

# ENFORCEMENT OF POLLUTION LAWS AND REGULATIONS: AN ANALYSIS OF FORUM CHOICE

*Jeremy Firestone\**

## I. INTRODUCTION

Regulatory agencies are imbued with substantial discretion as a result of vague delegations of authority from Congress. Thus, it is more than mere academic curiosity to pose the question: Why does a regulatory agency behave in the manner that it does and with what effect? Indeed, this core question goes to the heart of regulatory policy. As a starting point to answer this question, one might surmise that in addition to the legal framework imposed by the Constitution and by Congress, a given regulatory agency's organizational mission, culture and structure play a role. It also is conceivable that the private actors whom an agency regulates and the political milieu in which an agency operates influence its behavior as well. These factors likely shape not only the development of substantive regulations and agency implementation of the same, but also an area where agencies have even more discretion—the enforcement of laws and regulations. Although enforcement plays a leading role in the modern regulatory state and, more specifically, in the area of pollution control, little empirical work has been conducted on environmental enforcement. Hence, policymakers may not fully appreciate the interplay among administrative, civil judicial, and criminal sanctions—that is, venue choice.

The lack of empirical understanding of environmental enforcement is potentially problematic because an environmental standard that is in theory designed to protect public health and the environment may fail to accomplish that goal if enforcement is dominated by political calculations. On the other hand, if an agency implements an enforcement regime fairly, efficiently, and in a manner consistent with that agency's mission, the policy objective that is embodied in the underlying law or regulation can attain legitimacy, collective support, and ultimately status as a societal norm.<sup>1</sup> Rather than attempt to draw conclusions based on isolated

---

\* J.D., University of Michigan Law School, 1986; Ph.D., Public Policy Analysis, University of North Carolina at Chapel Hill, 2000. Between his legal and doctoral studies, the author spent a total of ten years as an environmental enforcement/regulatory lawyer, first for the federal government and then for the State of Michigan.

The author was supported by a U.S. Environmental Protection Agency STAR Fellowship, with data acquisition support provided through a dissertation research grant from the National Science Foundation. The author acknowledges the valuable comments of Richard Andrews, James Boyd, Donald Hornstein, and Raymond Palmquist, and the editors at the Harvard Environmental Law Review.

<sup>1</sup> See BARRY M. MITNICK, *THE POLITICAL ECONOMY OF REGULATION: CREATING, DE-*

judicial decisions or summary government statistics, both of which, while enlightening, also can be misleading, this Article reports on findings from a random sample of 325 Clean Air Act ("CAA"), Federal Water Pollution Control Act ("Clean Water Act" or "CWA"), and Solid Waste Disposal Act ("Resource Conservation and Recovery Act" or "RCRA") penalty enforcement actions commenced during fiscal years 1990–1997 and examines the choice of the U.S. Environmental Protection Agency ("EPA" or "Agency")<sup>2</sup> among administrative, civil judicial, and criminal enforcement venues to seek sanctions against firms and governments.<sup>3</sup>

Previous work on environmental regulatory behavior has tended to focus on targets of inspections, the environmental benefits of targeting, or both, rather than on the choice among fora in which to proceed with an enforcement action. Indeed, these studies generally end before the regulator has decided whether to issue the violator a noncompliance warning, order the violator to undertake certain measures to bring itself back into compliance, seek penalties for noncompliance, pursue a combination of these actions, or take no action at all. Studies that have focused on inspection targets have found that political factors, environmental damage, and previous noncompliance influence whom environmental regulators target for inspection.<sup>4</sup> Researchers who have examined the environmental benefits of targeting have found that inspections and enforcement reduce the time in violation and induce self-reporting.<sup>5</sup> Interestingly, these researchers have focused on particular industries such as steel or pulp and paper that are likely dominated by relatively large, publicly traded firms rather than industries heavily populated by closely held corporations, partnerships, or individuals unaffiliated with any legal entity such as asbestos removal, electroplating, and dry cleaning. In addition, they have not compared inspections across environmental media. While those studies' limited focus facilitated data gathering and enhanced their inter-

---

SIGNING, AND REMOVING REGULATORY FORMS 353–57 (1980).

<sup>2</sup> Although referred to as EPA's choice in this Article, the U.S. Department of Justice or the local U.S. Attorney participate respectively in the decision to file a civil or criminal matter in court.

<sup>3</sup> As such, the study population is conditional on EPA commencing a penalty action.

<sup>4</sup> See Catherine Dion et al., *Monitoring of Pollution Regulation: Do Local Conditions Matter?*, 13 J. REG. ECON. 5 (1998); Eric Helland, *The Enforcement of Pollution Control Laws: Inspections, Violations, and Self-Reporting*, 80 REV. ECON. & STAT. 141 (1998); Mary E. Deily & Wayne B. Gray, *Enforcement of Pollution Regulations in a Declining Industry*, 21 J. ENVTL. ECON. & MGMT. 260 (1991). These studies are described in more detail in Part IV.A.

<sup>5</sup> See generally Louis W. Nadeau, *EPA Effectiveness at Reducing the Duration of Plant-Level Noncompliance*, 34 J. ENVTL. ECON. & MGMT. 54–78 (1997); Wayne B. Gray & Mary E. Deily, *Compliance and Enforcement: Air Pollution Regulation in the U.S. Steel Industry*, 31 J. ENVTL. ECON. & MGMT. 96–111 (1996); Benoît Laplante & Paul Rilstone, *Environmental Inspections and Emissions of the Pulp and Paper Industry in Quebec*, 31 J. ENVTL. ECON. & MGMT. 19–36 (1996); Wesley A. Magat & W. Kip Viscusi, *Effectiveness of the EPA's Regulatory Enforcement: The Case of Industrial Effluent Standards*, 33 J. L. & ECON. 331 (1990). These studies are described in more detail in Part IV.B.

nal validity, their narrowness raises questions regarding the relevance of the conclusions to the broader range of environmental violators and violations.

After first placing EPA's choice among enforcement proceedings in context, this Article constructs models of how agencies behave when making environmental enforcement venue choices and reviews the literature on environmental targeting and sanctions. In light of that institutional and theoretical backdrop, a data set of violators from whom EPA sought penalties and pursued administratively, civil judicially, and criminally under the CAA, CWA, and RCRA, is constructed and empirically analyzed. A cross-media, cross-firm size, and cross-industry methodology is employed. The results presented here serve to reinforce, in some respects, the inspection targeting literature, yet they also suggest a need to reinterpret that literature in other respects. Although this Article provides some background on enforcement against individuals, a separate article explores venue choice considerations when individual violators are involved.<sup>6</sup>

## II. THE CONTEXT IN WHICH EPA CHOOSES AMONG ADMINISTRATIVE, CIVIL JUDICIAL, AND CRIMINAL REMEDIES

Criminal sanctions impose different costs than civil sanctions on society and on violators, and serve a different function as well. Consequently, it is important to place the empirical analysis of the choice among enforcement venues in context. In this Part, the discussion focuses on the normative characteristics that distinguish criminal from civil law, procedural and substantive distinctions among the fora, and EPA's efforts to guide its discretion in choosing among enforcement fora as well as its institutional preferences.

### A. Norms and Normative Distinctions

It is appropriate to begin our exploration into the distinctions among administrative, civil judicial, and criminal sanctions by considering the extent to which the criminal law in particular emerges from social norms and plays a normative role in society. To begin with, much of society's concern over crime may arise as a result of outrage at the "violation of the social order."<sup>7</sup> Thus, one way to look at the criminal justice system is as a response to violations of social norms. This conception may have merit because criminal violations give rise to more than just economic harm; they cause damage to the collective choice process as well.<sup>8</sup>

---

<sup>6</sup> Jeremy Firestone, *Agency Governance and Enforcement: The Influence of Mission on Environmental Decisionmaking*, 21 J. POL'Y ANALYSIS & MGMT. 409 (2002)

<sup>7</sup> Jeff L. Lewin & William N. Trumbull, *The Social Value of Crime?*, 10 INT'L REV. L. & ECON. 271, 277 (1990).

<sup>8</sup> See Kenneth Mann, *Punitive Civil Sanctions: The Middleground Between Criminal*

Given its ability to assign blame, censure conduct, and convey societal messages, the criminal justice system also assumes a normative role in society.<sup>9</sup> Indeed, the “expressive function” of the criminal law often takes precedence over other considerations such as deterrence and rehabilitation.<sup>10</sup> While sociologists draw attention to the criminal law’s socializing role,<sup>11</sup> in a similar manner, some economists view the criminal law as a preference-shaping mechanism.<sup>12</sup> Although the primary goal of civil enforcement is to secure compliance, criminal sanctions function on a broader plane; society can use criminal sanctions to change beliefs, attitudes, values, and goals, and to effectuate policies by influencing what individuals think they ought or want to do in a particular situation.<sup>13</sup> Given societal norms and normative effects of criminal prosecutions, the extent to which a violator’s conduct deviates from societal norms, as well as the benefits to society from expressing to the maximum extent possible its moral outrage at the conduct, likely influence enforcement personnel decision-making.

### B. Procedural and Substantive Distinctions

In addition to considering normative distinctions and the normative goals of enforcement when choosing among enforcement fora, a regulator/prosecutor also must be attuned to the numerous procedural and substantive characteristics that differentiate criminal from civil law. Indeed, procedural and substantive differences likely carry great weight with EPA enforcement decision-makers.

Many procedural differences are common knowledge, including the requirement that the government prove its case beyond a reasonable doubt to a unanimous jury, the double jeopardy bar, and the right to “take” the Fifth Amendment and refuse to testify against oneself in a criminal matter. The criminal system also contains more powerful information-gathering tools than the civil system with which to build a case.

---

and Civil Law, 101 YALE L.J. 1795, 1806 (1992); Christopher D. Stone, *Comment: Sentencing the Corporation*, 71 B.U. L. REV. 383, 392 (1991).

<sup>9</sup> Although civil judicial and administrative sanctions also may censure and stigmatize conduct, when society imposes criminal sanctions, there is a “deliberate intent to inflict punishment in a manner that maximizes” stigma. John C. Coffee, Jr., *Paradigms Lost: The Blurring of the Criminal and Civil Law Models—And What Can Be Done About It*, 101 YALE L.J. 1875, 1878 (1992).

<sup>10</sup> Susan Hedman, *Expressive Functions of Criminal Sanctions in Environmental Law*, 59 GEO. WASH. L. REV. 889, 896 (1991).

<sup>11</sup> Harry V. Ball & Lawrence M. Friedman, *The Use of Criminal Sanctions in the Enforcement of Economic Legislation: A Sociological View*, 17 STAN. L. REV. 197 (1965).

<sup>12</sup> See generally Kenneth G. Dau-Schmidt, *An Economic Analysis of the Criminal Law as a Preference-Shaping Policy*, 39 DUKE L.J. 1 (1990).

<sup>13</sup> Ball & Friedman, *supra* note 11, at 220; John C. Coffee, Jr., *Does “Unlawful” Mean “Criminal”?: Reflections on the Disappearing Tort/Crime Distinction in American Law*, 71 B.U. L. REV. 193, 223–38 (1991).

Examples include a search pursuant to a warrant, custodial interrogation, and the ability of prosecutors to compel testimony before a grand jury.<sup>14</sup> Because these devices allow the government to gather information before a case is filed, pursuing a matter criminally may be advantageous if information gathering before the filing of a case is of greater importance to the government than what otherwise could be acquired through civil discovery.<sup>15</sup> On the other hand, if discovery is unimportant, administrative procedures are likely to be sufficient.

If EPA decides to pursue a penalty case civilly, it has two options: it may seek fines in federal court or handle the matter internally, using its administrative authorities. Administrative and civil judicial enforcement share many attributes. The primary distinguishing characteristic is that with administrative enforcement, EPA typically functions as both the enforcer of the statutory command and the adjudicator, although the two functions within the Agency technically remain separate. A judge or EPA, as appropriate, may impose a civil sanction in an environmental matter whenever a person has violated or is violating a law or permit condition.<sup>16</sup> Regardless of whether the forum is a judicial or administrative one, a civil sanction may be imposed if the government proves the existence of a violation without regard to a violator's level of care, diligence, or good faith. In other words, liability is strict.<sup>17</sup>

A court possesses the authority to impose a relatively large environmental civil sanction on a liable defendant.<sup>18</sup> Although EPA also has authority to impose administrative penalties of up to \$25,000 per day, that authority is generally subject to certain limitations. For example, Section 113(d) of the CAA<sup>19</sup> limits the total amount of civil penalty sought to \$200,000 and requires that the action be commenced within twelve months of the first alleged date of violation.

In the 1990 CAA amendments, Congress provided EPA with another administrative tool—field citation authority—that is akin to issuing a traffic ticket, albeit an expensive one. Under Section 113 of the CAA, EPA can issue field citations not to exceed \$5,000 per day for minor violations.<sup>20</sup> Although a person issued a field citation has a reasonable opportunity to be heard and present evidence, that person is not entitled to

---

<sup>14</sup> See Mann, *supra* note 8.

<sup>15</sup> See V. S. Khanna, *Corporate Criminal Liability: What Purpose Does It Serve?*, 109 HARV. L. REV. 1477 (1996).

<sup>16</sup> See, e.g., 42 U.S.C. § 7413(a)(3) (2000) (authorizing the EPA administrator to issue penalties on compliance orders and to institute civil actions to remedy violations).

<sup>17</sup> There are a few minor exceptions to the strict liability nature of civil environmental violations. For example, under 33 U.S.C. § 311(7)(D), EPA may seek enhanced penalties for the grossly negligent or willful discharge of oil into waters of the United States in addition to, or instead of, strict liability penalties for oil discharge violations. 33 U.S.C. § 311(7)(D) (2002).

<sup>18</sup> See, e.g., 42 U.S.C. § 7413(b) (authorizing civil judicial fines of up to \$25,000 per day for each violation).

<sup>19</sup> *Id.* § 7413(d)(1).

<sup>20</sup> *Id.* § 7413(d)(3).

the full complement of processes otherwise mandated by the Administrative Procedure Act.<sup>21</sup>

Finally, Congress has expanded the civil net by encouraging citizens to assist the government's enforcement effort. Citizen suit provisions authorize citizens (often nonprofit organizations) to file civil suits against alleged violators after providing the government with sixty to ninety days notice, depending on the nature of the violation.<sup>22</sup> A notice of citizen suit may provoke EPA to file an administrative or civil judicial action or spur the notified party to enter into a settlement with EPA or the relevant state agency.<sup>23</sup>

In 1970, Congress initiated the modern era of criminalizing environmental violations with the adoption of a provision that sought to punish negligent CAA violations as misdemeanors. Throughout the 1970s, Congress added criminal misdemeanor provisions to the other environmental laws.

Although the criminal program commenced for all practical purposes in 1970, the federal government prosecuted only twenty-five environmental criminal cases during the 1970s. It was not until the early 1980s that the use of criminal proceedings became standard practice. This resulted after Congress created environmental felonies, beginning with the adoption of the 1980 RCRA amendments, and EPA and the U.S. Department of Justice ("DOJ") formed units dedicated solely to the investigation and prosecution of environmental crimes.<sup>24</sup> With the additional enforcement resources provided by the Pollution Prosecution Act of 1990,<sup>25</sup> the criminal program grew dramatically both in absolute terms and in its relationship to the federal government's civil environmental enforcement program.<sup>26</sup> Indeed, in 1995, the number of matters that EPA referred to the DOJ for criminal prosecution exceeded the number of matters EPA referred for civil judicial enforcement for the first time.<sup>27</sup>

---

<sup>21</sup> Compare *id.* with 5 U.S.C. §§ 554, 556 (2000).

<sup>22</sup> See, e.g., 42 U.S.C. § 6972.

<sup>23</sup> Federal or state court action commenced prior to the expiration of the relevant notice period denies the citizen jurisdiction to pursue his or her statutory claim. See, e.g., *Jones v. City of Lakeland*, 224 F.3d 518, 522 (6th Cir. 2000) (en banc) (CWA suit barred if state or EPA is diligently prosecuting an action in court; administrative enforcement not material under the statute). In any event, a citizen would remain free to pursue other remedies such as a state law damage claim.

<sup>24</sup> Dick Thornburgh, *Criminal Enforcement Priorities for the 1990s*, 59 GEO. WASH. L. REV. 775, 777-78 (1991).

<sup>25</sup> 42 U.S.C. §§ 4321-4370(d) (2000).

<sup>26</sup> James M. Strock, *Environmental Criminal Enforcement Priorities for the 1990s*, 59 GEO. WASH. L. REV. 916 (1991); Thornburgh, *supra* note 24, at 778-80.

<sup>27</sup> Yet even during the period examined for this study, October 1989 through September 1997, administrative penalty cases represent almost seventy-five percent of all environmental enforcement cases in which EPA seeks to sanction violators. Jeremy M. Firestone, *Environmental Enforcement Choice: Trading Off Equity for Environmental Benefits* 84 (2000) (unpublished Ph.D. dissertation, University of North Carolina at Chapel Hill) (on file with the Harvard Environmental Law Review).

The major environmental laws that regulate waste disposal—the CAA, CWA, and RCRA—now generally provide a three-tier system of criminal sanctions: misdemeanor penalties for “negligent” violations, felony penalties for “knowing” violations, and enhanced penalties for knowingly placing an individual in “imminent danger of death or serious bodily injury.”<sup>28</sup> Knowing violations typically provide for terms of imprisonment not to exceed three (or in some instances, five) years and fines of up to \$50,000 per day of violation.<sup>29</sup> Crimes of knowing endangerment carry terms of imprisonment of up to fifteen years for individuals and organizational fines of up to \$1,000,000.<sup>30</sup> Many environmental laws also call for a doubling of the penalty in the event of a subsequent conviction.<sup>31</sup>

Federal prosecutors, however, are not limited to environmental statutes when they charge a defendant with an environmental crime. Other criminal provisions under which the government often charges environmental violators include aiding and abetting, false claims, conspiracy, theft, false statement, mail and wire fraud, and perjury.<sup>32</sup> Often cases involve a mixture of environmental sanctions with these more “traditional” charges.

As an inducement for persons with knowledge of crimes to share that information with federal authorities, Congress also has authorized citizens’ awards. For example, Congress authorized EPA to pay an award of up to \$10,000 for information or services that lead to a criminal conviction under the CAA.<sup>33</sup>

The primary substantive distinction between sanctions in the criminal and civil systems is the availability of criminal nonmonetary sanctions, such as the incarceration of individuals and the intrusion into firm management through conditions on probation. It is primarily through the imposition of nonmonetary sanctions that the criminal system prevents individuals and firms from passing on environmental violations as a cost of doing business.

---

<sup>28</sup> The requirement that the government establish negligence in misdemeanor environmental criminal cases, and more generally, mens rea as an element of proof in a criminal matter, be it a misdemeanor or a felony, is the “rule, rather than exception to, the principles of Anglo-American jurisprudence.” *United States v. United States Gypsum Co.*, 438 U.S. 422, 436 (1978) (quoting *Dennis v. United States*, 341 U.S. 494, 500 (1951)).

<sup>29</sup> *See, e.g.*, 33 U.S.C. § 1319(c)(2) (2000).

<sup>30</sup> *See, e.g., id.* § 1319(c)(3).

<sup>31</sup> *See, e.g.*, 42 U.S.C. § 6928(d)(7) (2000).

<sup>32</sup> 18 U.S.C. §§ 2, 287, 371, 641, 1001, 1341, 1343, 1621, 1622, 1623 (2000); *see* U.S. Dep’t of Justice, *Factors in Decisions on Criminal Prosecutions for Environmental Violations in the Context of Significant Voluntary Compliance or Disclosure Efforts by the Violator* (1991), at <http://www.usdoj.gov/enrd/factors.htm> (last visited Oct. 19, 2002) (on file with the Harvard Environmental Law Review) [hereinafter *Factors in Decisions on Criminal Prosecutions*].

<sup>33</sup> 42 U.S.C. § 7413(f) (2000).

When a firm is convicted of a felony, a judge may place it on probation for up to five years;<sup>34</sup> order it to develop and implement a program to prevent and detect further violations; require its knowledgeable employees to submit to interrogation; and conduct unannounced examinations of its records.<sup>35</sup> In those situations where the government believes that continued judicial supervision of a firm is warranted, perhaps because of past waste handling practices or expected future behavior, the ability to place that firm on supervised probation offers the government an indispensable tool that it lacks in a civil forum.<sup>36</sup> Indeed, although the incarceration of corporate officials likely will cause a firm to install other persons within the corporate hierarchy, absent court supervision of the firm, the new officers may respond to the organizational environment in a manner similar to their predecessors.<sup>37</sup>

In light of the potential for harm associated with poor (let alone criminal) waste handling practices, supervised probation also provides the government with a tool that is analogous to the incarceration of an individual: in a sense, it disables<sup>38</sup> the corporate environmental criminal.<sup>39</sup> Through the use of supervised probation, the government can significantly reduce the likelihood that a firm will commit further crimes during the probationary period. Moreover, when a court intervenes into a firm's business practices, the loss of corporate autonomy serves as a powerful deterrent to other potential violators.<sup>40</sup>

A criminal conviction also may give rise to a number of direct or collateral consequences that may be of equal or greater significance than the immediate consequences of conviction.<sup>41</sup> First, in addition to the costs of incarceration or probation, the criminal justice system may impose stigma costs on a defendant. Moreover, when a firm is convicted crimi-

<sup>34</sup> 18 U.S.C. § 3561(c)(1) (2000).

