

DOES THE CRIMINAL ENFORCEMENT OF FEDERAL ENVIRONMENTAL LAW DETER ENVIRONMENTAL CRIME? THE CASE OF THE U.S. RESOURCE CONSERVATION AND RECOVERY ACT

Dr. Joshua Ozymy & Dr. Melissa L. Jarrell

When Scott Dominguez and Daren Weaver were directed to enter a 25,000-gallon tank and scrub the contents, little did they know that the seemingly routine job would leave Dominguez with severe brain injuries and an inability to perform basic tasks for the rest of his natural life. Dominguez's boss, Allan Elias, owner of Evergreen Resources Inc. based in Soda Springs, Idaho knew exactly what was at stake.¹ Elias sent the men into the tank to clean toxic cyanide sludge and later instructed employees to illegally dump some 8,000 gallons of it. When emergency responders and investigators appeared on the scene, Elias lied to them in an effort to cover up his crime, further endangering Dominguez. In May 1999, Elias was convicted of knowingly endangering Dominguez and on April 28, 2000 he was sentenced to 204 months incarceration, 36 months probation, and to pay \$364,750 in restitution to the EPA and millions of dollars in restitution to the victim.²

Elias's crimes and many others like them show the need for criminal enforcement of federal hazardous waste laws for serious, willful, chronic, and knowing actions that endanger others and the natural environment. The U.S Resource Conservation and Recovery Act (RCRA) is the primary statutory vehicle for which federal prosecutors pursue criminal charges for the worst hazardous waste offenses throughout the country.³ Whether the criminal investigation and prosecution of RCRA crimes actually deters hazardous waste crimes is generally unknown.

Much scholarly attention is paid to how and why the EPA uses RCRA to craft regulations and explores the legal effects of these regulations, but much less work has explored how RCRA is enforced through a criminal process.⁴ We wish to address an important issue often ignored in the law and policy literatures, which is the value of the RCRA criminal enforcement regime for deterring violations of federal hazardous waste

*Dr. Joshua Ozymy, corresponding author. Director of The Honors Program and Strategic Initiatives and Professor of Political Science at Texas A&M University Corpus Christi.

Dr. Melissa L. Jarrell, Dean, University College and Professor of Criminal Justice at Texas A&M University Corpus Christi.

¹ Alan Elias: (D. Idaho CR 98-070-BLW, 2000).

² Kurt Friedemann, 2000, Boss Must Pay for Poisoning Employee, available from: <https://www.hcn.org/issues/176/5696>.

The restitution ordered to the victim was vacated upon appeal. See: *Elias v. United States*: No. 01-1502 (2002).

³ U.S. Resource Conservation and Recovery Act (RCRA): 42 U.S.C. §6901 et seq. (1976).

⁴ Joshua Ozymy and Melissa L. Jarrell, 2015, *Wielding the Green Stick: An Examination of Criminal Enforcement at the EPA under the Bush and Obama Administrations*, 24 *Environmental Politics*, 40-43.

laws.⁵ While it is difficult to know with certainty if detection and prosecution rates can sufficiently raise the cost of offending relative to the benefit of polluting or provide general deterrence effects, we gather data from 1983-2019 on all environmental criminal prosecutions stemming from EPA criminal investigations to explore the plausibility of deterrence under RCRA. We hope our analysis adds to the discussion of whether RCRA's statutory provisions need strengthening to address substantive issues with the enforcement of hazardous waste problems. We provide an overview of RCRA below, followed by a discussion of the federal environmental criminal enforcement process, analysis, and then offer some reasonable remedies for enhancing the federal environmental criminal enforcement regime.

OVERVIEW OF RCRA

Escalating public concerns over hazardous waste caused Congress to act and pass RCRA into law in 1976.⁶ RCRA gives EPA cradle-to-grave authority over hazardous waste, which empowers the agency to regulate the generation, storage, transport, import/export, treatment, and disposal of solid and hazardous wastes.⁷ Creating a national framework for permitting the lifecycle of these wastes was a key task and accomplishment of EPA.⁸ Today the EPA is responsible for permitting or overseeing the permitting of some 6,600 facilities and 20,000 process units.⁹

⁵ Wayne B. Gray and Ronald J. Shadbegian, 2005, *When and Why Do Plants Comply? Paper Mills in the 1980s*, 27 *Law and Policy*, 238-240.; Wayne B. Gray and Jay P. Shimshack, 2011, *The Effectiveness of Environmental Monitoring: Review of the Empirical Evidence*, 5 *Review of Environmental Economics and Policy*, 3-6.; Michael J. Lynch, Kimberly L. Barrett, Paul B. Stretesky, and Michael Long, 2016, *The Weak Probability of Punishment for Environmental Offenses and Deterrence of Environmental Offenders: A Discussion Based on USEPA Criminal Cases, 1983-2013*, 37 *Deviant Behavior* 1096-1097.

⁶ Russell Phifer, 2010, *RCRA The First 30 Years of Hazardous Waste Regulation*, 17 *Journal of Chemical Health & Safety*, 4-7.

⁷ Thomas P. Eichler, 1984, *The Status of RCRA in the Mid-Atlantic States*, 26 *Environment*, 2-3.; What qualifies as a hazardous waste, mixture, derivative, or secondary waste for purposes of regulation under RCRA is often contested. *See* Jim Nickovich, 2004, *EPA Broadens RCRA Definition of "Hazardous Waste" to include Mixtures and Derivatives*, 31 *Ecology Law Quarterly*, 781-785.; Casey Roberts, 2005, *D.C. Circuit Affirms EPA Trend Towards Reducing RCRA Requirements for Recycling of Hazardous Secondary Materials*, 32 *Ecology Law Quarterly*, 749-756.

⁸ Lynn L. Bergeso, 2001, *EPA Proposes Standardized RCRA Permits*, 33 *Pollution Engineering*, 24-27.

⁹ U.S. EPA, *Resource Conservation and Recovery Act (RCRA) Overview* (2020), available from: <https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-overview>.; U.S. EPA, *RCRA Correction Action Cleanup Enforcement* (2020), available from: <https://www.epa.gov/enforcement/rcra-corrective-action-cleanup-enforcement>.

RCRA is organized through Subtitles A-J.¹⁰ Subtitles A provides basic definitions, interstate cooperation, and financial disclosure guidelines. Subtitle B creates the Office of Solid Waste and identifies EPA authority in various areas. Subtitle C it establishes EPA's authority over the hazardous waste lifecycle and the development of recordkeeping rules. EPA sought to regulate hazardous wastes under Subtitle C and set aside other wastes for further study in 1978.¹¹ In 1980 Congress acted to pass the Solid Waste Disposal Act Amendments.¹² The Amendments exempted many wastes generated in large volume by extractive industries, such as drilling fluids and other byproducts of oil, natural gas, and geothermal industry exploration, development, and production, combustion waste from ore, such as coal, lead, phosphate rock, uranium, any fossil fuel combination waste, and cement kiln dust from regulation as hazardous wastes under RCRA. Instead these were regulated as special wastes.¹³ Much of the fossil fuel and extractive industries were exempted from more stringent regulations had these common hazardous substances been regulated as hazardous wastes under RCRA.¹⁴

Subtitle D develops a framework for government cooperation to manage nonhazardous waste.¹⁵ Nonhazardous waste includes rules for landfills and any other waste disposal facility, rules for municipal solid waste, such as sludge from wastewater treatment plants or drinking water treatment facilities are developed here as is household trash.¹⁶ EPA has developed minimum guidelines for the design, location, restrictions, and closure of any municipal or industrial waste landfill. EPA also determines minimum standards for the incineration of nonhazardous waste and provides guidance and rules for state permitting programs.¹⁷ The final subtitles deal

¹⁰ U.S. EPA, 2020, Resource Conservation and Recovery Act (RCRA) Overview, available from: <https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-overview>.

¹¹ Environmental Science & Toxicology, 1995, Common Toxic Products Exempt from RCRA, 29, 301A-307A.s.

¹² Solid Waste Disposal Act Amendments: P.L. 3001(b)(2)(A) and 3001(b)(3)(A). Also known as the Bentsen and Bevill amendments for their sponsors, senators Lloyd Bentsen and Thomas Bevill.

¹³ Lynn L. Bergeson, 2004, Re-Re-Re Defining RCRA Solid Wastes, 36 Pollution Engineering, 32-33.

