

DECISIONS, DECISIONS ON TOXIC EMISSIONS: PROSECUTING
COMPANIES FOR ENVIRONMENTAL CRIMES UNDER THE U.S.
CLEAN AIR ACT

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Criminal provisions are set forth in the U.S. Clean Air Act to punish companies for air pollution crimes that involve significant harm and/or culpable conduct. Despite the importance of the Act for regulating toxic air pollution, we have little systematic understanding of how companies have been punished for air pollution crimes. We use content analysis of 2,728 criminal prosecutions stemming from U.S. EPA criminal investigations in the years from 1983 to 2021, collect data on all air pollution prosecutions under the Clean Air Act, and then select all cases with companies as named defendants for analysis. Findings suggest that of 391 total Clean Air Act prosecutions, 138 or about 35 percent involved at least one company as a defendant in the case and companies were assessed a total of 318 years of probation and over \$3.1 billion in monetary penalties at sentencing. While these monetary penalties are significant, they are highly contingent on the five largest penalty cases that are responsible for about 94 percent of these penalties, and over half of all prosecutions are focused on asbestos crimes. We conclude with potential recommendations for refocusing criminal enforcement efforts towards large stationary sources of pollution to better combat air pollution, achieve better environmental justice outcomes, and hopefully set the stage for future criminal enforcement of carbon emissions crimes.

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INTRODUCTION

The recent Supreme Court decision in *West Virginia v. EPA* has called into question the U.S. Environmental Protection Agency's ("EPA") authority under the U.S. Clean Air Act ("CAA") to regulate harmful air emissions from stationary sources in a manner that would significantly alter the energy landscape in the United States.¹ In 2015, EPA used its authority outlined in the Clean Power Plan to set the country on an important course towards reducing carbon emissions and combating climate change in a concerted manner by requiring electricity producers to shift toward zero- or low-carbon generating capacities—this regulation was deemed unlawful in the *West Virginia* decision.² The Inflation Reduction Act of 2022 ("IRA") takes a different tack, authorizing \$41.5 billion in appropriated funds for EPA to incentivize

¹ *West Virginia v. EPA*, 142 S. Ct. 2587 (2022); Dan Schweitzer, *Opinion: West Virginia v. EPA, 20-1530*, NAT'L ASS'N ATTORNEYS GENERAL (July 7, 2022), <https://www.naag.org/attorney-general-journal/opinion-west-virginia-v-epa-20-1530/>. At the core of the Court's argument was that EPA was not delegated the express ability by Congress via the CAA to broadly regulate the energy industry in such a manner. This issue gets to the heart of agency authority as delegated by Congress under important statutes and that Congress should "speak clearly if it wishes to assign to an agency decisions of vast economic and political significance," *West Virginia*, 142 S. Ct. at 2605 (quoting *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302, 324 (2014)), a legal theory referred to as the "major questions doctrine." *Id.* at 2595. Under this theory, the courts should not defer to the statutory authority of an agency when it uses that authority to impact broad issues affecting the economy, in this case the energy industry, most pertinently the coal industry, unless the authority is granted clearly by Congress. This theory reemerged in the last decade in important environmental cases that possibly portended *West Virginia*, such as *Util. Air Regul. Grp. v. EPA*, 573 U.S. 302 (2014), which challenged EPA's authority to regulate greenhouse gas emissions under the doctrine, largely upholding their ability to do so, if that authority was not more broadly applied. See Adam Liptak, *Supreme Court Limits E.P.A.'s Ability to Restrict Power Plant Emissions*, N.Y. TIMES (June 30, 2022), <https://www.nytimes.com/2022/06/30/us/epa-carbon-emissions-scotus.html>; Kevin O. Leske, *Major Questions About the "Major Questions" Doctrine*, 5 MICH. J. ENV'T & ADMIN. LAW 479, 480 (2016) (discussing pre-*West Virginia* cases like *Util. Air Regul. Grp. v. EPA* and *King v. Burwell* which invoked a slightly different version of the major questions doctrine).

The Air Pollution Control Act of 1955 was the first major Act of Congress to address air pollution as national problem. The CAA Extension of 1970 is generally taken as the earliest, most comprehensive version of the Act. See the following for the statutory history: Air Pollution Control Act of 1955, Pub. L. No. 84-159, 69 Stat. 322; Pub. L. No. 88-206, 77 Stat. 392 (1963); Clean Air Act Amendments of 1965, Pub. L. No. 89-272, 79 Stat. 992; Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676; Clean Air Act Amendments of 1977, Pub. L. No. 95-95, 91 Stat. 685; and Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399.

