forthcoming 2007) (claiming that “[a]necdotal evidence suggests that states have moved away from deterrence-based enforcement towards compliance assistance because they want to be more attractive to new business and encourage existing businesses to stay or grow”). *But see id.* at 6 (describing “suspicion among environmental groups that these [cooperative enforcement] initiatives merely provide cover for decreasing *de facto* environmental standards through enforcement”). More generally, Professor Andreen asserts that “[e]nforcement . . . is an attractive target, due to its obscurity for an administration or a Congress intent on undermining an Act with which it fundamentally disagrees.” Andreen, *supra* note 16. Administrative law scholars have suggested that “[a]s regulators’ discretion increases, so does the potential for special interest groups to influence agency policy.” Mark Seidenfeld, *Bending the Rules: Flexible Regulation and Constraints on Agency Discretion*, 51 ADMIN. L. REV. 429, 459 (1999). That assessment may explain why regulated entities may prefer a cooperative to a coercive relationship with their regulators, given the greater flexibility that tends to inhere in the cooperative model of environmental enforcement. For a description of the manner in which the cooperative model differs from the coercive model of enforcement, see *infra* Part I.A.2.

<sup>21</sup> See *infra* Part I.A.2.

<sup>22</sup> See *infra* Part I.A.2.

<sup>23</sup> See *infra* Part I.A.1.

<sup>24</sup> See *infra* Part I.B.

At present the data available allow little to be said about the effect of diverting resources from deterrence-based enforcement to compliance assistance. There is good evidence that traditional deterrence-based enforcement encourages compliance. However, there is no systematic study of whether compliance assistance achieves success at individual facilities at the expense of overall compliance rates, as deterrence theory would suggest. Thus, to date, the states’ shift to compliance assistance has been more of an act of faith than a rational policy choice.

Webster, *supra* note 20, at 8.

to provide some insight into how regulated entities perceive the nature of their relationships with environmental regulators. In particular, the Article reports on a survey that we conducted, in collaboration with two other researchers,<sup>25</sup> of facilities in the chemical industry that are regulated under the National Pollutant Discharge Elimination System Permit (“NPDES”) program established by the federal Clean Water Act (“CWA”).<sup>26</sup> The Article addresses whether the individual respondents working at those facilities characterize the facilities’ relationships with CWA regulators as coercive or cooperative in nature by analyzing responses to a series of questions that relate to different aspects of the relationship between CWA regulators and regulated facilities.

Despite the dichotomy between coercive and cooperative approaches to inducing compliance with the environmental laws, it is clear that federal and state agencies rarely rely exclusively on one approach.<sup>27</sup> As Professor Clifford Rechtschaffen recently stated:

While [the] distinctions [between coercive and cooperative approaches to enforcement] are significant and influence the enforcement policies of states and the federal government, it is also true that in practice, most environmental enforcement systems are a pragmatic combination of the two approaches. This is true to an even greater extent now as a result of recent reforms adopted by the EPA.

Numerous studies of agency enforcement demonstrate that most enforcers use a flexible, hybrid strategy that includes elements of both coercion and cooperation; few rigidly adhere to legalistic procedures.<sup>28</sup>

A hybrid approach to improving compliance rates might be composed, for example, of “an offer of compliance assistance to a particular regulated sector with a public threat of increased inspections.”<sup>29</sup>

---

<sup>25</sup> The other researchers associated with the survey are Don Haider-Markel, a political scientist at the University of Kansas and director of a survey center, and Tat Ebihara, a wastewater engineer with LFR Levine Fricke and formerly a professor at the University of Kansas.

<sup>26</sup> Clean Water Act, Pub. L. No. 95-217, § 33(c), 91 Stat. 1566, 1577 (1977) (codified as amended at 33 U.S.C. § 1342 (2007)).

<sup>27</sup> Rechtschaffen, *Pragmatic Risk Regulation*, *supra* note 6, at 1330.

<sup>28</sup> *Id.*

<sup>29</sup> *Id.* at 1333.

Given the broad discretion that statutes such as the CWA and state environmental laws typically vest in federal and state regulators, the agencies have a considerable range of choices at their disposal in deciding which mix of traditional, coercive enforcement techniques and cooperative ventures to apply in particular instances of known or suspected noncompliance.<sup>30</sup> Insights into how regulated entities perceive the nature of their relationships with environmental regulators should facilitate future research into how regulated entities are expected to react under each type of relationship. In turn, these insights should assist environmental regulators in devising the mix of enforcement approaches most apt to result in desirable levels of compliance by regulated industries.

Part I of this Article summarizes the theoretical debate over the advantages and disadvantages of both coercive and cooperative approaches to enforcement. It also describes the few empirical studies that directly compare the two approaches in the context of environmental regulation. Part II describes both the methods we used in administering our survey to facilities in the chemical industry regulated under the NPDES permit program, and the results from our analysis of the survey responses. Our analysis of the survey responses reveals that most of the participants in our survey report that they have cooperative relationships with their CWA regulators. A closer look at their responses to a series of questions designed to elicit responses to various aspects of the regulator-regulated entity relationship, however, reveals that the relationship is unlikely to be distinctively either cooperative or coercive. Instead, the respondents in our survey of the chemical industry report that some components of their relationships are cooperative in nature, while others are coercive.

This conclusion has significant implications both in analyzing previous empirical studies on the effectiveness of coercive and cooperative approaches to enforcement and compliance and in designing and conducting future studies of this kind. Our conclusion that the relationship between an environmental regulator and a regulated entity consists of multiple dimensions suggests that, before assessing the effect of this relationship on environmental behavior and/or performance on the part of

---

<sup>30</sup> See, e.g., *id.* at 1334 (“[F]ew areas of the law invest more discretion in agency employees or are more hidden from the public’s view and oversight than an agency’s enforcement actions.”) (quoting Robert R. Kuehn, *Remedying the Unequal Enforcement of Environmental Laws*, 9 ST. JOHN’S J. LEGAL COMMENT. 625, 640 (1994)).

regulated entities, future researchers should measure the various characteristics of the relationship rather than treat it in simplistic fashion as a monolithic reflection of one or the other approach to enforcement. Our survey questions reflect one attempt to describe the multifaceted nature of the relationship between the regulator and the regulated entity. Future research efforts should build on and refine these initial efforts to provide a more accurate portrayal of the impacts of coercive and cooperative approaches to environmental enforcement and compliance.

I. COERCIVE AND COOPERATIVE APPROACHES TO ENFORCEMENT IN CONTEXT: THEORY AND PRACTICE

A. *The Theoretical Debate*

The literature on environmental enforcement distinguishes between the coercive, or deterrence-based, and cooperative approaches to enforcement.<sup>31</sup> A review of the legal, political science, and economics literature on environmental enforcement reveals a debate about the comparative efficacy of these two different models.<sup>32</sup> We describe each of these approaches, and summarize the arguments that have been made in favor of and against reliance on each approach.

1. The Coercive, or Deterrence-Based, Approach

The coercive or deterrence model “reflects the view that policing and deterring violations are the essential core of environmental agencies’ activities and that other compliance activities are either (1) secondary and dispensable or (2) second-best compromises made to accommodate the realities of limited resources.”<sup>33</sup> In its efforts to implement this approach, EPA traditionally “sought to identify significant violators and then pursued such violators through formal enforcement actions that sought to penalize the violators by imposing sanctions that exceeded the economic benefit the violators reaped through non-compliance, while also requiring a timely return to compliance.”<sup>34</sup> As Professor Markell explains,

---

<sup>31</sup> See, e.g., CLIFFORD RECHTSCHAFFEN & DAVID L. MARKELL, REINVENTING ENVIRONMENTAL ENFORCEMENT AND THE STATE/FEDERAL RELATIONSHIP 59 (2003).

<sup>32</sup> See *id.*

<sup>33</sup> Markell, *Slack in the Administrative State*, *supra* note 5, at 22 (quoting ENVTL. L. INST. ET AL., *supra* note 5, at 2).

<sup>34</sup> *Id.* at 47.

“[k]ey elements of this model included: (1) monitoring compliance by the regulated community; (2) identifying violations; and (3) pursuing timely and appropriate enforcement actions against significant violators.”<sup>35</sup>

The coercive model is premised on the idea that regulated entities are rational economic actors whose principal motivations include maximization of profits.<sup>36</sup> According to one recent account:

Two visions of the firm dominate the compliance literature. The first is the firm as a rational profit-maximizer, obeying the law only when it is in the firm's best economic interest to do so. Thus, violations occur when the perceived benefits of noncompliance exceed the anticipated cost of sanctions. This view of the firm is consistent with deterrence theory, which regulators have historically relied upon in developing their enforcement programs. The rational profit-maximizer view typically leads to the use of traditional enforcement techniques; namely, extensive government monitoring and inspections coupled with penalties for observed violations.<sup>37</sup>

The deterrence model therefore postulates that decisions regarding compliance are based on self-interest; businesses comply when the costs of noncompliance outweigh the benefits of noncompliance.<sup>38</sup> Companies can

---

<sup>35</sup> *Id.* at 49.

<sup>36</sup> *Id.* at 51. Although the CWA regulates facilities that discharge pollutants into surface bodies of water (referred to as point sources, defined in 33 U.S.C. § 1362(14) (2007)), individuals or groups of individuals make decisions that ultimately result in a facility's compliance or noncompliance. The CWA subjects those who engage in certain kinds of violations to criminal penalties. 33 U.S.C. § 1319(c) (2007). Accordingly, a rational individual would also take into account as part of his or her decisionmaking process the potential personal consequences of decisions that bear on compliance, including the possibility of incarceration.

<sup>37</sup> Timothy F. Malloy, *Regulation, Compliance and the Firm*, 76 TEMP. L. REV. 451, 453-54 (2003). See also David B. Spence, *Can the Second Generation Learn from the First? Understanding the Politics of Regulatory Reform*, 29 CAP. U. L. REV. 205, 207 (2001) (stating that regulatory systems based on the deterrence model proceed on the premise, “consistent with the rational actor model of the firm, that compliance decisions were based on an expected value calculation. Firms would tend to comply with environmental regulations if the expected value of doing so was positive”).

<sup>38</sup> Professor Michael Vandenbergh has stated that:

[T]he standard economic deterrence model has applied a rational choice analysis to environmental compliance decision-making. Common formulations of the standard deterrence model assume that an individual

save money by not purchasing, installing, and operating pollution control equipment and can avoid additional training for workers by failing to comply with environmental regulations.<sup>39</sup> “The costs of noncompliance include the costs [sic] of coming into compliance once a violation is detected” as compared to coming into compliance earlier, “plus any penalties imposed for being found in violation multiplied (discounted) by the probability that the violations will be detected.”<sup>40</sup> These costs can also include damage to the business’s reputation,<sup>41</sup> potential tort liability,<sup>42</sup> and legal system expenses.<sup>43</sup>

The deterrence model proceeds on the premise that increasing the certainty and severity of penalties will deter noncompliance.<sup>44</sup> Under this model, a facility’s compliance status depends on the likelihood that violations will be detected by those entitled to enforce regulatory obligations<sup>45</sup> and the severity of the sanctions that noncompliance may trigger, because regulated entities will comply with their legal obligations only when they

---

will seek to maximize expected utility and thus will comply with an environmental law when the costs of noncompliance exceed the benefits. The costs of noncompliance are assumed to be the product of the certainty and severity of formal legal sanctions. Following this approach, individuals are not motivated to comply absent the threat of formal legal sanctions.

Michael P. Vandenbergh, *Beyond Elegance: A Testable Typology of Social Norms in Corporate Environmental Compliance*, 22 STAN. ENVTL. L.J. 55, 63-64 (2003) [hereinafter Vandenbergh, *Beyond Elegance*].

<sup>39</sup> RECHTSCHAFFEN & MARKELL, *supra* note 31, at 60.

<sup>40</sup> *Id.*

<sup>41</sup> See generally Jonathan M. Karpoff et al., *The Reputational Penalties for Environmental Violations: Empirical Evidence*, 48 J.L. & ECON. 653 (2005).