<sup>35</sup> See, e.g., *United States v. Palm Beach Cruises S.A.*, 204 B.R. 634 (S.D. Fla. 1996).

<sup>36</sup> Stephen A. Saltzburg, *The Control of Criminal Conduct in Organizations*, 71 B.U. L. REV. 421, 429 (1991).

<sup>37</sup> See Michael B. Metzger, *Organizations and the Law*, 25 AM. BUS. L.J. 407, 419 (1987).

<sup>38</sup> By disabling the corporate environmental criminal, supervised probation serves at least two purposes of sentencing: deterrence and protection of the public from further crimes of the defendant. See 18 U.S.C. § 3553(a)(2)(B)-(C) (2000).

<sup>39</sup> See Fred L. Rush, Jr., *Corporate Probation: Invasive Techniques for Restructuring Institutional Behavior*, 21 SUFFOLK U. L. REV. 33 (1986); Saltzburg, *supra* note 36, at 429; Metzger, *supra* note 37, at 438-39.

<sup>40</sup> See Michael J. Woods, *Environmental Compliance Programs as a Condition of Organizational Probation*, 8 FED. SENTENCING REP. 209 (1996).

<sup>41</sup> Two sources on the collateral consequences of an environmental conviction are particularly illuminating. See John F. Cooney et al., *Criminal Enforcement of Environmental Laws: Part III—From Investigation to Sentencing and Beyond*, 25 ENVTL. L. REP. (ENVTL. L. INST.) 10,600-622 (1995); David T. Buente Jr., et al., *The "Civil" Implications of Environmental Crimes*, 23 ENVTL. L. REP. (ENVTL. L. INST.) 10,589, 10,598-600 (1993); see also Mark A. Cohen, *Environmental Crime and Punishment: Legal/Economic Theory and Empirical Evidence of Enforcement of Federal Environmental Statutes*, 82 J. CRIM. L. & CRIMINOLOGY 1054 (1992).



nally, rather than being found civilly liable, there may be “reputational rub-off” on upper management.<sup>42</sup>

Second, evidence of a conviction can be used against a defendant in subsequent civil matters that are factually unrelated to the matter for which the defendant was convicted. Evidence of a prior crime can be admitted to prove motive, opportunity, intent, preparation, plan, knowledge, identity, or absence of a mistake or accident.<sup>43</sup> Further, counsel may use evidence of a prior felony conviction to impeach the credibility of a witness.<sup>44</sup>

Third, criminal fines are not dischargeable in bankruptcy. The bankruptcy code provides that debt is not dischargeable to the extent a debt is for a “fine, penalty, or forfeiture payable to and for the benefit of a governmental unit.”<sup>45</sup>

Although this exception applies to civil as well as criminal fines, it has significant implications only for those restitution obligations (to address, for example, the remediation of a site of environmental contamination) that a court imposes as part of a criminal sentence. In the criminal context, the U.S. Supreme Court has ruled that a restitution obligation ordered by a state court judge as a condition of probation is not subject to discharge in Chapter 7 bankruptcy proceedings.<sup>46</sup> Thus, if a judge orders a defendant who has been convicted of an environmental crime to pay restitution for the costs the government has incurred to clean up a site of contamination, that obligation is not dischargeable.

Fourth, an order requiring a defendant to pay for the costs of remediating environmental pollution in a criminal context may have different tax implications than if a similar order had been issued in a civil proceeding. Criminal restitution obligations fall within a gray area between criminal and civil fines, which are not deductible as necessary business expenses, and civil restitution obligations, which are deductible.<sup>47</sup> Whether a criminal restitution obligation is tax-deductible depends on whether the obligation is primarily characterized as punitive or compensatory.<sup>48</sup>

---

<sup>42</sup> For a discussion of reputational rub-off in the criminal context, see Khanna, *supra* note 15, at 1510.

<sup>43</sup> FED. R. EVID. 404(b).

<sup>44</sup> FED. R. EVID. 609.

<sup>45</sup> 11 U.S.C.A. § 523(a)(7) (West Supp. 2002).

<sup>46</sup> *Kelly v. Robinson*, 479 U.S. 36 (1986); *In re Soderling*, 998 F.2d 730 (9th Cir. 1993) (same for federal court orders); *United States v. Vetter*, 895 F.2d 456 (8th Cir. 1990); *see also* 11 U.S.C.A. § 523(a).

<sup>47</sup> 26 U.S.C. § 162(f) (2000).

<sup>48</sup> *Compare* *Kraft v. United States*, 991 F.2d 292 (6th Cir. 1993) (restitution not deductible even where defendant also received jail time and was ordered to pay a fine because it arose out of criminal proceedings) *with* *Stephens v. Comm’r*, 905 F.2d 667, 674 (2d Cir. 1990) (restitution obligation is deductible when it is ordered “in addition to” punishment and paid directly to a victim).

Finally, a criminal conviction may have significant consequences for a firm's present and future dealings with its shareholders and federal and state governments. For example, when a publicly traded firm has been convicted of a crime, it must disclose that information in its Security and Exchange Commission ("SEC") filings and thus may open itself up to shareholder derivative suits, securities fraud, or SEC enforcement. Moreover, as soon as an indictment is issued, the government has the authority to suspend contracts and grants,<sup>49</sup> and, upon criminal conviction, can disqualify a contractor for a period of time. Further, federal agencies are prohibited from entering into procurement contracts with persons convicted under the CWA and the CAA.<sup>50</sup> These last sanctions apply government-wide and can apply to all of a company's activities. In a similar vein, many states also have provisions that allow regulatory agencies to consider a permit applicant's criminal and compliance record when deciding whether to issue a permit. For example, New Jersey allows consideration of these factors when it weighs the merits of an application for a solid waste license.<sup>51</sup>

Therefore, to the extent an agency has discretion to choose among enforcement fora, there are a number of factors that appear relevant to that consideration: the enhanced procedural protections afforded criminal defendants; the possibility that a judge will impose nonmonetary sanctions on a criminal defendant; the collateral consequences that may result from a criminal conviction; and the control that can be exercised in the administrative realm.

### *C. EPA Discretion To Choose Among Venues*

Although in theory normative, procedural, and substantive distinctions influence enforcement choice, they also beg the following question: How much discretion in an individual case does EPA have to choose among sanctioning fora?

At first blush, EPA's discretion to proceed criminally appears circumscribed by the requirement that the government prove that a violator "knowingly" violated the law in order to obtain a criminal conviction. Yet, what does it mean to "knowingly" violate the law? The answer turns on whether the government is required to prove that a violator knew the nature of its acts and performed them intentionally (general intent) or whether the government must meet a stricter standard and prove that a

---

<sup>49</sup> 40 C.F.R. § 32.405(b) (2002). Although civil fraud can likewise give rise to debarment and suspension, the federal government rarely asserts a claim of fraud in an environmental civil penalty case.

<sup>50</sup> See 33 U.S.C. § 1368(a) (2000); 42 U.S.C. § 7606(a) (2000). These prohibitions are generally restricted to the offending facility.

<sup>51</sup> N.J. STAT. ANN. § 13:1E-133.1(a) (West 2002).

violator knew that its acts violated the law (specific intent).<sup>52</sup> The answer to this subsidiary question in part depends on whether the criminal prohibitions contained in environmental statutes fall within a class of offenses known as public welfare offenses.<sup>53</sup>

The seminal case extending the public welfare doctrine to environmental law is *United States v. International Minerals & Chemicals Corp.*<sup>54</sup> That case concerned the alleged failure of the defendant, which had shipped sulfuric acid and hydrofluosilicic acid, to indicate on shipping papers that those materials constituted a "corrosive liquid," as required by regulation.<sup>55</sup> Justice Douglas declared that when "dangerous or deleterious devices or products or obnoxious waste materials are involved, the probability of regulation is so great that anyone who is aware that he is in the possession of them or dealing with them must be presumed to be aware of the regulation."<sup>56</sup> The Supreme Court recognized only one defense: "A person thinking in good faith that he was shipping distilled water when in fact he was shipping some dangerous acid would not be covered."<sup>57</sup>

A recent Supreme Court decision, however, raises questions regarding the vitality of the public welfare offense doctrine. In *Staples v. United States*,<sup>58</sup> the Court considered whether the National Firearms Act required a defendant to know whether the gun in question was a "firearm" within the meaning of that Act. In concluding that the public welfare offense doctrine was not applicable to the offense in question, Justice Thomas distinguished previous cases on the following grounds: there had been a long tradition of widespread lawful gun ownership; guns in general are not "deleterious devices or products or obnoxious waste materials;"<sup>59</sup> and the statute provided for a potentially lengthy penalty of up to ten years imprisonment and could result in a felony conviction.<sup>60</sup>

The U.S. Courts of Appeals have reached differing opinions regarding the applicability of the public welfare offense doctrine to environmental felonies in light of *Staples*, yet a general framework of analysis has evolved. Regardless of the applicability of the doctrine, the government is required to prove that a defendant had knowledge of the facts, but need not prove that the defendant knew its conduct was illegal—that is,

---

<sup>52</sup> See, e.g., *United States v. Hopkins*, 53 F.3d 533 (2d Cir. 1995).

<sup>53</sup> Public welfare offenses are statutory offenses where the Supreme Court has inferred from Congressional silence that Congress did not intend to require the prosecution to prove mens rea to establish the offense, imposing a form of strict criminal liability. See *Staples v. U.S.*, 511 U.S. 600, 616 (2000).

<sup>54</sup> 402 U.S. 558 (1971).

<sup>55</sup> The statute in question provided criminal sanctions whenever someone "knowingly violates any such regulation." 18 U.S.C. 834(f) (2000).

<sup>56</sup> *Int'l Minerals*, 402 U.S. at 565.

<sup>57</sup> *Id.* at 563-64.

<sup>58</sup> 511 U.S. at 602.

<sup>59</sup> *Id.* at 610 (quoting *Int'l Minerals*, 402 U.S. at 565).

<sup>60</sup> *Id.* at 615.

the government need not prove willfulness.<sup>61</sup> Knowledge can be proved by circumstantial as well as direct evidence. The government can attempt to show that a defendant had actual knowledge as well as argue in the alternative that if the defendant lacked knowledge, it was only because it had consciously avoided knowing what was plain.<sup>62</sup> The cases thus suggest that, despite the requirement that the government prove a "knowing" violation, EPA retains substantial discretion to choose among administrative, civil judicial, and criminal remedies.

EPA and DOJ have published a number of guidance documents that shed some light on the government's objectives in the environmental enforcement program and hence the factors that shape prosecutorial discretion. Broadly speaking, EPA's exercise of discretion comes into play in two instances: the decision of whether to defer enforcement to the state in which the violation arose and, in the event it decides not to defer, whether to commence an administrative, civil judicial, or criminal action.

Under the CAA, CWA, and RCRA, a state may obtain approval from EPA to run any or all of those programs within its borders in lieu of the federal government, provided that the state's program is at least as stringent as, and not inconsistent with, the federal program. It must also include sufficient authority to enforce compliance and to penalize violators.<sup>63</sup> Jurisdiction over a particular program also can be shared between EPA and a state. For example, states can apply for a partial permit program under the CWA.<sup>64</sup> Split authority also can arise when Congress amends a statute.<sup>65</sup> Even in delegated states where approved state pro-

---

<sup>61</sup> The two earliest cases, *United States v. Hopkins*, 53 F.3d 533 (2d Cir. 1995), and *United States v. Weitzenhoff*, 1 F.3d 1523 (9th Cir. 1993), amended by 35 F.3d 1275 (9th Cir. 1993), distinguished *Staples* and applied the doctrine. The Fifth Circuit, however, held that the knowledge requirement applies to every element that is not jurisdictional. *United States v. Ahmad*, 101 F.3d 386 (5th Cir. 1996). In reversing the conviction, that court relied on *Staples* for the proposition that absent a clear statement from Congress, felonies should not fall within the public welfare offense doctrine. *Id.* at 391. Subsequently the Eighth Circuit distinguished *Ahmad*, noting that *Ahmad* involved a mistake-of-fact (the defendant thought he was disposing of water and not gasoline), while the present case as well as other precedents involved a mistake of law. *United States v. Sinskey*, 119 F.3d 712 (8th Cir. 1997) (government must prove knowledge of facts, not that conduct was illegal); *United States v. Unser*, 165 F.3d 755 (10th Cir. 1999); *United States v. Kelley Tech Coatings, Inc.*, 157 F.3d 432 (6th Cir. 1998); *United States v. Wilson*, 133 F.3d 251 (4th Cir. 1997). In other words, the phrase "'knowingly violates' requires knowledge of facts and attendant circumstances that comprise a violation of the statute, not specific knowledge that one's conduct is illegal." *United States v. Weintraub*, 273 F.3d 139, 147 (2d Cir. 2001) (distinguishing knowledge of wrongdoing from knowledge of illegality and finding it unnecessary to decide whether an asbestos work-practice standard is a "public welfare offense").

<sup>62</sup> *Hopkins*, 53 F.3d at 542.

<sup>63</sup> See, e.g., 42 U.S.C. § 6926(b) (2000).

<sup>64</sup> 33 U.S.C. § 1342(n) (2000).

<sup>65</sup> For example, when Congress amended RCRA in 1984, EPA was granted authority under the newly created requirements even in those states that had delegated RCRA programs unless and until a delegated state obtained interim or final authorization to administer the newly created authorities. 42 U.S.C. § 6926(g) (following the giving of notice to a state).

grams operate in lieu of the federal program, EPA has residual authority to enforce criminal and civil violations of the federal program.<sup>66</sup>

EPA authority in delegated states is nonetheless circumscribed by both policy and agreement. For example, in delegated states under the RCRA program, EPA has indicated that it will generally undertake civil enforcement only when one of the following occurs: a request is made by the state; state authority is limited; the state fails to take timely and/or appropriate action; a violation results in interstate pollution problems; a violator has violations in multiple states; a violator has obtained an economic advantage over its competitors as a result of the violation; or national precedent or consistency is at stake.<sup>67</sup> Moreover, agreements between EPA and individual states delineate the procedures by which EPA will provide a state with notice of EPA's intent to file a civil enforcement action.<sup>68</sup>

Assuming that a state lacks delegated authority or EPA decides not to defer to a state, EPA must decide whether to commence an administrative, civil judicial, or criminal penalty action. The premise of EPA's enforcement philosophy is that "less flagrant violations with lesser environmental consequences should be addressed through administrative or civil monetary penalties"<sup>69</sup> rather than through the criminal justice system. Accordingly, EPA's discretion is primarily informed by two factors: "significant environmental harm" and "culpable conduct."<sup>70</sup> When analyzing whether a case meets the significant environmental harm criterion, EPA takes into account the existence of actual harm, the threat of

---

<sup>66</sup> *Id.* § 6928(a)(2). A controversy has arisen over the extent of EPA's residual jurisdiction under RCRA in those situations where both EPA and a state file an enforcement action—a process generally known as overfiling. Under RCRA, an authorized state program operates "in lieu" of the federal program. *Id.* § 6926(b). The question is whether the state program displaces the federal administration and enforcement programs or only the former. Compare *Harmon Indus., Inc. v. Browner*, 191 F.3d 894 (8th Cir. 1999) (finding that unless EPA provides a state with an opportunity to correct a deficient enforcement action and withdrawing state authorization, EPA is barred from undertaking an enforcement action if a state takes any enforcement action) with *United States v. Murphy Oil USA, Inc.*, 143 F. Supp. 2d 1054 (W.D. Wis. 2001) (EPA not barred) and *United States v. Power Eng'g Co.*, 125 F. Supp. 2d 1050 (D. Colo. 2000).

<sup>67</sup> EPA, HAZARDOUS WASTE CIVIL ENFORCEMENT RESPONSE POLICY 11–13 (1996).

<sup>68</sup> As a result of delegations, states collectively bring more civil judicial and administrative actions than EPA. For fiscal years 1990–1997 the states collectively referred more than 2.5 times as many cases for civil judicial action than EPA under the CAA, CWA, and RCRA and more than five times as many administrative actions (which include compliance as well as penalty actions) under the CAA and RCRA. EPA, EPA-3000R-98-003 ENFORCEMENT AND COMPLIANCE ASSURANCE ACCOMPLISHMENTS REPORT, FY 1997 (1998) [hereinafter FY 1997 ACCOMPLISHMENTS REPORT]. Although delegations affect the universe of violators against whom EPA may commence a penalty action, they should have little or no impact on EPA's choice of enforcement forum.

<sup>69</sup> Memorandum from Earl E. Devaney, Director, Office of Criminal Enforcement, EPA, *The Exercise of Investigative Discretion* 6 (Jan. 12, 1994) (on file with the Harvard Environmental Law Review).

<sup>70</sup> *Id.* at 3; EPA, OPERATING PRINCIPLES FOR AN INTEGRATED EPA ENFORCEMENT AND COMPLIANCE AND ASSURANCE PROGRAM 6 (1996).

significant harm, the failure to report an actual discharge, and conduct that "appears to represent a trend or common attitude within the regulated community."<sup>71</sup> Under the culpable conduct criterion, EPA considers whether the person or entity under investigation has a history of repeated violations, engaged in deliberate conduct, concealed misconduct, falsified records, tampered with monitoring or control equipment, or chose to operate outside the regulatory regime.<sup>72</sup>

In 1991, DOJ established a policy to encourage self-policing and voluntary disclosure. DOJ indicated that it would view such actions as "mitigating factors" in the exercise of criminal prosecutorial discretion and identified a number of specific factors that inform its judgment of whether and how to prosecute.<sup>73</sup> In implementing the policy, DOJ considers whether a violator made a "voluntary, timely and complete disclosure" with particular attention given to whether the disclosure "aided" the investigation and occurred prior to the government obtaining knowledge of the noncompliance.<sup>74</sup> DOJ then weighs the "existence and scope of any regularized, intensive, and comprehensive environmental compliance program."<sup>75</sup>

EPA has taken this form of prosecutorial discretion a step further and effectively decriminalized some violations of the law by firms under its "self-policing" or "audit" policy. Under this policy, EPA will not recommend to DOJ<sup>76</sup> that a firm be prosecuted criminally if the firm discovers a violation through a systematic and documented environmental audit, promptly and voluntarily discloses the existence of the violation, and expeditiously undertakes remedial measures. To be eligible, however, the violation could neither have been part of a pattern of conduct nor have resulted in serious actual harm or threaten imminent and substantial harm.<sup>77</sup> Subsequent to adopting the 1995 audit policy, EPA created the Voluntary Disclosure Board, which makes recommendations regarding requests for relief under the policy.<sup>78</sup>

EPA has provided less insight into the factors that it considers germane to the decision of whether to proceed with a matter in an adminis-

---

<sup>71</sup> Devaney, *supra* note 69, at 4.

<sup>72</sup> *Id.* at 4-5.

<sup>73</sup> *Factors in Decisions on Criminal Prosecutions*, *supra* note 32, at 1.

<sup>74</sup> *Id.* at 2.

<sup>75</sup> *Id.* at 3. DOJ also considers the extent to which a violator has given the government complete and prompt cooperation, the pervasiveness of noncompliance, the existence or lack of an effective internal disciplinary system, and the promptness and completeness of efforts undertaken to remedy the noncompliance. *Id.* at 3-4.

<sup>76</sup> EPA's recommendation to DOJ nevertheless does "not affect the independent exercise of prosecutorial discretion" by DOJ. EPA, Implementation of the Environmental Protection Agency's Self-Policing Policy for Disclosures Involving Potential Criminal Violations 2 (1997) [hereinafter Self-Policing Policy].

<sup>77</sup> EPA, Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations, 60 Fed. Reg. 66,706 (Dec. 22, 1995).

<sup>78</sup> Self-Policing Policy, *supra* note 76, at 2.

trative or judicial forum. In that regard, EPA has stated that "if the bottom line requires higher penalties than can be achieved in an administrative proceeding," civil judicial enforcement is the appropriate course of action.<sup>79</sup> In addition, EPA has indicated that novel legal issues present particularly delicate considerations. On one hand, a favorable decision on the merits in federal court will set a strong precedent. However, if the case would have to be filed in a judicial district or circuit that has been hostile to EPA enforcement in the past, administrative action may be preferable.