² See generally *Fact Sheet: Overview of the Clean Power Plan*, U.S. EPA, <https://archive.epa.gov/epa/cleanpowerplan/fact-sheet-overview-clean-power-plan.html> (last updated May 9, 2017); John Copeland Nagle, *An Autopsy of the Clean Power Plan*, 44 ECOLOGY L. CURRENTS (2017).

the reduction of carbon emissions and provide grants for clean energy initiatives.³

While such regulations, incentives, and civil enforcement mechanisms are the most common methods to ensure compliance with air pollution laws, another mechanism that is often overlooked is the application of criminal enforcement tools to punish crimes involving serious harm and culpable conduct and to deter future environmental crimes.⁴ Given the high stakes of reducing carbon emissions, it seems plausible that there will be a need for an enhanced stick, along with carrots, to combat climate change and toxic air pollution. That will mean greater criminal enforcement of industrial facilities for CAA violations. Yet very little legal research has systematically examined how large companies, the actors at the very heart of this struggle over air pollution, have been prosecuted over time for criminal violations of the CAA.⁵

In this Essay, we examine 2,728 environmental crime prosecutions resulting from EPA criminal investigations since 1983. We analyze all prosecutions occurring under the CAA that involve companies as named defendants in the case. We categorize these prosecutions into general themes, show broader trends in prosecutions and penalties, and provide context with specific case examples of the largest penalties over time to show the universe of such prosecutions since the institutionalization of the criminal enforcement regime. We begin with a brief overview of the CAA and a short history of the environmental criminal enforcement program in the United States. We then analyze our data and conclude with suggestions for refocusing and reprioritizing prosecutorial efforts towards large stationary sources of pollution.

³ Inflation Reduction Act of 2022, Pub. L. No. 117-169, 136 Stat. 1818; U.S. EPA, INFLATION REDUCTION ACT (IRA) OVERVIEW: CLIMATE AND CLEAN-AIR RELATED PROVISIONS 2, <https://www.epa.gov/system/files/documents/2022-09/IRA%20Overview.pdf> (last visited Mar. 1, 2024).

⁴ See, e.g., Memorandum from Earl E. Devaney, Director of Office of Criminal Enforcement, to EPA Employees Working in or in Support of the Criminal Enforcement Program 3–4 (Jan. 12, 1994) [hereinafter “Devaney Memo”], <https://www.epa.gov/sites/production/files/documents/exercise.pdf> (advocating for the use of the “full range of enforcement tools available” to EPA, including criminal enforcement where applicable). General studies of criminal enforcement and deterrence suggest it is so infrequent, that it alone may have little deterrent effect, which of course must be taken into context with civil and administrative violations that are also applied to induce compliance with the law. See Michael J. Lynch, *The Sentencing/Punishment of Federal Environmental/Green Offenders, 2000-2013*, 38 DEVIANT BEHAV. 991, 1002–05 (2017).

⁵ For recent work on the criminal enforcement of the CAA, see Joshua Ozymy & Melissa Jarrell Ozymy, *Exploring Charging and Sentencing Patterns in U.S. Clean Air Act Criminal Prosecutions*, 61 NATURAL RES. J. 229, 225–248 (2021) [hereinafter Ozymy & Ozymy, *Exploring Charging & Sentencing Patterns*].

I. COMPLYING WITH THE U.S. CLEAN AIR ACT

EPA's primary legal authority to regulate air pollution in the United States derives from the Clean Air Act ("CAA").⁶ EPA has used the CAA to establish a variety of tools to combat air emissions from stationary and mobile sources of pollution, resulting in significant reductions of harmful air pollution across the country.⁷ While these efforts are promising, they are still imperfect and an overarching national environmental law that crosses environmental media is lacking—accordingly, the CAA will remain the primary tool for managing air pollution and, hopefully in the future, carbon emissions.⁸ The CAA is divided by six major titles:⁹ Title I contains provisions for the attainment and maintenance of the National Ambient Air Quality Standards ("NAAQS") and creates the basis for air permits with New Source Review ("NSR") and the prevention of significant deterioration ("PSD") standards;¹⁰ Title II regulates mobile sources of pollution;¹¹ Title III regulates air toxics, creates a list of hazardous air pollutants ("HAPs"), and includes provisions for citizen suits;¹² Title V establishes and details the Acid Rain Program ("ARP") to control acid rain deposition;¹³ Title V creates a permitting system for stationary sources

⁶ Paul G. Rogers, *EPA History: The Clean Air Act of 1970*, <https://archive.epa.gov/epa/aboutepa/epa-history-clean-air-act-1970.html>; see also *Clean Air Act Requirements and History*, U.S. EPA, <https://www.epa.gov/clean-air-act-overview/clean-air-act-requirements-and-history> (last updated Aug. 8, 2023).