<sup>42</sup> See Jody Freeman & Daniel A. Farber, *Modular Environmental Regulation*, 54 DUKE L.J. 795, 830 n.100 (2005) (asserting that “[f]irms might also be motivated [to comply with environmental regulations] by a desire to avoid the potential for future tort liability”); Michael P. Vandenbergh, *The Private Life of Public Law*, 105 COLUM. L. REV. 2029, 2059 (2005) (arguing that the incentives to comply with environmental laws may derive from a variety of factors, including tort liability). *But see* Freeman & Farber, *supra*, at 832 (claiming that “although firms may try to control their environmental impact to avoid tort liability or to reap the public relations benefits of being perceived as ‘green,’ these incentives may not be enough to ensure compliance”).

<sup>43</sup> See RECHTSCHAFFEN & MARKELL, *supra* note 31, at 60.

<sup>44</sup> See Mark A. Cohen, *Empirical Research on the Deterrent Effect of Environmental Monitoring and Enforcement*, 30 ENVTL. L. REP. (Envtl. Law Inst.) 10,245, at 10,245 (2000) [hereinafter Cohen, *Empirical Research*].

<sup>45</sup> Under the CWA, both the government and private citizens (including environmental public interest groups) are authorized to initiate enforcement actions. 33 U.S.C. §§ 1319, 1365 (2007). This Article does not address the role of citizen enforcement.

are convinced that the government might detect and penalize noncompliance.<sup>46</sup> The essential task for enforcement agencies, therefore, is to make penalties high enough and the probability of detection great enough that it becomes economically irrational for regulated entities to violate the law.<sup>47</sup> It is also necessary for regulated entities to perceive that there is a significant likelihood that the government will bring an enforcement action when a violation is detected.<sup>48</sup> In 1992, EPA described the four key elements of an effective enforcement program as follows: "(1) There is a good chance violations will be detected; (2) The response to violations will be swift and predictable; (3) The response will include an appropriate sanction; and (4) Those subject to requirements perceive that the first three factors are present."<sup>49</sup>

---

<sup>46</sup> Robert A. Kagan et al., *Explaining Corporate Environmental Performance: How Does Regulation Matter?*, 37 LAW & SOC'Y REV. 51, 61 (2005). Incentives will not operate in the same fashion for all regulated facilities. The benefits of noncompliance may be greater, for example, for a facility with high control costs than for a facility with low control costs. Thus, even if the likelihood of detection and the severity of the sanction are equal for both, it may be more "rational" for the facility with the higher avoided costs of compliance to decide not to take the steps necessary to come into compliance.

<sup>47</sup> As one expert on environmental enforcement and compliance explains:

Economists who study firm compliance and deterrence invariably start with the "optimal penalty" model of Gary Becker. The basic insight of that seminal article is that potential offenders respond to both the probability of detection and the severity of punishment if detected and convicted. Thus, deterrence may be enhanced either by raising the penalty, by increasing monitoring activities to raise the likelihood that the offender will be caught, or by changing legal rules to increase the probability of conviction. Becker's model ultimately leads to an "efficient" level of crime, whereby the marginal cost of enforcement is equated to the marginal social benefit of crime reduction.

Cohen, *Empirical Research*, *supra* note 44, at 10,245 (citing Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169 (1968)). Cohen has also characterized Becker's "seminal" article as "the starting point for virtually all subsequent economic analyses of crime and punishment." Mark A. Cohen, *Environmental Crime and Punishment: Legal/Economic Theory and Empirical Evidence on Enforcement of Federal Environmental Statutes*, 82 J. CRIM. L. & CRIMINOLOGY 1054, 1063 (1992). Moreover, according to Cohen, "[m]odels of 'optimal' enforcement and penalties generally do not distinguish between civil and criminal remedies, since both impose costs on the offender that will be internalized into its decision calculus." *Id.* Accordingly, the same considerations that govern decisions bearing on potential civil liability also may affect decisions bearing on the risk that the facility will be subjected to criminal fines.

<sup>48</sup> See Markell, *Slack in the Administrative State*, *supra* note 5, at 49.

<sup>49</sup> *Id.* at 50 (quoting U.S. ENVTL. PROT. AGENCY, PRINCIPLES OF ENVIRONMENTAL ENFORCEMENT 2-3 (1992)).

Under an enforcement approach based on the deterrence model,<sup>50</sup> an inspection of a facility subject to environmental regulation may be conducted in an effort to detect violations and collect evidence for subsequent enforcement actions, not to provide compliance advice to the inspected entity.<sup>51</sup> Because increasing the incidence of government monitoring tends to be expensive, the proponents of the deterrence model often argue that the best way to increase the effectiveness of enforcement of environmental laws as a deterrent to noncompliance is to increase the likelihood of conviction or the severity of the sanction.<sup>52</sup> Supporters of the coercive approach claim that:

[D]eterrence-based enforcement activity has provided a strong source of motivation for regulated entities. Fear of enforcement action and its attendant public embarrassment has caused many companies and facilities to move

---

<sup>50</sup> Deterrence theory distinguishes between specific deterrence and general deterrence, though the distinction also applies to a cooperative enforcement approach. See Cohen, *Empirical Research*, *supra* note 44, at 10,246. “Specific deterrence refers to the effect that an inspection or enforcement activity targeting a particular firm has on that firm’s subsequent environmental performance.” *Id.* See also Markell, *Slack in the Administrative State*, *supra* note 5, at 51 (defining the goal of specific deterrence as ensuring that “the specific violator pursued through an enforcement action will learn its lesson and not violate again”). General deterrence captures corporate responses to the underlying threat of receiving a government intervention. Cohen, *Empirical Research*, *supra* note 44, at 10,246 (stating that “[g]eneral deterrence refers to the effect of an enforcement activity on the behavior of a large number of persons or firms”); Markell, *Slack in the Administrative State*, *supra* note 5, at 51 (describing the goal of general deterrence as ensuring that “other regulated parties will take heed of the government’s enforcement presence and activity and will be more likely to comply with their legal obligations as a result”). It involves “detering the broader regulated community from noncompliance.” RECHTSCHAFFEN & MARKELL, *supra* note 31, at 60-61. The preceding literature focuses almost exclusively on general deterrence. See generally Cohen, *Empirical Research*, *supra* note 44; Markell, *Slack in the Administrative State*, *supra* note 5. Consistent with this focus, we also consider only general deterrence.

<sup>51</sup> The federal government may pursue enforcement action under the CWA without having conducted a prior inspection. See, e.g., 33 U.S.C. § 1319(a)(1) (2007) (giving EPA the authority to pursue administrative enforcement “on the basis of *any* information available” to it)(emphasis added). If a report that is submitted by a polluting facility to its regulator demonstrates on its face that its pollution levels have exceeded the levels authorized in its NPDES permit, an inspection is not necessary to provide evidence of noncompliance. See Ann Powers, *Reducing Nitrogen Pollution on Long Island Sound: Is There a Place for Pollutant Trading?*, 23 COLUM. J. ENVTL. L. 137, 182-83 (1998).

<sup>52</sup> See, e.g., Vandenbergh, *Beyond Elegance*, *supra* note 38, at 64-65.

into compliance. Deterrence has prevented many noncomplying parties from gaining an unfair competitive advantage over those who comply. And it has helped drive the application of technologies that can improve business performance and profitability.<sup>53</sup>

## 2. The Cooperative Approach

An alternative model of environmental enforcement is the cooperative model. This model is a "reaction to the adversarial enforcement methods suggested by the deterrence model."<sup>54</sup> The cooperative model emphasizes compliance, not the deterrence of noncompliance.<sup>55</sup> Accordingly, the primary function of an inspection may not be, as it is under the deterrence model, to accumulate evidence of violations for subsequent enforcement actions, but rather to provide advice to regulated entities as a means of facilitating compliance.<sup>56</sup> Under this approach, an inspection serves largely as an opportunity to resolve problems.<sup>57</sup> Cooperative enforcement approaches have been described as an example of "negotiate and control," as compared with the traditional "command and control" environmental regulatory regime with which coercive enforcement has traditionally been associated.<sup>58</sup>

Under both the coercive and cooperative models, facility inspections<sup>59</sup> and enforcement actions serve as threats.<sup>60</sup> Under the coercive model, the general deterrent effect of an inspection or an enforcement action of one facility derives exclusively from the threat it creates for

---

<sup>53</sup> Markell, *Slack in the Administrative State*, *supra* note 5, at 52.

<sup>54</sup> Vandenberg, *Beyond Elegance*, *supra* note 38, at 60.

<sup>55</sup> *See id.* at 116-17 (discussing problems with the cooperative model and noncompliance).

<sup>56</sup> RECHTSCHAFFEN & MARKELL, *supra* note 31, at 70.

<sup>57</sup> *Id.* Professor Rechtschaffen describes the kind of compromise that may result:

In one . . . initiative directed at steel "minimills," one EPA regional office announced that facilities would have six months within which to conduct self-audits and disclose violations under EPA's self-audit/disclosure policy. After those six months, multimedia inspection teams would inspect all nonauditing facilities and take appropriate enforcement action.

Rechtschaffen, *Pragmatic Risk Regulation*, *supra* note 6, at 1333.

<sup>58</sup> Markell, *Slack in the Administrative State*, *supra* note 5, at 56 (quoting David A. Dana, *The New "Contractarian" Paradigm in Environmental Regulation*, 2000 U. ILL. L. REV. 35, 37 (2000)).

<sup>59</sup> *See, e.g.*, RECHTSCHAFFEN & MARKELL, *supra* note 31, at 233.

<sup>60</sup> *Id.* at 59.

other facilities that may be the subject of similar actions in the future.<sup>61</sup> Under the cooperative model of enforcement, however, regulated facilities may be afforded more opportunities to avoid sanctions by resolving non-compliance before a penalty is assessed or other enforcement action pursued.<sup>62</sup> A cooperative regulator might even withdraw a pending sanction for past noncompliance once compliance has been achieved.<sup>63</sup> Such a regulator may choose to refrain from sanctioning a facility that has violated its NPDES permit as a result of a cooperative history between the regulator and the facility.<sup>64</sup> As a result, the cooperative approach “emphasizes flexible or selective enforcement that takes into consideration the particular circumstances of an observed violation.”<sup>65</sup> Indeed, “[l]evying penalties is seen as a mark of the [cooperative] system’s failure (to otherwise obtain compliance); compliance systems rely far more on rewards and incentives than penalties.”<sup>66</sup>

A cooperation-based system of enforcement views corporations not as economic actors solely interested in maximizing profits, but as institutions “influenced by a mix of civic and social motives.”<sup>67</sup> This model postulates that corporations are generally “inclined to comply with the law” (although developing accurate measurements of such inclinations is problematic).<sup>68</sup> According to some analysts of environmental regulation, corporations “have internalized the general societal norms about environmental protection.”<sup>69</sup> If businesses are generally committed to compliance with their regulatory obligations even without a coercive enforcement presence, the imposition of sanctions in the event that noncompliance occurs is not only unnecessary, but may even be counterproductive.<sup>70</sup> A “sanction-oriented” response to noncompliance may make regulated entities “resentful” and less likely to cooperate with regulators in the future.<sup>71</sup> Such

---

<sup>61</sup> *Id.* at 60.

<sup>62</sup> *See id.* at 70.

<sup>63</sup> *See id.*

<sup>64</sup> *See id.*

<sup>65</sup> John T. Scholz, *Cooperation, Deterrence, and the Ecology of Regulatory Enforcement*, 18 *LAW & SOC’Y REV.* 179, 180 (1984).

<sup>66</sup> Clifford Rechtschaffen, *Deterrence vs. Cooperation and the Evolving Theory of Environmental Enforcement*, 71 *S. CAL. L. REV.* 1181, 1188 (1998) [hereinafter Rechtschaffen, *Deterrence vs. Cooperation*].

<sup>67</sup> *Id.* at 1191.

<sup>68</sup> *Id.*

<sup>69</sup> RECHTSCHAFFEN & MARKELL, *supra* note 31, at 215.

<sup>70</sup> *Id.* at 67-68.