Although the guidance documents are instructive, ultimately the decision to initiate an enforcement action "generally rests entirely in [the] discretion" of the enforcer.<sup>80</sup> While some scholars see broad agency discretion to choose among enforcement fora as the consequence of civil law encroaching on terrain previously thought to be the exclusive domain of criminal law, others see the reverse—that is, criminal law encroaching on areas previously considered to be regulatory in nature.<sup>81</sup> Given the broad discretion that EPA possesses, it plays an important gatekeeper function, distinguishing between those violations meriting civil treatment and criminal treatment and, among those cases meriting civil treatment, between administrative and judicial remedies.<sup>82</sup> This role is appropriate given EPA's expertise in identifying and assessing the magnitude of environmental violations. Because EPA is decentralized, the gatekeeper function primarily falls to EPA regional enforcement personnel.<sup>83</sup> Not only must regional EPA personnel allocate scarce regional resources of time, money, and energy among the demands of competing cases, but they also must ration access to other institutions—such as EPA Head-

---

<sup>79</sup> EPA, Civil Penalty Policy for Section 311(b)(3) and Section 311(j) of the Clean Water Act 4 (1998) (on file with the Harvard Environmental Law Review); see also EPA, Clean Air Act Stationary Source Civil Penalty Policy (1991) (on file with the Harvard Environmental Law Review). As noted previously, one of the primary distinguishing characteristics between administrative and civil judicial enforcement is that in the former, the total penalty amount may be limited.

<sup>80</sup> See *Bordenkircher v. Hayes*, 434 U.S. 357, 364 (1978). "This discretion is especially firmly held by the criminal prosecutor." *Factors in Decisions on Criminal Prosecutions*, *supra* note 32.

<sup>81</sup> Compare Mann, *supra* note 8, with Coffee, *supra* note 9.

<sup>82</sup> As noted above, EPA also must distinguish between those cases to pursue and those to leave to state enforcement.

<sup>83</sup> EPA is organized into ten regions: Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont); Region 2 (New Jersey, New York, Puerto Rico, and the U.S. Virgin Islands); Region 3 (Delaware, Maryland, Pennsylvania, Virginia, West Virginia, and the District of Columbia); Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee); Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin); Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas); Region 7 (Iowa, Kansas, Missouri, and Nebraska); Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming); Region 9 (Arizona, California, Hawaii, Nevada, Guam, and American Samoa); and Region 10 (Alaska, Idaho, Oregon, and Washington).

quarters, DOJ, U.S. Attorneys Offices, and federal district court judges—involved in the adjudication of violations.<sup>84</sup>

When EPA regional offices exercise discretion, they likely do so with a preference to resolve violations civilly rather than criminally. Even with the relaxed scienter requirement in environmental felony matters, it remains easier for EPA to meet the civil burden of proof. Moreover, in a criminal matter, the government is required to prove its case with greater certainty. Perhaps as important, EPA may prefer civil rather than criminal cases because it is far easier to build on existing precedents and make new law in civil than in criminal court.<sup>85</sup>

When it undertakes its role as gatekeeper, EPA also likely has a general preference for administrative actions, despite the greater public drama and publicity that attaches to a judicial proceeding.<sup>86</sup> EPA's preference arises for a number of reasons. First, administrative proceedings require EPA to dedicate fewer personnel and financial resources. Second, they also evoke a less defensive response from the alleged violator, thus increasing the chances of settlement and providing less procedural due process. Third, making a referral to DOJ delays resolution of a matter.<sup>87</sup> In fact, differing views over what constitutes appropriate factual development on which to base a civil suit may result not only in delay, but also a decision by DOJ not to proceed.<sup>88</sup>

Fourth, EPA regional personnel also have much greater control over an ongoing administrative matter than a civil judicial or criminal action. With an administrative action, there is usually little or no EPA Headquarters involvement, and regional personnel do not have to take a backseat to or be upstaged by DOJ staff lawyers or Assistant U.S. Attorneys on case or courtroom strategy and decisions.<sup>89</sup> Conversely, with a criminal prosecution in particular, despite its public nature, EPA may get little credit for the successful resolution of the matter.<sup>90</sup>

Fifth, it might be more than a matter of not wanting to share decision-making power with another branch of government. Rather, EPA may not wish to share, and to an extent cede, decision-making authority to a branch of government that is quite differently organized. While EPA tends to vest its staff lawyers with a degree of authority, DOJ tends to be hierarchical. These different cultures may give rise to conflict that EPA

---

<sup>84</sup> See Colin S. Diver, *A Theory of Regulatory Enforcement*, 28 PUB. POL'Y 257 (1980).

<sup>85</sup> See Coffee, *supra* note 9, at 1891.

<sup>86</sup> *Id.* at 1888.

<sup>87</sup> See Mann, *supra* note 8 at 1869–70; Coffee, *supra* note 9 at 1887.

<sup>88</sup> See Joseph F. DiMento, *Criminal Enforcement of Environmental Law*, 525 ANNALS AM. ACAD. POL. & SOC. SCI. 134 (1993); PETER C. YEAGER, *THE LIMITS OF LAW: THE PUBLIC REGULATION OF PRIVATE POLLUTION* (1991).

<sup>89</sup> See JOEL A. MINTZ, *ENFORCEMENT AT THE EPA: HIGH STAKES AND HARD CHOICES* (1995); ROSEMARY O'LEARY, *ENVIRONMENTAL CHANGE: FEDERAL COURTS AND THE EPA* (1993).

<sup>90</sup> See YEAGER, *supra* note 88.



desires to avoid. Indeed, enforcement can be problematic when it requires coordination with government agencies such as DOJ whose organizational objectives likely differ from those of EPA.<sup>91</sup>

Sixth, EPA may prefer administrative as opposed to judicial resolution of a matter because, when proceeding administratively, EPA does not lose control over the timing or the manner of proceeding, concede sanctioning authority to a judge, or have to rely on the whims of a jury. Thus, the basic appeal of administrative proceedings may well be the larger power EPA enjoys in such cases rather than in quanta of proof or questions of procedure.<sup>92</sup>

Hence, normative, procedural, and substantive distinctions are relevant to EPA's choice among enforcement venues because, even in the face of documents informing the public of how it intends to exercise its discretion, EPA retains substantial discretion to choose among administrative, civil judicial, and criminal venues. However, as noted above, the power EPA is able to exercise in each forum is as likely as procedural and substantive distinctions to guide that discretion.

### III. ENFORCEMENT VENUE CHOICE THEORY

Because EPA does not pursue all enforcement cases in the administrative forum—a venue that appears to offer EPA control, speed, ease of prosecution, and certainty—two questions arise: What influences EPA to eschew the administrative preference, and how might those influences play out? To explain why and how EPA makes venue choice decisions, one may explore five “alternative” motivations: social welfare maximization; violation minimization; case maximization; environmental harm minimization; and political support maximization.<sup>93</sup> More than one of these explanations of behavior might be supported to varying degrees.

We first consider social welfare maximization,<sup>94</sup> not as a normative theory of how EPA should employ its enforcement resources, but rather

---

<sup>91</sup> Dimento, *supra* note 88; YEAGER, *supra* note 88.

<sup>92</sup> See Franklin E. Zimring, *The Multiple Middlegrounds Between Civil and Criminal Law*, 101 YALE L.J. 1901 (1992); Coffee, *supra* note 9; MINTZ, *supra* note 89.

<sup>93</sup> This Part builds on the theoretical framework set forth in Mark A. Cohen, *Monitoring and Enforcement of Environmental Policy*, in THE INTERNATIONAL YEARBOOK OF ENVIRONMENTAL AND RESOURCE ECONOMICS 1999–2000, at Sections 2.3, 3.1 available at <http://www.vanderbilt.edu/VCEMS/papers/enforcement.pdf>. Cohen discusses theories of enforcement in his excellent overview of the environmental enforcement literature, but does not discuss their implications for venue choice. In addition to the five motivations for EPA venue choice decisions discussed here, a sixth motivation is possible—bias. Firestone, *supra* note 6. For example, EPA enforcement personnel may relish punishing “deep pockets” or, alternatively, they may have an aversion to punishing large firms who are more likely than small firms to employ middle managers whose position in society resembles their own.

<sup>94</sup> This Article devotes significantly more attention to social welfare maximization than the other theories because of the prominence of economic scholarship in the legal arena as evidenced by the burgeoning field of law and economics. Moreover, one of the other theo-

as a positive theory of how EPA might as a matter of practice employ those resources. Under this theory, EPA would weigh the costs (its own, the violators,' and society's) and benefits of its choice among administrative, civil judicial, and criminal proceedings in an attempt to "optimally" deploy its resources.

Second, EPA might attempt to minimize the number of violations. In contrast to social welfare maximization, which would require EPA to focus on specific deterrence—that is, deterring the violator it seeks to punish—a strategy of violation minimization suggests a broader, general deterrence focus.

Third, rather than focus on minimizing the number of violations, EPA instead might attempt to maximize the number of cases it commences given the ease of measuring one's success when employing this latter strategy or as a proxy for violation minimization.

Fourth, to the extent that EPA enforcement relates to or is a product of the Agency's primary mission of public health and environmental protection, EPA may seek to minimize environmental harm when it chooses among enforcement fora. An environmental harm minimizer differs from a social welfare maximizer in that the former considers only the benefits of enforcement.

Fifth, EPA may be motivated by a desire to maximize its political support. In that regard, EPA might choose enforcement proceedings with an ear toward Congress and with an eye on local socioeconomic conditions. While discussing each of the five theories, I also consider the relationship between each theory and EPA's venue choice. Finally, I consider the relationship between disparate treatment based on the type and size of violator and EPA's overarching enforcement motivation.

### A. *Social Welfare Maximization*

Normative economic theory suggests that EPA should employ its enforcement resources with the goal of maximizing social welfare. This goal may take on added significance in the environmental context because one often confronts violations of law that arise in the context of otherwise socially productive activities. Here, the question we consider is not whether EPA should adopt social welfare maximization as its goal, but rather whether EPA has adopted social welfare maximization as a matter of positive theory in its choice of enforcement proceedings. Before answering that question, we first should consider precisely what economic theory purports and whether that theory is likely to have application in the environmental enforcement realm.

---

ries—environmental harm minimization—can be thought of as the benefit side of social welfare maximization.

Anticipating what economists would write more than two hundred years later, Montesquieu thought it essential that there be a "certain proportion" in punishments because a great crime, which is more pernicious to society, should be avoided more than a smaller, less pernicious crime.<sup>95</sup> He believed that criminal justice should be directed toward crime prevention rather than punishment and should be more attentive to inspiring "good morals [than] . . . inflict[ing] punishments."<sup>96</sup> Jeremy Bentham expanded on these ideas and constructed rules governing the proportionality of punishments.<sup>97</sup>

In 1968, Gary Becker published his seminal work on "optimal" criminal sanctions to control crime. Becker argued that the criminal penalty for a given crime should be set equal to the net social cost of the crime, adjusted for the probability of detection.<sup>98</sup> In that respect, Richard Posner<sup>99</sup> has argued that the criminal law bears a resemblance to the law of torts: both can be given economic meaning and designed to promote efficiency.<sup>100</sup>

In a Posnerian world, economic meaning can likewise be attributed to the major environmental laws. Under these laws, the federal government may seek to impose sanctions on either firms, individuals, or both, in civil or criminal proceedings. The seminal case addressing whether a firm can be held criminally liable is *New York Central and Hudson River Railroad Co. v. United States*.<sup>101</sup> Relying on the tort law doctrine of respondeat superior, the Supreme Court held that a corporation could be found liable based on the knowledge and intent of an employee acting within the scope of his authority.<sup>102</sup> The Court noted that in tort law, liability is imputed not because the corporation actually acts maliciously,

<sup>95</sup> MONTESQUIEU, *THE SPIRIT OF LAWS* 161 (David Wallace Carrithers ed. & Thomas Nugent trans., U. of Cal. Press 1977) (1748).

<sup>96</sup> *Id.* at 158; see also CESARE BECCARIA, *OF CRIMES AND PUNISHMENTS* 49 (Jane Gregson trans., Morsilio Publishers Corp. 1996) (1764). The purpose of punishment is not only to "prevent the criminal [from] committing new crimes, [but] . . . to keep others from doing likewise." *Id.* This proposition is slightly broader, invoking general rather than specific deterrence.

<sup>97</sup> Bentham's rules include that: (a) the punishment be greater than the profit of the offense; (b) the greater the mischief, the greater the punishment; (c) the punishment should be tied to each specific offense (it should be greater for stealing \$10 than \$2); and (d) the punishment be increased in proportion to the extent it falls short of certainty. Jeremy Bentham, *An Introduction to the Principles and Morals of Legislation*, in 1 WORKS OF JEREMY BENTHAM 86-95 (John Bowring ed., Russell & Russell, Inc. 1962) (1781); Jeremy Bentham, *Principles of Penal Law*, in 1 WORKS OF JEREMY BENTHAM, *id.* at 399-402.

<sup>98</sup> Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169 (1968).

<sup>99</sup> Richard Posner, *An Economic Theory of the Criminal Law*, 85 COLUM. L. REV. 1193 (1985).

<sup>100</sup> A similar analogy can be made with respect to civil penalty enforcement law.

<sup>101</sup> 212 U.S. 481 (1909).

<sup>102</sup> *United States v. Hilton Hotels Corp.*, 467 F.2d 1000, 1005 (9th Cir. 1972) (holding that a corporation can be liable even if agent acted contrary to corporate policy).

but because the imputed act is "done for the benefit of the principal."<sup>103</sup> It thus saw no reason why a corporation "which profits from the transaction" should not be found criminally liable.<sup>104</sup> Building on that case, other courts have relied on the doctrine of "collective knowledge," in which the knowledge of all employees, rather than just a single one, may be imputed to the corporation.<sup>105</sup>

Although large corporate fines in theory are ordered to motivate corporate shareholders and directors to discipline managers and lower-level employees, fines may be ineffective at changing the behavior of those employees who commit most of the violations within large firms.<sup>106</sup> Yet, if a shareholder bears no risk of losing income as a result of an official's behavior, he will have little incentive to hire managers who are unwilling to commit violations on the firm's behalf.<sup>107</sup> As a result, economic theory supports the imposition of firm liability. Because, as mentioned above, in enacting the major environmental laws Congress has seen fit to impose firm liability, those laws have at least some attributes of a liability scheme that is designed to maximize social welfare.

### 1. *The Choice Between Civil and Criminal Venues*

While environmental laws are consistent with economic theory in imposing firm liability, the question remains whether liability should be civil, criminal, or both? Under Judge Posner's market-oriented framework, the major function of criminal law is to prevent people from bypassing the market in those instances when tort law cannot deter them.<sup>108</sup> Accordingly, as long as a defendant can afford to pay the social cost of his conduct, civil rather than criminal penalties should be imposed because the civil system is cheaper to administer than the criminal system.<sup>109</sup> However, when an offender has an inability to pay, optimal deterrence theory suggests that nonmonetary sanctions such as imprisonment are required.<sup>110</sup> More specifically, Steven Shavell has identified five fac-

<sup>103</sup> *N.Y. Cent.*, 212 U.S. at 493; see also *United States v. Beusch*, 596 F.2d 871, 877 (9th Cir. 1979) (holding that a corporation can be held liable if the agent intended to benefit the corporation; "actual benefit is largely irrelevant").

<sup>104</sup> *N.Y. Cent.*, 212 U.S. at 495.

<sup>105</sup> See, e.g., *United States v. Bank of New England, N.A.*, 821 F.2d 844 (1st Cir. 1987).

<sup>106</sup> Barry D. Baysinger, *Organization Theory and the Criminal Liability of Organizations*, 71 B.U. L. REV. 341, 363 (1991).

<sup>107</sup> Posner, *supra* note 99, at 1228.

<sup>108</sup> *Id.* Economists, however, may make a mistake if they think of the criminal law as a mechanism to secure transaction structures. Indeed, murder, rape, and treason have nothing to do with exchange. Moreover, how does one make sense of the criminalizing of prostitution, which prohibits rather than encourages a market exchange? See JULES L. COLEMAN, *MARKETS, MORALS AND THE LAW* 57-60 (1988).

<sup>109</sup> See Posner, *supra* note 99, at 1228-29.

<sup>110</sup> See Steven Shavell, *Criminal Law and the Optimal Use of Nonmonetary Sanctions as a Deterrent*, 85 COLUM. L. REV. 1232, 1236-37 (1985).

tors that are relevant to the question of whether a nonmonetary sanction is necessary for optimal criminal deterrence: (1) the size of a party's assets; (2) the probability that a party will escape sanction (as this probability increases, the likelihood that the monetary sanction needed will exceed a person's assets increases); (3) the level of private benefits resulting from the offense (the higher the benefits, the greater monetary sanction needed to deter); (4) the probability that an act will cause harm; and (5) the magnitude of the harm.<sup>111</sup> If these factors are sufficiently high, nonmonetary sanctions may be desirable if one seeks to maximize social welfare despite the greater social costs associated with their use.

Given that a firm cannot be imprisoned, however, the question arises whether the government should ever seek the imposition of criminal sanctions against a firm to the extent the government's goal is social welfare maximization. In that regard, Posner draws a distinction between those actions that society wishes to deter conditionally, such as breach of contract, and those actions society wants to prohibit in all instances, such as rape.<sup>112</sup> As to the former, society can deter the conduct by requiring the breaching party to pay the non-breaching party's costs,<sup>113</sup> while in the case of rape, a damage remedy is inadequate.<sup>114</sup> John Coffee likewise argues that since firm liability is imposed vicariously, it should be priced rather than criminalized.<sup>115</sup> Indeed, as soon as society agrees that there is a limit to the level of employee monitoring in which a firm should engage, society essentially has priced rather than prohibited the conduct.

For Posner, the question is not whether firms should be liable for the actions of their employees and officers, but rather why such liability has to be criminal given that firms cannot be imprisoned.<sup>116</sup> According to Posner, the procedural safeguards that are inherent in the criminal process and which result in the criminal system being more expensive to administer than the civil system "make economic sense only on the assumption that criminal punishments impose heavy social costs rather than merely transfer money from the criminal to the state."<sup>117</sup> If firm criminal fines do in fact impose heavy social costs, the procedural safeguards of the criminal system, which in theory are designed to protect defendants from the personal disutility of a criminal conviction, also may protect society against inordinate social costs. On the other hand, if one assumes that firm criminal sanctions do not impose heavy social costs, Posner's contention merits further consideration because, if true, the

---

<sup>111</sup> *Id.*

<sup>112</sup> RICHARD POSNER, *ECONOMIC ANALYSIS OF THE LAW* 357-58 (2d ed. 1976).

<sup>113</sup> From an economic standpoint, if the gain to the breaching party is greater than the loss to the non-breaching party, the breach may be viewed as beneficial.

<sup>114</sup> POSNER, *supra* note 112.

<sup>115</sup> Coffee, *supra* note 13, at 230.

<sup>116</sup> Posner, *supra* note 99, at 1229.

<sup>117</sup> *Id.*

mere fact that EPA seeks to impose criminal sanctions against firms would suggest that EPA is not maximizing social welfare.

It is a mistake, however, to view firm criminal sanctions as purely monetary. As noted earlier, probation is an important nonmonetary sanction that judges can impose on firms that have violated environmental laws. Moreover, even if one views firm criminal sanctions as purely monetary in nature, obtaining compliance with criminal sanctions may not be more expensive than obtaining a similar level of compliance under a civil enforcement regime.

To begin with, the criminal law operates as both a formal and an informal constraint on behavior. Indeed, the "criminal law is stained so deeply with notions of morality and immorality, public censure and punishment, that labeling an act criminal often has consequences that go far beyond mere administrative effectiveness."<sup>118</sup> In fact, the enactment of a criminal statute can be a compelling factor in making the prohibited conduct illegitimate in the eyes of potential actors even in those instances when they disagree with the law or its purpose.<sup>119</sup> Thus, the mere labeling of an environmental violation as a crime may have a deterrent effect that can be garnered without the government having to increase its costs of enforcement.

Furthermore, if the government already intends to criminally prosecute an employee, manager, or officer of a firm, there may be economies of scale that can be gained by prosecuting the firm in a criminal rather than a civil forum.<sup>120</sup> Where the government's case focuses on punishing the wrongdoer rather than remediating environmental damage and the proof that the government intends to proffer against a firm will significantly overlap with what the government already intends to introduce against an individual criminal defendant, it makes little sense to put on a separate case in a different forum.

By prosecuting a firm and an individual in one forum, the government also may be the beneficiary of strategic incentives of the defendants, which may take several forms. To begin with, one defendant might enter into a plea bargain that is premised on that defendant's cooperation in the prosecution of another defendant.<sup>121</sup> Further, if the case goes to

---

<sup>118</sup> Ball & Friedman, *supra* note 11, at 216.

<sup>119</sup> *See id.*

<sup>120</sup> Maintaining proceedings in criminal and civil courts that parallel one another also raises a whole host of complications that are not present when an action is maintained in only one forum. For example, punitive civil penalties may implicate the Double Jeopardy Clause. *See* Memorandum from Steven A. Herman, Office of Enforcement, EPA, Parallel Proceeding Policy (June 22, 1994) (on file with the Harvard Environmental Law Review). Parallel proceedings increase the possibility of prosecutorial error and thus decrease the probability of criminal conviction and civil liability (and/or the amount of civil or criminal sanction awarded). For example, EPA has to take care to avoid using its administrative regulatory inspection authority to evade the protections of the Fourth Amendment. *Id.* In a similar vein, EPA must assure that it does not use grand jury information for improper purposes or violate grand jury secrecy. *Id.*

<sup>121</sup> Mark A. Cohen, *Theories of Punishment and Empirical Trends in Corporate Crimi-*

trial, the defendants may employ conflicting defense strategies and may even attempt to blame one another for the violation.<sup>122</sup> In this latter situation, the position in which the defendants find themselves resembles the classic prisoner's dilemma. Although the dominant group strategy in a criminal proceeding would be to cooperate in a common defense strategy, each defendant's dominant individual strategy may be to place the blame on the other defendant(s). Whether defendants' strategies diverge at the plea bargain or trial stage, the result is the same: namely, the probability of conviction increases.