⁷ *The Clean Air Act: Successes and Challenges Since 1970*, RES. FOR THE FUTURE (Jan. 6, 2020), <https://www.rff.org/news/press-releases/clean-air-act-successes-and-challenges-1970/>.

⁸ The absence of an overarching environmental law makes regulating air pollution difficult. See Richard Arnold & Andrew B. Whitford, *Organisational Dilemmas of the US EPA: Why Structures Matter for Environmental Protection*, 14 ENV'T POL. 118, 118–121 (2005).

⁹ *Clean Air Act Table of Contents by Title*, U.S. EPA, <https://www.epa.gov/clean-air-act-overview/clean-air-act-text#toc> (last updated May 2, 2023) [hereinafter *CAA Table of Contents by Title*].

¹⁰ *New Source Review (NSR) Permitting*, U.S. EPA, <https://www.epa.gov/nsr> (last updated Jan. 17, 2024); *Prevention of Significant Deterioration Basic Information*, U.S. EPA, <https://www.epa.gov/nsr/prevention-significant-deterioration-basic-information> (last updated Jan. 17, 2024); see also *CAA Table of Contents by Title*, *supra* note 9.

¹¹ *Clean Air Act Title II - Emission Standards for Moving Sources, Parts A through C*, U.S. EPA, <https://www.epa.gov/clean-air-act-overview/clean-air-act-title-ii-emission-standards-moving-sources-parts-through-c> (last updated Aug. 8, 2023); see also *CAA Table of Contents by Title*, *supra* note 9.

¹² *1990 Clean Air Act Amendment Summary: Title III*, U.S. EPA, <https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary-title-iii> (last updated Nov. 15, 2023); *Clean Air Act Title III - General Provisions*, U.S. EPA, <https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iii-general-provisions> (last updated Aug. 8, 2023).

¹³ *Acid Rain Program*, U.S. EPA, <https://www.epa.gov/acidrain/acid-rain-program> (last updated Oct. 31, 2023); see also *CAA Table of Contents by Title*, *supra* note 9.

of air pollution, such as powerplants and factories;¹⁴ and Title VI provides for stratospheric ozone protection by overseeing a phaseout of chlorofluorocarbons (“CFCs”) and regulating ozone-depleting substances (“ODS”).¹⁵

EPA maintains a compliance monitoring strategy for the CAA to focus its efforts to control air pollution in a series of areas.¹⁶ For much of its compliance monitoring categories, EPA oversees regulations that govern air emissions from stationary sources of air pollution, such as refineries, power plants, and other factories.¹⁷ These include: oversight of the ARP; managing the Applicability of Determination Index (“ADI”), an EPA database associated with compliance standards for clean air rules; inspection of renovation and demolition sites containing asbestos so it is properly remediated under rules set by the Asbestos National Emissions Standards for Hazardous Air Pollutants (“NESHAP”); managing air toxics from sources under NESHAP; maintaining and overseeing the evolution of NSR/PSD standards; prevention of the accidental release of hazardous substances; overseeing New Source Performance Standards (“NSPS”) at facilities; CFCs and ODS regulations; stack testing guidelines for facility compliance with the CAA; overseeing risk management plans (“RMP Rule”) for chemical accident prevention at facilities using extremely hazardous substances; Area Source Rules for HAPs deemed the greatest threats in urban areas; and emissions testing oversight for residential wood heaters.¹⁸

When monitoring for violations of the CAA, infractions are typically treated as administrative or civil matters, and the overarching

¹⁴ *Operating Permits Issued under Title V of the Clean Air Act*, U.S. EPA, <https://www.epa.gov/title-v-operating-permits> (last updated Jan. 18, 2024); *see also CAA Table of Contents by Title*, *supra* note 9.

¹⁵ *Clean Air Act Title VI - Stratospheric Ozone Protection*, U.S. EPA, <https://www.epa.gov/clean-air-act-overview/clean-air-act-title-vi-stratospheric-ozone-protection> (last updated Aug. 8, 2023); *see also CAA Table of Contents by Title*, *supra* note 9. The statute has also been used to regulate and phaseout asbestos in numerous applications throughout the country. *See Asbestos Laws and Regulations*, U.S. EPA, <https://www.epa.gov/asbestos/asbestos-laws-and-regulations> (last updated Oct. 10, 2023).

¹⁶ *Clean Air Act (CAA) Compliance Monitoring*, U.S. EPA, <https://www.epa.gov/compliance/clean-air-act-cao-compliance-monitoring> (last updated June 14, 2023).

¹⁷ *Stationary Sources of Air Pollution*, U.S. EPA, <https://www.epa.gov/stationary-sources-air-pollution> (last updated Jan. 8, 2024).