<sup>71</sup> *Id.* at 68. *See also* Raymond J. Burby & Robert G. Paterson, *Improving Compliance with State Environmental Regulations*, 12 *J. OF POL’Y ANALYSIS & MGMT.* 753, 756 (1993)

a shift in attitude may matter to regulators if it increases the intransigence of regulated facilities, thereby increasing the cost of monitoring compliance and pursuing noncompliance.<sup>72</sup> Although the presence of clear and well-understood regulatory obligations (such as the effluent limitations contained in NPDES permits)<sup>73</sup> may reduce the incidence of overcompliance, facilities regulated under the CWA may still choose to overcomply as a means of avoiding noncompliance that results from random variations in plant operations or unexpected events that may occasionally push a plant into noncompliance. A coercive response to these types of noncompliance events may breed especially strong resentment or ill will.<sup>74</sup>

The environmental enforcement literature that supports the cooperative model of enforcement therefore tends to urge that regulators treat regulated entities found to be in noncompliance as "partners."<sup>75</sup> Regulated entities afforded such a regulatory reception, so the argument goes, will tend to respond more positively to suggestions and advice tendered by

---

(arguing that "the overzealous use of deterrence can foster resentment and retaliation, leading regulated groups to apply political pressure to reduce enforcement or repeal the offending regulatory program"). Perhaps this willingness to apply political pressure on the part of regulated entities represents the most important weakness of a coercive enforcement approach. Our survey of chemical manufacturing facilities inquires whether or not the regulated entities had asked an elected official to help with a difference of opinion between the facility and the regulator in the preceding three-year period. Five percent of the sampled facilities had requested this assistance. In addition, nineteen percent of the sampled facilities had asked the supervisor of the facility's water regulator to help with a difference of opinion between the facility and the regulator.

<sup>72</sup> See Sidney A. Shapiro & Randy S. Rabinowitz, *Punishment Versus Cooperation in Regulatory Enforcement: A Case Study of OSHA*, 49 ADMIN. L. REV. 713, 718-19 (1997) (claiming that, if the government imposes sanctions despite the belief of environmental managers that they have made good faith efforts to comply with regulations, "corporate officers may react by being less cooperative with regulatory agencies," such as by refusing to identify new problems for regulators or contesting enforcement actions even if the firm's legal costs will exceed the size of the fine); see also Kagan et al., *supra* note 46, at 61-62 (noting that some theorists claim that "a uniformly aggressive style of regulation is likely to engender legalistic and political resistance"). A risk exists "that too much deterrence will have the effect of stifling other socially desirable activities. Unlike street crime that has no social utility, most environmental offenses are byproducts of socially desirable production or distribution processes." Cohen, *Empirical Research*, *supra* note 44, at 10,251. Of course, this risk of over-deterrence applies to both enforcement approaches, coercive and cooperative. However, the risk is greater within a coercive approach. See *id.*

<sup>73</sup> The effluent limitations contained in NPDES Permits are often expressed as numerical limits on discharge allowed from individual units of production. See GLICKSMAN ET AL., *supra* note 3, at 543.

<sup>74</sup> RECHTSCHAFFEN & MARKELL, *supra* note 31, at 67-68.

<sup>75</sup> *Id.*

regulators on how to achieve compliance than will entities saddled with a coercive enforcement presence.<sup>76</sup> Such a “partnership” should involve the use of flexible guidelines rather than uniform rules, and an emphasis on before-the-fact prevention of violations instead of after-the-fact sanctions for noncompliance.<sup>77</sup>

Independent of the incentives for compliance provided by any enforcement approach, voluntary compliance may comport with a regulated entity’s self-interest due to market forces.<sup>78</sup> Compliance may result in cost savings for regulated entities because steps taken to assure compliance may also produce more efficient business operations by reducing waste management costs, reducing raw material acquisition costs, lowering energy costs, reducing insurance premiums in response to good compliance history, reducing the costs of borrowing if lenders regard those who comply as less risky investments, and reducing the likelihood of tort judgments or other third party liabilities.<sup>79</sup> In addition, compliance may allow a firm to market itself as “green,” affording it competitive advantages.<sup>80</sup> Finally, a good environmental performance record can attract capital from investors seeking to pour their money into “socially responsible” businesses.<sup>81</sup> It is possible that these extra-regulatory factors provide a sufficient impetus for compliant behavior and that no regulatory presence is necessary, or at least that regulatory enforcement does not provide a payoff in terms of incremental improvements in compliance that justify the cost of its implementation.<sup>82</sup> If an enforcement strategy

---

<sup>76</sup> *Id.*

<sup>77</sup> See Raymond J. Burby, *Coercive v. Cooperative Pollution Control: Comparative Study of State Programs to Reduce Erosion and Sedimentation Pollution in Urban Areas*, 19 ENVTL. MGMT. 359, 361 (1995).

<sup>78</sup> RECHTSCHAFFEN & MARKELL, *supra* note 31, at 218.

<sup>79</sup> *Id.* at 218-20.

<sup>80</sup> *Id.* at 219.

<sup>81</sup> *Id.* at 220.

<sup>82</sup> Both coercive and cooperative approaches to enforcement require regulators to invest in monitoring and enforcement. It is possible that these costs will be greater under a coercive approach because regulators feel the need for more frequent inspections due to the lack of cooperation between regulators and regulated facilities, and because enforcement action tends to be more frequent under a coercive approach. See Burby, *supra* note 77, at 360. On the other hand, the technical assistance that regulators provide on an ongoing basis under a cooperative enforcement regime may be even more costly than the costs of monitoring and enforcement incurred by coercive regulators. See Douglas C. Michael, *Cooperative Implementation of Federal Regulations*, 13 YALE J. ON REG. 535, 543 (1996) (arguing that one of the prerequisites to a successful enforcement approach based on voluntary compliance is effective monitoring of regulated entities). Michael asserts that

is necessary for inducing compliance, a cooperative enforcement approach may resonate better with regulated entities given a facility's willingness to respond to market signals for better environmental management.<sup>83</sup> Use of a coercive enforcement approach may be more likely to generate resentment.<sup>84</sup> Moreover, the use of a cooperative enforcement approach might even prompt polluting facilities to respond to market signals more strongly or at least increase the likelihood that a given facility will respond to those signals. This conjecture is speculative since no previous study examines this particular interplay.

### 3. The Coercive Response to the Cooperative Approach

Supporters of the deterrence model, however, have been wary of claims that the cooperative approach is likely to engender higher levels of compliance and that deterrence-based enforcement is likely to be counterproductive.<sup>85</sup> Professors Rechtschaffen and Markell provide a good summary of the arguments that have been made to rebut the contention that a coercive enforcement approach is counterproductive:

[A]s a general proposition, there are several reasons for skepticism about the argument that deterrence-based enforcement is counterproductive. First, this contention rests on certain suppositions about enforcement behavior, most notably that inspectors are rigid and legalistic and respond to all violations with formal sanctions. . . . [T]hese assumptions are belied by studies showing that enforcement personnel in fact eschew formal, legalistic actions, and instead rely heavily on informal negotiations (while using traditional sanctions as a backup) to achieve compliance. Second, the advocates of this position presuppose that most corporations generally are inclined to comply with the law for civic or social reasons, an assumption that is problematic . . . . Third, the cooperative model underemphasizes the economic pressures for noncompliance. Coaxing and persuasion

---

even if regulators choose a cooperative approach, "[r]esidual reliance on direct enforcement is necessary in a system of self-regulation." *Id.* at 548.

<sup>83</sup> RECHTSCHAFFEN & MARKELL, *supra* note 31, at 230-31.

<sup>84</sup> *Id.* at 230.

<sup>85</sup> *Id.* at 231.

may be very productive when firms are making good-faith efforts to comply and have ample resources to do so. It is far less likely to work when compliance will have significant financial consequences for a firm.<sup>86</sup>

Rechtschaffen and Markell also describe responses to the claim that considerations that bear on the normal conduct of day-to-day business actually provide regulated entities with sufficient incentives to comply even without the threat of sanctions, making enforcement unnecessary.<sup>87</sup> In other words, while the potential for more efficient operation may induce some firms to comply with their regulatory obligations voluntarily, some compliance measures will increase a firm's expenses, cutting against its willingness to comply without the pressures provided by enforcement action.<sup>88</sup> Moreover, even if compliance makes business sense in the long-term, it may result in short-term financial losses that regulated firms are unwilling to bear, given the pressure for corporate management to provide immediate returns on shareholder investments.<sup>89</sup> In addition, the benefits of being perceived as "green" may be less important to some firms than others; in particular, this factor may be a less significant inducement toward compliance for firms that do not directly market consumer products.<sup>90</sup> In response to the claim that voluntary compliance may benefit a regulated firm in the stock market, skeptics point out that many regulated firms are not publicly traded, and therefore will not be affected by this factor.<sup>91</sup> Investors may not be impressed by the disclosure of a firm's noncompliance if they are not convinced that noncompliance will result in a strong governmental response, which may well be the case under a cooperative regime.<sup>92</sup> For these reasons and those noted above, critics of

---

<sup>86</sup> *Id.* A firm's ability to borrow money and the cost of borrowing may affect its willingness to invest in compliance.

<sup>87</sup> RECHTSCHAFFEN & MARKELL, *supra* note 31, at 218-20. Rechtschaffen and Markell, however, do not assess the possibility of a cooperative enforcement approach prompting a greater response to market forces or it being more effective in the presence of market forces for better environmental protection. *See id.*

<sup>88</sup> *See id.* at 222.

<sup>89</sup> *See id.* at 221.

<sup>90</sup> *Id.* at 222.

<sup>91</sup> *Id.* at 224.

<sup>92</sup> *Id.* at 221-25. With this exception, the critics' responses to the role of market forces that is touted by supporters of the cooperative approach do not address the interplay between market forces and the type of relationship between the regulator and the regulated entities. *Id.* Both regulators and investors may adjust their responses in accordance with the

the cooperative approach suggest that regulated facilities that are parties to a cooperative enforcement relationship, which deemphasizes sanctions and the threat of sanctions, are unlikely to achieve levels of compliance as great as the levels of compliance achieved when facilities are parties to a coercive relationship, in which regulated facilities perceive regulators as inclined to initiate enforcement action that can adversely affect the firm's bottom line.

Another criticism of the cooperative approach is its tendency to reduce accountability and transparency.<sup>93</sup> As Professor Markell has explained:

This reduction in accountability may manifest itself in at least three ways. First, regulated parties may gain additional leverage over the disposition of cases. Second, regulators may gain additional discretion to address cases as they believe appropriate—the surfeit of options may provide additional insulation from public oversight or scrutiny. Third, as indicated above, there is the possibility that the expanded tool box will reduce accountability in the sense that it will relieve pressure on regulators to produce traditional results. Because of these possible consequences, Professor [David] Dana and others have suggested that contractarian approaches are likely to benefit the regulated community and have the potential to disenfranchise the interested public, at least to some degree.<sup>94</sup>

The cooperative approach also has the potential to undermine what Rechtschaffen and Markell refer to as “the expressive function” of deterrence-based enforcement, in that enforcement action “gives voice to the public’s desire to regulate and sanction undesirable behavior” by conveying

---

nature of the alleged noncompliance. Regulators operating under either a cooperative or coercive regime may tend to be more inclined to pursue enforcement actions for serious violations. Similarly, investors and potential investors may be more likely to respond negatively to reports of what they perceive to be serious instances of noncompliance than to reports of minor violations.

<sup>93</sup> Markell, *Slack in the Administrative State*, *supra* note 5, at 56-57.

<sup>94</sup> *Id.*

a set of meanings about environmental violations that is very different from that communicated by an overly cooperative-oriented approach, that puts an undue emphasis on negotiation and conciliation. The message conveyed by deterrence reaffirms for the public that environmental statutes are important and that transgressions are something to be taken very seriously.<sup>95</sup>

#### 4. Summary of the Debate over the Coercive and Cooperative Approaches to Environmental Enforcement and Compliance

Scholars and environmental policymakers have conducted a spirited debate about the comparative merits of the coercive and cooperative approaches to enforcement of the nation's environmental laws.<sup>96</sup> Those who support the coercive model regard the deterrence of violations as the fundamental purpose of environmental enforcement.<sup>97</sup> They regard enforcement actions whose goal is to impose sanctions that exceed the economic benefits of noncompliance as the most effective way to induce regulated entities to comply with their regulatory obligations.<sup>98</sup> In their view, the greater the likelihood and severity of the sanctions, the greater the deterrent impact of enforcement activities.<sup>99</sup> Accordingly, proponents of the coercive model believe that enforcement agencies must make it "economically irrational for regulated entities to violate the law"<sup>100</sup> and that this economic penalty will only happen through the coercive presence of enforcement officials.<sup>101</sup> Supporters of the cooperative approach to environmental enforcement focus more on compliance than deterrence.<sup>102</sup> The cooperative approach includes a larger emphasis on both compliance assistance and compliance incentives on the part of regulatory agencies.<sup>103</sup> The cooperative approach to enforcement proceeds on the premise that regulated entities react to a variety of motives that include not only maximizing the bottom line, but also "internaliz[ing] the general societal

---

<sup>95</sup> RECHTSCHAFFEN & MARKELL, *supra* note 31, at 235-37.