A firm also may more readily resolve a related civil matter if the possibility that the matter could be handled criminally lurks in the background. Having laws that sanction firm criminal conduct in the environmental sphere and prosecutorial resources to make the threat of criminal sanctions credible thus increases the deterrent effect of those other sanctions. Because of this increased deterrence, corporate criminal liability has the effect of lowering the cost to government of imposing civil sanctions.<sup>123</sup>

Further, the unique collateral consequences of a criminal conviction discussed earlier (such as bankruptcy effects and debarment) also may support the existence of corporate criminal liability. Finally, corporate criminal liability may be justified because it is only through the criminal law that society punishes attempted violations.<sup>124</sup>

An advantage of punishing corporate attempted violations is that it raises the expected sanction for committing an environmental crime by raising the probability of detection and prosecution without having to increase the magnitude of the sanction.<sup>125</sup> Thus, for a number of reasons, the imposition of criminal liability on a firm is not necessarily inconsistent with the notion of social welfare maximization. It also should be noted that, presently, federal environmental law is almost entirely devoid of provisions punishing attempted crimes.

---

*nal Sanctions*, 17 *MANAGERIAL & DECISION ECON.* 399, 408 (1996), found some support for this notion in that individuals from firms that had cooperated with a criminal investigation faced an increased probability of conviction.

<sup>122</sup> See Saltzburg, *supra* note 36, at 432.

<sup>123</sup> In addition, given the right to a speedy trial, criminal trials are generally concluded in a shorter amount of time than civil trials. Because a sanction needs to be increased in proportion to its distance to the offense to have the same deterrent effect, a civil sanction would need to be greater than the criminal sanction for the same violation. This is true not only because of the time-value of money (discounting) but because the impression of a conviction on the firm "is weakened by distance" from the offense. Bentham, *Principles of the Penal Law*, *supra* note 97, at 402.

<sup>124</sup> This is not to say that civil law could not provide sanctions for attempted violations, but that the law of attempts has been relegated to the criminal sphere.

<sup>125</sup> Steven Shavell, *Deterrence and the Punishment of Attempts*, 19 *J. LEGAL STUD.* 435 (1990).

## 2. Limitations of Social Welfare Maximization

If, consistent with the discussion above, we assume that the liability schemes that Congress established in the CAA, CWA, and RCRA are not inconsistent with a desire to maximize social welfare,<sup>126</sup> we are still faced with the question of whether EPA in fact adopted such a model for enforcement. For a number of reasons the social welfare maximization model may not fare well at EPA. To begin with, social welfare maximization requires access to information that EPA likely lacks. For example, it is extremely difficult to accurately estimate the extent of environmental, let alone social, harm that arises from a violation on which to base an optimal enforcement strategy. Likewise, it is very difficult to estimate detection probabilities, one of the linchpins of being able to impose optimal fines.<sup>127</sup> Similar pitfalls arise in attempts to estimate firm abatement costs or to predict the deterrent impact of various sanctions. Perhaps not surprisingly, to the extent EPA focuses on deterrence, it focuses on general rather than specific deterrence.<sup>128</sup>

Even if EPA had good estimates of benefits, costs, and detection probabilities, EPA might continue to disregard the economic model because it is based on the assumption that individuals and firms are rational actors that decide whether to spend time and resources to avoid or minimize violations solely by weighing costs and benefits. Yet, when moral considerations are prominent, how a person would otherwise weigh the costs and benefits of illegal conduct may influence the decision process only minimally.<sup>129</sup> Moral considerations in effect "create non-markets in some areas, and rather poor ones in others."<sup>130</sup> In such circumstances, an individual pursues what she considers to be a moral line of behavior even in the absence of the threat of government sanctions.<sup>131</sup>

---

<sup>126</sup> This also assumes that we find support in the data for the proposition that EPA's actions are consistent with social welfare maximization.

<sup>127</sup> Detection ratios have been estimated to be between 1:10 and 1:50. Amitai Etzioni, *The U.S. Sentencing Commission on Corporate Crime: A Critique*, 525 ANNALS AM. ACAD. POL. & SOC. SCI. 147, 153 (1993). These ratios suggest that if EPA and judges did employ optimal penalty theory, fines would have to be very large.

<sup>128</sup> Indeed, EPA requires sanctions in all cases of a certain class and attempts to standardize penalties for violations of comparable seriousness with little regard for firm-specific considerations. See Cheryl Wasserman, *Federal Enforcement: Theory and Practice*, in INNOVATION IN ENVIRONMENTAL POLICY 21-31, 41 (T.H. Tietenberg ed., 1992); cf. Jennifer Arlen & Reinier Kraakman, *Controlling Corporate Misconduct: An Analysis of Corporate Liability Regimes*, 72 N.Y.U. L. REV. 687, 752-54 (1997) (suggesting that the United States Sentencing Commission amend the sentencing guidelines to take into account firm-specific and industry-specific characteristics in order to promote optimal deterrence).

<sup>129</sup> AMITAI ETZIONI, *THE MORAL DIMENSION: TOWARD A NEW ECONOMICS* 67-87 (1988).

<sup>130</sup> *Id.* at 77 (italics omitted).

<sup>131</sup> *Id.* This contention finds support in a recent survey of graduate students in MBA programs and corporate executives attending an executive education program. See Raymond Paternoster & Sally Simpson, *Sanction Threats and Appeals to Morality: Testing a*



In addition, EPA's policy statements and actions suggest that it does not view violations as resulting solely from rational decisions on behalf of firms. For example, EPA's audit policies suggest that EPA views firm structural factors to be important determinants of violations.<sup>132</sup> Moreover, when an agency adopts a measure like an audit policy, it likely does so out of recognition of the limits of deterrence and of the potential benefits of gaining normative commitment from the regulated community to the values it seeks to inculcate.<sup>133</sup>

Finally, EPA historically has delegated substantial discretion to front-line personnel.<sup>134</sup> In the enforcement context, this primarily means staff lawyers and to a lesser extent biologists, engineers, and physical scientists. Unlike economists and policy analysts, these individuals are unlikely to be versed in, let alone follow, a model based on rational choice and social welfare maximization. Rather, they are apt to be motivated by notions closer to their own disciplines. For example, lawyers may be motivated by society's desire for retribution, general deterrence, and rehabilitation. Scientists may see environmental harm as the prime determinant. As a result, achieving a management objective of enforcement based on a rational-actor model may be exceedingly difficult without first changing EPA culture.

### 3. EPA as a Social Welfare Maximizer

Given the difficulty of obtaining reliable information, a belief that moral considerations may hold sway, EPA policy statements, and EPA culture, the social welfare maximization model likely lacks predictive power when modeling EPA enforcement choice. If, despite these concerns, EPA enforcement personnel nonetheless seek to maximize social welfare, one would expect that as EPA (i.e., enforcement), violator (i.e., compliance), and societal costs increase, EPA would find judicial remedies less attractive and thus increasingly handle those matters administratively. On the other hand, as harm increases, EPA will increasingly handle violations criminally.

---

*Rational Choice Model of Corporate Crime*, 30 L. & Soc'y REV. 549 (1996). These researchers found that decisions to commit corporate crime are likely to be influenced by moral sentiments and shame as well as an assessment of the costs and benefits. To the extent this research reflects reality, it suggests that as a normative matter, EPA enforcement should not be based solely on the economic model.

<sup>132</sup> W.S. Loquist, *Organizational Probation and the U.S. Sentencing Commission*, 525 ANNALS AM. ACAD. POL. & SOC. SCI. 157 (1993); Wasserman, *supra* note 128.

<sup>133</sup> See Raymond J. Burby & Robert G. Paterson, *Improving Compliance with State Environmental Regulations*, 12 J. POL'Y ANALYSIS & MGMT. 753 (1993).

<sup>134</sup> See generally MARC C. LANDY ET AL., THE ENVIRONMENTAL PROTECTION AGENCY: ASKING THE WRONG QUESTIONS (1990).

### B. Violation Minimization

The second theory this Article considers is violation minimization. Given the reservations expressed regarding the viability of social welfare maximization as EPA's enforcement goal, it may be more reasonable to view EPA enforcement personnel as "violation-minimizing policemen" who see their primary objective as general rather than specific deterrence.<sup>135</sup> With this perhaps more realistic behavioral model of EPA enforcement, one considers enforcement personnel to be individuals who seek to enforce societal norms and values associated with the pollution of the environment and the exposure of human populations to hazardous substances rather than to correct a market failure. In other words, this model assumes that agency personnel do not believe that violations of their agency's rules "are simply regulatory offenses that lack inherent moral culpability."<sup>136</sup> From their perspective, one of the limitations of the social welfare maximization model is that notions of guilt, fault, and responsibility are absent from the analysis.<sup>137</sup>

Given a fixed amount of financial and personnel resources that can be dedicated to enforcement, a decision to minimize violations should result in a high percentage of administrative cases because factors such as inexpensive costs of enforcement, favorable burden of proof, quick resolution, and increased control that are associated with administrative enforcement should allow the most penalty cases to be brought. Yet, given the larger general deterrent effect of a criminal sanction than a civil sanction, violation minimization suggests a role for criminal sanctions as well.

### C. Case Maximization

Instead of attempting to minimize the number of violations, EPA enforcement decisions may be driven by a desire to maximize the number of enforcement cases. This theory is premised on the notion that regulators are motivated primarily by self-interest.<sup>138</sup> One might expect EPA to attempt to maximize the number of enforcement cases it brings because one of the ways in which Congress, the public, and EPA itself measure enforcement "success" is by counting the number of cases commenced in a given fiscal year.<sup>139</sup> Although EPA recently began to consider the "ac-

---

<sup>135</sup> Devon Garvie & Andrew Keeler, *Incomplete Enforcement with Endogenous Regulatory Choice*, 55 J. PUB. ECON. 141, 144 (1994).

<sup>136</sup> Coffee, *supra* note 9, at 1889. This is perhaps unsurprising given that "enforcement is undertaken by agents whose own utility functions influence outcomes." Douglass C. North, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE 54 (1990).

<sup>137</sup> See COLEMAN, *supra* note 108, at 164-65.

<sup>138</sup> See William A. Niskanen, *Politicians and Bureaucrats*, 18 J.L. & ECON. 617, 618 (1975).

<sup>139</sup> To the extent a regulator is concerned with congressional and public affirmation, the

tual results and environmental impact” of its enforcement activities as a success barometer, EPA “continue[s] to count [the number of] enforcement activities as a measure of success.”<sup>140</sup> Moreover, EPA bean-counting incentives are such that individual EPA employees and managers may have perverse incentives to maximize numbers.<sup>141</sup> Indeed, the goal of EPA enforcement employees and managers may not only be to implement the public health and environmental protection policy of the Agency, but to “meet a production demand” as well.<sup>142</sup>

Maximizing the number of cases would force EPA to focus exclusively on administrative cases because administrative cases require fewer enforcement resources. Although the desire to maximize cases might explain EPA’s heavy reliance on the administrative venue, it is unlikely to shed light on the question presented here: What motivates EPA to depart from the administrative forum?

#### D. Environmental Harm Minimization

If one views enforcement as an outgrowth of EPA’s larger regulatory mission to protect public health and the environment, one might expect that EPA makes enforcement choice decisions in a manner that minimizes environmental harm. While the goal of violation minimization suggests that EPA’s enforcement branch is more closely identified with law enforcement than with the regulatory mission of the Agency, the goal of environmental harm minimization implies that EPA enforcement personnel are allied with its regulatory employees.<sup>143</sup> Environmental harm minimization differs from social welfare maximization in that the former is concerned solely with

---

case maximization theory shares some attributes with the political support maximization model discussed below.

<sup>140</sup> OFFICE OF COMPLIANCE AND ENFORCEMENT ASSURANCE, EPA, OPERATING PRINCIPLES FOR AN INTEGRATED ENFORCEMENT AND COMPLIANCE ASSURANCE PROGRAM (Nov. 18, 1996) available at <http://www.epa.gov/compliance/resources/policy/planning/state/oprin-integ-mem.pdf>; see also, e.g., 33 U.S.C.A. § 1375(a) (West Supp. 2002) (requiring EPA to report to Congress on pending enforcement actions); Press Release, EPA, EPA Sets Enforcement Records in 1999 (Jan. 19, 2000) (touting its record 1654 administrative complaints and compares the number of civil judicial and criminal cases in the present year to prior years) (on file with the Harvard Environmental Law Review); FY 1997 ACCOMPLISHMENT REPORT, *supra* note 68 (setting forth the numbers of administrative actions initiated, cases referred to DOJ for civil judicial enforcement, and criminal defendants charged for fiscal years 1990 through 1997).

<sup>141</sup> Diver, *supra* note 79, at 295–96; J. B. Ruhl, *Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law*, 34 Hous. L. Rev. 933, 988 (1997); Clifford Rechtschaffen, *Deterrence vs. Cooperation and the Evolving Theory of Environmental Enforcement*, 71 S. CAL. L. REV. 1181, 1218–20 (1998).

<sup>142</sup> Diver, *supra* note 84, at 280; see also DiMento, *supra* note 88 (finding that incentive structure rather than importance of environmental violations may drive response).

<sup>143</sup> Cohen, *supra* note 93. Environmental harm minimization also could be termed environmental benefits maximization.

the benefits of enforcement (subject to a fixed enforcement budget), while the latter focuses not only on benefits, but also societal and firm costs.<sup>144</sup>

Environmental harm minimization implies that, as the actual or potential for harm to public health or the environment increases from a violation, EPA will invest greater financial resources to punish the conduct, demonstrate less concern about a quick resolution of the case, and be more interested in using the case as a vehicle to promote general deterrence.<sup>145</sup> EPA also would select targets without regard to the number of cases filed, the number of residual violations, or costs.

### *E. Political Support Maximization*

The last theory this Article considers is political support maximization. The premise of this theory is that regulatory agencies seek to maximize political support.<sup>146</sup> This theory may have particular appeal in the context of enforcement because a regulator such as EPA may worry that targets of its enforcement actions will seek to retaliate. EPA also may fear that a community in which a violator operates may be displeased in the event that swift and thorough punishment of that violator is not forthcoming. Conversely, a community that is economically dependent on an employer may pressure the Agency to back away from aggressive enforcement. Individuals, firms, and government entities may exert political pressure on Congress to decrease EPA's enforcement budget, transfer its authority to state government actors, or hold oversight hearings on EPA's enforcement programs in an effort to rein in enforcement personnel. The political maximization model predicts that EPA is most likely to handle administratively those violators that have the ability to influence powerful congressional representatives, operate in areas of high unemployment, employ large numbers of people, or commit violations in low-income or less environmentally minded communities. The model also predicts that EPA is least likely to handle such violations criminally.

### *F. Other Factors*

In addition to the five theories discussed above, other factors might influence EPA's venue decisions. We might even think of these influences together representing a sixth theory of enforcement—a theory based on

---

<sup>144</sup> Carol Adaire Jones & Suzanne Scotchmer, *The Social Cost of Uniform Regulatory Standards in a Hierarchical Government*, 19 J. ENVTL. ECON. & MGMT. 61 (1990).

<sup>145</sup> Increasing the sanction as the extent of harm increases is also consistent with the traditional justifications of punishment—incapacitation, deterrence, reform, and retribution as well as social welfare maximization. TED HONDERICH, PUNISHMENT: THE SUPPOSED JUSTIFICATIONS (rev. ed. 1976).

<sup>146</sup> See generally Sam Peltzman, *Toward a More General Theory of Regulation*, 19 J.L. & ECON. 211 (1976); see also Jack Hirshleifer, Comment, *Toward a More General Theory of Regulation*, 19 J.L. & ECON. 241 (1976).

case realities. The “case reality” theory posits that there are legitimate bases on which to distinguish between large and small firms and between firms and governmental units.

Taking the firm-size question first, to the extent that EPA adopts a different venue choice strategy for large and small firms, one might be tempted to conclude that EPA is a political support maximizer. However, the disparate treatment of firms based on firm size might result from a number of factors that operate concurrently with EPA’s over-arching enforcement mode.

To begin with, although EPA may have no more difficulty detecting violations perpetrated by large firms than those perpetrated by small firms, a violation committed by a large firm is more likely to be embedded deeply within the interior of the firm, making the identification of individuals with knowledge of the genesis of the violation and proof of culpable conduct difficult.<sup>147</sup> In light of the embedded nature of large firm crime, EPA’s culpability criterion<sup>148</sup> would tend to result in EPA reserving criminal sanctions for small firms. In addition, given the greater intent and evidentiary burdens in criminal matters, one might expect EPA, all other things being equal, to pursue more difficult cases—that is, cases against large firms—civilly.

Small firms also may be more apt to engage in knowing violations of environmental laws—the predicate for criminal treatment—or may engage in different types of violations than large firms because they lack the necessary financial resources to implement compliance measures and sufficient market strength to be able to pass the costs of such measures on to their customers.<sup>149</sup> This lack of resources would tend to increase the probability of criminal sanctions being reserved for small firms.

In addition, small firms that perpetrate environmental crimes may be so marginal, with individual employees involved often acting on their own behalf, or “under the cover of an illusory professional status or fly-by-night company,” that small firms and their employees offer an elusive target for civil or administrative proceedings.<sup>150</sup> Indeed, with marginal firms, the dispositional options may be criminal prosecution or no legal action at all because they lack the resources to make civil proceedings beneficial.

Further, given that small firm resources are limited, EPA may not consider it prudent to use its finite enforcement resources to pursue small

---

<sup>147</sup> See Stanton Wheeler et al., *Sentencing the White-Collar Offender: Rhetoric and Reality*, 47 AM. SOC. REV. 641 (1982). This factor provides justification for the doctrine of collective knowledge as a basis for corporate liability. See *supra* note 105 and accompanying text.

<sup>148</sup> Devaney, *supra* note 69.

<sup>149</sup> See YEAGER, *supra* note 88.

<sup>150</sup> Susan P. Shapiro, *The Road not Taken: The Elusive Path to Criminal Prosecution for White-Collar Offenders*, 19 L. & SOC’Y REV. 179, 204 n.21 (1985).

firms in civil court when almost identical sanctions could be obtained administratively. Indeed, small firm resources might be so compromised by the cost of litigation that civil judicial resolution of a violation would bear only limited or perhaps even no environmental benefit. Enforcement actions against small firms thus may be confined almost exclusively to the administrative and criminal fora.

Large firms themselves may exert significant control over the indictment process. Given the greater publicity attendant to, and the collateral consequences that may be associated with, a criminal matter (as evidence in future civil proceedings, bankruptcy and tax consequences of restitution obligations, probation obligations, SEC filings, debarment, suspension of contracts, and inability to obtain necessary environmental permits), large firms likely prefer that EPA handle their environmental violations civilly rather than criminally. As a result, large firms may marshal their resources to protect themselves against the possibility of criminal indictment. For example, large firms may use their superior financial and technical resources to take advantage of government self-policing/audit policies. Moreover, in those circumstances when large firms fail to undertake appropriate prophylactic measures, they are more likely than their small firm counterparts to be able to draw on sufficient legal resources to transform potential criminal indictments into civil complaints.<sup>151</sup>

EPA also may treat governmental units differently from firms for reasons other than political considerations. To begin with, governmental violations often arise in the context of government's role as secondary-waste managers of last resort (for example, through the operation of publicly owned treatment works ("POTWs")) rather than as cradle-to-grave generators of pollutants.<sup>152</sup> In that context, EPA might look at local government violations more as a failure of the local government as a regulator than as a regulated entity. In addition, EPA enforcement personnel might see a penalty on a local unit of government as little more than a wealth transfer from one level of government to another. Finally, given that it is highly unlikely that a criminal court would step in and impose the sanction of supervisory probation on a governmental body, the potential benefits from pursuing a criminal action against a governmental body are likely to be less than those that EPA could obtain in a similar pursuit of a private firm.<sup>153</sup>

---

<sup>151</sup> Wheeler et al., *supra* note 147; YEAGER, *supra* note 88.

<sup>152</sup> See General Pretreatment Regulations for Existing and New Sources of Pollution, 40 C.F.R. § 403 (2001).

<sup>153</sup> Congress itself has created a distinction between government and firms in the imposition of enhanced criminal fines for organizations that engage in knowing endangerment crimes, specifically excluding governmental bodies from the definition of "organization." See 42 U.S.C. § 6928(f)(5) (2000).

#### IV. PRIOR STUDIES RELATING TO EPA'S ENFORCEMENT FORUM CHOICE

Empirical studies undertaken to date of environmental enforcement can be broken into three categories: those that examined which firms are targeted; those that looked at the benefits of targeting, and those that focused on sanctions imposed on private firms. Of those environmental studies that focused on targeting in some manner, they have tended to consider the targets of monitoring and inspections rather than of enforcement.