¹⁴ David L. Hippensteel, 1999, The RCRA Exemption for Oil and Natural Gas Exploration and Production Wastes-What you may not Know, 6 Environmental Geosciences, 106-109.s.

¹⁵ EPA has authority over enforcement actions and often does so in conjunction with the states or despite state actions. See Margaret May, 2003, Tenth Circuit Upholds the EPA's Right to Overfile under RCRA 30 Ecology Law Quarterly, 777-781.

¹⁶ Michael Somers, 2011, RCRA's New Causation Question: Linking Ubiquitous Wastes to Specific Defendants, 38 Boston College Environmental Affairs Law Review, 193-217.

¹⁷ U.S. EPA, Resource Conservation and Recovery Act (RCRA) Regulations, 2020, available from: [https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-regulations#nonhaz.;](https://www.epa.gov/rcra/resource-conservation-and-recovery-act-rcra-regulations#nonhaz.) EPA data shows that as of 2017, 267.8 million tons of municipal solid waste (MSW) was generated annually in the United States. Approximately, 35 percent was recycled or composted. These figures include waste accepted from consumers and does not include construction or demolition debris, municipal wastewater sludge, industrial debris, and other nonhazardous wastes.

with federal responsibilities, research and development, regulation of underground storage tanks, and standards for tracking medical waste, as well as citizen lawsuit provisions.

ENFORCING RCRA

Criminal provisions of RCRA are found in Table 1.¹⁸ Most of these provisions denote maximum penalties for one or more of the cradle-to-grave violations related to treatment, storage, or disposal of hazardous substances without a permit or in violation of a permit. Transporting regulated wastes without a manifest is a related offense, as is transportation to an unpermitted facility. Transporting and illegally exporting hazardous waste may also be a criminal offense. Other potential criminal charges under RCRA relate to intentional behaviors to obstruct investigations or lie to officials, such as false statements, or the knowing alteration, destruction, or concealment of records. In all of these cases RCRA criminal provisions take advantage of extensive recordkeeping required of any entity that should be permitted to handle hazardous waste through its lifecycle. Knowing endangerment is defined as any act that puts another person in imminent danger of death or serious bodily injury as the result of any combination of acts related to storing, treatment, transporting, disposing of, or exporting hazardous waste.

Table 1. Criminal Provisions of the U.S. Resource Conservation and Recovery Act

Violation	Maximum Penalty Per Violation/Day
Treatment, Storage, or Disposal Without a Permit	(5) Years and up to \$50,000
Treatment, Storage, or Disposal in Violation of a Permit	(2) Years and up to \$50,000
Transportation of Hazardous Waste Without a Manifest	(2) Years and up to \$50,000
Transportation to an Unpermitted Facility	(5) Years and up to \$50,000
False Statements	(2) Years and up to \$50,000

These figures are based on surveys, data estimates, and other means.; U.S. EPA, *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures, 2014*, Available from: https://www.epa.gov/sites/production/files/2018-03/documents/methodolgy_document_for_selected_municipal_solid_waste_products.pdf.

¹⁸ Data for Table 1 are found from the following: U.S. EPA, 2020, *Criminal Provisions of the Resource Conservation and Recovery Act (RCRA)*, available from: <https://www.epa.gov/enforcement/criminal-provisions-resource-conservation-and-recovery-act-rcra>.

Knowing Alteration, Destruction, or Concealment Of Records	(5) Years and up to \$50,000
Knowing Endangerment	(15) Years and up to \$250,000 \$1,000,000 if an Organization
Illegal Export of Hazardous Waste	(5) Years and up to \$50,000

The development of federal environmental law dates back over a century.¹⁹ The Rivers and Harbors Act of 1899 prohibited illegal dumping and obstruction of the navigable waters of the United States and introduced misdemeanors in federal environmental statutes.²⁰ The Lacey Act of 1900, prohibited the unregulated, interstate trade in wildlife.²¹ In the 1970s federal environmental law continued to add misdemeanor provisions but it was the passage of RCRA and the hazardous and solid waste disposal amendments in the 1980s that felony provisions were inserted and then expanded in federal environmental law.²² Prior to the early 1980s only 25 environmental crimes were prosecuted.²³

The institutionalization of a federal environmental criminal enforcement apparatus came about in 1981 with creation of the EPA's Office of Enforcement and the DOJ's Environmental Crimes Section (ECS) in 1982.²⁴ These units began a process of hiring and specializing in the investigation and prosecution of federal environmental crimes.²⁵ ECS became an independent Unit within the Environment and Natural Resources Division (ENRD) in 1987 and employed about 40 prosecutors.²⁶ The next year Congress granted EPA's Criminal Enforcement Division (CID) full law enforcement authority.²⁷ In 1995 the Office of Criminal Enforcement, Forensics and

¹⁹ DOJ-ENRD, 2019, History, available from: <https://www.justice.gov/enrd/history>.

²⁰ The Rivers and Harbors Act of 1899: (33 U.S.C. 403).

²¹ The Lacey Act of 1900: (16 U.S. Code § 3371-3378).

²² The Resource Conservation and Recovery Act of 1976: (42 U.S.C. §6901).; U.S. Department of Justice Environmental Crimes Section, 2015, Historical Development of Environmental Criminal Law, available from: <https://www.justice.gov/enrd/about-division/historical-development-environmental-criminal-law>.

²³ Celia, B. Campbell-Mohn. *SUSTAINABLE ENVIRONMENTAL LAW*. St. Paul, Minnesota: (West Publishing Company 1993).

²⁴ U.S. EPA, 2011, Criminal Enforcement Program. Available from: <https://www.epa.gov/sites/production/files/documents/oceft-overview-2011.pdf>.

²⁵ Theodora Galactos, The United States Department of Justice Environmental Crimes Section: A Case Study of Inter- and Intrabranh Conflict over Congressional Oversight and the Exercise of Prosecutorial Discretion, 64 *Fordham Law Review*, 590, (1995).

²⁶ U.S. Department of Justice Environmental Crimes Section, 2015, Historical Development of Environmental Criminal Law, available from: <https://www.justice.gov/enrd/about-division/historical-development-environmental-criminal-law>.; ENRD dates to 1909, when it was referred to as the Public Lands Division.

²⁷ Criminal investigators were deputized by the U.S. Attorney General in 1984 as Special Deputy United States Marshals, requiring regular renewal until 1988. See John Peter Suarez, 2003,

Training (OECFT) was created to centralize criminal investigative work within the broader Office of Environmental Compliance Assurance (OECA) that came to replace the Office of Enforcement.²⁸ Civil judicial actions are overseen by the Environmental Enforcement Section (EES) of ENRD.²⁹ EPA-CID now contains some 150 criminal investigators and related staff located across 41 offices.³⁰

Significant harm and culpable conduct are the general requirements for a case being pursued for criminal prosecution.³¹ EPA criminal investigators, also known as special agents or 1811s enjoy autonomy to investigate and sources for investigations often come from self-reported documents, civil inspectors that notice potential problems, state or local environmental agencies that may have already issued citations, penalties or warnings, and former employees of a company.³² Cooperation on criminal investigations is common and often undertaken with other state and local agencies.³³ If criminal investigators feel there is sufficient evidence to warrant prosecution, they may approach prosecutors in ECS or the U.S Attorney's Office to seek an indictment from a grand jury or file an information with the appropriate District Court.³⁴

For deterrence to be effective, the cost of committing a RCRA crime must outweigh the financial benefits of the offense among rational offenders.³⁵ EPA-CID and DOJ-ECS focus on investigating, punishing, and hopefully deterring serious, chronic, and willful violations of federal hazardous waste laws.³⁶ Both agencies have

Management Review of the Office of Criminal Enforcement, Forensics and Training, 7, available from: <https://www.epa.gov/sites/production/files/documents/oceft-review03.pdf>.

²⁸ U.S. EPA, 2020, Basic Information on Enforcement, available from:

<https://www.epa.gov/enforcement/basic-information-enforcement>.

²⁹ DOJ-ENRD, 2015, Environmental Enforcement Section (EES): An Overview of Our Practice, available from: <https://www.justice.gov/enrd/overview-our-practice>.

³⁰ U.S. EPA, 2020, U.S. Environmental Protection Agency Criminal Enforcement Program: America's Environmental Crime Fighters. Available from:

<https://www.epa.gov/sites/production/files/documents/oceftbrochure.pdf>.