<sup>96</sup> GLICKSMAN ET AL., *supra* note 3, at 1000.

<sup>97</sup> See Markell, *Slack in the Administrative State*, *supra* note 5, at 22.

<sup>98</sup> See *id.* at 47.

<sup>99</sup> See Vandenberg, *Beyond Elegance*, *supra* note 38, at 63-64.

<sup>100</sup> RECHTSCHAFFEN & MARKELL, *supra* note 31, at 60.

<sup>101</sup> See Markell, *Slack in the Administrative State*, *supra* note 5, at 50.

<sup>102</sup> See Rechtschaffen, *Deterrence vs. Cooperation*, *supra* note 66, at 1188.

<sup>103</sup> *Id.*

norms about environmental protection,"<sup>104</sup> taking advantage of good compliance records to enable a firm to market itself as green, and creating an image of environmental responsibility that may attract investment.<sup>105</sup> The advocates of the cooperative approach contend that a coercive approach to enforcement may be counterproductive if it engenders intransigence and ill will on the part of regulated entities.<sup>106</sup> The advocates of the coercive approach are skeptical of the significance of any factors other than economically rational behavior in inducing compliance with regulatory obligations.<sup>107</sup>

Theory aside, is there any empirical evidence to back the claims of either side of the debate about the comparative effectiveness of these differing approaches to environmental enforcement and compliance? The next subpart will address this question.

#### B. *Empirical Studies of Coercive vs. Cooperative Enforcement*

To date, there is little empirical analysis on the use of cooperation-oriented strategies.<sup>108</sup> In particular, few studies examine the comparative efficacy of cooperation-oriented strategies.<sup>109</sup> One article analyzing the use of the cooperative approach in regulation of water pollution in Canada states that "past studies that have hailed the merits of cooperative enforcement have offered surprisingly little by way of empirical support."<sup>110</sup> There seems to be even less research that directly compares coercive and cooperative strategies. According to Professor Rechtschaffen, "[t]he argument that cooperation works better than deterrence to achieve compliance with environmental law is unconvincing. Most fundamentally, it is largely untested."<sup>111</sup> Rechtschaffen then quotes Raymond J. Burby & Robert G. Paterson, saying that "there is little in the way of empirical evidence that can be used in deciding which enforcement techniques [approaches based

---

<sup>104</sup> RECHTCHAFEN & MARKELL, *supra* note 31, at 215.

<sup>105</sup> *See id.* at 218-20.

<sup>106</sup> *See* Burby & Paterson, *supra* note 71, at 756.

<sup>107</sup> *See* RECHTCHAFEN & MARKELL, *supra* note 31, at 231.

<sup>108</sup> *See, e.g.,* Shapiro & Rabinowitz, *supra* note 72, at 720 (arguing that there is "little empirical evidence" to verify the assertion that agency cooperation with regulated entities will increase compliance).

<sup>109</sup> *See id.*

<sup>110</sup> Kathryn Harrison, *Is Cooperation the Answer? Canadian Environmental Enforcement in Comparative Context*, 14 J. OF POL'Y ANALYSIS & MGMT. 221, 223 (1995).

<sup>111</sup> Rechtschaffen, *Deterrence vs. Cooperation*, *supra* note 66, at 1205.

on deterrence or cooperation] are most likely to achieve regulatory goals.”<sup>112</sup> The evidence that does exist is largely anecdotal.<sup>113</sup>

One researcher has noted that rates of compliance with water pollution controls are “significantly lower” in the pulp and paper industry in Canada, where the cooperative approach to enforcement is generally followed, than in the United States, concluding that the growing consensus in favor of cooperative enforcement is misplaced.<sup>114</sup> Another researcher concluded that “[t]he best performing state programs [for nonpoint sources of water pollution] tend to be those that use a highly coercive approach, both with the private sector and in securing local government adoption and enforcement of pollution control regulations.”<sup>115</sup> Still others

---

<sup>112</sup> *Id.* (quoting Burby & Paterson, *supra* note 71, at 757).

<sup>113</sup> *See, e.g.*, Shapiro & Rabinowitz, *supra* note 72, at 720 (asserting that “[t]here is little empirical evidence on the relative effectiveness of cooperative and legalistic enforcement policies,” and that “[m]ost of the evidence is anecdotal and open to dispute”).

<sup>114</sup> Harrison, *supra* note 110, at 222 (“[T]he conclusion that rates of compliance are significantly lower in Canada than the United States casts doubt on the growing consensus in favor of cooperative enforcement.”). Harrison also concluded that, “[i]n the case of the pulp and paper industry, the cooperative Canadian approach to enforcement has delivered disappointing results compared to the more adversarial U.S. approach. This study therefore casts doubt on the relatively untested assumption that cooperative enforcement is equally if not more effective than the adversarial approach.” *Id.* at 240.

<sup>115</sup> Burby, *supra* note 77, at 368 (claiming that his study shows that EPA and the states “cannot expect to reduce nonpoint source pollution substantially through programs that lack coercion”). For purposes of the CWA, a “point source” includes “any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged.” 33 U.S.C. § 1362(14) (2007). Any source of water pollution that does not qualify as a point source is a nonpoint source, which the Act does not define. *See id.*; *see also* Environmental Protection Agency, Nonpoint Source Pollution: The Nation’s Largest Water Quality Problem, <http://www.epa.gov/owow/nps/facts/point1.htm> (last visited Apr. 15, 2007).

According to the EPA, nonpoint source pollution is caused by diffuse sources that are not regulated as point sources and normally is associated with agricultural, silvicultural and urban runoff, runoff from construction activities, etc. . . . In practical terms, nonpoint source pollution does not result from a discharge at a specific, single location (such as a single pipe) but generally results from land runoff, precipitation, atmospheric deposition, or percolation.

United States v. Plaza Health Labs., Inc., 3 F.3d 643, 652 n.3 (2d Cir. 1993) (Oakes, J., dissenting) (citing OFFICE OF WATER REGULATIONS AND STANDARDS, EPA OFFICE OF WATER, NONPOINT SOURCE GUIDANCE 3 (1987)). Although the CWA largely ignores nonpoint sources of water pollution, nothing in the statute prohibits the states from regulating them. 33 U.S.C. § 1370 (providing that nothing in the CWA precludes the states from imposing pollution abatement requirements more stringent than federal standards adopted under the CWA). If a state chooses to adopt enforceable restrictions for nonpoint sources, such as mandatory best management practices, it has the option of overseeing compliance with

have concluded that the impact of the government's choice of enforcement strategies on compliance with regulatory obligations depends on the kind of regulatory standard at issue<sup>116</sup> and that, in particular, the cooperative approach is better suited to inducing compliance with performance standards than with specification standards.<sup>117</sup> Finally, a recent study by Professor Andreen concludes that compliance rates for major dischargers under the CWA "have remained stubbornly static" during the period during which many states have "replaced traditional enforcement mechanisms with some form of cooperation-based strategy."<sup>118</sup> He concludes, based on that evidence, that "[t]he new, more flexible approach has not improved rates of compliance."<sup>119</sup>

---

those restrictions pursuant to either a coercive or cooperative enforcement approach. See GLICKSMAN ET AL., *supra* note 3, at 513 ("The CWA traditionally has subjected nonpoint source controls to softer state-run planning and management programs.").

<sup>116</sup> Both design (or specification) and performance standards typically specify a goal that takes the form of a mandatory cap, often expressed numerically, on discharges. Sidney A. Shapiro & Robert L. Glicksman, *Goals, Instruments, and Environmental Policy Choice*, 10 DUKE ENVTL. L. & POL'Y F. 297, 305 (2000). Under the CWA, EPA derives this effluent limitation on the basis of its determination of the level of pollution control that it is feasible for a particular group of regulated entities to achieve. See GLICKSMAN ET AL., *supra* note 3, at 542. Design and performance standards diverge, however, with respect to the degree of discretion afforded to regulated facilities in determining how to achieve the applicable effluent limitation. Shapiro & Glicksman, *supra*, at 305.

[U]nder a design standard the agency defines the method by which regulated entities are required to achieve the goal—such as by installing and operating a particular kind of pollution control technology or work practice—whereas under a performance standard, regulated entities are free to achieve the goal any way they want. They can use the model technology or work practice identified by the agency as the one that makes compliance possible, or they can devise alternative means of meeting the goal. In theory at least, regulated entities subject to a performance standard have an incentive to develop such alternative means if they provide a more efficient means of achieving the regulatory goal.

*Id.* Performance standards, not specification standards, are the norm under the federal pollution control laws, including the CWA. *Id.* at 306.

<sup>117</sup> According to Burby and Paterson, "[w]hile deterrence of violations through monitoring and inspections stimulates compliance with both specification and performance standards, building commitment and capacity to obey the law through a cooperative approach to enforcement has much more impact on the degree of compliance attained for performance standards than for specification standards." Burby & Paterson, *supra* note 71, at 754, 766 (arguing that "[d]eterrent measures provide a needed backstop for dealing with recalcitrant firms who evade regulatory requirements for financial gain or merely through sloth or incompetence").

<sup>118</sup> Andreen, *supra* note 16, at 19.

<sup>119</sup> *Id.*

While these studies help to inform our understanding of cooperative enforcement strategies, they represent only rudimentary steps. Only one of these studies gathers facility-specific data on the type of relationship between regulators and regulated entities.<sup>120</sup> Importantly, none of these studies considers this relationship as consisting of multiple dimensions. In this Article, we examine both of these aspects of the regulatory relationship. In particular, we distinguish between the relative presence of one enforcement approach or the other by assessing multiple dimensions. We demonstrate that, in reality, no single type of approach exists for many given facilities. Instead, the relationship is represented by shades of gray. This assessment demonstrates that an accurate depiction of the regulator-regulated entity relationship should precede any analysis of the comparative efficacy of coercive and cooperative enforcement regimes.

## II. COERCIVE AND COOPERATIVE ENFORCEMENT IN THE CHEMICAL INDUSTRY

In light of the sharp debate between those who advocate moving away from a traditional deterrence-based approach to achieving compliance with environmental statutes such as the CWA and those who are skeptical that such a shift will improve compliance, it would be useful to know more about what kinds of relationships actually exist between regulators and point sources regulated under the CWA. Our study attempts to shed light on these relationships. To do so, we designed and implemented a survey of regulated facilities in the chemical industry.<sup>121</sup> The survey includes a series of questions that require the respondents to characterize certain aspects of their interactions with regulators, including the nature of their relationship with CWA regulators. In particular, the survey includes a series of questions that are designed to indicate whether a particular respondent has a cooperative or a coercive relationship with state or federal regulatory authorities. This Part describes the methods that we used to elicit responses to these questions. It also describes our analysis of the survey responses and the implications of our analytical results on any future research that examines the comparative advan-

---

<sup>120</sup> See Harrison, *supra* note 110.

<sup>121</sup> The survey questionnaire was developed with the assistance of Mark Cohen, the Director of the Vanderbilt Center for Environmental Management. The survey was pre-tested with a sample of 20 facilities in the Kansas City metropolitan area. For a full copy of the survey, see EPA Grant Facility Survey (2002), <http://www.ku.edu/pri/CEP/EPA/surveyinstrument.pdf> [hereinafter EPA Grant Facility Survey].

tages and disadvantages of the coercive and cooperative approaches to environmental enforcement.