##### A. Targeting Influences

EPA can learn of environmental violations in a number of ways, including reporting required by law, voluntary self-reporting, tips, and monitoring. Insight into how EPA behaves when choosing among enforcement fora may be gleaned if one examines those studies that consider which factors influence environmental regulatory agencies in their choice of monitoring and enforcement targets.

Deily and Gray examined EPA air monitoring and enforcement at steel plants from 1977 to 1986.<sup>154</sup> They sought evidence on the relationship between the level of monitoring/enforcement<sup>155</sup> and the probability that those regulatory actions would result in economic dislocation. Although their results were mixed, they found general support for the political support maximization model.<sup>156</sup> They found negative and significant relationships between monitoring/enforcement and both the probability that a plant would close and the size of the employer relative to the community work force.<sup>157</sup> On the other hand, their research documented that EPA directed more actions against plants in high unemployment counties rather than fewer as predicted by the model.<sup>158</sup> Finally, they found no evidence of a relationship between monitoring/enforcement and plant abatement costs. In other words, their research did not provide support for the social welfare maximization model.

The authors followed up the first study by considering air monitoring and enforcement at steel plants for the years 1980 to 1989.<sup>159</sup> Their results provide support for the environmental harm minimization model: noncompliant firms, firms that generated higher emissions, and firms that were located in nonattainment areas stood a greater likelihood of being a

---

<sup>154</sup> Deily & Gray, *supra* note 4.

<sup>155</sup> Significantly, the authors did not control for whether the action could be characterized as phone call, letter, an inspection, a compliance order, or a penalty action. In a footnote, the authors indicate that they obtained similar results when they only lumped inspections, compliance orders, and penalties together. *Id.* at 265 n.12.

<sup>156</sup> *See id.* at 268.

<sup>157</sup> *Id.* at 268-69.

<sup>158</sup> *Id.* at 269.

<sup>159</sup> Gray & Deily, *supra* note 5.

target of EPA.<sup>160</sup> On the other hand, they found mixed support for the political maximization model in that firms that were large local employers faced less monitoring/enforcement, while firms owning plants in areas of high unemployment faced more.<sup>161</sup>

Dion, Lanoie, and Laplante examined surface water sampling inspections at pulp and paper firms in Quebec, Canada, from 1985 to 1991.<sup>162</sup> Using plant age as a surrogate for compliance costs, their research, like that of Deily and Gray, suggests that regulators do not consider compliance costs in their inspection decisions.<sup>163</sup> In addition, although they found that inspections were positively related to the level of unemployment, in juxtaposition to Deily and Gray, the Canadian researchers found a positive and significant relationship between inspection activity and the importance of a plant to the local labor market.<sup>164</sup> They surmised that the difference in result between the two studies might be due to the fact that Deily and Gray lumped monitoring and enforcement together.<sup>165</sup>

Although not raised by the authors, the divergent results may reflect differences in the organizational culture of the two regulatory agencies as well as the milieu in which they operate. These factors may be particularly pronounced given that the studies examined environmental monitoring in two countries. Alternatively, the divergence may reflect differences between air and water regulatory programs. Finally, one of the means by which Dion, Lanoie, and Laplante measure environmental damage—the ratio of the amount of effluent discharged by a plant to the flow of the river—was a significant and positive predictor of plant inspection.<sup>166</sup> Thus, Dion, Lanoie, and Laplante found some support for both the political maximizer and environmental harm minimizer models.

Helland considered surface water discharge inspections of pulp and paper firms in EPA Region IV (the southeastern United States) between 1990 and 1993.<sup>167</sup> He found that political factors such as community affluence and the probability of plant closure were positively related to the likelihood of inspection.<sup>168</sup> He also found the level of pollution in the surrounding area, prior violations, and failure to file a discharge monitoring report increased the probability of inspection.<sup>169</sup> As Helland notes, his results suggest that regulators engage in two levels of overlapping

---

<sup>160</sup> *Id.* at 108.

<sup>161</sup> *Id.*

<sup>162</sup> Dion et al., *supra* note 4.

<sup>163</sup> *Id.* at 13.

<sup>164</sup> *Id.*

<sup>165</sup> *Id.* at 13–14.

<sup>166</sup> *Id.* at 15.

<sup>167</sup> Helland, *supra* note 4, at 144–45.

<sup>168</sup> *Id.* at 151.

<sup>169</sup> *Id.*



targeting: one related to the political sensitivity of the mill and the other related to the conduct of the violator.<sup>170</sup>

In another study, Helland investigated the influences on EPA's choice of surface water inspection type and stringency of inspections at pulp and paper mills.<sup>171</sup> Specifically, he evaluated EPA's choice among reconnaissance (a paperwork check), nonsampling (an abatement technology and paperwork check such as a performance audit), and sampling inspections (where physical samples are collected and analyzed).<sup>172</sup> Helland found that in states with smaller per-manufacturer budgets for water pollution control, a larger percentage of the inspections were of the sampling variety.<sup>173</sup> Thus, resource constraints did not result in an equal reduction of all three types of inspections. In other words, expanding a state's water pollution budget may not engender an increase in inspection stringency.

### B. Benefits of Targeting

In addition to, or rather than focusing on, EPA targeting behavior, some of the studies mentioned above and others focus on the benefits of targeting in terms of future pollution emission reduction, rate of compliance and length of time out of compliance. Like the previous examination, a consideration of these studies may shed light on EPA enforcement choice behavior.

Magat and Viscusi examined CWA biological oxygen demand ("BOD") discharges from pulp and paper mills from the first quarter of 1982 until the first quarter of 1985.<sup>174</sup> They found that when EPA increased inspection activity at a plant in the quarter immediately preceding the present quarter, a twenty percent decrease in BOD emissions and a decrease in the probability of noncompliance resulted.<sup>175</sup> Although they did not observe a post-inspection rebound in BOD discharges in later quarters, they found that inspections had no significant effects if lagged two quarters.<sup>176</sup>

Laplante and Rilstone analyzed 1985–1990 data on the pulp and paper industry in Quebec.<sup>177</sup> Their model was similar to Magat and Viscusi's study except that in recognizing that government inspections are endogenous (i.e., once a firm has been inspected it may be less likely to be inspected again in the near future), they look at the expected rather than actual inspection rate for a firm. They found that past inspections

---

<sup>170</sup> *Id.* at 152.

<sup>171</sup> Eric Helland, *The Revealed Preferences of State EPAs: Stringency, Enforcement, and Substitution*, 35 J. ECON. & MGMT. 242 (1998).

<sup>172</sup> *Id.* at 244–45.

<sup>173</sup> *Id.* at 256.

<sup>174</sup> Magat & Viscusi, *supra* note 5.

<sup>175</sup> *Id.* at 352.

<sup>176</sup> *Id.* at 353.

<sup>177</sup> Leplante & Rilstone, *supra* note 5.

resulted in a 28% reduction in BOD discharges, a rate slightly greater than observed by Magat and Viscusi.<sup>178</sup> They also observed a secondary benefit to inspections: increased reporting.<sup>179</sup> This study, like the prior one, thus provides support for the environmental harm minimization model.

Gray and Deily extended the work of Magat and Viscusi to a study of air monitoring/enforcement at steel plants.<sup>180</sup> Gray and Deily found that the combination of monitoring and enforcement (as well as monitoring alone) led to increased compliance.<sup>181</sup> Finally, Nadeau considered air monitoring (inspections and tests) and enforcement (administrative and civil judicial compliance and penalty actions) at pulp and paper mills from 1979 to 1989.<sup>182</sup> This model built on the prior studies, yet considered the length of noncompliance rather than the mere fact of noncompliance.<sup>183</sup> Nadeau found that when monitoring activity was increased by 10%, the time during which noncompliant plants violated EPA regulations was reduced by 4.2%.<sup>184</sup> A 10% increase in enforcement activity fared slightly better: it resulted in a 4–4.7% reduction in the time during which a plant was in violation.<sup>185</sup>

Taken together, the studies that focus on environmental targeting and the benefits that arise from such targeting suggest that monitoring decisions are influenced by regulators' desire both to minimize environmental harm and to maximize political support.

### C. Sanctions Imposed

An inspection is one side of the spectrum of monitoring and enforcement; imposition of sanctions is the other. Despite the central role that the imposition of penalties plays in government's effort to obtain compliance with environmental laws, there has been little in the way of systematic analysis of the actual use of sanctions by regulatory agencies.

The U.S. Sentencing Commission ("USSC") analyzes federal environmental criminal data as part of its larger study of federal sentencing data for thirty-two categories of criminal offenses, including more traditional "street" crime categories of murder, sexual abuse, theft, and drug trafficking as well as "non-street" categories of civil rights, antitrust, and environmental and wildlife.<sup>186</sup> Of the 1249 organizational defendants

---

<sup>178</sup> *See id.* at 30.

<sup>179</sup> *Id.* at 32–33.

<sup>180</sup> Gray & Deily, *supra* note 5. This is the second of two previously discussed studies by the authors.

<sup>181</sup> *Id.* at 106.

<sup>182</sup> Nadeau, *supra* note 5.

<sup>183</sup> *Id.* at 55.

<sup>184</sup> *Id.* at 77.

<sup>185</sup> *Id.*

<sup>186</sup> USSC, 2000 SOURCE BOOK OF FEDERAL SENTENCING STATISTICS (2000) [hereinaf-

analyzed by USSC during fiscal years 1995 to 2000,<sup>187</sup> 261 (or twenty-one percent) were sentenced for environmental crimes.<sup>188</sup> More organizational defendants were sentenced for environmental crimes than any other crime category other than fraud.<sup>189</sup> At sentencing, judges ordered 223 of the 261 environmental crime defendants to pay a fine.<sup>190</sup> Annual median fines were generally in the range of \$50,000 to \$100,000, while annual mean fines varied significantly from year to year, indicating the presence of one or more outliers (extremely high fines) in certain years.<sup>191</sup> More detailed analysis is available for fiscal year 2000. In that fiscal year, the median fines for air, hazardous/toxic waste and water violations were respectively, \$100,000, \$112,496 and \$229,984, suggesting that water violations are considered more harmful than air or hazardous waste violations.<sup>192</sup> Throughout the period, judges also ordered a total of 65 waste discharge entities to pay restitution.<sup>193</sup>

Of the approximately 60,000 individual defendants sentenced in the most recent year for which statistics are available (fiscal year 2000), 210, or 0.35%, were sentenced for either an environmental or wildlife ("E/W") crime.<sup>194</sup> Approximately 93% of the E/W defendants were sentenced after entering a plea.<sup>195</sup> E/W defendants were older and more likely to be U.S. citizens, male, and white when compared to defendants sentenced for all crimes.<sup>196</sup> Moreover, approximately one-fifth of E/W sentenced defendants did not graduate from high school, while another two-fifths had no college education.<sup>197</sup>

---

ter 2000 SOURCE BOOK]; USSC, 1999 SOURCE BOOK OF FEDERAL SENTENCING STATISTICS (1999); USSC, 1998 SOURCE BOOK OF FEDERAL SENTENCING STATISTICS (1998); USSC, 1997 SOURCE BOOK OF FEDERAL SENTENCING STATISTICS (1997); USSC, 1996 SOURCE BOOK OF FEDERAL SENTENCING STATISTICS (1996); USSC, 1995 ANNUAL REPORT (1995). The USSC data presented were derived by aggregating summary statistics provided in USSC tables over this six-year period. USSC SOURCE BOOKS *available at* <http://www.ussc.gov/research.htm>.

<sup>187</sup> *Id.*

<sup>188</sup> An additional thirty-two organizational defendants were sentenced for wildlife crimes. *Id.*

<sup>189</sup> *Id.*

<sup>190</sup> *Id.*

<sup>191</sup> 2000 SOURCE BOOK, *supra* note 186.

<sup>192</sup> *Id.*

<sup>193</sup> *Id.*

<sup>194</sup> *Id.* USSC statistics presented for individuals are for defendants sentenced for either environmental pollution *or* wildlife crimes because the USSC did not separate those two categories.

<sup>195</sup> *Id.*

<sup>196</sup> 2000 SOURCE BOOK, *supra* note 186.

<sup>197</sup> *Id.* The lack of formal education suggests that the environmental crimes program may focus on those individuals who personally participate in the conduct that leads to an offense rather than those higher up in the corporate chain. Alternatively, the environmental crimes program may focus on owners and officers from smaller, closely held firms, or unincorporated individuals where less of a premium may be placed on education. However, because the USSC does not segregate environmental from wildlife crimes committed by individuals, the lack of formal education among E/W defendants may reflect a lack of edu-

Although approximately 85% of individuals sentenced for all crimes in fiscal year 2000 received a jail sentence, slightly less than one-third of the individuals sentenced for E/W crimes received a sentence that included imprisonment.<sup>198</sup> Despite the advent of sentencing guidelines for environmental and wildlife crimes, the rate of imprisonment for E/W crimes in 2000 was not appreciably different from the rate of imprisonment for environmental crimes committed between 1985 and 1990.<sup>199</sup> Moreover, the imprisonment rate for E/W crimes was substantially less than that for many other crime categories, such as pornography/prostitution, and on par with simple drug possession and antitrust.<sup>200</sup> Further, among those individuals sentenced to a term of imprisonment, the average length of imprisonment for white-collar crimes was 20.5 months, while the average length for E/W crimes was less than 15 months.<sup>201</sup> Rather than imprisoning E/W criminals, courts appear to be placing them on probation and/or ordering them to pay minimal fines.<sup>202</sup> Courts placed slightly more than half of the individuals sentenced for E/W crimes on probation (without imprisonment) and ordered almost 70% to pay a fine and/or restitution, with the combined median amount of payment ordered just \$4,000.<sup>203</sup> Mark Cohen conducted the only complex statistical analysis that focused exclusively on federal environmental crimes.<sup>204</sup> He analyzed cases in which courts sentenced firms for environmental violations between 1984 and 1990.<sup>205</sup> Cohen's effort was part of a larger undertaking by the USSC to fill a gap in the literature on corporate sanctions and to provide empirical support for federal sentencing guidelines for corporate defendants.<sup>206</sup>

Cohen's analysis of corporate fines and total sanctions suggests that whether a crime results in significant cleanup costs is "highly significant."<sup>207</sup> That finding is consistent with the environmental minimi-

cation among those individuals who engage in wildlife crimes such as killing an endangered species or bald eagle.

<sup>198</sup> *Id.*

<sup>199</sup> U.S. SENTENCING GUIDELINES MANUAL ch. 2, pt. Q (compiled with Title 18 of the U.S. Code). Compare 2000 SOURCE BOOK, *supra* note 186, with Cohen, *supra* note 41.

<sup>200</sup> 2000 SOURCE BOOK, *supra* note 186, at tbl. 13.

<sup>201</sup> *Id.*

<sup>202</sup> *Id.* at tbls. 12, 15.

<sup>203</sup> *Id.*

<sup>204</sup> Cohen, *supra* note 40.

<sup>205</sup> *Id.* at 1071-72.

<sup>206</sup> *Id.* at 1071; see U.S. Sentencing Guidelines Manual, ch. 8, pt. D. That portion of the Chapter 8 guidelines that addresses fine levels does not apply to organizations sentenced for environmental crimes as environmental crimes are specifically excluded from their coverage. On November 16, 1993, the Advisory Working Group on Environmental Sanctions submitted to the USSC a set of guidelines that would apply to the sentencing of organizational defendants for environmental crimes. Phyllis J. Newton, *Report from Advisory Group on Environmental Sanctions* (Dec. 16, 1993) available at <http://www.ussc.gov/publicat/ENVIRON.pdf> (last visited Nov. 21, 2002). Congress has yet to act on those guidelines.

<sup>207</sup> Cohen, *supra* note 41, at 1090-91.

zation model. Cohen also observed that the type of crime had an effect on the amount of the sanction that a firm received,<sup>208</sup> with sanctions positively related to hazardous and toxic substance violations and, to a lesser degree, to surface water discharge violations.<sup>209</sup> In addition, Cohen found that courts imposed higher sanctions on a firm when an individual from that firm also was convicted.<sup>210</sup>

Somewhat surprisingly, Cohen found that individual and firm defendants who entered guilty pleas did not receive smaller sanctions than those defendants that were found guilty after a jury trial.<sup>211</sup> Cohen's study also suggests that among those individuals who were convicted, those who falsified tests or were owners or managers of a firm were more likely to receive a jail sentence.<sup>212</sup> Moreover, firm sanctions and the presence of large environmental damages increased the likelihood of those individuals<sup>213</sup> receiving monetary sanctions.<sup>214</sup> Finally, Cohen observed that the amount of the monetary sanction<sup>215</sup> imposed increased with the size of

<sup>208</sup> *Id.*

<sup>209</sup> *Id.*

<sup>210</sup> *Id.* at 1090, 1093. Economic theory suggests that if an employee is fined, the optimal firm sanction will be equal to the harm caused less the employee sanction. On the other hand, if an employee is imprisoned, it will be optimal to impose a fine on the firm that equals the harm "plus the social cost of imprisonment less the private disutility of imprisonment." A. Mitchell Polinsky & Steven Shavell, *Should Employees Be Subject to Fines and Imprisonment Given the Existence of Corporate Liability?*, 13 INT'L REV. L. & ECON. 239, 241 (1993).

<sup>211</sup> Cohen, *supra* note 41, at 1091; *see id.* at 1094.

<sup>212</sup> *See id.* at 1094-95.

<sup>213</sup> Although Cohen's analysis provides considerable insight into the role of criminal environmental sanctions, his data limited the conclusions he was able to draw regarding individuals convicted of environmental crimes. Because the USSC focused on corporate sanctions, only those individuals who were indicted along with a corporate defendant were included within the data set. Thus, no inferences could be drawn regarding those individuals whom the federal government indicted without their corporate employers.

<sup>214</sup> *See* Cohen, *supra* note 41, at 1094-95. In an extension of the present study of venue choice to the realm of individuals, I found the following: (1) individuals from small firms were seven times more likely than those from large firms to be subject to penalty actions; (2) EPA does not pursue individuals affiliated with medium and large firms criminally; and (3) an individual's position within the firm had little influence on venue choice. Firestone, *supra* note 6, at 418-23. Significantly, that study considered individuals without regard to whether their firm affiliates were also the subject of an enforcement action or whether, for that matter, they were even affiliated with a firm. *Id.* With individuals, I found support for social welfare maximization rather than environmental harm minimization in the venue choice decision. *Id.* at 422. While culpability was a statistically significant predictor of venue choice, violation severity and pollutant toxicity were not. *Id.* at 418-19.

<sup>215</sup> In his path-breaking research, Cohen appears to have handled sample selection issues incorrectly, leading to biased estimates. At sentencing, a judge faces two choices. First, a judge must decide whether to impose a particular sanction (*e.g.*, fine or no fine). Conditional on the decision to impose a sanction, a judge must then determine the amount or extent of the sanction (*e.g.*, the size of the fine).

Because those choices depend, at least in part, on the same underlying variables (*e.g.*, RCRA, the amount of damages, whether fraud is present), the two choices are interrelated. As a result, some or all of the unobserved effects that explain the two choices are likely to be correlated, leading to biased parameter estimates. *See generally* James J. Heckman, *Sample Selection Bias as a Specification Error*, 47 ECONOMETRICA 153 (1979). In order to

the firm.<sup>216</sup> However, in a later study of corporate crime where he controlled for the amount of monetary harm, Cohen found no evidence of a "deep pocket" effect.<sup>217</sup>

Hamilton considered how the EPA uses informal rules, such as guidance documents and policy memoranda, to impose more stringent administrative penalties.<sup>218</sup> In his examination of a subset of RCRA enforcement actions conducted between 1981 and 1992, Hamilton found that penalties were negatively related to the cost of compliance and positively related to threats to the environment,<sup>219</sup> providing support for the notion that the EPA is a social welfare maximizer. He also found that EPA levied higher fines in those states whose citizens participated in environmental organizations at greater rates, and in states and congressional districts that had members of Congress who had EPA oversight responsibilities.<sup>220</sup>

Karpoff, Lott, and Rankine examined 283 environmental violations by publicly traded firms from 1980 through 1991.<sup>221</sup> Their sample included investigations as well as administrative, civil judicial, and criminal cases brought by EPA, DOJ, states, local governments, environmental organizations, and individuals.<sup>222</sup> Surprisingly, the authors were unable to explain variation in the penalties based on firm size, legal forum, type of environmental harm, or the party that initiated the action. They did, however, find a statistically significant decrease in a firm's common share value immediately following an announcement of alleged violations and a slightly larger decrease following initial press reports that legal proceedings had been initiated.<sup>223</sup> The authors did not attribute these decreases to expectations of lower profits due to reputational losses, however, because they also observed that share value losses were of a mag-

obtain consistent estimates, one must correct for the sample selection bias. *See generally* Kenneth E. Train & Judi E. Strebler, *Energy Conservation and Rebates in Commercial Food Enterprises*, 69 AM. J. AGRIC. ECON. 106 (1987); Jeffrey A. Dubin & Daniel L. McFadden, *An Econometric Analysis of Residential Electric Appliance Holdings and Consumption*, 52 ECONOMETRICA 345 (1984). Cohen also apparently did not account for the fact that a judge may trade off one sanction (*e.g.*, imprisonment) for another (*e.g.*, a fine). *See* Cohen, *supra* note 41.