³¹ Earl E. Devaney, 1994 The Exercise of Investigative Discretion, 3-4, available from:

<https://www.epa.gov/sites/production/files/documents/exercise.pdf>.

³² Joel A. Mintz, 2004, Treading Water: A Preliminary Assessment of EPA Enforcement During the Bush II Administration, 34 *Environmental Law Reporter*, 10912.; John Peter Suarez, 2003, Management Review of the Office of Criminal Enforcement, Forensics and Training, 16, available from: <https://www.epa.gov/sites/production/files/documents/oceft-review03.pdf>.

³³ Joel A. Mintz, 2006, Some Thoughts on the Interdisciplinary Aspects of Environmental Enforcement, 36 *Environmental Law Reporter*, 10495.

³⁴ Joel A. Mintz, *Enforcement at the EPA: High Stakes and Hard Choices*, (Austin: University of Texas Press 2012).

³⁵ Gary Becker, 1968, Punishment: An Economic Approach, 169 *The Journal of Political Economy*, 183.

³⁶ EPA faces very strong incentives to pursue civil, rather than criminal enforcement, due to lower burdens of proof in civil cases, costs, and the range of non-criminal options. See Evan J. Ringquist and Craig E. Emmert, 1999, Judicial Policymaking in Published and Unpublished Decisions: The Case of Environmental Civil Litigation, 52 *Political Research Quarterly*, 12.; Jeremy Firestone,

organizational cultures emphasizing punishment and deterrence.³⁷ For this process to deter hazardous waste crimes, the probability of detection must be suitably high and the severity of punishment sufficiently robust to deter particular offenders from choosing to commit a crime and to set an example for others when punishment is meted out.³⁸ Determining the sufficiency of the probability of detection and significant punishments being handed out when crimes are discovered are somewhat more difficult with environmental crimes than street crimes. Many regulated individuals and companies have no intention to break the law, sometimes polluting is not a criminal offense, other times there may be legal ambiguity as to whether a particular act is an offense, and many companies can remain in chronic violation with penalties attached for years without criminal sanction. There is also much less data on environmental crimes than street crime, making the study of such phenomena more difficult.³⁹

The value of deterrence for the environmental criminal enforcement regime has always had to be more surgical in its approach, given limited resources and the changing interpretation of environmental statutes through both the courts and regulatory rulemaking. A past Director of the Office of Enforcement, Earl E. Devaney noted well that...it is unlikely the Office will ever be large enough in size to fully defeat the ever-expanding universe of environmental crime...it must maximize its presence and impact through discerning case selection, and then proceed with investigations that advance EPA's overall goal of regulatory compliance and punishing criminal wrongdoing.⁴⁰ Criminal enforcement may also be more circumstantial in its effect,

2002, Agency Governance and Enforcement: The Influence of Mission on Environmental Decisionmaking. 21 *Journal of Policy Analysis and Management*, 410.

³⁷ A management review noted of the Division in 2003, "To the extent any single pattern dominates, it is the law enforcement orientation of the Immediate Office, CID, and (to a lesser extent) LCRMD (Legal Counsel and Resources Management Division)". See John Peter Suarez, 2003, Management Review of the Office of Criminal Enforcement, Forensics and Training, ii, available from: <https://www.epa.gov/sites/production/files/documents/oceft-review03.pdf>.; U.S. Department of Justice, 2020. Press Room. Available from:

<https://www.justice.gov/enrd/press-room>.

³⁸ Richard A. Posner, 1985, An Economic Theory of the Criminal Law, 85 *Columbia Law Review*, 1193-1200.

³⁹ For studies on the difficulties of measuring corporate crime rates and deterrence see: Carol Gibbs and Sally S. Simpson, 2009, *Measuring Corporate Environmental Crime Rates: Progress and Problems*, 51 *Crime, Law and Social Change*, 87-90.; Harland Prechel and Alesha Istvan, 2016, *Disproportionality of Corporations' Environmental Pollution in the Electrical Energy Industry*, 59 *Sociological Perspectives*, 505-507.; Lori S. Bennear, 2008, *What Do We Really Know? The Effect of Reporting Thresholds on Inferences using Environmental Right-to-Know Data*, 2 *Regulation & Governance*, 293-295.; Carole M. Billiet and Sandra Rousseau, 2014, *How Real is the Threat of Imprisonment for Environmental Crime?* 37 *European Journal of Law and Economics*, 183-186.; Michael J. Lynch, 2017, *The Sentencing/Punishment of Federal Environmental/Green Offenders, 2000-2013*, 38 *Deviant Behavior*, 991-992.

⁴⁰ Earl E. Devaney, 1994 *The Exercise of Investigative Discretion*, 2-3, available from: <https://www.epa.gov/sites/production/files/documents/exercise.pdf>.

rather than intentional and surgical, given a limited ability to detect crimes and the need to respond to known environmental problems, such as explosions, spills, and the discovery of toxic dumps. We explore the plausibility of detection and prosecution for RCRA crimes historically below with these limitations in mind.

DATA

We gather data on all environmental criminal prosecutions resulting from EPA-CID investigations using content analysis of the EPA's *Summary of Criminal Prosecutions Database*.⁴¹ We code all cases by fiscal year (FY) for all years available moving from FY 1983 through the end of calendar year 2019. This data provides a very substantive data source for understanding the nature of criminal prosecutions, given the criminal enforcement apparatus was institutionalized in the two years prior to 1983.⁴² We coded all 2,588 cases and select 396 prosecutions where RCRA is a primary charging statute. We coded the following variables for each prosecution summary: a narrative summary, fiscal year, docket number, state identified where the crime took place, total number of defendants identified in the case summary, and the presence of at least one company or corporate defendant in the prosecution.

We developed coding protocols by analyzing a cases from FY 1983 through FY 2015 with two coders working for four weeks and we checked weekly for discrepancies in their coding. Once we began to see patterns and our inter-coder reliability exceeded 90 percent, we moved forward with the analysis and coding of the data. Our coders analyzing data independently and the lead author reviewed discrepancies until consensus was met. Inter-coder reliability for the project was approximately 95 percent.⁴³

Our approach and data choices have a few limitations that do not substantively hinder the analysis, but bear mentioning here. First, we cannot understand how all of the parties in the case influenced the outcome. This is not our primary goal, just to catalog outcomes and this limitation is not severe. Second, if federal environmental statutes changed or interpretations changed in the courts, we cannot control for such change. Third, any cases not cataloged by EPA in the database are unknown to us in the analysis. Finally, we ended our analysis at the end of calendar year 2019, meaning the analysis that follows does not complete this fiscal year.

FINDINGS

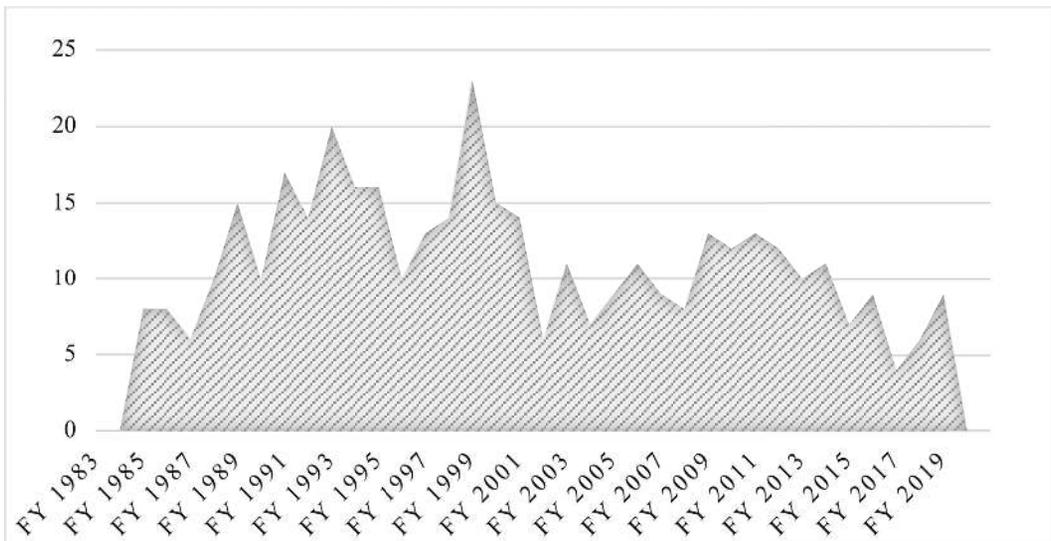
⁴¹ U.S. EPA, 2020, *Summary of Criminal Prosecutions Database*, available from: <https://www.epa.gov/enforcement/summary-criminal-prosecutions>.