A. *Survey Sample Selection and Respondent Participation*

Our study examines the relationships between CWA regulators and point sources in the chemical industry whose discharges are subject to effluent limitations set forth in NPDES permits. We chose the industrial sector of chemical and allied products as the focus of our study because it serves as an excellent vehicle for examining the efficacy of government interventions on corporate environmental performance. EPA has demonstrated a strong interest in this sector,<sup>122</sup> and regards one of the sub-sectors, industrial organics, as a priority industrial sector.<sup>123</sup> The chemical industry is responsible for a significant portion of the nation's industrial output and a significant portion of all wastewater discharges by facilities subject to CWA regulation.<sup>124</sup> However, the chemical industry is not necessarily representative of all industrial sectors. Indeed, its unique attributes contribute to our interest in studying it. Some firms in the chemical industry, for example, have demonstrated an interest in promoting pollution reduction and prevention through efforts prompted by the Responsible Care program, which is a voluntary management initiative supported by the American Chemical Council.<sup>125</sup>

---

<sup>122</sup> See, e.g., U.S. ENVTL. PROT. AGENCY, EPA-305-R-96-002, CHEMICAL INDUSTRY NATIONAL ENVIRONMENTAL BASELINE REPORT: 1990-1994 at ES-3 (1997), available at <http://www.epa.gov/compliance/resources/publications/assistance/sectors/chembaseline9094.pdf>; U.S. ENVTL. PROT. AGENCY & CHEM. MFRS. ASS'N, EPA-305-R-99-001, ROOT CAUSE ANALYSIS PILOT PROJECT, at ii (1999), available at <http://www.epa.gov/compliance/resources/publications/assistance/sectors/rootcauseanalysis.pdf>.

<sup>123</sup> See, e.g., Paul S. Farber & E. Lynn Grayson, *A Survival Guide to Multimedia Inspections: EPA's Multi-Media Enforcement & Inspection Program*, ENVTL. PROT. MAG., Jan. 1999, available at <http://www.kerleyink.com/technology/MULTI-ME.htm>.

<sup>124</sup> The U.S. chemical industry is the largest in the world and is responsible, on a value-added basis, for about 1.9% of U.S. gross domestic product. See ALLEN J. LENZ & JOHN LAFRANCE, MEETING THE CHALLENGE: U.S. INDUSTRY FACES THE 21ST CENTURY: THE CHEMICAL INDUSTRY (1996), available at <http://www.technology.gov/Reports/chemicals/chemical.pdf>. The chemical industry historically has been a large generator of wastes disposed of both on land and water. For example, "[t]he chemical and allied products industry accounts for 49% of hazardous waste generation" in the United States. JEFFREY G. MILLER & CRAIG N. JOHNSTON, THE LAW OF HAZARDOUS WASTE DISPOSAL AND REMEDIATION 7 (1996).

<sup>125</sup> See, e.g., Dow Chemical Company, Responsible Care, <http://www.dow.com/commitments/care/> (last visited Apr. 15, 2007) (describing Responsible Care as "a voluntary initiative within the global chemical industry to safely handle our products from inception in the

The original population of facilities chosen for administration of our survey was drawn from EPA's Permit Compliance System ("PCS") database as of September 2001.<sup>126</sup> This original population included 2,596 chemical facilities, which were supposed to have NPDES permits for pollution discharge into water.<sup>127</sup> Of these facilities, 499 were designated as major facilities and 2,097 as minor facilities.<sup>128</sup> We included in the survey sample only facilities that met the following criteria: (1) they were still in operation as of 2002; (2) they held an NPDES permit; (3) they discharged regulated pollutants into surface water bodies; and (4) their contact information was available from either EPA or alternative sources, such as phone books. After excluding the facilities that did not fit the relevant criteria, the population surveyed was 1,003 facilities. From this group of eligible respondents, 267 facilities completed at least 90% of the survey, implying a survey response rate of 26.6%. Although this rate may seem fairly low, it is comparable to previous large-scale surveys of industrial sectors.<sup>129</sup>

We find no systematic state or regional bias in participation when we compare the original sample of 1,003 potentially eligible facilities to the 267 facilities that actually completed the survey. For example, only the Midwest region is slightly over-represented in the response group, and only the Northeast region is slightly under-represented. These differences, however, are small. Across most of the states the difference between representation in the original sample and representation in the response group averages less than 2%. There is some difference in the participation of major and minor facilities. In the original sample, 69% of facilities were minor facilities and 31% were major facilities. In the group

---

research laboratory, through manufacture and distribution, to ultimate disposal, and to involve the public in our decision-making processes").

<sup>126</sup> The PCS database includes data on inspections performed by federal and state regulators and on enforcement actions taken by federal administrative agencies and courts. Environmental Protection Agency, Water Discharge Permits (PCS), <http://www.epa.gov/enviro/html/pcs/adhoc.html> (last visited Apr. 15, 2007).

<sup>127</sup> See DIETRICH EARNHART ET AL., SHAPING CORPORATE ENVIRONMENTAL BEHAVIOR AND PERFORMANCE: THE IMPACT OF ENFORCEMENT AND NON-ENFORCEMENT TOOLS 96 (2006), available at <http://www.ipsr.ku.edu/CEP/EPA/finalreport.pdf>.

<sup>128</sup> *Id.*

<sup>129</sup> See, e.g., Magali Delmas & Michael Toffel, Institutional Pressures and Environmental Strategies 17 (University of California, Santa Barbara, Working Paper No. 07-022, 2005), available at <http://www.hbs.edu/research/pdf/07-022.pdf> (stating that a 17% response rate in a survey in which 3160 people were contacted "is comparable to other recent survey-based strategy research").

of survey respondents, major facilities are slightly over-represented at 39%. Because this difference is significant, we chose not to compare the responses of major and minor facilities.<sup>130</sup>

*B. Survey Responses Relating to Coercive and Cooperative Enforcement*

Our survey includes a series of questions designed to indicate whether a particular respondent has a cooperative or a coercive relationship with state or federal regulatory authorities. The question that most directly solicits information about the nature of the relationship between CWA regulators and regulated facilities simply asks the respondents to characterize the nature of the way in which the water regulator with whom they typically work treats the facility and its employees.<sup>131</sup> The categories available to respondents were: “generally coercive,” “generally cooperative,” and “don’t know.”<sup>132</sup> As Table 1 indicates, only 2.7% state that the relationship is generally coercive, while 96.2% state that it is generally cooperative.<sup>133</sup> The vast majority of respondents appear to regard their relationships with their principal regulators as cooperative.

Other survey questions solicit responses about particular aspects of the relationship between regulators and regulated entities that we regard as relevant to whether those relationships are generally cooperative or generally coercive. For example, we asked each respondent to characterize the manner in which the regulator with whom they typically works treats the facility and its employees.<sup>134</sup> The categories for this question were “always fair,” “sometimes fair, sometimes unfair,” “always unfair or

---

<sup>130</sup> Statistical analysis indicates that only the distinction between minor and major facilities proves important for explaining whether a contacted facility completed the administered survey. This statistical analysis demonstrates that neither the preceding history of inspections nor the preceding enforcement actions against a particular facility explain whether a contacted facility responded to the survey. Moreover, the analysis demonstrates that the decision to respond is not explained by the EPA region in which a particular facility resides. Even if the threat of inspections and enforcement actions varies across EPA regions, this variation does not predict whether a contacted facility responds to the survey. The analysis is not able to control for variation across states in a similar fashion given the large number of individual states, relative to the sample size.

<sup>131</sup> EPA Grant Facility Survey, *supra* note 121, at 19.

<sup>132</sup> *Id.*

<sup>133</sup> See tbl.1.

<sup>134</sup> EPA Grant Facility Survey, *supra* note 121, at 19.

arbitrary,” and “don’t know.”<sup>135</sup> We consider the first category to be more indicative of a cooperative relationship than the second and the second to reflect a more cooperative relationship than the third. As indicated in Table 2, no respondent reports that the treatment is always unfair, 18.8% of the respondents report that it sometimes fair, sometimes unfair, and 80.1% report that it is always fair.<sup>136</sup> Thus, most of the respondents appear to perceive their relationships with regulators as relatively cooperative. The percentage of respondents indicating a cooperative relationship under this question is lower, however, than the percentage based on the most direct assessment of the overall relationship.<sup>137</sup>

An additional question focuses on whether the regulated facility typically works with a federal or state water regulator.<sup>138</sup> Our conjecture is that regulated facilities may tend to work more cooperatively with state regulators than with federal regulators because state regulators tend to work closer to the regulated facility. Regulated facilities may be more concerned about maintaining cooperative relationships with regulators who are part of the same community in which they live and work. As Table 3 indicates, 96.5% of the respondents report that their facility typically works with state regulators, while only 1.1% report that they typically work with federal regulators.<sup>139</sup>

We were also curious about whether facilities typically worked with the same individual water regulator, or multiple regulators that varied with the circumstances.<sup>140</sup> We posit that regulated entities will typically find it easier to maintain a cooperative relationship with a single regulator than with multiple regulators whose approaches to compliance may differ and who may not understand the facility’s past compliance history. Table 4 indicates that 56.5% of the respondents report that they typically work with the same regulator, while 41.9% report that they typically work with multiple regulators.<sup>141</sup>

---

<sup>135</sup> *Id.*

<sup>136</sup> See tbl.2.

<sup>137</sup> Compare tbl.1, with tbl.2.

<sup>138</sup> EPA Grant Facility Survey, *supra* note 121, at 18.

<sup>139</sup> See tbl.3. The predominance of state regulators reflects the fact that EPA has delegated NPDES permitting authority to state environmental agencies in most states. According to EPA’s website, only five states have not received authority to administer at least some aspect of the NPDES permit program. See Environmental Protection Agency, National Pollutant Discharge Elimination System: State Program Status, <http://cfpub.epa.gov/npdes/statestats.cfm> (last visited Apr. 15, 2007).

<sup>140</sup> See EPA Grant Facility Survey, *supra* note 121, at 18.

<sup>141</sup> See tbl.4.

Facilities were also asked whether, over the past three years, any individual in the facility asked the supervisor of the facility's water regulator to help with a difference of opinion between the facility and the regulator.<sup>142</sup> We regard a negative answer to represent less friction between the regulator and the facility than a positive answer. A positive answer may reflect a sign that a previously cooperative relationship has gone sour.<sup>143</sup> As Table 5 reveals, 79.8% of the respondents state that their facility did not seek help from the supervisor of the regulator, while 19% state that the facility did so.<sup>144</sup> Thus, for at least a sizeable number of the facilities, there appears to have been some period of non-cooperation, or at least a difference of opinion, between CWA regulators and regulated facilities.

A related question addresses whether, over the past three years, any individual at the facility asked a local, state, or federal elected official to help the facility with a difference of opinion between the facility and a water regulator.<sup>145</sup> We regard a negative answer as more reflective of a cooperative relationship than an affirmative answer, for the reasons previously described. As Table 6 indicates, 94.2% of the respondents report that no one contacted an elected official to help with a difference of opinion between a regulator and the regulated facility. Only 4.6% report that the facility made such a request.<sup>146</sup> For those respondents who report that they contacted an elected official, a follow-up question inquired whether the official was most often a local official, a state official, or a federal official.<sup>147</sup> 23.5% of the relevant respondents report that the elected official contacted by the facility was most often a local official; 41.2% report that it was a state official; only 5.9% report that it was a federal official.

The final question in the portion of the survey addressing coercive and cooperative approaches attempts to discern the type of relationship existing between the regulator and the regulated entity indirectly with the help of a specific hypothetical scenario. This question asks how likely it is that the respondent's facility would allow regulators access to plant

---

<sup>142</sup> EPA Grant Facility Survey, *supra* note 121, at 19.

<sup>143</sup> Alternatively, the appeal to a regulator's supervisor may represent an effort by the regulated facility to escape the adverse consequences of a pre-existing coercive relationship with a non-responsive regulator.

<sup>144</sup> See tbl.5.

<sup>145</sup> EPA Grant Facility Survey, *supra* note 121, at 19.

<sup>146</sup> See tbl.6.

<sup>147</sup> EPA Grant Facility Survey, *supra* note 121, at 20.

facilities if they arrived unannounced.<sup>148</sup> The answers available to respondents were “always likely,” “likely,” “somewhat likely,” “not at all likely,” and “don’t know.”<sup>149</sup> The more likely the respondent is to allow unannounced access, the more cooperative we regard the relationship between the respondent’s plant and the CWA regulator. As Table 7 indicates, 90% of the respondents report that it is always likely, while none say it is not at all likely.<sup>150</sup> These responses provide evidence that companies are generally willing to cooperate with regulators performing unannounced inspections.