¹⁸ *Clean Air Act (CAA) Compliance Monitoring*, U.S. EPA, <https://www.epa.gov/compliance/clean-air-act-cao-compliance-monitoring> (last updated June 14, 2023); *Clean Air Act Stationary Source Compliance Monitoring Strategy*, U.S. EPA, <https://www.epa.gov/compliance/clean-air-act-stationary-source-compliance-monitoring-strategy> (last updated Nov. 16, 2023); *Area Source Rule Implementation Guidance*, U.S. EPA, <https://www.epa.gov/compliance/area-source-rule-implementation-guidance> (last updated Sept. 6, 2023).

philosophy of civil enforcement is to bring the violator back into compliance with the law.¹⁹ Civil administrative actions include issuing fines, notices of violation, or administrative orders of correction that are needed to comply with the law, or in cases where a violator does not come into compliance, the government may pursue civil judicial actions.²⁰ If the defendant is found liable for a violation, a negotiated settlement can also be reached where they may enter into a consent decree to meet certain obligations to regain compliance and not admit fault.²¹ Outside of monetary penalties or fines,²² the government may seek other remedies for non-compliance including: permanent or temporary injunctive relief to prevent a party from engaging in certain actions that cause environmental damage, which may include environmental mitigation or monitoring plans; administrative orders on consent, where an agreement is made with a responsible party to pay for damages caused by certain past or ongoing actions (usually the cost to cleanup or remediate pollution); a supplemental environmental project (“SEP”) that requires the violator to provide public or environmental benefits above and beyond compliance; or stipulated remedies in a settlement that require future actions if the terms of a settlement are violated at a future date.²³

II. CRIMINAL ENFORCEMENT OF ENVIRONMENTAL CRIMES

While civil enforcement tools focus on compliance, there are instances where violations of the law involve culpable conduct that produces serious harm and may be remedied through a criminal process that centers on deterrence and punishment.²⁴ Civil violations focus on basic violations of law, whereas criminal violations involve intent. This means that civil liability in environmental law is strict and gives no consideration to whether a defendant knew or intended to violate the law, whereas criminal liability assumes a defendant knowingly violated

¹⁹ *Basic Information on Enforcement*, U.S. EPA, <https://www.epa.gov/enforcement/basic-information-enforcement> (last updated Dec. 18, 2023) (discussing the types and results of each distinct type of enforcement action).

²⁰ *Id.*

²¹ *Id.*

²² *Guidance on Use of Penalty Policies in Administrative Litigation*, U.S. EPA (Apr. 26, 2021), <https://www.epa.gov/enforcement/guidance-use-penalty-policies-administrative-litigation>.

²³ *Securing Mitigation as Injunctive Relief in Certain Civil Enforcement Settlements*, U.S. EPA (Nov. 14, 2012), <https://www.epa.gov/enforcement/securing-mitigation-injunctive-relief-certain-civil-enforcement-settlements-2nd-edition>; *Supplemental Environmental Projects (SEPs)*, U.S. EPA, <https://www.epa.gov/enforcement/supplemental-environmental-projects-seps> (last updated Jan. 26, 2024).

²⁴ See Devaney Memo, *supra* note 4, at 3–4.

the law or at a minimum knew the facts at the time of the violation.²⁵ Given this distinction, the CAA contains criminal provisions that typically focus on “knowing” violations of the law and impose statutory maximum penalties for violations that may double in repeat violations.²⁶ Another important distinction between civil and criminal violations of the CAA is the possibility of incarceration in the latter.²⁷

Developing a system for punishing federal environmental crimes meant the construction of an organizational structure to monitor and police violations, the addition of criminal provisions in federal environmental statutes, and the provision of resources for prosecuting offenders for criminal violations. This process evolved over time with our understanding of the seriousness of environmental violations in causing harm to animals, humans, and the natural environment. Some of the first federal penalties for environmental crimes can be traced to the Rivers and Harbors Act and Lacey Act, passed at the beginning of the twentieth century to provide penalties for altering or obstructing the navigable waters of the United States and engaging in the unpermitted interstate wildlife trade.²⁸ These and subsequent laws focused on punishing environmental crimes as misdemeanors or applied civil penalties. By the 1970s, a significant push for environmental regulations resulted in the creation of EPA and the passage of the CAA and other federal laws governing various environmental media, such as the Clean Water Act (“CWA”), Resource Conservation and Recovery Act (“RCRA”), Toxic Substances Control Act (“TSCA”), and the Federal Insecticide, Fungicide, and Rodenticide Act (“FIFRA”).²⁹

By the end of the decade, it had become apparent that stiffer punishments needed to be implemented for environmental crimes, and the process for evolving resources to manage serious crimes started to manifest in the United States and more broadly across the developed world, as multiple countries began to push for tougher penalties for

²⁵ *Basic Information on Enforcement*, *supra* note 19.