⁴² Ozymy and Jarrell *Supra* note 8, at 40-45.

⁴³ Ole R. Holsti, *Content Analysis for the Social Sciences and Humanities*, 140 (Addison Wesley, 1969).; Earl R. Babbie, 2012, *The Practice of Social Research* (Wadsworth Publishing, 2012).

In Figure 1 we plot the total number of RCRA-focused prosecutions by EPA fiscal year, 1983-2019. Since 1983, we find RCRA was used in criminal prosecutions a total of 396 times or about 15% of total prosecutions since 1983. The first prosecutions settled under RCRA occurred in FY 1985 with eight prosecutions completed that year. The annual number rose to ten by FY 1988, 20 in FY 1993, and 23 in FY 1999. Prosecutions never reach that annual high, declining to 4 in FY 2017. Average prosecutions over the last 37 years were 10.7.⁴⁴

Figure 1. Total RCRA Criminal Prosecutions by EPA Fiscal Year, 1983-2019.



Source: U.S. EPA Summary of Criminal Prosecutions Database.

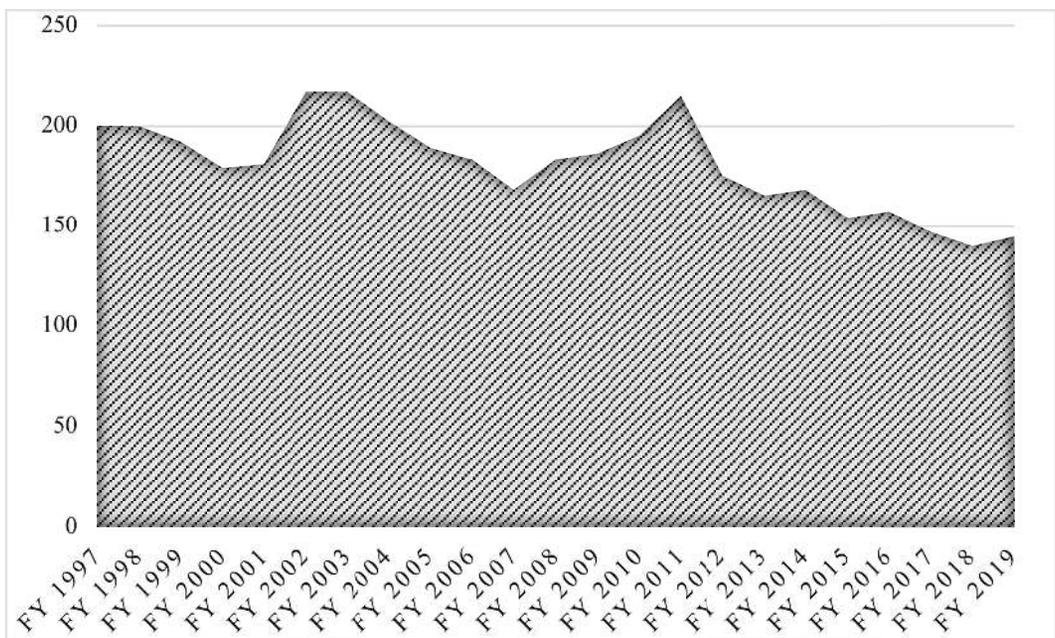
Based on the number of prosecutions alone, there is little chance the average offender would face criminal prosecution for a RCRA crime. We now move to calculating the probability of detection, by exploring the number of environmental police officers available to investigate RCRA crimes. Calculating this probability requires comparing the number of EPA-CID criminal investigators to the number of regulated facilities in any given year.⁴⁵ The number of investigators, also called special agents, or 1811s, was 23 in 1982, when the Office of Enforcement began hiring experienced law enforcement personnel to take on this role. The number of investigators grew to 55 by 1990. The Pollution Prosecution Act professionalized

⁴⁴ The total number of prosecutions completed each fiscal year is less important than the overall pattern. Many prosecutions persist over a series of years.

⁴⁵ U.S. EPA, 2020, Criminal Enforcement: Special Agents, available from: <https://www.epa.gov/enforcement/criminal-enforcement-special-agents>.

criminal investigation, by mandating a statutory minimum of 200 agents.⁴⁶ By 1995 EPA-CID exceeded that minimum with 220 agents on staff.⁴⁷ We show how the number of agents has evolved since 1997 in Figure 2. In 1997 there were 200 agents employed by EPA-CID. That number rose to 217 in 2002, but then a drop below the statutory minimum occurs, shrinking to 168 by 2007 and then rising to 215 by 2011. The annual number of agents employed by EPA-CID drops again to 165 in 2013, 140 in 2018, and then 146 by 2019.⁴⁸

Figure 2. Total Special Agents by EPA Fiscal Year, 1997-2009.



Source: OECA, EPA, and PEER.

⁴⁶ The Pollution Prosecution Act of 1990 (P.L. 101-593).

⁴⁷ Washington Legal Fund, Chapter 2, Environmental Protection Agency Criminal Enforcement Policies, 2-2, available from: <https://s3.us-east-2.amazonaws.com/washlegal-uploads/upload/Chapter2EPA.pdf>.

⁴⁸ Data from Figure 2 comes from author requests of OECA, EPA, and PEER. Measures of total special agents can be slightly different. The variation in any given year on this point is not severe. In the worst discrepancy, our requests of OECA gave us 195 agents one year, but EPA figures give us 206.; U.S. EPA, 2017, Criminal Enforcement Program Overview, 8-11, available from: <https://19january2017snapshot.epa.gov/sites/production/files/documents/oceft-overview-2011.pdf>.; Public Employees for Environmental Responsibility (PEER), 2019. EPA CID Agent Count, available from: https://www.peer.org/wp-content/uploads/2019/11/11_21_19-Federal_Pollution_EPA_CID_Agent_Count.pdf.

We now move to estimate the regulatory community that must be policed in any given year. While it is impossible to measure the population of potential criminals outside of the regulated community, we attempt to measure the number of facilities that EPA-CID must police each year and then compare those to both the number of criminal investigators available to detect potential crimes and the number of prosecutions handed down annually to get a sense of the probability of prosecution in any given year. To determine the number of regulated firms, we select those with active hazardous waste permits using EPA's Enforcement Compliance History Online (ECHO) data gathering tool.⁴⁹ With ECHO we begin by selecting hazardous waste facilities, all locations, all facilities in the database's universe, no restrictions on enforcement and compliance to list all facilities, and select data for Toxics Release Inventory (TRI) On-Site Land Releases for all years available (2006-19), to capture all permitted hazardous waste facilities reporting releases to the TRI each year.⁵⁰ Total facilities to do vary greatly over this time period from 2,977 in 2006, to a high of 3,272 in 2015, and a low of 2,788 in 2019. The average number of regulated RCRA facilities over these fourteen years was about 3,112.⁵¹ We use this data, our data on special agents, criminal prosecutions, and utilize the methodology from Lynch *et al*, as a guide beginning in Table 2 below to begin assessing the probability of detection and prosecution under RCRA.⁵²

We now estimate the probability of detection by comparing the number of criminal investigators to the number of regulate facilities, 2006-19. In table 2, we list the year in the first column, number of investigators or special agents employed that year in column 2, number of regulated facilities using ECHO data in column 3, the number of facilities divided by the number of special agents in column 4. Column 4 can be misleading because not all special agents give their time to RCRA prosecutions. In an attempt to create a measure of the percentage of investigative staff employed to police RCRA crimes, we divide the total number of criminal prosecutions since 1983 (2,588) by the number of RCRA prosecutions, which is about 15 percent of prosecutions, leading us to assume roughly fifteen percent of investigative capital was employed towards RCRA-focused investigations. We divide the number of special

⁴⁹ U.S. EPA, 2020, Enforcement Compliance History Online (ECHO), available from: <https://echo.epa.gov/>.

⁵⁰ U.S. EPA, Toxics Release Inventory (TRI) Program, 2020, available from: <https://www.epa.gov/toxics-release-inventory-tri-program>.