In addition to the set of questions that reflect on relations between the regulator and the regulated entity, the survey includes a pair of questions relating to the respondents’ attitudes about the value of regulation.<sup>151</sup> The first of these two questions addresses whether each respondent thinks it should be the government’s responsibility to impose strict laws to control industry’s impact on the environment.<sup>152</sup> The categories for this question were “definitely should be,” “probably should be,” “probably should not be,” “definitely should not be,” and “don’t know.”<sup>153</sup> We regard an individual who thinks it is the government’s responsibility to impose such laws to be more likely to cooperate with its facility’s regulator than one who does not think so. As Table 8 indicates, 57.1% of the respondents report that it definitely should be, while 35.5% report that it probably should be. Only a total of 6.2% of the respondents report that this probably should not be or definitely should not be the role of the government.<sup>154</sup>

---

<sup>148</sup> *Id.* at 18.

<sup>149</sup> *Id.*

<sup>150</sup> *See* tbl.7.

<sup>151</sup> The questions discussed so far in this Article focus on various aspects of the facility’s relationship with its regulator. The next group of questions focus on the individual respondent’s attitudes toward government regulation and the likelihood of compliance by facilities in the absence of regulation.

<sup>152</sup> EPA Grant Facility Survey, *supra* note 121, at 26.

<sup>153</sup> *Id.*

<sup>154</sup> *See* tbl.8. It is not unusual to portray corporate officials as resentful towards the intrusion of the government into their business affairs, particularly when the government is forcing the business to undertake activities that may potentially reduce corporate profitability. The high percentage of respondents who answer this question affirmatively (“definitely should be” or “probably should be”) may therefore seem surprising. These results may be attributed to the identity of the respondents. Most of those answering the survey were environmental managers likely to feel that their jobs are important, and, in turn, likely to feel that compliance with environmental regulations is also important. These attitudes may or may not reflect the views of others at the facility.

The second question in this pair addresses the extent to which the respondents agree or disagree with this statement: "Companies will behave responsibly when it concerns environmental protection, regardless of government regulation."<sup>155</sup> The categories are "strongly agree," "agree," "neither agree nor disagree," "disagree," "strongly disagree," and "don't know."<sup>156</sup> We regard those who strongly agree or agree as more likely to cooperate with regulators than those who do not. As Table 9 indicates, 11.6% of the respondents strongly agree with the statement, 29% agree, 9.7% neither agree nor disagree, 37.7% disagree, and 11.2% strongly disagree.<sup>157</sup> Thus, a total of 49% of the respondents disagree to some extent with the notion that industry would behave responsibly in the absence of government regulation. Only 40.6% of the respondents believe that regulation is not necessary to ensure responsible industry behavior. In part, the respondents may believe that, even though their facilities would prefer to behave responsibly even in the absence of government regulation, their competitors might not. If their facility behaves responsibly and competitors do not, those competitors may gain an advantage in the market as a result of their avoidance of environmental control costs. Thus, regulation is necessary to provide a level playing field.<sup>158</sup>

These responses, together with the responses to the previous question about the government's responsibility to regulate, seem to indicate agreement among many of the respondents that government regulation of activities that create risks of environmental harm is not only legitimate but necessary. This is consistent with other survey results.<sup>159</sup> It is also possible that the responses to these two questions are an expression of a fairly solid recognition among the industry respondents of the utility of a coercive enforcement presence, the absence of which may decrease incentives to comply with regulatory obligations.<sup>160</sup>

---

<sup>155</sup> EPA Grant Facility Survey, *supra* note 121, at 27.

<sup>156</sup> *Id.*

<sup>157</sup> See tbl.9.

<sup>158</sup> Professor Plater's conversations with various executives also demonstrate the need for regulation: "[A]s one candid executive once said to me: Actually, we all need mandatory government regulations to give us a compelling reason to do the right thing and make sure our competitors do too; 'Good fences make good neighbors.'" Zygmunt J. B. Plater, *Dealing with Dumb and Dumber: The Continuing Mission of Citizen Environmentalism*, 20 J. ENVTL. L. & LITIG. 9, 31 (2005).

<sup>159</sup> See, e.g., Robert R. Kuehn, *The Limits of Devolving Enforcement of Federal Environmental Laws*, 70 TUL. L. REV. 2373, 2387 (1996) ("Half of all corporate environmental managers believe that the federal government's enforcement is inadequate, citing the need for more enforcement to ensure that all companies are treated equally.").

<sup>160</sup> On the other hand, those who conclude that the government has legitimate environmental protection responsibilities, and that companies will not behave responsibly

C. *Correlations and Cross-Tabulations*

This subpart compares the responses to the individual questions described above that relate to the relationship between the regulator and the regulated entity. In particular, this subpart explains and interprets the correlations between all possible pairs of responses, such as the correlation between the overall type of relationship—coercive versus cooperative—and the treatment of a regulated entity by its regulator. The responses to all possible pairs of questions are also cross-tabulated, and these cross-tabulations are interpreted. This analysis demonstrates that the relationship between a regulator and a regulated entity consists of multiple dimensions. In other words, no single underlying dimension seems to reflect all of the responses.

First, we calculated and interpreted the correlations between all possible pairs of responses. Table 10 reports the Pearson pairwise correlation coefficients.<sup>161</sup> In general, these statistics reveal only weak correlations between the various measures capturing the relationship between the regulator and the regulated entity. Of the twenty-one pairwise correlations, only six are positive and statistically significantly different from zero (*i.e.* the p-value associated with the correlation coefficient is no greater than 0.10). Of these significant correlations, the largest magnitude is only 0.35, indicating limited or no connection between these pairs of responses. Five of the correlations are negative, though the coefficients are insignificantly different from zero. The remaining ten correlations are positive but insignificantly different from zero.

Second, we cross-tabulated the responses to all possible pairs of questions and interpreted these cross-tabulations. To facilitate the creation and interpretation of the cross-tabulations, we collapsed each response into two categories, excluding the “don’t know” responses. This cleanly divides responses into indicating the presence of either a coercive relationship or a cooperative relationship. This re-arrangement affects only two individual questions and responses: (1) for treatment of the regulated entity by its regulator, an “always fair” response was taken to indicate a cooperative relationship and responses of “sometimes fair, sometimes

---

in the absence of government regulation, might be more willing to cooperate with regulators than those who think government regulation is illegitimate and unnecessary. Some respondents may even believe that a government enforcement presence is legitimate and necessary in the abstract, but still react in a hostile and non-cooperative manner when their facility becomes the focus of an enforcement action.

<sup>161</sup> See tbl.10.

unfair” were thought to indicate a coercive relationship; (2) for the question regarding likelihood of allowing regulators access to plant facilities without announcement, an “always likely” response was taken to indicate a cooperative relationship and responses of “likely” or “somewhat likely” were thought to indicate a coercive relationship. The resulting cross-tabulations are reported in Table 11. As with the correlation coefficients, these statistics reveal less than complete overlap between the various measures capturing the relationship between the regulator and the regulated entity. Our analysis focuses on the cells of each cross-tabulation that demonstrate a conflict in the classification of the regulator-regulated entity relationship based on the two measures analyzed. In other words, we focus on situations where one measure indicates a coercive relationship, while the other measure indicates a cooperative relationship. These conflicting classifications are indicated by the diagonal cells of each two-by-two table.

We begin our interpretation with those cross-tabulations that involve the overall nature of the relationship between the regulator and the regulated entities: coercive versus cooperative. Tables 11(d), 11(i), 11(m), 11(p), 11(s), and 11(t) report these cross-tabulations. As shown in these tables, sometimes those who report that they generally have cooperative relationships also report that particular aspects of their relationships are more consistent with a coercive than with a cooperative relationship. The converse is also true: those who report that they have coercive relationships nevertheless describe some aspects of their relationships with regulators in a manner than seems to reflect cooperation. For example, Table 11(m) reports the cross-tabulations between the consistency of the specific regulator (same individual regulator versus multiple regulators) and the overall nature of the regulator-regulated entity relationship.<sup>162</sup> As shown, a large portion of the respondents (41%) provide conflicting indications of the relationship between the regulator and the regulated entity.<sup>163</sup> Moreover, of those facilities experiencing a coercive relationship, 71% are nevertheless working with the same individual regulator.<sup>164</sup> As stronger evidence of this conflict, 95% of those facilities

---

<sup>162</sup> See tbl.11(m).

<sup>163</sup> This percentage is calculated from the lower left and top right cells. In other words, the addition of .78% to 40.39% is 41%. This same formula is followed for subsequent calculations of this nature.

<sup>164</sup> This percentage is calculated from the sample numbers located in the upper and lower left cells. In other words, the upper cell sample number is five and the lower cell sample number is two. The total sample size of coercive relationship respondents is seven. Five

working with multiple regulators nevertheless experience a cooperative relationship.<sup>165</sup>

To complete our analysis, we systematically interpret each of the twenty-one pairwise cross-tabulations shown in Table 11. Tables 11(a) through 11(f) report the cross-tabulations that involve the likelihood of allowing regulators access to plant facilities without announcement. Table 11(a) reports the cross-tabulation between the likelihood of allowing regulators access to plant facilities without announcement and the typical type of regulator (state versus federal). As shown, only 10% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Yet, of those facilities working mostly with a federal regulator, 67% are still always likely to allow access to their plant operations in response to an unannounced visit. Of those facilities who were not always likely to allow access, 96% still work mostly with a state regulator.<sup>166</sup>

Table 11(b) reports the cross-tabulation between the likelihood of allowing regulators access to plant facilities without announcement and the type of interaction with the regulator (same individual regulator versus multiple regulators). As shown, 43% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities working with multiple regulators, 91% are still always likely to allow access to their plant operations in response to an unannounced visit. Of those facilities who were not always likely to allow access, 46% still work with the same individual regulator.<sup>167</sup>

Table 11(c) reports the cross-tabulation between the likelihood of allowing regulators access to plant facilities without announcement and the treatment of the regulated entity by its regulator. As shown, 26% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. As stronger evidence, of those facilities not receiving always fair treatment, 94% are still always likely to allow access to their plant operations in response to an un-

---

divided by seven and multiplied by 100 equals 71%. This same formula is followed for subsequent calculations of this nature.

<sup>165</sup> This percentage is calculated from the sample numbers located in the upper left and upper right cells. In other words, the upper left cell sample size is five and the upper right cell sample size is 103. Combined, the total sample number of coercive, same individual regulators is 108. One hundred and three divided by 108 and multiplied by 100 equals 95%. This same formula is followed for subsequent calculations of this nature.

<sup>166</sup> See tbl.11(a).

<sup>167</sup> See tbl.11(b).

nounced visit. Of those facilities who were not always likely to allow access, 88% still receive always fair treatment.<sup>168</sup>

Table 11(d) reports the cross-tabulation between the likelihood of allowing regulators access to plant facilities without announcement and the overall nature of the relationship (coercive versus cooperative). As shown, 12% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Despite this limited evidence, of those facilities in a coercive relationship, 100% are still always likely to allow access to their plant operations in response to an unannounced visit. Of those facilities who were not always likely to allow access, 100% still maintain a cooperative relationship.<sup>169</sup>

Table 11(e) reports the cross-tabulation between the likelihood of allowing regulators access to plant facilities without announcement and the request for assistance from the regulator's supervisor. As shown, 25% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that requested assistance, 90% are still always likely to allow access to their plant operations in response to an unannounced visit. Of those facilities who were not always likely to allow access, 79% still found no need for assistance.<sup>170</sup>

Table 11(f) reports the cross-tabulation between the likelihood of allowing regulators access to plant facilities without announcement and the request for assistance from an elected official. As shown, 13% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that requested assistance, 83% are still always likely to allow access to their plant operations in response to an unannounced visit. It is also notable that, of those facilities who were not always likely to allow access, 92% still found no need for assistance.<sup>171</sup>

Tables 11(g) through 11(k) report the remaining cross-tabulations that involve the typical type of regulator (state versus federal). This set of cross-tabulations does not reveal an incomplete overlap between the measures capturing the regulator-regulated entity relationship because the number of respondents working mainly with a state regulator is so small: only two facilities for Tables 11(g) through 11(I), and three facilities for Tables 11(j) and 11(k). Table 11(g) reports the cross-tabulation

---

<sup>168</sup> See tbl.11(c).

<sup>169</sup> See tbl.11(d).

<sup>170</sup> See tbl.11(e).