²⁶ *Criminal Provisions of the Clean Air Act*, U.S. EPA, <https://www.epa.gov/enforcement/criminal-provisions-clean-air-act> (last updated Jan. 4, 2024) (listing several CAA criminal violations and the requisite “knowing” mental element).

²⁷ *Basic Information on Enforcement*, *supra* note 19; Joshua Ozymy, Bryan Menard & Melissa L. Jarrell, *Persistence or Partisanship: Exploring the Relationship between Presidential Administrations and Criminal Enforcement by the U.S. Environmental Protection Agency 1983-2019*, 81 PUB. ADMIN. REV. 49, 50 (2021) (listing the potential outcomes of a criminal conviction, including incarceration).

²⁸ Rivers and Harbors Act, 33 U.S.C. §§ 401, 403 (1976); Lacey Act, 16 U.S.C. § 3371 (1900).

²⁹ Clean Water Act, 33 U.S.C. § 1251–1376 (1972); Resource Conservation and Recovery Act, 42 U.S.C. § 6901 (1976); Toxic Substances Control Act, 15 U.S.C. § 2601 (1976); Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. § 136 (1972).

environmental crimes.³⁰ As the “tough on crime” movement swept through Congress by the 1980s,³¹ there was enough bipartisan consensus to begin adding criminal provisions to environmental statutes, first with RCRA in 1984, followed by the CWA in 1987, and then the CAA in 1990.³²

Resources for monitoring and policing environmental crimes were institutionalized when EPA’s criminal enforcement program began in 1982.³³ Full-time criminal investigators were hired the following year and these special agents were granted full law enforcement authority by Congress in 1988.³⁴ EPA’s Criminal Investigation Division (“EPA-CID”), which today spearheads federal investigations into environmental crimes, was granted additional resources and support in 1990, with the passage of the Pollution Prosecution Act authorizing a minimum of 200 criminal investigators.³⁵ Prosecuting environmental crimes goes back to the Public Lands Division in the Department of Justice (“DOJ”), organized in 1909, which became the modern

³⁰ Bradley C. Howard, *Wielding the Big Stick: Deterrence and the Criminal Enforcement of Environmental Laws*, 15 WM. & MARY ENV’T L. & POL’Y REV. 29, 30–34 (1991) (discussing the criminalization of environmental law in the 1980s). Prosecuting corporate officers for hazardous waste crimes was difficult until amendments to RCRA as one example. See David T. Barton, *Corporate Officer Liability Under RCRA: Stringent but Not Strict*, 1991 BYU L. REV. 1547, 1548–50 (1991); Michael R. Pendleton, *Beyond the Threshold: The Criminalization of Logging*, 10 SOC’Y & NAT. RES. 181, 191–93 (1997).

³¹ See *Law and Order in the 1980s*, 15 CRIME & SOCIAL JUST. (1981); JUDITH GREENE, GETTING TOUGH ON CRIME: THE HISTORY AND POLITICAL CONTEXT OF SENTENCING REFORM DEVELOPMENTS LEADING TO THE PASSAGE OF THE 1994 CRIME ACT 11 (2002).

³² *Historical Development of Environmental Criminal Law*, U.S. DEP’T OF JUST. ENV’T & NAT. RES. DIV., <https://www.justice.gov/enrd/about-division/historical-development-environmental-criminal-law> (last updated Sept. 12, 2023). As criminal investigations and prosecutions commenced, there was greater concern about how criminal enforcement would unfold and consensus over the issue in Congress began to wane. See Theodora Galactos, *The United States Department of Justice Environmental Crimes Section: A Case Study of Inter- and Intra-branch Conflict over Congressional Oversight and the Exercise of Prosecutorial Discretion*, 64 FORDHAM L. REV. 589, 590–92 (1995).

³³ *About the Office of Enforcement and Compliance Assurance (OECA)*, U.S. EPA, <https://www.epa.gov/aboutepa/about-office-enforcement-and-compliance-assurance-oeca> (last updated Dec. 29, 2023); see also *Criminal Enforcement Overview*, U.S. EPA, <https://www.epa.gov/enforcement/criminal-enforcement-overview> (last updated Jan. 24, 2024) (stating that EPA’s criminal enforcement program was established in 1982).

³⁴ For a management review of the culture of EPA’s criminal enforcement staff and history, see U.S. EPA, U.S. ENVIRONMENTAL PROTECTION AGENCY REVIEW OF THE OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS AND TRAINING 5–7 (2003).