<sup>216</sup> Cohen, *supra* note 41, at 1091-92. Individuals in closely held firms, however, are more likely to be convicted. *See id.* at 1094.

<sup>217</sup> Cohen, *supra* note 121, at 409-10.

<sup>218</sup> James T. Hamilton, *Going by the (Informal) Book: The EPA's Use of Informal Rules in Enforcing Hazardous Waste Laws*, in 7 ADVANCES IN THE STUDY OF ENTREPRENEURSHIP, INNOVATION, AND ECONOMIC GROWTH 109-55 (G. D. Libecap ed., 1996).

<sup>219</sup> *Id.* at 149.

<sup>220</sup> *Id.* at 143.

<sup>221</sup> Jonathan M. Karpoff et al., *Environmental Violations, Legal Penalties, and Reputation Costs* (Univ. of Chicago Law School, John M. Olin Law & Economics Working Paper No. 71, 1998) (on file with the Harvard Environmental Law Review).

<sup>222</sup> The sample was obtained through a search of The Wall Street Journal Index. *Id.* at 9.

<sup>223</sup> *Id.* at 24. In contrast, press reports related to settlement of matters were statistically insignificant. *Id.*

nitude similar to that of the legal penalties imposed.<sup>224</sup> This finding differed from an earlier study of criminal fraud, where two of the authors observed significant reputational losses.<sup>225</sup> The authors of the later study surmised that environmental and fraud violations have different effects on reputational losses because while fraud imposes costs on those with whom a firm does business, environmentally harmful activities impose externalities on parties who cannot impose costs on the violating firm.

Finally, a recent study by Kelly Lear-Nordby sheds light on the relationship of administrative fines to firm size, harm caused by violations, and gains obtained by offending firms.<sup>226</sup> She found that for firms whose parent companies are "large" (those with more than fifty employees), firm size significantly and positively influenced the amount of sanction.<sup>227</sup> On the other hand, fines for small firms depended on the expected gain to the violator from noncompliance and on the harm imposed by the violation.<sup>228</sup> Lear-Nordby's small-firm findings are thus consistent with a social welfare maximization model.<sup>229</sup>

Thus, the studies of environmental sanctioning provide some support for both the social welfare maximization and environmental harm minimization models. On the other hand, the fact that the figures compiled by the USSC suggest that judges are loath to incarcerate individuals or to impose substantial fines on them raises the question of whether, as implemented, the costs to the government in terms of the procedural advantages afforded environmental violators in the criminal forum are worth the benefits to the government in terms of enforcing societal norms.

---

<sup>224</sup> *Id.* This conclusion finds support in Kari Jones & Paul H. Rubin, *Effects of Harmful Environmental Events on Reputations of Firms* (1999) (unpublished manuscript) (on file with the Harvard Environmental Law Review). There the authors investigated reputational losses associated with negative environmental events caused by oil firms and electric utilities from 1970 until 1992. Stock returns associated with those events were random and on average equal to approximately zero. *Id.*

<sup>225</sup> Jonathan M. Karpoff & John R. Lott, Jr., *The Reputational Penalty Firms Bear From Committing Criminal Fraud*, 36 J.L. & ECON. 757 (1993).

<sup>226</sup> Kelly Lear-Nordby, *An Empirical Examination of EPA Administrative Fines* (Jan. 1999) (unpublished manuscript) (on file with the Harvard Environmental Law Review). She examined 158 cases in which EPA imposed an administrative fine in 1995. *Id.*

<sup>227</sup> *See id.* at 24–25.

<sup>228</sup> Lear-Nordby used two proxy measures for harm: the statute invoked and the level of hazard posed by the pollutant in question. *See id.* at 25.

<sup>229</sup> *But see* John Lynxwiler et al., *Determinants of Sanction Severity in a Regulatory Bureaucracy*, in *CORPORATIONS AS CRIMINALS* 147 (Ellen Hochstetler ed., 1984) (finding that the amount of the sanction decreased with firm size when the authors analyzed administrative sanctions under the Surface Mining Control Act). It should be noted, however, that the Occupational Safety and Health Administration ("OSHA"), rather than EPA, administers the Surface Mining Control Act. The inconsistency between Lynxwiler's and Lear-Nordby's findings thus may be due to different cultures at EPA and OSHA. Moreover, the studies, having been conducted more than a decade apart, may be capturing different general regulatory climates.

## V. EMPIRICAL EVIDENCE OF EPA ENFORCEMENT CHOICE

A. *Description of the Sample and Population of Violators*

This Section of the empirical results lays the groundwork for the more complex statistical analysis to come. This Section discusses how and why the sample was selected in the manner chosen, introduce the variables analyzed, and provides some descriptive statistics (means, standard errors, and percentages) of the population of violators and violations.

For this study, I analyzed the choices available to EPA to penalize violators under the CAA, CWA, and RCRA. I chose these statutory regimes for two reasons. First, they are the major statutes that regulate the environmental management practices of business and individuals in the United States. Second, for each statute I was able to draw and analyze a sufficient number of cases in each enforcement forum. In contrast, regulation is less ubiquitous and case diversity more limited under the Toxic Substances Control Act ("TSCA"),<sup>230</sup> the Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA"),<sup>231</sup> and the Emergency Planning and Community Right-to-Know Act ("EPCRA").<sup>232</sup> In addition, I chose not to focus on violators whom EPA had targeted primarily under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA" or "Superfund")<sup>233</sup> because most CERCLA cases are premised more on the notion of restitution than punishment. Moreover, CERCLA does not directly regulate conduct; rather, it addresses site cleanup.<sup>234</sup>

Because this research focuses on the interaction between EPA and the community it regulates, I did not examine those criminal matters that were investigated solely by agencies other than EPA, such as the Federal Bureau of Investigation. In addition, I excluded civil judicial penalty or administrative penalty cases for which there is no corresponding criminal penalty and vice versa.<sup>235</sup> Administrative penalty cases were drawn from those cases listed in the EPA civil docket or in one of the three program-specific databases. The civil judicial population was drawn from the EPA civil docket, and the criminal population from the EPA criminal database.<sup>236</sup> To be included in the population of sampled cases, a case had to

---

<sup>230</sup> 15 U.S.C. §§ 2601–2692 (2000).

<sup>231</sup> 7 U.S.C.A. §§ 136–136y (West Supp. 2002).

<sup>232</sup> 42 U.S.C. §§ 11001–11050 (2000).

<sup>233</sup> 42 U.S.C.A §§ 9601–9675 (West Supp. 2002).

<sup>234</sup> *Id.*

<sup>235</sup> Omitted cases include bankruptcy actions, judicial actions to enforce requirements specified in a previously entered judicial order or decree, violations under the leading underground storage tank portion of RCRA that are not subject to criminal sanctions, and criminal CRC-importation cases.

<sup>236</sup> The EPA civil docket and the program-specific database were accessed through



have been initiated during fiscal years 1990 to 1997 and entered into an EPA database by March 1998; contained at least one count under the CAA, CWA, or RCRA; and been amenable to enforcement under administrative, civil judicial, and criminal authorities. After eliminating cases that were listed more than once on a given list as well as administrative cases that EPA entered in both the docket and a program database, as well as grouping related cases,<sup>237</sup> I was left initially with a population of 411 criminal, 785 civil judicial, and 3465 administrative cases.<sup>238</sup> The cases were then stratified (by enforcement forum and EPA region), and a random sample of cases without replacement was selected. Each case is itself a cluster of violators.<sup>239</sup>

For each case, I attempted to obtain from EPA, DOJ's Environment and Natural Resources Division, or the Executive Office of United States Attorneys, as appropriate, documents such as complaints, indictments, and plea agreements. From those documents, I extracted information on the nature of the violator and offense. This information added

---

EPA's multimedia data system, Integrated Data for Enforcement Analysis ("IDEA"). The program-specific databases are the CAA Air Facility Sub-system ("AFS"), the RCRA information system ("RCRA Info"), and the CWA Permit Compliance System ("PCS"). The criminal database is known as the criminal docket system. See EPA, *Compliance and Enforcement Data Systems*, <http://www.epa.gov/compliance/planning/data/index.html> (last visited Oct. 19, 2002) (on file with the Harvard Environmental Law Review).

<sup>237</sup> At times, EPA lumped violations from multiple facilities into one case. For example, EPA brought one enforcement action against a firm for violations at eighteen of its facilities. On the other hand, when the government pursued a firm for oil dumping violations, it filed two separate actions, one of which also included a second defendant, on the same day in the same court. In both situations, I counted the action as one case, but reviewed all relevant pleadings.

<sup>238</sup> The number of administrative cases is an estimate. A complete and detailed review of the administrative cases that I selected revealed several cases that entered on both the docket and the program database. The cases thus had an increased chance of selection, although no case was selected twice. Some duplication was inevitable given missing data in the EPA databases and the fact that EPA uses different dates, identifiers, and names as key indicators in each of its databases. Moreover, EPA does not follow rigorously any standard data entry protocol on any given individual list. Based on the number of duplications discovered I adjusted the total number of administrative cases for weighting purposes.

<sup>239</sup> The analysis accounts for the complex sampling design (a combination of stratification and cluster sampling); weighing adjustments alone does not account for sampling strategy. For example, one would expect that two violators charged in the same case (cluster) share substantially more in common with one another than two violators in separate cases. Cluster sampling thus has the tendency to increase standard errors. Breaking a sample into subpopulations (e.g., EPA regions) called strata and then selecting a separate sample within each stratum has the opposite effect on standard errors provided that the strata are homogeneous and the means of the variables of interest differ among strata. Failure to account for stratification and cluster sampling will not affect point estimates provided a weighting variable is used, but will affect standard errors and hence significance tests. See Leslie Kish, *SURVEY SAMPLING* 21, 75-77, 84, 148-51, 161-64 (1965). Stratification is often used with cluster sampling because of its countervailing effect on standard errors. *Id.* at 164-66. Although it would have been preferable to select violators rather than cases, such a strategy would have substantially increased the amount of information to be collected and the burden placed on federal government agencies to respond to information requests.

significantly to the information contained in EPA's databases and facilitated the correction of errors in those databases. Upon review of the documents, I excluded states from further consideration if they were joined in the litigation as a matter of law.<sup>240</sup> If primary documents for a given violator were not readily available, I also excluded that violator from the empirical analysis.<sup>241</sup> The data set for analysis comprises documents in 325 cases, of which 266 have one or more organizational violators. Of the 266 organizational-violator cases, 107 are administrative, 106 civil judicial, and 53 criminal. The 266 cases have 337 organizational violators.

Table I contains variable names and descriptions.<sup>242</sup> These variables allow an explicit test of the environmental harm and political support maximization models. Other behavioral models were not tested either due to lack of data (e.g., data on firm abatement costs of each violation or a proxy measure thereof would be required to explicitly test the social welfare maximization model) or due to the inapplicability of the model (e.g., case maximization) to venue choice. Some conclusions regarding the other models (e.g., violation minimization and social welfare maximization) are nonetheless drawn implicitly from the results.

Turning first to the issue of enforcement targets, EPA pursued almost 15% of all violators criminally, yet handled only 9% of all cases criminally. This suggests that, on average, a criminal matter is more likely than a civil matter to have multiple violators. Firms were the most prevalent targets of EPA enforcement in the sample; however, individuals dominated the criminal forum. Indeed, while firms comprised approximately 67% of the overall number of enforcement targets, when one considers only the criminal forum, individuals comprised approximately 67% of the defendants. Government-entity violators represented slightly more than 11% of the total violators, and EPA targeted most of them administratively. In contrast, although small firms make up approximately 40% of the organizational violator targets, they make up a disproportionate share (more than 60%) of the organizational violator criminal targets.

Table II contains population means and standard errors by enforcement forum for several variables. A number of items stand out. First, the means and standard errors of per capita income ("PCI") are remarkably consistent across enforcement fora. This suggests that as far as enforcement choice is concerned, EPA's actions do not present "economically

---

<sup>240</sup> See, e.g., 42 U.S.C. § 1319(e) (2000).

<sup>241</sup> In addition to offices failing to locate documents, six of the sixty three U.S. Attorneys Offices failed to produce documents within more than a year and a half. The six districts (and their associated EPA Region) for which I did not receive documents are: the District of Connecticut (Region 1); the Southern District of New York (Region 2); the District of Maryland (Region 3); the Eastern District of Missouri (Region 7); the District of Nevada (Region 9); and the Western District of Washington (Region 10).

<sup>242</sup> Further detail on the construction of these variables can be found in the Appendix, *infra*.

based" environmental justice concerns. Turning to county unemployment rates, there is a great disparity between the mean in the administrative venue (13.4%) and the means in the civil judicial and criminal venues. At first glance, this suggests that EPA may have forgone the use of more potent enforcement tools in economically depressed areas. However, because of the large standard error associated with the administrative venue (6.5), the disparity might not be statistically significant when complex modeling is undertaken. EPA appears to have used toxicity to distinguish among fora, having reserved civil judicial enforcement for the most toxic substances and administrative enforcement for the least. Finally, the data indicate that on average civil judicial matters took at least 50% longer to resolve than either administrative or criminal matters.

Table III presents a case-level view of the types of violations found in the sample by enforcement forum. If one assumes that violation severity increases as one moves from a "level 0" to a "level 7" violation, the results indicate that, as a general matter, EPA was more likely to pursue cases in court and in the criminal forum as violations became more serious. Using the zero to seven scale, the "average" violation per enforcement forum is 3.50 for administrative, 4.37 for civil judicial, and 5.93 for criminal enforcement. However, even in those instances when a case involved the spilling or other uncontrolled release of pollutants into the environment (Violation 7), EPA chose administrative enforcement more than 50% of the time.

### *B. General Models of EPA Enforcement Choice*

With the descriptive statistics as a backdrop, we now turn to complex modeling.<sup>243</sup> I first consider a series of models that compare the likelihood of criminal versus civil enforcement (a "logit" model). Because there may be differences among civil judicial and administrative enforcement, I then examine a series of models that make pairwise comparisons among administrative, civil judicial, and criminal enforcement.

#### *1. Criminal to Civil Judicial Comparison.*

Table IV contains results of a statistical model of the likelihood of criminal enforcement.<sup>244</sup> It compares the likelihood of criminal enforce-

---

<sup>243</sup> Complex modeling that involves multiple independent variables—in the present context, those variables such as pollutant toxicity that may help to explain EPA's venue choice—allows one to examine the effect of any given independent variable on the variable of interest, holding all other independent variables constant.

<sup>244</sup> This type of model, where the variable of interest—that is, the dependent variable—is assigned, for example, a "1" if a violator was charged criminally and a "0" if charged civilly, is known as a logit model.

ment to civil enforcement. Four models are considered: constrained,<sup>245</sup> environmental harm minimization, political support maximization, and full.<sup>246</sup> Although each of the models has at least some statistical support, as evidenced by the fact that each is significant at the 1% level, none of the political variables are significant in the political model at even the 10% level.<sup>247</sup>

Focusing first on the constrained model, EPA was less likely to criminally charge the largest firms ("500") and government bodies than small firms (the excluded violator category).<sup>248</sup> Indeed, the odds of EPA charging an organization criminally decreased by 90% when the organization was a government entity rather than a small firm, holding all other variables constant, while the odds decreased by 68% for the largest firms.<sup>249</sup> EPA also was less likely to criminally charge medium-sized firms than small firms. However, that the absolute value of the coefficient on MEDIUM is smaller than the absolute value of the coefficients on 500 or GOV implies that the odds of criminal prosecution of medium-sized firms were greater than the odds of criminal prosecution of the largest firms or of government entities. In contrast to 500 and GOV, both of which are highly significant, MEDIUM is only significant at the 10% level. As mentioned previously, the mere fact that small and large firms are treated differently does not necessarily mean that EPA is motivated by political considerations. Indeed, the addition of other variables to the model supports other conclusions.

The environmental model fits the data quite well. All of the environmental variables have the expected signs and are significant at the 5%

<sup>245</sup> The constrained model contains only organizational size/type and environmental medium variables. It is constrained in that it does not include any environmental or political variables. The primary motivation for the constrained model was to create a model to which to compare the other models, rather than to create a properly specified model.

<sup>246</sup> The full model contains variables from the constrained, environmental, and political models.

<sup>247</sup> The level of significance is the probability of committing a Type-I error—that is, the probability of falsely rejecting a null hypothesis (null hypothesis = no significance) that is in fact true. Thus, if a coefficient (or a series of coefficients) is tested at the 1% level, an otherwise insignificant coefficient will be incorrectly found to be significant only one out of one hundred times.

<sup>248</sup> When there are multiple categories that are exclusive (i.e., an organizational entity can be a 500 firm, medium firm, small firm, or government entity, but cannot fall within more than one of those categories), the model requires that one of the categories in the comparison group be excluded. For firm/size type, the excluded category is small firms; for environmental media, CAA; and for the violation severity, VIOLMAJ (major violations). Thus, the value presented in the table for government bodies in the constrained model (-2.332) in Table IV is a comparison between government bodies and small firms. These figures can be interpreted by converting the logit (the log of the odds) to the odds. See *infra* note 249.

<sup>249</sup> The logit is the log of the odds of criminal prosecution compared to civil enforcement. The exponential of a coefficient is simply the odds. See J. SCOTT LONG, REGRESSION MODELS FOR CATEGORICAL AND LIMITED DEPENDENT VARIABLES 79-82 (1997). Thus,  $e^{-1.146} = .318$ .  $1 - .318 = .682$  or 68%.

level. The environmental variables also add significant explanatory power to the model based on the difference between the Pseudo  $R^2$ —a measure of the degree of association between the variable of interest (here, the likelihood of criminal prosecution) and the explanatory variables (e.g., firm size, statute invoked, environmental)—of the constrained model and that of the environmental model.<sup>250</sup> The data thus provide support for the theory that EPA is an environmental harm minimizer, and perhaps, more importantly, suggest that EPA's enforcement arm is aligned with its regulatory arm.

The data also provide evidence that small firms engage in different types of violations than larger firms. MEDIUM is no longer significant even at the 10% level when the environmental variables are added to the model and the absolute value of its coefficient is closer to zero. Moreover, substituting the variable LARGE—a composite of 500 and MEDIUM—for those two variables in the environmental model provides additional support: when comparing the constrained to the environmental model, the absolute value of the coefficient on LARGE becomes closer to zero (from 0.88 to 0.54) and the level of significance changes from .011 to .15. The fact that small firms engage in different types of violations than large firms suggests that firm technical and financial resources play a part in violations. This result argues for policies that are geared toward small firm technical assistance and the provision of loans to those firms to implement prophylactic environmental measures.

The data do not appear to provide support for the political support maximization model. Indeed, a joint test of significance supports a finding that all of the political variables in the political model are equal to zero. When the variable GREEN (state-level conservation group membership) was added to the model,<sup>251</sup> a test of the model continued to find that the political variables jointly lack significance. Moreover, by itself, GREEN is not significant at even the 10% level. Furthermore, the fact that the variable measuring per capita income effect ("LOGPCI") is not significant implies that EPA enforcement choice does not implicate economic-based environmental justice concerns.

There is one surprising aspect in the full model: the variable HAPP9597 (a dummy variable that measures the number of members

---

<sup>250</sup> All Pseudo  $R^2$ 's reported in Table IV (and in Table V) were generated from models that took into account sample weights but that did not adjust for the complex survey design. Although it would have been preferable to report Pseudo  $R^2$ 's from the models set forth in the Tables, the software did not provide for the capability explicitly. The models employed for this purpose have identical coefficients but different standard errors than models presented in the Tables. For the environmental model at issue, the standard errors are generally between 1 and 10% larger when failing to adjust for the survey design.

<sup>251</sup> Because GREEN is at best significant at the 10% level in all models run as part of this research, and its inclusion would have required the exclusion of a number of observations due to missing data, the models that are presented in table form do not contain the variable GREEN. The variable GREEN's significance is nonetheless reported in the text.

from a state's congressional delegation that sat on the House Appropriation Subcommittee having jurisdiction over EPA's budget during the year in which EPA initiated a case) is significant at the 1% level, but the sign of its coefficient is in the opposite direction from that predicted by the political model. Indeed, given the "Republican Revolution," HAPP9597 (the Gingrich Congress variable) is the one political maximization variable that one might expect to have a negative and significant effect on EPA enforcement. HAPP9597 thus could be masquerading as a regional or state effect, or it could be that EPA responded to its critics by taking them head on.

The results presented here thus contrast with the air and water targeting studies of the steel and pulp and paper industries that found support for both the environmental harm and political support models. It may be that those prior studies were too narrowly focused to generalize their results. Alternatively, it may not be correct to view monitoring and enforcement as two sides of the same coin. Indeed, while monitoring is primarily a field activity directed by engineers and other EPA scientists, lawyers drive enforcement. Lawyers tend to be more removed from the communities and the public than field personnel and, thus, perhaps less susceptible to community pressures. Moreover, to the extent enforcement personnel see themselves as enforcing social norms associated with pollution, they may be less susceptible to congressional influence than field personnel.