⁵¹ The TRI reports annual quantities of toxic chemicals from facilities throughout the country that report EPA. To be required to report, a facility must fall within a reportable industry sector, have ten or more full-time equivalent employees (FTE), and manufacture or process or use a regulated chemical in amounts above legal thresholds to be required to report. These criteria exclude non-point sources and many smaller producers, making ours a conservative estimate of the total facilities to be policed under RCRA. See U.S. EPA, 2019, Factors to Consider When Using Toxics Release Inventory Data, 8, available from: https://www.epa.gov/sites/production/files/2019-03/documents/factors_to_consider_march_2019.pdf.

⁵² Lynch *et al. Supra* note 5, at 1101-1103.

agents by .15 to create a measure of RCRA special agents in column 5. In Column 6 we use this measure and divide it by the number of regulated facilities to get a better estimate of how many RCRA-focused investigative resources are put forward relative to regulated facilities in a given year.

Table 2. Estimating the Probability of a RCRA Criminal Investigation, 2006-19.

Year	Agents	Facilities	Facilities/Agent	RCRA Agents	Facilities/RCRA Agents
2006	183	2,977	16	27	108
2007	168	3,033	18	25	120
2008	183	3,123	17	27	114
2009	186	3,050	16	28	109
2010	195	3,140	16	29	107
2011	215	3,160	15	32	98
2012	175	3,180	18	26	121
2013	165	3,229	20	25	130
2014	168	3,206	19	25	127
2015	154	3,272	21	23	142
2016	157	3,183	20	24	135
2017	147	3,137	21	22	142
2018	140	3,084	22	21	147
2019	145	2,788	19	22	128

Source: OECA, EPA Summary of Criminal Prosecutions Database, ECHO, TRI, and PEER.

We find there are 183 agents at EPA-CID tasked with investigation environmental crimes in 2006. They must police 2,977 facilities generally or an average of about 16 facilities per agent. This number assumes all resources are put towards RCRA investigations, which greatly overestimates the human capital available for RCRA policing. When we divide the number of facilities by .15, we estimate that only 27 of these agents or equivalent were put forward to police RCRA crimes. This gives us an estimate of 108 facilities that each special agent equivalent must police in a given year to put forth any police presence annually. This number is also conservative. We measure the regulated community conservatively by the number of permitted facilities reporting to ECHO and TRI in a given year. In reality these agents must investigate mobile source hazardous waste crimes, individuals, firms, and other entities without permits, and other facilities not captured in ECHO. Even by our conservative logic and estimates here, if a criminal investigator worked 48 weeks a year and 5 days a week given four weeks of personal and vacation time, that would leave 240 days per year for policing RCRA facilities and investigating crimes. This individual would have to undertake all of their other administrative duties and visit one facility roughly every

2.2 days to make an appearance in 2006. As the number of criminal investigators have decreased over time, in 2018 we estimate 21 agents for RCRA work and 147 facilities each or each investigator would have to visit a facility about every 1.6 workdays.⁵³

These scenarios are hypothetical. Criminal investigators must do administrative work, engage in lengthy investigations, attend meetings, conferences, professional development, testify in court, and many other functions. They also do not make unannounced visits as a matter of form to police the community. Many facilities remain in chronic violation over many years and state environmental investigators can also make visits to these facilities. For RCRA crimes one could argue by these metrics 1.6 days to visit a facility is a reasonable estimate, absent other activities, which of course makes it less reasonable in practice. Having a police presence for these facilities alone with so few men and women to investigate and the difficulties of investigating large, stationary sources of pollution make the probability of detection low, particularly when considering other duties.

We move from the plausibility of detection to the probability of prosecution for RCRA crimes in Table 3. In 2006, we find eleven prosecutions for CRA crimes across 2,977 regulated facilities with hazardous waste permits that report to the TRI. The basic probability of a stationary source being prosecuted in 2006 for a RCRA violation was about .004. There were 13 RCRA-focused prosecutions completed in 2009. With 3,050 facilities to police, the probably of being prosecuted was again about .004. The average probability over these 14 years of being prosecuted for a RCRA crime, among stationary sources that report to ECHO and TRI was about .3%. or .003.

Table 3. Estimating the Probability of being Prosecuted under RCRA, 2006-19.

Year	Total Prosecutions	Total Facilities	Probability
2006	11	2,977	.0037
2007	9	3,033	.0030
2008	8	3,123	.0026
2009	13	3,050	.0043
2010	12	3,140	.0038
2011	13	3,160	.0041
2012	12	3,180	.0038
2013	10	3,229	.0031
2014	11	3,206	.0034
2015	7	3,272	.0021
2016	9	3,183	.0028
2017	4	3,137	.0013

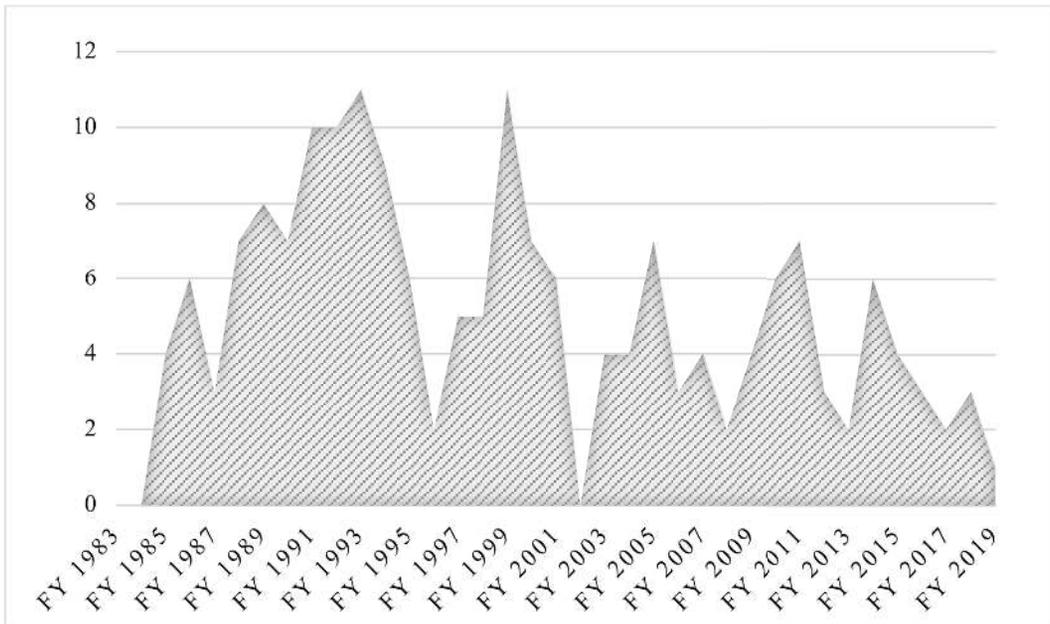
⁵³ Lynch *et al* estimate that there is one police investigator for every 1,365 residents over the age of ten in New York City as a basis of comparison here. See Lynch *et al. Supra* Note 5, at 1101-1102.

2018	6	3,084	.0019
2019	9	2,788	.0032

Source: OECA, EPA Summary of Criminal Prosecutions Database, ECHO, and TRI.

Our analysis overestimates the probability of prosecution, given that many mobile sources and non-permitted entities violate RCRA laws. We cannot control for those outside the regulatory universe or properly estimate its size. Instead we try to hone our analysis a bit more below, by providing better estimates of the probability a company is prosecuted under RCRA, rather than simply using the raw number of prosecutions in a given year. We created a measure in our dataset to account for this possibility, by coding each prosecution if there was at least one named company or corporation as a defendant in the case. We find 182 prosecutions that meet this criteria, 1983-2019 and plot them in Figure 3. We find the number of RCRA-focused prosecutions with a company as the named defendant moves from a low of zero prosecutions in the early 1980s to a high of 11 in 1993 and 1999. The average number of prosecutions over these 37 years was a little less than five prosecutions per year.

Figure 3. Total Annual RCRA Criminal Prosecutions Containing at least one Company as a Defendant, 1983-2019.



Source: U.S. EPA Summary of Criminal Prosecutions Database.

We utilize this data in Table 4 to re-estimate the probability of a regulated facility being prosecuted under RCRA from 2006-19 using our prosecution data and ECHO data. Using total prosecutions as a measure in the second column, in 2006 there were 3 prosecutions across 2,977 facilities or a probability of about .001 that any of these facilities would be prosecuted in a given year. As the number of annual prosecutions dips to two in 2017 across 3,137 facilities, the probability of prosecution drops to about .0006. The highest probability of prosecution comes in 2011, where 7 prosecutions occurred and there were 3,229 facilities in the regulatory universe, or about a .2% chance of being prosecuted that year. The average chance a regulated facility would be prosecuted for a RCRA crime across these 14 years was low at about .1%.