³⁵ Pollution Prosecution Act of 1990 Pub. L. No. 101-593, §202, 104 Stat. 2962 (1994). The number of special agents varies by source, ranging from 145 to around 200. See U.S. EPA, U.S. EPA CRIMINAL ENFORCEMENT PROGRAM, AMERICA’S ENVIRONMENTAL CRIME FIGHTERS 3 (2022), <https://www.epa.gov/sites/production/files/documents/oceftbrochure.pdf>; *EPA CID Agent Count*, PUB. EMPS. FOR ENV’T RESP. (2019), https://www.peer.org/wp-content/uploads/2019/11/11_21_19-Federal_Pollution_EPA_CID_Agent_Count.pdf.

Environment and Natural Resources Division (“DOJ-ENRD”).³⁶ Specific resources for environmental crime prosecution were organized around the same time that EPA’s Office of Enforcement was put into service, when the Environmental Crimes Section (“DOJ-ECS”) was created in 1982. The DOJ-ECS was organized in 1982 and by 1987 became its own organizational unit within ENRD, now employing about 43 attorneys and a dozen staff.³⁷

The practical process of prosecuting environmental crimes is very collaborative in nature. Investigative staff build cases from a variety of sources, typically civil inspection data, regulatory filings, required reports, former employees, and whistleblowers.³⁸ Once they build a case, they must work with prosecutors, typically within DOJ-ECS or the United States Attorneys’ Offices, to file criminal charges in federal court or convene a grand jury.³⁹ Prosecutions often undertake a taskforce structure, with state, local, and federal criminal agents involved in the process.

III. EMPIRICAL LITERATURE ON CRIMINAL SANCTIONING

The broader themes in the literature on using criminal enforcement tools to police and sanction environmental crimes focus on the desire and ability of federal law enforcement agents to pursue enough cases and seek sufficient penalties so that the probability of detecting and punishing environmental crimes is adequately robust to deter offenders from violating the law.⁴⁰ An initial criticism of criminal enforcement is that EPA-CID employs less than 200 special agents across the entire country to monitor and detect environmental crimes and even fewer prosecutors within DOJ to specialize in the pursuit of criminal sanctions against offenders, which renders the probability of detection and punishment suboptimal.⁴¹ Recent research suggests prosecutions have

³⁶ *History*, U.S. DEP’T OF JUST. ENV’T & NAT. RES. DIV., <https://www.justice.gov/enrd/history> (last updated Sept. 12, 2023); *Historical Development of Environmental Criminal Law*, *supra* note 32.

³⁷ *Historical Development of Environmental Criminal Law*, *supra* note 32. Employment figures are given as of 2022. See DANIEL S. KAHN, CORPORATE CRIMINAL INVESTIGATIONS AND PROSECUTIONS 430 (2022).

³⁸ Joel A. Mintz, *Some Thoughts on the Interdisciplinary Aspects of Environmental Enforcement*, 36 ENV’T L. REP. 10495–96 (2006).

³⁹ For a discussion of the nature of criminal investigations and collaborations, see *id.*

⁴⁰ See Gary Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169, 183 (1968); Richard A. Posner, *An Economic Theory of the Criminal Law*, 85 COLUM. L. REV. 1193, 1205 (1985) (considering “criminals [to be] sufficiently rational to be deterrable”).

⁴¹ See generally Michael J. Lynch et al., *The Weak Probability of Punishment for Environmental Offenses and Deterrence of Environmental Offenders: A Discussion Based on*

been consistent over time, but likely infrequent, given the number of potential environmental crimes in the country.⁴² Further research has also shown that large penalties at sentencing may be rare.⁴³

These findings must take into account that the criminal enforcement regime works alongside civil and administrative enforcement mechanisms, as well as state-level enforcement. The probability of detection and punishment is located within this broader regulatory and legal framework for enforcing environmental laws, where civil or administrative penalties are often more appropriate and probably preferred to achieve compliance goals, rather than resorting to criminal punishments first, as with the traditional criminal justice system.⁴⁴ Research shows that prosecutors pursue prosecution of environmental crimes involving “aggravating factors,” such as chronic offenses, significant harm, operating illegally or outside the boundaries of the regulatory system, deceptive conduct, or repeated offenses.⁴⁵ Empirical studies of criminal enforcement also show that crime severity is the best general predictor of penalties in environmental crime prosecutions.⁴⁶

USEPA Criminal Cases, 1983–2013, 37 *DEVIANT BEHAV.* 1096, 1096–99 (2016); Joshua Ozymy & Melissa L. Jarrell, *Sub-Optimal Deterrence and Criminal Sanctioning under the U.S. Clean Water Act*, 24 *U. DENV. WATER L. REV.* 159, 170–80 (2021); Joshua Ozymy & Melissa L. Jarrell, *Does the Criminal Enforcement of Federal Environmental Law Reduce Crime? The Case of the Resource Conservation and Recovery Act*, 11 *ENV'T & EARTH L.J.* 65, 65–88 (2021).