<sup>171</sup> See tbl.11(f).

between the typical type of regulator (state versus federal), and the type of interaction with the regulator (same individual regulator versus multiple regulators). As shown, 41% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that work with multiple regulators, 100% are working mostly with a federal regulator. No facilities work with the same federal regulator.<sup>172</sup>

Table 11(h) reports the cross-tabulation between the typical type of regulator (state versus federal), and the treatment of the regulated entity by its regulator. As shown, 19% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities not receiving always fair treatment, 98% are working mostly with a federal regulator. Of those facilities who work mostly with a state regulator, 50% always receive fair treatment.<sup>173</sup>

Table 11(i) reports the cross-tabulation between the typical type of regulator (state versus federal), and the overall relationship between the regulator and the facility. As shown, only 4% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Yet, of those facilities experiencing a coercive relationship, 100% are working mostly with a federal regulator. Moreover, of those facilities who work mostly with a state regulator, 100% experience a cooperative relationship.<sup>174</sup>

Table 11(j) reports the cross-tabulation between the typical type of regulator (state versus federal), and a request for assistance from the regulator's supervisor. As shown, 21% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that requested assistance, 100% are working mostly with a federal regulator. Of those facilities who work mostly with a state regulator, 100% found no need for assistance.<sup>175</sup>

Table 11(k) reports the cross-tabulation between the typical type of regulator (state versus federal), and a request for assistance from an elected official. As shown, only 6% of the respondents provide conflicting indications of the relationship between the regulator and the regulated

---

<sup>172</sup> See tbl.11(g).

<sup>173</sup> See tbl.11(h).

<sup>174</sup> See tbl.11(i).

<sup>175</sup> See tbl.11(j).

entity. Yet, of those facilities that requested assistance, 100% are working mostly with a federal regulator. Moreover, of those facilities who work mostly with a state regulator, 100% found no need for assistance.<sup>176</sup>

Tables 11(l) through 11(o) report the remaining cross-tabulations that involve the type of interaction with the regulator (same individual regulator versus multiple regulators). Table 11(l) reports the cross-tabulations between the type of interaction with the regulator (same individual versus multiple regulators), and the treatment of the regulated entity by its regulator. As shown, 37% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities not receiving always fair treatment, 65% are working with the same individual regulator. Of those facilities working with multiple regulators, 88% receive always fair treatment.<sup>177</sup>

Table 11(m) reports the cross-tabulations between the type of interaction with the regulator (same individual versus multiple regulators), and the overall regulator-regulated entity relationship (coercive versus cooperative). As shown, a large portion of the respondents (41%) provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities experiencing a coercive relationship, 71% are working with the same individual regulator. Of those facilities working with multiple regulators, 99% experience a cooperative relationship.<sup>178</sup>

Table 11(n) reports the cross-tabulations between the type of interaction with the regulator (same individual versus multiple regulators), and a request for assistance from the regulator's supervisor. As shown, a large portion of the respondents (43%) provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that requested assistance, 49% are working with the same individual regulator. Of those facilities working with multiple regulators, 83% found no need for assistance.<sup>179</sup>

Table 11(o) reports the cross-tabulations between the type of interaction with the regulator (same individual versus multiple regulators), and a request for assistance from an elected official. As shown, a large portion of the respondents (43%) provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that requested assistance, 50% are working with the same individual

---

<sup>176</sup> See tbl.11(k).

<sup>177</sup> See tbl.11(l).

<sup>178</sup> See tbl.11(m).

<sup>179</sup> See tbl.11(n).

regulator. Of those facilities working with multiple regulators, 96% found no need for assistance.<sup>180</sup>

Tables 11(p) through 11(r) report the remaining cross-tabulations that involve the treatment of the regulated entity by its regulator. Table 11(p) reports the cross-tabulations between the treatment of the regulated entity by its regulator and the overall nature of the regulator-regulated entity relationship (coercive versus cooperative). As shown, 16% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities not always receiving fair treatment, 86% are still experiencing a cooperative relationship. None of the facilities that experience a coercive relationship receive “always fair” treatment. In this case, the two measures of the regulator-regulated entity relationship fully align.<sup>181</sup>

Table 11(q) reports the cross-tabulations between the treatment of the regulated entity by its regulator and a request for assistance from the regulator’s supervisor. As shown, a substantial portion of the respondents (24%) provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that requested assistance, 63% are receiving “always fair” treatment. Of those facilities not receiving “always fair” treatment, 63% still found no need for assistance.<sup>182</sup>

Table 11(r) reports the cross-tabulations between the treatment of the regulated entity by its regulator and a request for assistance from an elected official. As shown, a substantial portion of the respondents (21%) provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that requested assistance, 67% are receiving “always fair” treatment. More importantly, of those facilities not receiving “always fair” treatment, 92% still found no need for assistance.<sup>183</sup>

Tables 11(s) and 11(t) report the remaining cross-tabulations that involve the overall nature of the regulator-regulated entity relationship (coercive versus cooperative). Table 11(s) reports the cross-tabulations between the overall nature of the regulator-regulated entity relationship and a request for assistance from the regulator’s supervisor. As shown, 18% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that

---

<sup>180</sup> See tbl.11(o).

<sup>181</sup> See tbl.11(p).

<sup>182</sup> See tbl.11(q).

<sup>183</sup> See tbl.11(r).

requested assistance, 90% are experiencing a reportedly cooperative relationship. Of those facilities experiencing a coercive relationship, 29% found no need for assistance.<sup>184</sup>

Table 11(t) reports the cross-tabulations between the overall nature of the regulator-regulated entity relationship (coercive versus cooperative), and a request for assistance from an elected official. As shown, only 7% of the respondents provide conflicting indications of the relationship between the regulator and the regulated entity. Yet, of those facilities that requested assistance, 92% are experiencing a reportedly cooperative relationship. Of those facilities experiencing a coercive relationship, 86% found no need for assistance.<sup>185</sup>

Table 11(u) reports the last cross-tabulation: the tabulation between a request for assistance from the regulator's supervisor and a request for assistance from an elected official. As shown, a substantial portion of the respondents (18%) provide conflicting indications of the relationship between the regulator and the regulated entity. Of those facilities that requested assistance from an elected official, 42% did not seek assistance from the regulator's supervisor. Of those facilities requesting assistance from the regulator's supervisor, 86% found no need for assistance from an elected official.<sup>186</sup>

In general, these cross-tabulations provide substantial evidence that the relationship between a regulator and a regulated entity consists of multiple dimensions. Therefore, before assessing the effect of this relationship on environmental behavior and/or performance on the part of regulated entities, future research should comprehensively measure the various characteristics of the relationship.

#### CONCLUSIONS CONCERNING COERCIVE AND COOPERATIVE MODELS OF ENFORCEMENT

Environmental regulations amount to little if regulated entities do not comply with them. How best to induce those entities to meet their regulatory responsibilities has for some time been the subject of fierce debate. On the one hand, some environmental enforcement experts regard

---

<sup>184</sup> See tbl.11(s).

<sup>185</sup> See tbl.11(t).

<sup>186</sup> See tbl.11(u). Of course, if these two forms of assistance represent substitutes, then only one form of requested assistance may be expected. In this case, the identified combinations do not represent conflicting indications of the regulator-regulated entity relationship.

deterrence as the essential and overriding component of any effective effort to induce higher rates of compliance by regulated entities.<sup>187</sup> Under this view, regulated entities respond better to threats directed at their corporate bottom line than to any other factor.<sup>188</sup> Unless enforcement efforts engender a perception among regulated entities that it is less costly for them to comply than it is to resist compliance and risk the imposition of costly sanctions, these entities will have little incentive to alter their behavior to improve their compliance posture.<sup>189</sup> Other experts contend that regulated entities are responsive to a host of factors, including but not limited to a desire to minimize the cost of environmental regulation.<sup>190</sup> These factors create an environment in which the provision of compliance assistance and incentives may be a more effective technique for inducing compliance than the creation of a strong deterrent based on a rigorous enforcement presence.<sup>191</sup> The proponents of a cooperative approach generally do not support elimination of deterrence-based enforcement.<sup>192</sup> Rather, they regard such enforcement as a last resort which, if used excessively, can engender resistance by regulated entities that can be counterproductive to the ultimate goal of enhanced compliance.<sup>193</sup>

To date, few empirical studies have tested the impacts of coercive and cooperative approaches to enforcement.<sup>194</sup> The study of facilities in the chemical industry that are regulated by the CWA described in this Article represents an effort to begin to address the paucity of information on the effects of these two different approaches to enforcement on environmental behavior or compliance. Our study indicates that the vast majority of respondents describe their relationships with CWA regulators as cooperative rather than adversarial or coercive. The responses to additional questions reveal, however, that in some respects, those who report that they generally have cooperative relationships also report that particular aspects of their relationships are more consistent with a coercive than a cooperative relationship. The converse is also true; those who report that they have coercive relationships nevertheless describe some aspects of their relationships with regulators in a manner that reflects cooperation.

---

<sup>187</sup> See *supra* Part I.A.1.

<sup>188</sup> See *supra* Part I.A.1.

<sup>189</sup> See *supra* Part I.A.1.

<sup>190</sup> See *supra* Part I.A.2.

<sup>191</sup> See *supra* Part I.A.2.

<sup>192</sup> See *supra* Part I.A.2.

<sup>193</sup> See *supra* Part I.A.2.

<sup>194</sup> See *supra* Part I.B.

In coming to these results, our study cross-tabulated the responses to all possible pairs of questions. In general, these cross-tabulations reveal incomplete overlap between the various measures capturing the relationship between the regulator and the regulated entity. We also calculated and interpreted the correlations between all possible pairs of responses. Similar to the cross-tabulations, these statistics reveal only weak correlation between the various measures capturing the relationship between the regulator and the regulated entity. Overall, the analysis demonstrates that the relationship between a regulator and a regulated entity consists of multiple dimensions; no single underlying factor determines all aspects of the regulator-regulated entity relationship.

The implications of these results for the debate over the comparative effectiveness of the coercive and cooperative approaches to enforcement are significant. They demonstrate that empirical studies assessing the effectiveness of the two approaches on environmental behavior or performance should avoid characterizing the relationship between regulators and regulated entities as either distinctively coercive or cooperative. Those relationships tend, instead, to be multifaceted, with different aspects of the relationship between regulator and regulated entity conforming to one or the other of the two enforcement approaches. Our study provides one starting point for delineating the various components of the regulator-regulated entity relationship. Scholars who design future empirical studies on environmental enforcement and compliance, and environmental policymakers who assess the results of such studies, would do well to recognize the nuanced nature of the relationship between regulators and regulated entities if they are to provide the most meaningful contributions to the ongoing debate over the impacts of coercive and cooperative enforcement approaches on the behavior and performance of regulated entities.