Table 4. Estimating the Probability of a Firm being Prosecuted under RCRA, 2006-19.

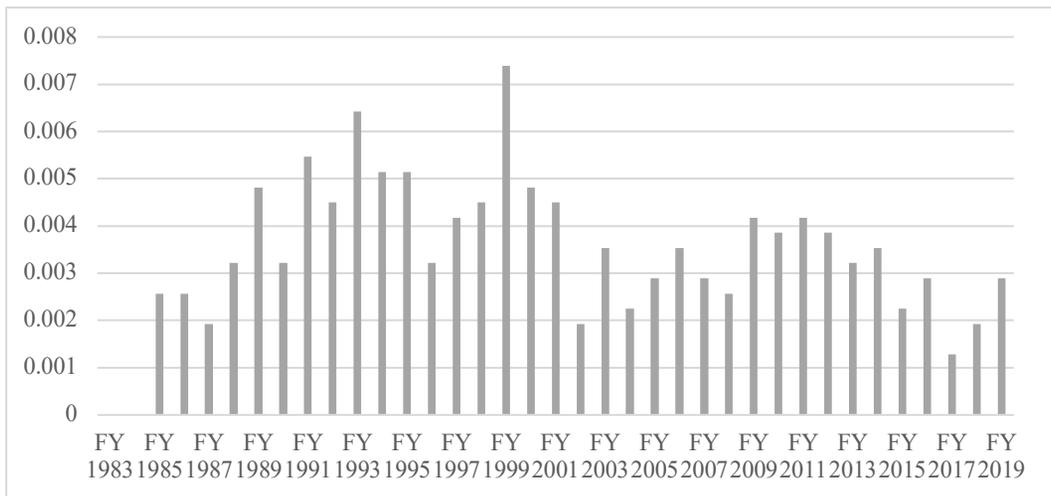
Year	Total Prosecutions	Total Facilities	Probability
2006	3	2,977	.0010
2007	4	3,033	.0013
2008	2	3,123	.0006
2009	4	3,050	.0013
2010	6	3,140	.0019
2011	7	3,160	.0022
2012	3	3,180	.0009
2013	2	3,229	.0006
2014	6	3,206	.0019
2015	4	3,272	.0012
2016	3	3,183	.0009
2017	2	3,137	.0006
2018	3	3,084	.0010
2019	1	2,788	.0004

Source: OECA, EPA Summary of Criminal Prosecutions Database, ECHO, and TRI.

ECHO data used to estimate the annual number of regulated facilities is only available 2006-19. We do not find that the annual number of facilities varies greatly during that time period. Assuming this trend is more or less accurate for our purposes going back to 1983 we roughly measure the average number of facilities from 2006-19 to be 3,112 and use this as an annual measure of regulated firms, 1983-2019. In Figure 4 we use this average to estimate the probability of being prosecuted under RCRA, 1983-2019. We find the average probability of being prosecuted to be low. In the best of circumstances when prosecutions were high as in 1993, when 20 were completed, we find that across 3,112 facilities, the chance of being prosecuted was about .6% that

year. In 2017 when only 4 prosecutions were completed, the chance of being prosecuted was .1% that year. In the best circumstance, in 1999 when 23 prosecutions were completed, there was a .7% chance of prosecution that year.

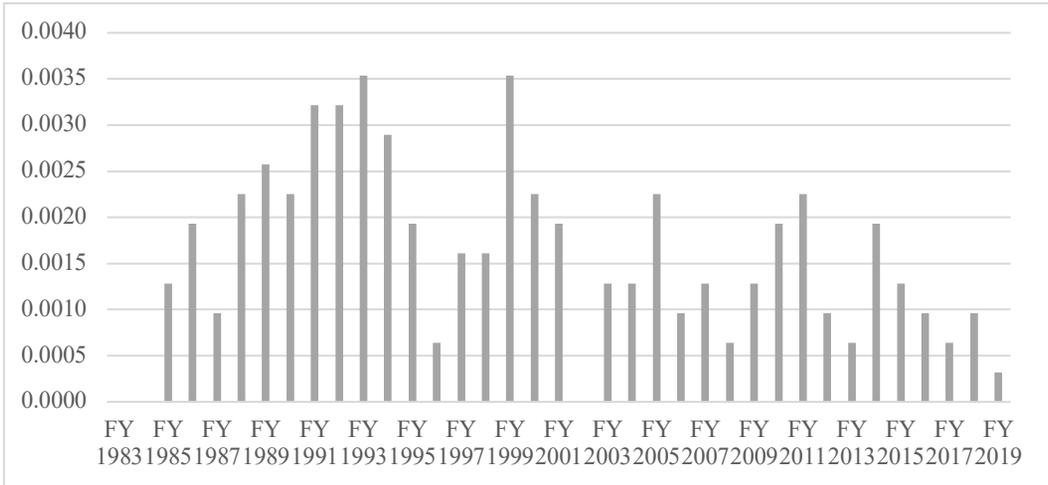
Figure 4. Estimating the Probability of being Criminally Prosecuted under RCRA, 1983-2019.



Source: U.S. EPA Summary of Criminal Prosecutions Database.

We go back to our measure of prosecution using only those cases where at least one company or corporation was prosecuted in a case. When we compare these numbers to the average number of facilities 2006-29 (3,112) and use that data to re-estimate the probability of a firm being criminally prosecuted in Figure 5, our probabilities of prosecution further decline. For example, in 1987 we find three prosecutions containing at least one company or corporation as a defendant in a case and an average of 3,112 facilities to police. That gives a .1% chance of being prosecuted that year. When prosecutions reach their zenith of eleven in 1993 and 1999, the chance of being prosecuted only increase to about .3%. Creating a measure of average firms and moving back to the 1980s-1990s that is no longer available in ECHO does not radically change the probability any facility in the regulated universe would be prosecuted.

Figure 5. Estimating the Probability of a Company being Criminally Prosecuted under RCRA, 1983-2019.



Source: U.S. EPA Summary of Criminal Prosecutions Database.

We find the probability of detection and prosecution for RCRA crimes moving back to 1983 to be fairly low. All other factors aside, even a permitted company wishing to commit a hazardous waste crime in any given year has a decidedly low probability of being detected by EPA-CID or prosecuted by DOJ-ECS. We now address the related issue of whether large penalty cases may provide for an additional deterrence function for both individuals and companies. We begin exploring this possibility by examining large-penalty cases levied against corporations for RCRA crimes since 1983 in Table 5.

Table 5. Punitive Corporate Monetary Penalties Levied in RCRA Criminal Prosecutions, 1983-2019.

Fiscal Year	Company	Penalty
1992	Rockwell International	\$18,501,625
2001	TRW Vehicle Safety Systems	\$12,004,000
2010	Southern Union	\$18,000,000
2011	Honeywell Metropolis Works	\$12,000,000
2014	Tonawanda Coke Corporation	\$24,700,000
2015	American Screw and Rivet	\$17,692,974

Source: U.S. EPA Summary of Criminal Prosecutions Database.

Rockwell International pled guilty on June 1, 1992 for illegal discharge and release of toxic and hazardous wastes to the Rocky Flats sewage treatment plant and for the illegal storage and treatment of hazardous wastes.⁵⁴ The company managed the U.S. Department of Energy's Rocky Flats nuclear weapons facilities near Golden, Colorado. Rockwell was sentenced to pay a fine of \$18.5 million, with \$2 million suspended, because the company agreed to pay \$2 million to the State of Colorado. A special assessment fee of \$1,625 was also imposed.⁵⁵ TRW Vehicle Safety Systems was prosecuted for storing, treating, and illegally transporting hazardous wastes from its Mesa II facility to a landfill in Mobile, Arizona in violation of RCRA.⁵⁶ On August 20, 2001 the company was sentenced to pay \$12 million in state and federal fines, a \$4,000 special assessment fee, and serve 60 months probation.⁵⁷ The Southern Union Company was found guilty of storing hazardous waste without a permit and was sentenced on October 2, 2009 to a \$6 million fine, \$12 million in community service payments, and two years probation.⁵⁸ The company began removing gas regulators in homes in 2001 and stored them in a shed. In September 2004, three youths broke into the facility and ended up contaminating both the facility and a nearby apartment complex.⁵⁹

Honeywell Metropolis Works was prosecuted for illegally storing some 7,500 drums of radioactive and hazardous wastes. Honeywell was charged with knowingly storing hazardous waste without a permit and was sentenced on March 11, 2011 to pay an \$11.8 million federal fine and implement a household hazardous waste program at a cost of \$200,000.⁶⁰ Tonawanda Coke Corporation was prosecuted for releasing coke oven gas containing benzene through an unreported pressure relief valve and storing, treating, and disposing of hazardous waste without a permit.⁶¹ The company was sentenced on March 19, 2013 to 60 months probation, a \$12.2 million community

⁵⁴ Matthew L. Wald, 1992, Rockwell to Plead Guilty and Pay Large Fine for Dumping Waste, *New York Times*, available from: <https://www.nytimes.com/1992/03/26/us/rockwell-to-plead-guilty-and-pay-large-fine-for-dumping-waste.html>.