Next, I combined all firms together into one variable, FIRM, and rerun the model. With this model, EPA remained significantly less likely to pursue government entities than firms criminally. Exactly why EPA treats governments differently than firms is unclear because of the very small number (two) of governments subject to criminal sanctions in the sample. The small number of governments prosecuted criminally suggests that a positive bias in favor of governments may exist or, more realistically, that EPA treats governments differently than firms because they are in fact different (e.g., in the CWA context they are both a regulator and regulatee).

## 2. *Criminal to Civil Judicial to Administrative Comparison*

In order to gain additional insight into EPA's behavior, the civil forum was divided into administrative and civil judicial venues and then the choice among the three enforcement fora estimated simultaneously.<sup>252</sup>

---

<sup>252</sup> This model, which is comprised of a series of pairwise comparisons (e.g., criminal to civil judicial enforcement), is known as a multinomial logit model. With multinomial models there is a concern that choice between any two categories may not be independent of the other choices. In other words, using the present research as an example, it is important that the comparison between administrative and civil judicial fora remained invariant whether or not the criminal choice existed. I employed the Hausman test of the independence of irrelevant alternatives ("IIA") to test this proposition. Low  $\chi^2$  values suggest that

Table V presents those results. Table V-A compares administrative to civil judicial enforcement while Table V-B compares criminal to civil judicial enforcement.

Considering first the constrained model, EPA differentiated little between violator types when deciding whether to enforce administratively or civil judicially. This implies that violator characteristics play little role in EPA's decision to shed the comfort and control of the administrative forum for the more public drama of the judicial forum. On the other hand, consistent with the results from the earlier comparison between criminal and civil enforcement, EPA was significantly less likely to target large- and medium-sized firms and government entities than small firms for criminal as compared to civil judicial enforcement.

The addition of the environmental variables had little effect on the odds of criminal prosecution of very large firms, as the coefficient and standard error in the environmental model on 500 are very similar to those obtained in the constrained model.<sup>253</sup> When the variable OIL<sup>254</sup> was added to the model, the natural log of the cumulative toxicity of the substances involved was no longer statistically significant in the comparison between criminal and civil judicial enforcement, but remained highly significant in the administrative-to-civil-judicial-enforcement comparison. OIL is positively and significantly related to the filing of criminal charges rather than a civil judicial complaint. The variable CULP was then replaced

---

the multinomial model is appropriate. Although negative  $\chi^2$  alues are possible, the Hausman test does not work with negative values. Using another test method in those instances when  $\chi^2$  values were negative, Jerry Hausman and Daniel McFadden, *Specification Tests for the Multinomial Logit Model*, 52 *ECONOMETRICA* 1219 (1984), found that in each instance IIA was not violated.  $\chi^2$  values are reported in Tables V-A and V-B. In general, the multinomial models performed quite well, the one exception being the constrained model comparison between criminal and civil judicial enforcement.

I also attempted to construct a nested logit model. In the present context, one might assume, for example, that EPA first makes a choice between civil and criminal enforcement and then, assuming it chooses the civil option, makes a choice between administrative and civil judicial enforcement. In other words, one might assume that the choice is nested. Although it is theoretically possible to run a nested logit model when one focuses on individual characteristics (*e.g.*, pollutant discharged) rather than attributes of the choice (*e.g.*, cost of bringing a case in a particular forum), nested logit capability is primarily geared toward the latter. As a result, those models would not converge, and I was left with the multinomial option. However, as mentioned above, the Hausman specification test suggests that the multinomial models performed well. *See id.*

<sup>253</sup> However, when the variable LARGE was substituted for 500 and MEDIUM, the coefficient on LARGE changed from -1.12 to -0.89 and its level of significance changed from 1% to 5% when the environmental variables were added to the model. This suggests that when the environmental harm of the violation is controlled for, the size of the firm, while still a significant predictor, has less influence on the choice between the civil judicial forum and the administrative forum.

<sup>254</sup> A test with the variable OIL was included in light of the fact that, while EPA generally sought to penalize organizations for violations involving "categorical pollutants"—those pollutants that EPA singled out for special regulation under the CAA and CWA—civilly, it handled approximately 15% of cases involving oil criminally. *See infra* Appendix, Table I.

with a more circumscribed measure of culpability, CULP2.<sup>255</sup> This new variable was not a statistically significant predictor of the choice between civil judicial and administrative enforcement. Culpability thus appears to have its greatest influence on the criminal civil judicial divide, while toxicity does a better job of demarcating the administrative civil judicial fault line. Having culpability distinguish between civil and criminal enforcement is consistent with the notion that criminal law is meant to punish those with a guilty mind.

The political model has significantly less explanatory power<sup>256</sup> than the environmental model and has some variables with signs that are inconsistent with theory. However, in contrast to the model that compared criminal to civil enforcement discussed earlier, a test of the political variables does not find that they jointly lack significance. This is not surprising given that in the present model the unemployment rate is a statistically significant predictor of civil judicial enforcement compared to administrative enforcement. It bears mentioning, however, that the coefficient on UNEMP (.004) is quite small and thus the odds of civil judicial treatment only increase by 0.4% for every 1% increase in the unemployment rate.<sup>257</sup>

Table VI presents predicted probabilities for the constrained and environmental models assuming that the type of organization at issue changes from the percentage in the population to one hundred percent of the organizational violator population. Thus, PSAMPLE2 is the predicted probability of criminal prosecution given the present distribution of organizational types, while PGOV0 is the predicted probability of administrative enforcement assuming all of the organizational violators were government bodies, when holding all other variables constant. Predicted probabilities are an alternative way of examining the data and allow one to predict the mix of administrative, civil judicial, and criminal cases if, for example, EPA only pursued government violators or small firms.

Several observations deserve mention. To begin with, differences between the predicted probabilities of criminal prosecution of small firms and the other organizations narrow when the variables that serve as a proxy for environmental harm are added—that is, as one moves from the constrained to the environmental model. This suggests that the detected violations of small firms are more harmful or potentially more harmful than those committed by large firms.

Looking specifically at the environmental model, the difference between small (.0678) and medium (.0654) firm predicted probabilities of

---

<sup>255</sup> CULP2 includes only dumping, failure to report, and discharge in the face of an order or notice of violation (“NOV”). See *infra* note 272.

<sup>256</sup> This is evident from a comparison of the two models’ Pseudo R<sup>2</sup>s. See *infra* Appendix, Table V-A.

<sup>257</sup> In addition, conservation group membership level is not statistically significant in either comparison. See *infra* Appendix, Table V-5.



criminal enforcement is negligible. There also is a large shift in the predicted probability of administrative enforcement for medium-sized firms from the constrained model (.7428) to the environmental model (.6953). In contrast, the predicted probability of administrative enforcement in the environmental model for each of the other entities is at least .7600. The administrative enforcement difference between small and medium firms may have arisen as a result of EPA's judgment that given meager small firm resources to address underlying violations, pursuit of small firms in a civil court was not a wise expenditure of EPA and small firm resources. On the other hand, the large/medium firm difference in conjunction with the political model's lack of explanatory power suggests that firm technical and legal resources also play a role in EPA's venue choice.

### *C. Fiscal Year, Regional, and Environmental Medium Effects*

To gain further insight into EPA enforcement choice, I also examined fiscal year, regional, and environmental effects. In short, the analysis indicates that there is a large-firm effect for the second half of the study period, but not for the first; that there is only limited variation among EPA regions; and that EPA has adopted different enforcement strategies in each of the programs studied.

#### *1. Fiscal Year Effects*

Given changes in the economy and in the executive, legislative, and judicial spheres of government over time, it is possible that enforcement choice might vary over the course of the study. Looking at the data, the only easily identifiable and discernable fiscal year trend is that the number of overall organizational violators peaked in 1994 (17.2% of all defendants during the eight-year period compared to an average of 12.5%). Indeed, overall enforcement in 1997 (7.9% of all cases during the eight-year period) was only slightly above 1990 levels (7.8%). Because administrative matters represent the lion's share of penalty cases commenced, year-to-year shifts reflect in part the ebb and flow of administrative enforcement. For example, in fiscal year 1994, EPA commenced 535 CAA, CWA, and RCRA administrative penalty actions (against organizations and individuals), compared to only 329 in 1996.<sup>258</sup>

To analyze further fiscal year effects, complex modeling was employed. The variables MEDIUM and 500 first were aggregated into one variable, LARGE, and then an interaction term, LARGE $FY_i$ , was created.<sup>259</sup> This revealed that during the eight-year study period, the overall

---

<sup>258</sup> EPA, ENFORCEMENT AND COMPLIANCE ASSURANCE ACCOMPLISHMENTS REPORT, FY 1996 (1997).

<sup>259</sup> With the interaction term, the variable LARGE97 would be assigned a "1" if the violator was a large firm and the enforcement action commenced in fiscal year 1997, and

trend was for EPA to increase the proportion of penalty enforcement actions against large organizational violators. A model measuring the likelihood of criminal prosecution was then constructed, as seen in Table VII.<sup>260</sup>

Interestingly, there was no large-firm effect for the 1990 to 1993 time period. However, for the time period from 1994 to 1997, being a large rather than small firm decreased the odds of EPA criminal pursuit by 76%.<sup>261</sup> The fiscal year effect could be attributed to a number of factors, including political considerations (such as an administration's desire to curry favor with large donors); learning on behalf of EPA; a new approach toward compliance among large firm; greater sophistication among large firms in hiding "knowing" violations; EPA compliance incentive policies (e.g., the audit policy); and/or the overall fiscal-year trend of increasing proportions of cases filed against large firms. To the extent learning occurred as EPA brought enforcement actions, one must be concerned with the potential that observations are confounded with one another. Any confounding, however, is likely to be insignificant in this study.

First, in each enforcement forum, EPA "prevailed" in some sense of the word; that is, in most cases a penalty of some amount was imposed on the violator(s). Indeed, EPA resolved the large majority of cases, whether administrative, civil judicial, or criminal, by either a settlement or plea. Second, in the criminal sphere, ninety-four semi-autonomous U.S. Attorneys Offices handled cases so that any one office was unlikely to have handled many environmental criminal cases. Indeed, the comparatively small overall total of criminal cases over the eight-year study period—a period that included a change in the President and thus a likely change in each of the ninety-four U.S. Attorneys—did not provide much opportunity for learning. This is particularly true in light of the fact that the criminal program is still very young.

To the extent EPA has learned from litigation in the criminal arena when pursuing organizational violators, that learning has occurred in the context of knowing endangerment counts.<sup>262</sup> EPA, however, did not learn from *Villegas* and similar judicial decisions whether it should file a case criminally. Rather, EPA learned that adding a knowing endangerment

"0" otherwise; the variable LARGE96 would be assigned a "1" if the violator was a large firm and the enforcement action commenced in fiscal year 1996; and so on. See *infra* Appendix, Table I.

<sup>260</sup> The model contains the variables LARGE, FY9497 (which is a dummy variable assigned a "1" if the case was initiated during fiscal years 1994–1997 and "0" otherwise), and LARGE47, an interaction term between LARGE and FY9497.

<sup>261</sup> This calculation requires the creation of variable that is a linear combination of the variables LARGE and LARGE47. This combination is statistically significant at the 1% level. See *infra* Appendix, Table VII.

<sup>262</sup> See, e.g., *United States v. Villegas*, 784 F. Supp. 6 (E.D.N.Y. 1991), *conviction rev'd on other counts sub nom. United States v. Plaza Health Labs., Inc.*, 3 F.3d 643 (1993).

count to a knowing felony indictment likely spelled more trouble than it was worth. In other words, EPA's "education" did not suggest that it should change the mix of cases or refrain from filing any criminal charges for a given violation. Given that confounding is unlikely, policymakers need to take into account the observed fiscal year effect because it suggests that equity concerns—that is, failing to treat large and small firms alike—are increasing rather than decreasing and that large firms may not be receiving appropriate deterrent signals.

## 2. Regional Considerations

In light of the delegation of authority from EPA Headquarters in Washington, D.C., to EPA regional offices, and the relative autonomy under which those regional offices function, it is conceivable that regional variations in enforcement may exist and, thus, merit study. However, because regional variables by themselves will only highlight regional differences in the propensity to use administrative, civil judicial, and criminal tools without providing any insight into the intra-forum mix of cases, the models considered use variables that are a composite of the variable LARGE and regional variables.<sup>263</sup>

Not surprisingly, there is variability among regions in the proportion of organizational cases in which LARGE violators were pursued. The proportions range from .021 in the Pacific Northwest (Region 10) to .081 in the Rust Belt (Region 5). However, when one considers more complex statistical models that incorporate venue choice, a substantial amount of uniformity among regions is seen, although there is some support for the proposition of regional variation. Regions 6 (Dallas) and 9 (San Francisco) in particular appear to be outliers. Region 6 was less likely than several other regions to have pursued large firms criminally while Region 9 was significantly less likely to have pursued large firms administratively than six other regions.

In sum, although there is a substantial amount of uniformity among EPA regions, there is support for the proposition of regional variation. Regions 6 and 9 in particular appear to be outliers.

## 3. Environmental Medium-Specific Effects

Looking back to Tables IV and V, it is apparent that firms pursued under RCRA or CWA are significantly more likely than those pursued under the CAA to face criminal charges. We can gain additional insight

---

<sup>263</sup> Given that there are ten EPA regional offices, the variables MEDIUM and 500 were aggregated into one variable—LARGE. See *supra* note 83 for a breakdown of states into EPA regions.

into EPA program-specific enforcement if we disaggregate the data by statute and consider environmental medium-specific effects.

Turning first to descriptive statistical data, a number of environmental medium-specific trends are apparent. First, EPA invoked only one statute in most cases and did not pursue multimedia enforcement in the administrative venue. This does not necessarily mean that the existence of violations across environmental media "caused" EPA to file a matter in a judicial forum. Rather, once EPA decided to proceed in a judicial forum, it may have sought to charge violators with any and all violations.

Second, EPA conducted more than half of its enforcement actions administratively, regardless of environmental medium or violator type/size.<sup>264</sup> Given that EPA pursued almost all RCRA enforcement actions against organizations administratively (87%) or criminally (8%), with the substantial portion of those cases being administrative, overall RCRA enforcement appears consistent with a violation minimization strategy. In contrast, overall CWA enforcement is relatively balanced while CAA enforcement is substantially skewed toward civil enforcement.

Third, given local government's leading role in the treatment of water pollutants through the ownership and operation of POTWs, not surprisingly, EPA directed a substantial percentage (25%) of its total CWA organizational violator penalty actions against government entities. In contrast, EPA brought less than 2% of similar CAA penalty violations against governments.

Fourth, although small firms were EPA's most prevalent targets under the CAA and CWA, medium firms assumed that role in RCRA enforcement. Fifth, EPA commenced approximately 70% of all CAA and RCRA criminal actions against small firms compared to just less than 60% of all CWA criminal actions. Finally, in the sample selected, EPA did not initiate a single CAA criminal action against a government entity or one of the largest firms.

To gain additional insight into medium-specific effects, I constructed separate models for CWA, CAA, and RCRA enforcement. With CWA enforcement, EPA's enforcement choice does not show evidence of firm-size effects, although governments appear less likely to have been subjected to criminal enforcement than firms. The CWA environmental model fits the data well whether or not the variable OIL is included. OIL is positively and significantly related to the likelihood that EPA commenced a criminal action. In sum, CWA enforcement is not only balanced among the three enforcement venues,<sup>265</sup> but treats all firms in a similar manner.

---

<sup>264</sup> See *infra* Table VIII.

<sup>265</sup> See Table VIII.

Because the variables 500 and GOV perfectly predict that EPA handled a CAA matter civilly,<sup>266</sup> all the non-small firm CAA violators were lumped into one category. With the CAA environmental model, the environmental variables from the earlier aggregated models (that is, measures of culpability, toxicity, and violation severity) have little explanatory power in the face of two new variables: AIRCAT, which measures whether a categorical air pollutant is present, and ATTAIN, which measures whether the categorical pollutant was present in an area where air pollution levels exceed national ambient air quality standards for the particular pollutant at issue.<sup>267</sup> The newly added variables perform well, have the expected signs, and are each statistically significant at the 1% level. Because the goal in nonattainment areas is to avoid further air quality deterioration and improve air quality, EPA would be expected to direct more stringent enforcement into those areas to the extent that the environmental harm minimization model holds true.

Finally, the RCRA model provides substantial support for environmental harm minimization. In fact, violation severity is a perfect predictor of criminal enforcement. In addition, the variable CULP has the proper sign and is statistically significant at the 1% level. Finally, small firms had a significantly greater probability of being the targets of RCRA criminal enforcement than other organizational violators.

Although EPA has apparently aligned its enforcement of the CAA and RCRA against firms in the right direction by emphasizing the minimization of environmental harm, firm-size disparate treatment and the unbalanced nature of its enforcement under those statutory regimes raise this question: What is different about the CWA? Under the CWA, Congress has required a discharger to obtain an operating (discharge) permit since the 1972 amendments. A permit details the specific levels or rates at which a permittee may discharge particular pollutants. Because a permittee also is required to file monthly discharge monitoring reports, regulators can determine compliance easily. In contrast, regulation under RCRA is primarily based on status—whether someone is a generator, transporter, owner, or operator—while regulation under CAA historically was based in large part on whether a discharger violated ambient air standards under a state implementation plan.

Only with the 1990 amendments to the CAA did Congress expand the federal permitting role beyond new source construction to operation of sources, be they new or existing. Given the lag time between congressional action and EPA rule promulgation, among EPA rule promulgation, state delegation, and policy implementation, and between violation and

---

<sup>266</sup> All inter-firm conclusions are tempered by the fact that, of 114 unique CAA organizational violators, only 6 were addressed criminally (4 small firms and 2 medium firms).

<sup>267</sup> Given that AIRCAT pollutants have no toxicity score assigned to them, not surprisingly, LOGTTOX in the presence of AIRCAT is not statistically significant.

enforcement, it would not be surprising to find that this policy change had little effect on the cases in this study. It thus appears that a more tightly controlled permit process along the lines of CWA permitting facilitates the discovery and proof of knowing violations on behalf of large firms.

## VI. CONCLUSIONS

Overall, the evidence presented here is encouraging. In its choice of enforcement venue under the CAA, CWA, and RCRA, EPA appears to be motivated by a desire to minimize environmental harm and maximize social welfare. Conversely, there is little evidence that EPA is motivated by a desire to maximize political benefits. Importantly, EPA's enforcement choice does not implicate socioeconomic-based environmental justice concerns as evidenced by the lack of significance of community per capita income.

To the extent a cautionary note can be sounded with regard to EPA enforcement, that note implicates fairness. The evidence indicates that federal regulators target small firms for criminal prosecution because the detected violations of small firms are more harmful or potentially more harmful than those committed by large firms. However, even after accounting for the harm of the violation, small firms remain more likely than large firms to face criminal sanctions. Indeed, after taking into account the harm of the violation, the probability of a small firm facing a criminal sanction is still twice as great as that of a large firm.<sup>268</sup> This finding suggests that factors other than the desire to minimize environmental harm influence EPA's allocation of resources. One factor appears to be the statutory regime under which a violator is charged. Although EPA allocates its enforcement resources under the three statutory regimes studied in a manner that minimizes environmental harm, unlike its enforcement of the CAA and RCRA, EPA's enforcement of the CWA does not result in firm-size disparities.

Fairness dictates that the government should not reserve the criminal forum for small firms unless there is some clear ethical justification to do so. For example, one might be able to justify disparate treatment based on firm size if the criminal sanctions imposed on large firms are greater than those imposed on small firms for similar violations. In such circumstances, large firms may be receiving a similar message of deterrence as their small firm counterparts. By raising the specter of unfairness, I am not suggesting that EPA and DOJ enforcement personnel are doing anything improper. Indeed, practical considerations likely play a role in creating this disparity. Such considerations include the greater difficulty of proving a knowing violation against a large firm given the embedded na-

---

<sup>268</sup> See *infra* Table VI.

ture of large-firm violations as well as the technical and legal resources employed by large firms that in many instances allow large firms to avoid the most patently notorious violations and to stave off indictment when those prophylactic efforts fail.

The tighter permitting and monitoring requirements that exist in the CWA regulatory scheme appear to negate firm-size effects. Moreover, the results of CWA enforcement—balanced and equitable enforcement—and the change in CAA permitting to mirror CWA permitting bode well for future CAA enforcement. On the other hand, the results suggest that RCRA's status-based regulatory framework may not lead to an enforcement regime that effectively deals with all violators. The fact that small firms may engage in more egregious conduct also suggests that government should expand its effort to provide technical assistance to small firms. In addition, Congress may want to consider financial assistance to help small firms acquire technical expertise and conduct environmental audits. These efforts, in conjunction with the permitting changes discussed above, may go a long way toward ensuring a spirit of fairness.

The results reinforce, in some respects, prior studies of enforcement targeting. Most importantly, the environmental benefits that EPA reaps from the manner in which it deploys its inspection and monitoring resources carry over into the realm of enforcement choice. On the other hand, the way in which this study's findings of enforcement behavior differ from findings in studies of monitoring behavior implies that political considerations may be more prevalent the more proximate a government actor is to a violator's place of business and to the community in which a violation arises. This inference argues for a continued strong federal enforcement presence, with federal officials acting either out in front of or beside state enforcement personnel.