TABLE 1

## GENERAL RELATIONSHIP BETWEEN REGULATOR AND REGULATED ENTITY (N=260)

Category	Frequency	%
Generally Coercive	7	2.7
Generally Cooperative	250	96.2
Don't Know	3	1.1

TABLE 2

## TREATMENT OF REGULATED ENTITY BY REGULATOR (N=261)

Category	Frequency	%
Always Fair	209	80.1
Sometimes Fair, Sometimes Unfair	49	18.8
Always Unfair or Arbitrary	0	0
Don't Know	3	1.1

TABLE 3

## TYPICAL REGULATOR: STATE VS. FEDERAL (N=259)

Category	Frequency	%
State	250	96.5
Federal	3	1.1
Don't Know	6	2.3

TABLE 4

TYPE OF INTERACTION WITH REGULATOR:  
SAME INDIVIDUAL REGULATOR VS. MULTIPLE REGULATORS (N=260)

Category	Frequency	%
Same Individual Regulator	147	56.5
Multiple Regulators	109	41.9
Don't Know	4	1.5

TABLE 5

REQUEST FOR ASSISTANCE FROM  
SUPERVISOR OF FACILITY'S REGULATOR (N=258)

Category	Frequency	%
No	206	79.8
Yes	49	19.0
Don't Know	3	1.2

TABLE 6

REQUEST FOR ASSISTANCE FROM AN ELECTED OFFICIAL (N=260)

Category	Frequency	%
No	245	94.2
Yes	12	4.6
Don't Know	3	1.2

TABLE 7

LIKELIHOOD OF ALLOWING REGULATORS ACCESS TO  
PLANT FACILITIES WITHOUT ANNOUNCEMENT (N=260)

Category	Frequency	%
Always Likely	234	90.0
Somewhat Likely	7	2.7
Likely	17	6.5
Not at All Likely	0	0
Don't Know	2	0.8

TABLE 8

ATTITUDE OF INDIVIDUAL RESPONDING FOR FACILITY REGARDING  
GOVERNMENT'S RESPONSIBILITY TO IMPOSE ENVIRONMENTAL LAWS (N=259)

Category	Frequency	%
Definitely Should Be	148	57.1
Probably Should Be	92	35.5
Probably Should Not Be	9	3.5
Definitely Should Not Be	7	2.7
Don't Know	3	1.2

TABLE 9

ASSESSMENT BY INDIVIDUAL RESPONDING FOR FACILITY  
OF WHETHER COMPANIES BEHAVE RESPONSIBLY EVEN  
WITHOUT REGULATION (N=259)

Category	Frequency	%
Strongly agree	30	11.6
Agree	75	29.0
Neither Agree Nor Disagree	25	9.7
Disagree	98	37.8
Strongly Disagree	29	11.2
Don't Know	2	1.0

TABLE 10

CORRELATIONS BETWEEN INDIVIDUAL MEASURES  
OF THE REGULATOR-REGULATED ENTITY RELATIONSHIP<sup>195</sup>

Measure	-1	-2	-3	-4	-5	-6
Likelihood of Allowing Regulators Access to Plant without Announcement: Always Likely vs. Not Likely						
Typical Type of Regulator: State vs. Federal	0.089 (0.162)					
Type of Interaction with Regulator: Same Individual vs. Multiple Regulators	0.021 (0.745)	0.106 (0.096)				
Treatment of Regulated Entity by Regulator: Always Fair vs. Not Always Fair	- 0.055 (0.382)	0.070 (0.267)	0.224 (0.000)			
Overall Nature of the Relationship: Coercive vs. Cooperative	- 0.054 (0.388)	- 0.015 (0.811)	0.099 (0.115)	0.345 (0.000)		
Requested Assistance from Regulator's Supervisor: Yes vs. No	0.015 (0.808)	- 0.054 (0.394)	0.059 (0.350)	0.222 (0.000)	0.2222 (0.000)	
Requested Assistance from Elected Official: Yes vs. No	0.055 (0.383)	- 0.024 (0.709)	0.033 (0.602)	0.080 (0.205)	0.076 (0.227)	0.221 (0.000)

<sup>195</sup> P-values are shown in parentheses.

TABLE 11

## CROSS-TABULATIONS OF INDIVIDUAL MEASURES OF THE REGULATOR-REGULATED ENTITY RELATIONSHIP

TABLE 11(a)

## LIKELIHOOD OF ALLOWING REGULATORS ACCESS TO PLANT FACILITIES WITHOUT ANNOUNCEMENT AND TYPICAL TYPE OF REGULATOR (STATE VS. FEDERAL) (N=250)

	Coercive: Federal	Cooperative: State
Coercive: Not Always Likely to Allow Access	1 (0.40 %)	23 (9.20 %)
Cooperative: Always Likely to Allow Access	2 (0.80 %)	224 (89.60 %)

TABLE 11(b)

## LIKELIHOOD OF ALLOWING REGULATORS ACCESS TO PLANT FACILITIES WITHOUT ANNOUNCEMENT AND TYPE OF INTERACTION WITH REGULATOR (SAME INDIVIDUAL VS. MULTIPLE REGULATORS) (N=253)

	Coercive: Same Individual	Cooperative: Multiple Regulators
Coercive: Not Always Likely to Allow Access	11 (4.35 %)	13 (5.14 %)
Cooperative: Always Likely to Allow Access	97 (38.34 %)	132 (52.17 %)

TABLE 11(c)

LIKELIHOOD OF ALLOWING REGULATORS ACCESS TO PLANT FACILITIES WITHOUT ANNOUNCEMENT AND TREATMENT OF THE REGULATED ENTITY BY ITS REGULATOR (N=253)

	Coercive: Not Always Fair Treatment	Cooperative: Always Fair Treatment
Coercive: Not Always Likely to Allow Access	3 (1.18 %)	21 (8.24 %)
Cooperative: Always Likely to Allow Access	46 (18.04 %)	185 (72.55 %)

TABLE 11(d)

LIKELIHOOD OF ALLOWING REGULATORS ACCESS TO PLANT FACILITIES WITHOUT ANNOUNCEMENT AND OVERALL RELATIONSHIP (COERCIVE VS. COOPERATIVE) (N=254)

	Coercive: Overall Coercive	Cooperative: Overall Cooperative
Coercive: Not Always Likely to Allow Access	0 (0.00 %)	24 (9.45 %)
Cooperative: Always Likely to Allow Access	7 (2.76 %)	223 (87.80 %)

TABLE 11(e)

LIKELIHOOD OF ALLOWING REGULATORS ACCESS TO PLANT FACILITIES WITHOUT ANNOUNCEMENT AND REQUEST FOR ASSISTANCE FROM THE REGULATOR'S SUPERVISOR (N=253)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Not Always Likely to Allow Access	5 (1.98 %)	19 (7.51 %)
Cooperative: Always Likely to Allow Access	43 (17.00 %)	186 (73.52 %)

TABLE 11(f)

LIKELIHOOD OF ALLOWING REGULATORS ACCESS TO PLANT FACILITIES WITHOUT ANNOUNCEMENT AND REQUEST FOR ASSISTANCE FROM AN ELECTED OFFICIAL (N=254)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Not Always Likely to Allow Access	2 (0.79 %)	22 (8.66 %)
Cooperative: Always Likely to Allow Access	10 (3.94 %)	220 (86.61 %)

TABLE 11(g)

TYPICAL TYPE OF REGULATOR (STATE VS. FEDERAL)  
AND TYPE OF INTERACTION WITH REGULATOR  
(SAME INDIVIDUAL VS. MULTIPLE REGULATORS) (N=250)

	Coercive: Same Individual	Cooperative: Multiple Regulators
Coercive: Typically State Regulator	2 (0.80 %)	0 (0.00 %)
Cooperative: Typically Federal Regulator	103 (41.20 %)	145 (58.00 %)

TABLE 11(h)

TYPICAL TYPE OF REGULATOR (STATE VS. FEDERAL) AND  
TREATMENT OF THE REGULATED ENTITY BY ITS REGULATOR (N=251)

	Coercive: Not Always Fair Treatment	Cooperative: Always Fair Treatment
Coercive: Typically State Regulator	1 (0.40 %)	1 (0.40 %)
Cooperative: Typically Federal Regulator	47 (18.73 %)	202 (80.48 %)

TABLE 11(i)

TYPICAL TYPE OF REGULATOR (STATE VS. FEDERAL) AND OVERALL NATURE OF THE RELATIONSHIP (COERCIVE VS. COOPERATIVE) (N=250)

	Coercive: Overall Coercive	Cooperative: Overall Cooperative
Coercive: Typically State Regulator	0 (0.00 %)	2 (0.80 %)
Cooperative: Typically Federal Regulator	7 (2.80 %)	241 (96.40 %)

TABLE 11(j)

TYPICAL TYPE OF REGULATOR (STATE VS. FEDERAL) AND REQUEST FOR ASSISTANCE FROM THE REGULATOR'S SUPERVISOR (N=247)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Typically State Regulator	0 (0.00 %)	3 (1.21 %)
Cooperative: Typically Federal Regulator	48 (19.43 %)	196 (79.35 %)

TABLE 11(k)

TYPICAL TYPE OF REGULATOR (STATE VS. FEDERAL) AND REQUEST FOR ASSISTANCE FROM AN ELECTED OFFICIAL (N=249)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Typically State Regulator	0 (0.00 %)	3 (1.20 %)
Cooperative: Typically Federal Regulator	11 (4.42 %)	235 (94.38 %)

Table 11(l)

TYPE OF INTERACTION WITH REGULATOR (SAME INDIVIDUAL VS. MULTIPLE REGULATORS) AND TREATMENT OF THE REGULATED ENTITY BY ITS REGULATOR (N=256)

	Coercive: Not Always Fair Treatment	Cooperative: Always Fair Treatment
Coercive: Same Individual Regulator	32 (12.50 %)	77 (30.08 %)
Cooperative: Multiple Individual Regulators	17 (6.64 %)	130 (50.78 %)

TABLE 11(m)

TYPE OF INTERACTION WITH REGULATOR (SAME INDIVIDUAL VS. MULTIPLE REGULATORS) AND OVERALL NATURE OF THE RELATIONSHIP (COERCIVE VS. COOPERATIVE) (N=255)

	Coercive: Overall Coercive	Cooperative: Overall Cooperative
Coercive: Same Individual Regulator	5 (1.96 %)	103 (40.39 %)
Cooperative: Multiple Individual Regulators	2 (0.78 %)	145 (56.86 %)

TABLE 11(n)

TYPE OF INTERACTION WITH REGULATOR (SAME INDIVIDUAL VS. MULTIPLE REGULATORS) AND REQUEST FOR ASSISTANCE FROM THE REGULATOR'S SUPERVISOR (N=251)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Same Individual Regulator	24 (9.56 %)	84 (33.47 %)
Cooperative: Multiple Individual Regulators	25 (9.96 %)	118 (47.01 %)

TABLE 11(o)

TYPE OF INTERACTION WITH REGULATOR (SAME INDIVIDUAL VS. MULTIPLE REGULATORS) AND REQUEST FOR ASSISTANCE FROM AN ELECTED OFFICIAL (N=253)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Same Individual Regulator	6 (2.37 %)	102 (40.32 %)
Cooperative: Multiple Individual Regulators	6 (2.37 %)	139 (54.94 %)

TABLE 11(p)

TREATMENT OF THE REGULATED ENTITY BY ITS REGULATOR AND OVERALL NATURE OF THE RELATIONSHIP (COERCIVE VS. COOPERATIVE) (N=257)

	Coercive: Overall Coercive	Cooperative: Overall Cooperative
Coercive: Not Always Fair Treatment	7 (2.72 %)	42 (16.34 %)
Cooperative: Always Fair Treatment	0 (0.00 %)	208 (80.93 %)

TABLE 11(q)

TREATMENT OF THE REGULATED ENTITY BY ITS REGULATOR AND  
REQUEST FOR ASSISTANCE FROM THE REGULATOR'S SUPERVISOR (N=253)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Not Always Fair Treatment	18 (7.11 %)	30 (11.86 %)
Cooperative: Always Fair Treatment	31 (12.25 %)	174 (68.77 %)

TABLE 11(r)

TREATMENT OF THE REGULATED ENTITY BY ITS REGULATOR  
AND REQUEST FOR ASSISTANCE FROM AN ELECTED OFFICIAL (N=255)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Not Always Fair Treatment	4 (1.57 %)	45 (17.65 %)
Cooperative: Always Fair Treatment	8 (3.14 %)	198 (77.65 %)

TABLE 11(s)

OVERALL NATURE OF THE RELATIONSHIP (COERCIVE VS. COOPERATIVE) AND REQUEST FOR ASSISTANCE FROM THE REGULATOR'S SUPERVISOR (N=253)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Overall Coercive	5 (1.98 %)	2 (0.79 %)
Cooperative: Overall Cooperative	44 (17.39 %)	202 (79.84 %)

TABLE 11(t)

OVERALL NATURE OF THE RELATIONSHIP (COERCIVE VS. COOPERATIVE) AND REQUEST FOR ASSISTANCE FROM AN ELECTED OFFICIAL (N=255)

	Coercive: Assistance	Cooperative: No Assistance
Coercive: Overall Coercive	1 (0.39 %)	6 (2.35 %)
Cooperative: Overall Cooperative	11 (4.31 %)	237 (92.94 %)

TABLE 11(u)

REQUEST FOR ASSISTANCE FROM THE REGULATOR'S SUPERVISOR  
AND REQUEST FOR ASSISTANCE FROM AN ELECTED OFFICIAL (N=255)

	Coercive: Assistance from Elected Official	Cooperative: No Assistance from Elected Official
Coercive: Requested Assistance from Regulator's Supervisor	7 (2.75 %)	42 (16.47 %)
Cooperative: No Requested Assistance from Regulator's Supervisor	5 (1.96 %)	201 (78.82 %)