⁵⁵ Rockwell International Corporation (D. Colorado CR-92-107, 1992).

⁵⁶ The company agreed to pay a total of \$17.6 million to settle civil and criminal claims. *See* U.S. EPA, 2020, TRW Vehicle Safety Systems, Inc. Hazardous Waste Settlement. Available from: <https://www.epa.gov/enforcement/trw-vehicle-safety-systems-inc-hazardous-waste-settlement>.

⁵⁷ TRW Vehicle Safety Systems, Inc. (D. Arizona 01-10-PHX-ROS, 2001).

⁵⁸ Southern Union Company (D. Rhode Island 1:07CR00134-01S, 2010).

⁵⁹ The fine was later amended on appeal to the U.S. Supreme Court in *Southern Union Company v. United States* (567 US, 2012). *See* <https://lawaspect.com/case-southern-union-company-v-united-states/>.

⁶⁰ Honeywell Metropolis Works (S.D. Illinois 11-CR-40006-JPG, 2011); U.S. Department of Justice, 2011, Honeywell Pleads Guilty to Illegal Storage of Hazardous Waste, available from: <https://www.justice.gov/opa/pr/honeywell-pleads-guilty-illinois-illegal-storage-hazardous-waste>.

⁶¹ Tonawanda Coke Corporation: (W.D. New York 1:10-CR-00219-WMS-HKS, 2013).

service payment, and a \$12.5 million federal fine.⁶² American Screw and Rivet was prosecuted for illegally storing more than 24,000 gallons of hazardous waste at their Anderson, South Carolina facility, costing EPA over \$17 million in disposal fees.⁶³ The company was sentenced to five years probation and ordered to pay \$17,692,974 in restitution.⁶⁴

While these penalties against corporations are significant, they are by no means as punitive as penalties for other environmental crimes such as the \$4 billion penalty levied against British Petroleum for their role in the Deepwater Horizon Disaster or Volkswagen AG's \$2.8 billion penalty resulting from their extensive emissions rigging scheme.⁶⁵ In both of these cases criminal provisions of U.S. Clean Water Act and Clean Air Act were used to seek extensive penalties to deter future violations from the companies and to set examples in their various industries.⁶⁶ While these rare penalties are circumstantial to the crimes that occurred and what criminal charging statutes were most appropriate, as well as their public salience and willingness of prosecutors to pursue large penalties, big-penalty RCRA cases come nowhere close to this standard to play a specific or general deterrence function for companies.

We now turn to significant incarceration penalties assessed individual defendants in RCRA criminal prosecutions in Table 6. Charles Arcangelo and nine co-defendants operated five junkyards, four scrap dealer businesses, and a restaurant in New Haven, Connecticut. Charles and James Arcangelo were prosecuted under RICO (Racketeer Influenced and Corrupt Organization) in regards to transporting and harboring illegal aliens, mail fraud, racketeering, sale or receipt of stolen motor vehicles, illegal disposal of hazardous waste without a permit in violation of RCRA, and other charges related

⁶² U.S. Department of Justice, 2013, *Historic Verdict in Environmental Crime Case as Tonawanda Coke and Manager Found Guilty of Violating the Clean Air Act and Resource Conservation and Recovery Act*, available from:

https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm?action=3&prosecution_summary_id=2555&searchParams=M5%2C%3A%2FXT%2A%5CCYZ%40JZ%5DIWY45%3DXBI%3EX%3A%29M%3B%5CSK%25%29%3F%5F%5B%202%2D%25Z%2DF%2EZ%5F%5DSMWOZ%2A4I%20%25%5F%0AM%26A%2B1%2BEI%29%22%5BF6%21XCP%5D%3DFPWZB%27LY%27%2ADB%3DN3RTFWIWZA%5D3%40%3BQ0K%29I%3C%20%5CO%3DS4X%22%0AM5X3%3D%5C5WLME%24BJ9%5F%2F3Z%2D8V4J%2B7U%3F%3D7PR%25CE%223W%2F%5F0L9ML%2EZB%5C%21U%2A%3E%2AY92UL%2C9%0A%27%3E%29%5E%224I%22WE0%20%20%0A

⁶³ American Screw and Rivet (D. South Carolina 8:13CR724 /726, 2015).

⁶⁴ WYFF4, 2015, *Woman Scammed Banks, Stored 24,000 Gallons of Hazardous Waste*, available from: <https://www.wyff4.com/article/woman-scammed-banks-stored-24-000-gallons-of-hazardous-waste/7012463>.

⁶⁵ BP, PLC: (E.D. Louisiana 2:12-CR-00292-DEK, 2013).; Volkswagen AG: (E.D. Michigan 16-CR-20394, 2017).

⁶⁶ U.S. Clean Air Act of 1970 (P.L. 91-604).; U.S. Clean Water Act of 1972 (33 USC 1251).

to interstate trafficking in stolen motor vehicles.⁶⁷ Collectively, defendants were sentenced to 564 months incarceration.⁶⁸

Wilbur Duane Outhwaite was prosecuted along with six other defendants including LCP Chemicals for contaminating the company's site near Brunswick, Georgia. The defendants were charged with knowingly treating, storing, and disposing of hazardous waste without a permit in violation of RCRA, conspiracy, CWA violations, and other charges.⁶⁹ In 1999 the defendants were collectively sentenced to 213 months incarceration.⁷⁰ Harold Julio Fargas and representatives of the Cali Cocaine Cartel constructed what was at the time one of the United States' largest cocaine manufacturing facilities in Minden, New York in 1985. The facility exploded and investigators found 250, 55-gallon containers of ethyl ether abandoned at the facility.⁷¹ Fargas fled and remained at large until 1999 when he was charged with knowing endangerment under RCRA and violating the Drug Abuse Prevention and Control Act.⁷² On December 16, 1999 Fargas was sentenced to serve 180 months incarceration.⁷³

⁶⁷ U.S. EPA, 1989, FY89 Enforcement Accomplishments Report, available from: <https://nepis.epa.gov/Exe/ZyNET.exe/9101JPU2.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1986+Thru+1990&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C86thru90%5Ctxt%5C0000029%5C9101JPU2.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>.

⁶⁸ Charles Arcangelo: (D. Connecticut N-88-43TFGD, 1989).

⁶⁹ U.S. EPA, 1999, Three Officials of LCP Chemicals Convicted, available from: https://archive.epa.gov/epapages/newsroom_archive/newsreleases/bd048b2330fe314d85256701006f04a0.html.

⁷⁰ William Duane Outhwaite: (S.D. Georgia CR-298-11, 1999).

⁷¹ U.S. EPA, 1999, Environmental Charges Stem from Illegal Cocaine Lab, available from: https://archive.epa.gov/epapages/newsroom_archive/newsreleases/d5b73dfdfa7e10ce85256818005e6af8.html.

⁷² Drug Abuse Prevention and Control Act: 21 USC 13).

⁷³ Harold Julio Fargas: (N.D. New York 99-CR-537, 2000).

Table 6. Significant Incarceration Sentences in RCRA Criminal Prosecutions, 1983-2019.

Fiscal Year	Primary Defendant	Months Incarceration
1989	Charles Arcangelo	564 Months
1999	Wilbur Duane Outhwaite	213 Months
2000	Harold Julio Fargas	180 Months
2001	Mark Anthony Dorner	953 Months
2013	Alan Elias	204 Months
2019	Charles Ferris Callihan	225 Months

Source: U.S. EPA Summary of Criminal Prosecutions Database.