The present study also provides insights into how to reinterpret the important work of earlier researchers. To begin with, the mere fact that EPA treats firms differently based on firm size does not necessarily imply that EPA behaves as a net political support maximizer. Rather, the disparity in treatment may result in whole or in part from differences in the type of violations engaged in by large and small firms or from strategic and legal considerations. Second, caution should be exercised in attempting to generalize findings from one environmental medium to the next. Finally, looking at truly small firms matters. What is true regarding the manner in which EPA enforces the CWA's chlorine discharge requirements against pulp and paper firms may not be true of EPA in its enforcement of the CWA's cadmium discharge requirements against electroplating firms, given the potential for large disparities in the size, wealth, and sophistication of the two populations of firms. All of this suggests that researchers are likely to find RCRA targeting studies, broader targeting studies that include small firms, and studies of industries populated by small firms to be promising avenues of future research.

## APPENDIX: DATA, VARIABLE DESCRIPTION, AND ECONOMETRIC ISSUES

Firm size was one variable used in the models.<sup>269</sup> Firms were designated as "500" if they were one of, or a subsidiary of, one of the 500 largest firms based on sales. Firms not meeting the "500" sales threshold, but nevertheless listed in the Directory, were designated as "MEDIUM." All other firms were deemed "SMALL."<sup>270</sup> The variables included in the models are set forth in Table I.

Because environmental damages are difficult to measure—for example, they may include nonuse values associated with damaged resources such as existence value as well as lost use, restoration costs and replacement costs—several surrogates for environmental damages are considered. Violation coding was based on EPA penalty policy as well as on the notion that violations that occur outside EPA's regulatory framework (unpermitted violations) are more serious than violations that reflect deviance from within (permit/regulatory violations). Of the latter violations, actual discharges to the environment (e.g., effluent limitation exceedances) are more serious than those violations that merely threaten an exceedance (e.g., paperwork or lack of secondary containment). Violations were coded as follows:

0. Paperwork/labeling
  1. Failure to comply with an information request
  2. Minor violation of permit/statute
  3. Inability to determine extent of discharge
  4. Permit/regulatory exceedance
  5. No permit, disposal at facility regulated for other materials or land ban AND no release into the environment
  6. Disposal of fill material without a permit
  7. Spills, release or disposal other than fill material

When a violator engaged in multiple violations, the violator was assigned the highest violation code. Because of the difficulty of collapsing three statutory regimes, each of which has its own unique violations, into one violation-coding scheme, and to minimize the possibility of author influ-

---

<sup>269</sup> Firm size data was obtained from DUN & BRADSTREET, MILLION DOLLAR DIRECTORY (1997) in the calendar year in which EPA initiated the enforcement action.

<sup>270</sup> Although it is possible to obtain recent sales information of many small firms through several data sources, sales of a small firm in 1997 may be vastly different from its 1989 sales. Moreover, many small firms, and particularly those that EPA singled out for criminal prosecution, may no longer exist.



ences, violations of 3 or less were recoded as VIOLMIN, violations assigned a 4 as EXCEED, and violations of 5 to 7 as VIOLMAJ.

The next measure of environmental damages considered is the toxicity of the pollutant(s) involved. Toxicity data were obtained from the EPA Office of Pollution Prevention and Toxics ("OPPT"). The primary measure employed in the analysis is LOGTTOX, the natural log of the cumulative toxicity of all substances involved in a case. Inhalation toxicity scores were used for air violations, oral toxicity scores for water violations, and—given that the exposure scenario of concern for a hazardous waste violation may be oral- and/or inhalation- based—the greater of the two toxicity scores for hazardous waste violations.<sup>271</sup> If a pollutant had no toxicity score, it was assigned a zero. To obtain cumulative toxicity, the toxicity scores of the pollutants were added. Because the log formulation is employed and there are zero scores, one was added to each toxicity score prior to taking the natural log.

Another means to minimize harm is to minimize those violations that result from culpable conduct. Culpable conduct is deliberate conduct rather than being inadvertent, sloppy, or consistent with a good faith effort to comply. The variable CULP was assigned a "1" if culpable conduct was present and "0" otherwise. The variable CULP was defined narrowly to include only "midnight dumping," failing to report a release, continuing to operate without a permit in the face of a cease-and-desist order or notice of violation, tampering with a monitoring device, falsifying records, false statements, fraud, and conduct that is grossly negligent, such as allowing an individual with known convictions for driving under the influence of alcohol to transport hazardous waste.<sup>272</sup> Conduct was not deemed "culpable" merely because the government charged a violator with a criminal violation that required an allegation that the violator's conduct was "knowing" or "negligent."<sup>273</sup>

---

<sup>271</sup> This decision was based on a statement of Dr. Steven Hassur, who stated that when he is uncertain of which route of exposure is associated with a particular hazardous waste violation, he uses the "greater of the two toxicity weights that may potentially apply to the chemical." E-mail from Dr. Steven M. Hassur, OPPT, to author (Aug. 2, 2000) (on file with the Harvard Environmental Law Review).

<sup>272</sup> There is some concern that CULP might be endogenous to the choice decision. This concern is particularly great for the last four types of conduct defined as culpable because of the relationship between the conduct, for example, fraud and the necessity of pleading fraud in the criminal indictment or information. To address this concern, a sensitivity analysis was conducted with the variable CULP2, which includes only dumping, failure to report, and discharge in the face of an order or notice of violation. In addition, the endogeneity concern is tempered by the fact that size of an administrative or civil judicial monetary penalty is determined with reference to the "seriousness of the violation," among other factors. *See, e.g.*, 42 U.S.C. § 7413(e)(1) (2000). EPA thus has an incentive, regardless of the enforcement forum chosen, to allege the existence of culpable conduct because proof of the same should result in the imposition of a larger penalty, all other things being equal.

<sup>273</sup> Most criminal violations included at least one knowing felony and no case in the sample included a knowing endangerment felony count. As a result, criminal violations were not segregated into subcategories depending on whether a misdemeanor, knowing

Turning to other considerations, EPA may have concerns that local communities in which violators are located may criticize enforcement actions due to those actions' impact on local unemployment.<sup>274</sup> County unemployment rates ("UNEMP") for the county in which the violator resided and in the year in which EPA initiated the enforcement action were secured from the Bureau of Labor Statistics ("BLS").<sup>275</sup>

Because more affluent communities may be more likely to protest violations, one might expect a per-capita income effect on the enforcement tool chosen. As a result, per-capita county income was procured from the Bureau of Economic Analysis for the county and year in which a violation arose.<sup>276</sup> County per-capita income was brought forward and adjusted by the change in the national per capita income over the same time period, and then, following Helland,<sup>277</sup> the variable LOGPCI (the natural log of per capita income) was created as the variable of interest.

Because EPA also may react to the level of support for the environment,<sup>278</sup> I obtained state-wide conservation membership levels.<sup>279</sup> The variable used, GREEN, provides a good cross-section of environmentalists. It is comprised of individuals in a mainstream conservation organization (Sierra Club), individuals that support an organization that engages in civil disobedience (Greenpeace), and hunters and fishermen (National Wildlife Federation).

The study also examines the impact of the 1994 congressional election, which ushered the Republican Party into majority status and focused the legislative agenda on the Contract with America and on smaller, less intrusive government. More specifically, congressional Republicans focused on the EPA budget and the burdens that environmental regulations and enforcement place on business. I obtained Appropriations Subcommittee membership from the biennial Almanac of American Politics.<sup>280</sup> The variable  $APP_{ij}$  measures the number of Appropriation Subcommittee members who have jurisdiction over EPA's budget from each state in the Senate and House during the two time periods of interest: 1989 to 1994 and 1995 to 1997. On the House side, rather than focus on membership in a congressional district, I assumed that a House Ap-

felony, or knowing endangerment felony was charged. Rather, as noted in the text, criminal violations were distinguished based on the actual allegations that support the charge(s).

<sup>274</sup> Helland, *supra* note 171, at 250.

<sup>275</sup> BLS no longer routinely makes data available for years prior to 1990 because of changes in the methodology by which the unemployment rate is calculated. Thus, for cases filed in 1989, January 1990 rates are employed.

<sup>276</sup> Because of an inability to obtain county level data for Puerto Rico, annual data for the Commonwealth as a whole was used.

<sup>277</sup> See Helland, *supra* note 4.

<sup>278</sup> SUSAN HUNTER & RICHARD W. WATERMAN, ENFORCING THE LAW: THE CASE OF THE CLEAN WATER ACTS 161-65 (1996).

<sup>279</sup> BOB HALL & MARY LEE KERR, 1991-1992 GREEN INDEX 111 (1992).

<sup>280</sup> MICHAEL BARONE & GRANT UJIFUSA, ALMANAC OF AMERICAN POLITICS (1990, 1992, 1994, 1996, 1998).

propriation Subcommittee members' influence spills over to other congressional districts in his or her state.<sup>281</sup>

For modeling, only unique organizational violators were considered. Thus, if both a parent and a subsidiary corporation, two or more otherwise related firms (e.g., "sister" subsidiaries or where the same person owned and controlled both firms) or a government entity controlled another entity violator, it was only considered one observation and the largest entity was used. On the other hand, if two or more unrelated organizational violators appeared in the same case, each was considered a separate observation.

---

<sup>281</sup> John A. Hird, *Superfund Expenditures and Cleanup Priorities: Distributive Politics or the Public Interest?*, 9 J. POL'Y ANAL. & MGMT. 455 (1990).

TABLE I: INDEPENDENT VARIABLES

Variable	Measure	Model
500	Firm is one of the 500 largest firms or has a parent corporation that is one of the 500 largest firms	All
FIRM	500 + MEDIUM + SMALL	
FY <sub>i</sub>	Fiscal Year of case initiation	
FY9497	Case Initiated during fiscal years 1994 to 1997	
GOV	Governmental Entity	
LARGE	500 or MEDIUM Firm	
LARGE47	Interaction Term between LARGE and FY47	
LARGEFY <sub>i</sub>	Interaction Term between LARGE and FY <sub>i</sub>	
MEDIUM	Firm otherwise listed in Dun & Bradstreet Million Dollar Directory	
P <sub>-</sub>	Predicted Probability of the variable in question	
SMALL	Firm not listed in Dun & Bradstreet	
STATUTE <sub>i</sub>	Statute violated (CAA, CWA, RCRA)	
APP <sub>ij</sub>	Appropriation Subcommittee membership having jurisdiction over EPA by chamber and 1994 election	Political
APP <sub>ik</sub>	Appropriation subcommittee membership having jurisdiction over EPA budget and election year status	
GREEN	Conservation Members/1000 State Residents	
LOGPCI	Per Capita Income of County in Which Violation Occurred	
UNEMP	Unemployment Rate in County of Violator	

ATTAIN	Nonattainment zone for present categorical air pollutant	Env'tl
CATAIR <sub>i</sub>	Categorical air pollutant	
CAT <sub>i</sub>	Type of Categorical Pollutant (OIL, SULFUR, NOX, etc.)	
CULP	Dumping, Discharge Violating Agency Command, Failure to Report, Gross Negligence, Fraud, Falsity, and Tampering.	
CULP2	Dumping, Discharge Violating Agency Command and Failure to Report	
LOGTTOX	The cumulative toxicity of all substances involved	
OIL	Pollutant in question is oil	
VIOL <sub>i</sub>	Type of Violation (VIOLMIN, EXCEED, VIOLMAJ)	

TABLE II: VIOLATOR POPULATION MEANS AND STANDARD ERRORS OF CONTINUOUS VARIABLES OF INTEREST

Variable Forum	Mean	Standard Error
<b>GREEN</b>		
Administrative	8.42	.31
Civil Judicial	8.69	.29
Criminal	9.01	.61
<b>PCI</b>		
Administrative	23781	676
Civil Judicial	24029	655
Criminal	23857	809
<b>UNEMP</b>		
Administrative	13.4	6.45
Civil Judicial	7.07	0.24
Criminal	6.90	0.47
<b>LOGTTOX</b>		
Administrative	3.42	.56
Civil Judicial	6.18	.68
Criminal	4.63	.73
<b>LENGTH</b>		
Administrative	306	35
Civil Judicial	456	65
Criminal	267	37

TABLE III: CASE POPULATION PROPORTIONS BY VIOLATION TYPE

Violation Type	Admin.	Civil Judicial	Criminal	Total
0. Paper-work/labeling	.976	.024	.000	1
1. Info Request	1.000	.000	.000	1
2. Minor Violation	.953	.047	.000	1
3. Unable to Determine Discharge Extent	.741	.242	.017	1
4. Exceedance	.897	.094	.010	1
5. No Permit	.669	.237	.095	1
6. Fill Material Release	.754	.192	.054	1
7. Other Spill/Release	.524	.228	.248	1
Total	.777	.167	.056	1
Average Violation Score	3.50	4.37	5.93	

TABLE IV: LIKELIHOOD OF CRIMINAL PROSECUTION

Variable	Model			
	Constrain	Env't1	Political	Full
500	-1.146** (.495)	-1.005** (.511)	-1.24** (.528)	-1.284* (.578)
MEDIUM	-0.688* (.385)	-.1579 (.433)	-.749* (.387)	-.296 (.448)
GOV	-2.332*** (.689)	-2.406*** (.862)	-2.62*** (.788)	-2.442*** (.871)
CWA	1.821*** (.459)	1.540*** (.472)	1.882*** (.470)	1.545*** (.505)
RCRA	1.620*** (.475)	.725 (.529)	1.627*** (.488)	.836 (.525)
VIOLMIN		-2.712*** (.680)		-3.22*** (.959)
EXCEED		-1.747*** (.560)		-2.143*** (.705)
LOGTTOX		.0865** (.041)		.090** (.042)
CULP		2.654*** (.552)		2.740*** (.623)
HAPP8994			.397 (.303)	.587 (.458)
SAPP8994			-.545 (.461)	-.600 (.815)
HAPP9597			.539 (.356)	1.074*** (.385)
SAPP9597			-.199 (.826)	.269 (.745)
UNEMP			-.005 (.006)	-.001 (.002)
LOGPCI			.400 (.006)	.326 (.731)



Variable	Model			
	Constrain	Env't'l	Political	Full
CONSTANT	-3.829 (.443)	-3.656*** (.522)	-7.92* (4.72)	-7.116 (7.371)

\*Significant at 10%

\*\*Significant at 5%

\*\*\*Significant at 1%

TABLE V-A: LIKELIHOOD OF ADMINISTRATIVE COMPARED WITH CIVIL  
JUDICIAL ENFORCEMENT

Variable	Model			
	Constrain	Env't'l	Political	Full
Pseudo R <sup>2</sup>	.0715	.2412	.1184	.2836
IIA ( $\chi^2$ )	.12	1.16	-.08	1.29
500	-.255 (.340)	-0.431 (0.357)	-0.173 (0.346)	-0.571 (0.359)
MEDIUM	-.338 (.359)	-0.793** (0.379)	-0.465 (0.360)	-0.976** (0.389)
GOV	-.249 (.401)	-0.506 (0.423)	0.001 (0.441)	-0.281 (0.441)
CWA	.715** (.358)	0.740* (0.415)	0.716* (0.379)	0.812* (0.467)
RCRA	1.89*** (.483)	2.656*** (0.629)	2.146*** (0.535)	2.796*** (0.650)
VIOLMIN		1.984*** (0.466)		2.188*** (0.532)
EXCEED		0.954** (0.416)		1.146*** (0.434)
CULP		-1.796** (0.730)		-1.579** (0.733)
LOGTTOX		-0.109*** (0.036)		-0.112*** (0.039)
HAPP8994			-1.033* (0.311)	-1.223*** (0.364)
SAPP8994			1.563* (0.485)	1.133** (0.605)
HAPP9597			0.241 (0.325)	-0.006 (0.375)
SAPP9597			-0.186 (0.601)	0.587 (0.727)

Variable	Model			
	Constrain	Envt'l	Political	Full
UNEMP			0.004* (0.002)	0.016 (0.063)
LOGPCI			0.117 (0.506)	0.150 (0.740)
CONSTANT	.982*** (.286)	0.789* (0.443)	-0.292 (5.084)	-0.872 (7.762)

\*Significant at 10%

\*\*Significant at 5%

\*\*\*Significant at 1%

TABLE V-B: LIKELIHOOD OF CRIMINAL COMPARED WITH CIVIL JUDICIAL ENFORCEMENT

Variable	Model			
	Constrain	Env't'l	Political	Full
IIA ( $\chi^2$ )	16.6	0.2	-23.4	-52.26
500	-1.357** (.538)	-1.298** (0.543)	-1.398** (0.570)	-1.656*** (0.585)
MEDIUM	-.978** (.435)	-0.585 (0.432)	-1.168*** (0.439)	-0.843* (0.456)
GOV	-2.548*** (.702)	-2.683*** (0.836)	-2.620*** (0.811)	-2.603*** (0.880)
CWA	2.422*** (.539)	1.876*** (0.547)	2.440*** (0.564)	1.894*** (0.619)
RCRA	3.274*** (.665)	2.302*** (0.680)	3.464*** (0.711)	2.553*** (0.711)
VIOLMIN		-1.196 (0.726)		-1.344 (0.949)
EXCEED		-1.296** (0.644)		-1.544** (0.785)
CULP		1.658*** (0.480)		1.929*** (0.540)
LOGTTOX		0.030 (0.047)		0.026 (0.050)
HAPP8994			-0.424 (0.374)	-0.077 (0.514)
SAPP8994			0.774 (0.611)	-0.089 (0.996)
HAPP9597			0.741* (0.422)	1.075** (0.431)
SAPP9597			-0.336 (0.915)	0.701 (0.869)
UNEMP			-0.001 (0.006)	0.014 (0.063)

Variable	Model			
	Constrain	Env't'l .	Political	Full
LOGPCI			0.500 (0.528)	0.448 (0.840)
CONSTANT	-2.552*** (.503)	-2.303*** (0.571)	-7.671 (5.322)	-7.101 (8.695)

\*Significant at 10%

\*\*Significant at 5%

\*\*\*Significant at 1%

TABLE VI: PREDICTED PROBABILITY OF ENFORCEMENT CHOICE IF VIOLATOR TYPE CHANGES FROM THE PERCENTAGE IN THE SAMPLE TO 100%<sup>a</sup>

Variable	Mean		Standard Deviation	
	Constrain	Env't'l	Constrain	Env't'l
Administrative	0.7627		0.0094	
Civil Judicial	0.1851		0.0086	
Criminal	0.0522		0.0030	
PSAMPLE0	0.7627		0.0057	0.0127
PSAMPLE1	0.1851		0.0072	0.0113
PSAMPLE2	0.0522		0.0032	0.0057
PGOV0	0.7874	0.7665	0.0072	0.0136
PGOV1	0.2031	0.2222	0.0075	0.0134
PGOV2	0.0095	0.0112	0.0004	0.0013
P5000	0.7689	0.7636	0.0066	0.0135
P5001	0.2006	0.2032	0.0076	0.0128
P5002	0.0305	0.0332	0.0014	0.0035
PMEDIUM0	0.7428	0.6953	0.0065	0.0157
PMEDIUM1	0.2107	0.2394	0.0080	0.0144
PMEDIUM2	0.0466	0.0654	0.0021	0.0061
PSMALL0	0.7556	0.7898	0.0042	0.0121
PSMALL1	0.1573	0.1424	0.0065	0.0101
PSMALL2	0.0872	0.0678	0.0037	0.0064

<sup>a</sup>p\_\_0 = predicted probability of administrative enforcement

p\_\_1 = predicted probability of civil judicial enforcement

p\_\_2 = predicted probability of criminal enforcement

TABLE VII: LIKELIHOOD OF CRIMINAL PROSECUTION OF LARGE FIRMS  
PRE- AND POST-OCTOBER 1, 1993

Variable	Coefficient	Standard Error	P Value
LARGE	-0.313	0.505	0.536
LARGE47	-1.095	0.683	0.110
FY9497	-0.033	0.454	0.943
GOV	-2.347	0.698	0.001
CWA	1.884	0.475	0.000
RCRA	1.603	0.482	0.001
CONSTANT	-3.852	0.565	0.000

TABLE VIII: POPULATION PROPORTIONS BY ENVIRONMENTAL MEDIUM,  
VIOLATOR TYPE, AND FORUM

Statute	Variable	Admin- istrative	Civil Judicial	Criminal	Total
CAA					
	Small	0.2994	0.1416	0.0154	0.4563
	Medium	0.1168	0.0877	0.0057	0.2103
	500	0.2015	0.1129	0	0.3145
	GOV	0	0.0189	0	0.0189
	Total	0.6178	0.3612	0.0211	1
CWA					
	Small	0.2943	0.0473	0.0437	0.3853
	Medium	0.1414	0.0422	0.0143	0.1979
	500	0.1235	0.0327	0.0131	0.1693
	GOV	0.2014	0.0428	0.0034	0.2475
	Total	0.7606	0.1649	0.0745	1
RCRA					
	Small	0.2687	0.0042	0.0527	0.3257
	Medium	0.3295	0.0154	0.0132	0.3582
	500	0.1635	0.0376	0.0072	0.2082
	GOV	0.1054	0	0.0025	0.1079
	Total	0.8671	0.0572	0.0756	1