⁴² For an example, see Ozymy, Menard & Jarrell, *Persistence or Partisanship*, *supra* note 27.

⁴³ Lynch, *The Sentencing/Punishment of Federal Environmental/Green Offenders*, *supra* note 4, at 1105.

⁴⁴ It was acknowledged decades ago that criminal enforcement would never have the resources to police environmental crimes like street crime and would have to be targeted in its approach. The regulatory system is also different than street crime and so the approach to criminal enforcement was always meant to find application in very serious instances of serious harm or culpable conduct. See Devaney Memo, *supra* note 4, at 3–4. Research on state and local level criminal enforcement is also limited. Recent examples include Matthew S. Crow et al., *Camouflage-Collar Crime: An Examination of Wildlife Crime and Characteristics in Florida*, 34 *DEVIANT BEHAV.* 635 (2013); Joshua C. Cochran et al., *Court Sentencing Patterns for Environmental Crimes: Is there a “Green” Gap in Punishment?*, 34 *J. OF QUANTITATIVE CRIMINOLOGY* 37 (2018); Michael J. Lynch, *County-Level Environmental Crime Enforcement: A Case Study of Environmental/Green Crimes in Fulton County, Georgia, 1998-2014*, 40 *DEVIANT BEHAV.* 1090 (2019).

⁴⁵ David M. Uhlmann, *Prosecutorial Discretion and Environmental Crime*, 38 *HARV. ENV'T L. REV.* 159, 164 (2014) (enumerating the “aggravating factors” present in criminal environmental cases); David M. Uhlmann, *Prosecutorial Discretion and Environmental Crime Redux: Charging Trends, Aggravating Factors, and Individual Outcome Data For 2005-2014*, 8 *MICH. J. ENV'T. & ADMIN. L.* 297, 329–40 (2019).

⁴⁶ Kathleen F. Brickey, *Charging Practices in Hazardous Waste Crime Prosecutions*, 62 *OHIO ST. L.J.* 1077, 1118 (2001); Joshua Ozymy & Melissa L. Jarrell, *Why Do Regulatory Agencies Punish? The Impact of Political Principals, Agency Culture, and Transaction Costs in Predicting Environmental Criminal Prosecution Outcomes in the United States*, 33 *REV. POL'Y RSCH.* 71 (2016).

Given the state of the literature, we still have relatively few empirical studies that examine the criminal prosecution of companies for environmental crimes in a systematic manner over time; this is particularly true of air pollution crimes under the CAA.⁴⁷ There is still much to be learned about criminal deterrence in this area.⁴⁸ Our approach is to examine over 2,700 federal environmental crime investigations and subsequent prosecutions, identify all corporate prosecutions under the CAA, and examine patterns and themes in offenses and punishments over time. Through this approach, we are able to gain significant insight into whether federal prosecutors pursued prosecutions of companies under the CAA and the outcomes of those prosecutions from the inception of the modern criminal enforcement apparatus in 1983.

IV. DATA AND ANALYSIS

We collect data from EPA's Summary of Criminal Prosecutions Database, which provides important data on all EPA-CID criminal investigations resulting in prosecution from 1983 to 2023.⁴⁹ We searched the database by fiscal year ("FY"), beginning with the initial case in the database in 1983 and gathering data until April 30, 2022.⁵⁰ We ultimately gathered data on 2,728 prosecutions. From there, we selected all 391 prosecutions for CAA crimes for analysis, and then further selected 138 prosecutions of companies/corporations. For the

⁴⁷ See, e.g., Ozymy & Ozymy, *Exploring Charging & Sentencing Patterns*, *supra* note 5.

⁴⁸ For a broader discussion of crime and specifically environmental crime, see Carole M. Billiet & Sandra Rousseau, *How Real is the Threat of Imprisonment for Environmental Crime?*, 37 EUR. J.L. & ECON. 183 (2014); Raymond Paternoster, *How Much Do We Really Know About Criminal Deterrence?*, 100 J. CRIM. LAW & CRIMINOLOGY 765 (2010).

⁴⁹ *Summary of Criminal Prosecutions Database*, U.S. EPA, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm (last updated Mar. 10, 2024) [hereinafter *Criminal Prosecutions Database*]. Data for the analysis comes exclusively from the database and if any case is not included by EPA then it will not be present in our findings. The bottom line for determining penalties and the nature of each prosecution must come from a consistent source across all CAA prosecutions and thus we rely solely on the database. Our analysis of the database runs through April 30, 2022, though the EPA database now provides information through the end of 2023. Although our analysis went through April 30, 2022, all relevant prosecutions were adjudicated by FY 2021, which is reflected in Figures 1–6.