Mark Anthony Dorner and seven co-defendants were prosecuted for producing methamphetamines. Dorner and his co-defendants were charged with illegal disposal of hazardous waste without a permit under RCRA and violating the Drug Abuse Prevention and Control Act.⁷⁴ Collectively, the defendants were sentenced to 953 months incarceration.⁷⁵ On October 15, 2012 an explosion occurred at the munitions bunker at Camp Minden, Louisiana. The bunker and trailer were destroyed, 11 cars were derailed, windows shattered within a four-mile radius, and the town of Doyline, Louisiana was evacuated. Charles Ferris Callihan and other defendants conspired to defraud the United States by submitting false certificates to the U.S. Army that hazardous wastes had been sent to permitted facilities and that demilitarized M6 propellants had been sold to third parties. Callihan and other officials at Explo Systems, Inc. contracted with the military to demilitarize munitions and had been awarded an \$8.6 million contract.⁷⁶ The officials entered into a conspiracy to ship hazardous waste to unpermitted facilities, illegally store and hide hazardous waste from government officials during inspection, and submitted false statements to government officials. On November 29, 2018 the defendants were collectively sentenced to 225 months incarceration and other penalties.⁷⁷

While these sentencing examples are significant, and show examples of large penalties in RCRA prosecutions, they also show that other charges drive the sentencing. Alan Elias is a good example of a knowing endangerment charge with a stiff sentence that is RCRA-focused, as is the case against Outhwaite. The Dorner and Fargas cases are drug-related and that drives sentencing. The cases against the

⁷⁴ Mark Anthony Dorner: (E.D. Missouri 4:00CR396SNL, 2001).

⁷⁵ U.S. EPA, 2000, Three Plead Guilty in Missouri Illegal Drug Lab Case, available from: https://archive.epa.gov/epapages/newsroom_archive/newsreleases/4ebf2903a549d626852569af005b9bac.html.

⁷⁶ U.S. Department of Justice, 2016, Federal Grand Jury Indicts 6 Explo Company Officials for Offenses Related to Camp Minden, Louisiana Ammunition Disposal, available from: <https://www.justice.gov/usao-wdla/pr/federal-grand-jury-indicts-6-explo-company-officials-offenses-related-camp-minden>.

⁷⁷ Charles Ferris Callihan: (W.D. Louisiana 16-CR-00214-06, 2018).

Arcangelos and Callihan and Explo Systems are related to RCRA charges, but as well but connected to other crimes. As with the large corporate penalty cases, large prison sentences for RCRA crimes alone are decidedly rare.

CONCLUSION

As the regulated community under RCRA grows in the United States or should grow with a subsequent expansion of the country's economy, the question of whether the criminal enforcement apparatus is sufficient to police bad behavior along with the compliance regime of administrative fines, warnings, and civil actions is an important one to explore. Our general answer is that approached from a variety of vantage points, the probability of a facility in the regulated community being detected if committing a crime is rather low. We find the same for prosecutions. Our summary judgement is that given detection and punishment probabilities are fairly low over time, the ability of the federal criminal enforcement regime to deter RCRA crimes appears limited.

An important point of emphasis here is that environmental criminal enforcement was always underfunded and required to make hard choices with limited resources.⁷⁸ The deterrent effect expected would be one seen alongside the civil enforcement regime and targeted at serious and willful violations of the law. Many acts of companies and individuals may not constitute violations of the law or may simply be legally ambiguous as to whether or not such actions are illegal. Chronic violations are not necessarily criminal actions under the law or policed in such a manner, because many companies stay in chronic violation for many years before criminal sanctions are attempted, if at all.⁷⁹ Criminal enforcement also exists within a broader enforcement and compliance framework that involves federal civil enforcement, as well as state enforcement efforts. Within this framework of limitations, we offer three possibilities for improving what are likely sub-optimal deterrence effects for RCRA criminal violations.

Detection probabilities are low in our estimation for RCRA crimes. EPA-CID should be allowed to hire the statutory minimum number of criminal investigators.⁸⁰ The rates of detection we estimate are low and that ignores mobile sources, midnight dumping, and many other crimes. To enhance detection, EPA-CID must simply be authorized to hire more criminal investigators as prescribed by law and the same must occur for DOJ-ECS if additional prosecutions are to take place for the sake of increasing the reasonable potential of punishment. DOJ-ECS only employed 43 prosecutors in 2015 and this number must be increased to have additional

⁷⁸ John Peter Suarez, 2003, Management Review of the Office of Criminal Enforcement, Forensics and Training, 5, available from: <https://www.epa.gov/sites/production/files/documents/oceft-review03.pdf>.

⁷⁹ Ozymy and Jarrell *supra* note 8, at 40.

⁸⁰ Public Employees for Environmental Responsibility (PEER), 2019. EPA CID Agent Count, available from: https://www.peer.org/wp-content/uploads/2019/11/11_21_19-Federal_Pollution_EPA_CID_Agent_Count.pdf.

environmental crime-focused attorneys on staff.⁸¹ The environmental criminal enforcement apparatus is effective under limited resources and modest additions to staff would go far. For example, these collaborations have been found to produce a 67 percent filing rate for criminal charges and a 90 percent conviction rate, which is a significant value for the investment.⁸²

Another modest remedy for sub-optimal deterrence that involves the addition of little resources is to enhance the role community stakeholders play in the enforcement process. A good place to start would be applying principles of community policing with environmental justice communities living near the fenceline of industrial facilities strewn throughout the United States. These communities bear the largest health burdens in the country and there is already a history of environmental justice activism in many communities and stakeholder inclusion via the EPA's Office of Environmental Justice (OEJ).⁸³ OEJ invites these communities to the table for permitting issues, planning, and must consider their voice if any new burdens are foisted upon them. Giving them the tools and taking seriously their efforts to police the fenceline could play a significant role in enhancing a police presence, where EPA-CID lacks resources or the will to act. The Report a Violation website was introduced in January 2006, and within a decade EPA-CID opened 35 cases and six of those cases were successfully prosecuted.⁸⁴ Expanding this program considerably and allowing a stronger version of community policing of toxic facilities in environmental justice communities would help resource-starved administrators.

One final addition to help with detection and punishment of RCRA crimes is to work to enhance the visibility of environmental crimes and criminals. The general public rarely appreciates the severity of environmental crimes, even though they collectively injure more people in the United States than street crime.⁸⁵ The mass media rarely pays attention to such crimes and their victims unless there is a large explosion and instant deaths, an injury, or a major environmental catastrophe.⁸⁶ Until much greater public interest and media attention are drawn to environmental crimes, policymakers have less of a reason to add sufficient funding for this important work.

⁸¹ U.S. DOJ-ECS, 2015, Historical Development of Environmental Criminal Law, available from: <https://www.justice.gov/enrd/about-division/historical-development-environmental-criminal-law>.

⁸² U.S. EPA, 2017, Criminal Enforcement Program Overview, 5, available from: <https://19january2017snapshot.epa.gov/sites/production/files/documents/oceft-overview-2011.pdf>; Total OEFCT budgeting in real dollars according to EPA estimates as one example was flat at \$65 million between FY 2007-11.

⁸³ U.S. EPA, 2017, Factsheet on the EPA's Office of Environmental Justice, available from: https://www.epa.gov/sites/production/files/2017-09/documents/epa_office_of_environmental_justice_factsheet.pdf.

⁸⁴ U.S. EPA, 2017, Criminal Enforcement Program Overview, 6-7, available from: <https://19january2017snapshot.epa.gov/sites/production/files/documents/oceft-overview-2011.pdf>.

⁸⁵ Melissa L. Jarrell and Joshua Ozymy, 2012, Real crime, Real Victims: Environmental Crime Victims and the Crime Victims' Rights Act (CVRA), 58 *Crime, Law and Social Change*, 374-377.

⁸⁶ Melissa L. Jarrell, 2009, Environmental Crime and Injustice: Media Coverage of a Landmark Environmental Crime Case, 6 *Southwest Journal of Criminal Justice*, 27-28.

Simply noting case outcomes on EPA and DOJ's websites or promoting the EPA's Fugitives Program are steps in the right direction, but insufficient to achieve the greater visibility that is needed on this front.⁸⁷

⁸⁷ U.S. EPA, 2020, EPA Fugitives, available from: <https://www.epa.gov/enforcement/epa-fugitives>.