⁵⁰ The first case in the database involves the prosecution of Columbia Marine Services for discharging oil into the Ohio River. The company was indicted on October 13, 1982. See *Criminal Prosecutions Database*, *supra* note 49 (referencing Columbia Marine Services, Inc., E.D. Kentucky 82-36, 1983). All prosecutions retrieved from the EPA Criminal Prosecutions Database are referenced using the exact defendant names and docket numbers listed in the database—these citations have not been altered to ensure that they can be traced back to the database.

purposes of our data collection, we define a company as any private corporate entity. The following information was collected from each case: a narrative summary of the prosecution, FY noted as an identifier in the case, docket number, state identifier for the state in which the crime took place, number of named defendants, presence of at least one company as a named defendant in the case, and all sentencing data parceled out by individual and companies to include probation (in months), incarceration (in months), community service (in months), and all monetary penalties in nominal dollars, such as fines, special assessments, restitution, and any named monetary penalties assigned at sentencing.

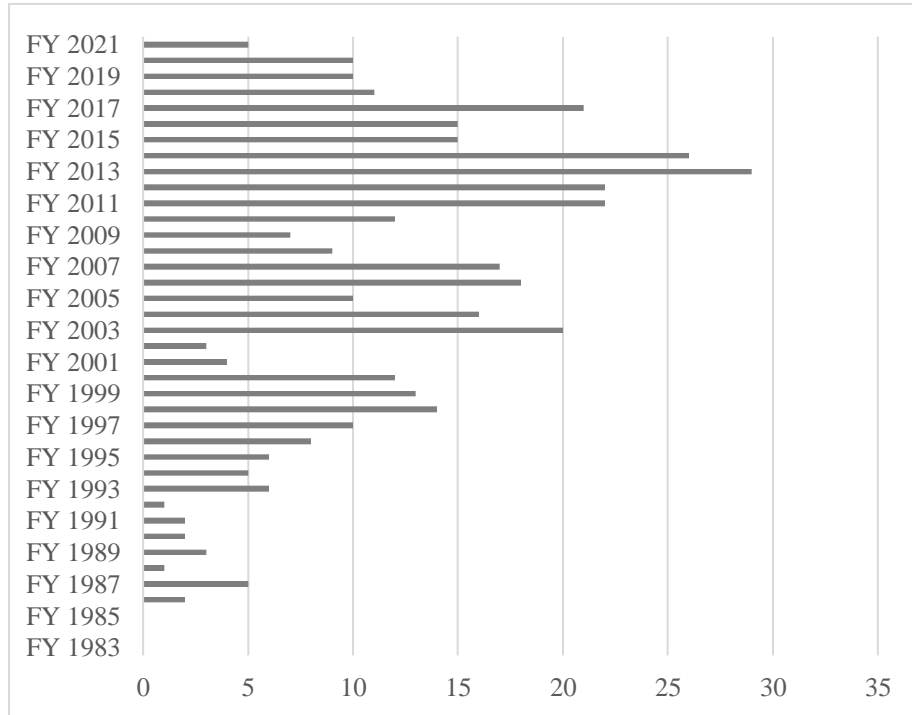
Our analytical approach to the data was to use content analysis to code each prosecution summary. Two coders were used to code data independently of one another. We conducted a test pilot for four weeks until we better understood the data and could deal with coding issues that would arise in the data gathering phase. Discrepancies were reviewed by one of the authors until a consensus was found. The coding was mostly straightforward once the pilot phase ended and coding commenced, with discrepancies mostly falling to cases with multiple defendants and complex sentencing data. Inter-coder reliability for the analysis was approximately 95 percent.⁵¹

V. FINDINGS

Figure 1 examines total CAA prosecutions adjudicated per fiscal year, from FY 1983 to FY 2021. We do not find any prosecutions adjudicated until 1986, when the first two cases were adjudicated. By the end of the 1980s, when the criminal enforcement regime was beginning to institutionalize, prosecutions slowly rose to a total of 11 by the end of the decade. Prosecutions rose exponentially through the 1990s, with 8 adjudicated in 1996, 14 in 1998, and 13 in 1999. A total of 67 cases were adjudicated in the 1990s. Prosecutions continued to rise in the early 2000s, reaching a high of 20 in 2003; between 2000 and 2009, we find a total of 116 prosecutions adjudicated. Annual prosecutions adjudicated peaked in 2013 at 29 prosecutions. As demonstrated in our data, a grand total of 391 cases were adjudicated under the CAA during this time frame.

⁵¹ The agreed upon items are divided by non-agreed items. See OLE R. HOLSTI, *CONTENT ANALYSIS FOR THE SOCIAL SCIENCES AND HUMANITIES* 140 (1969).

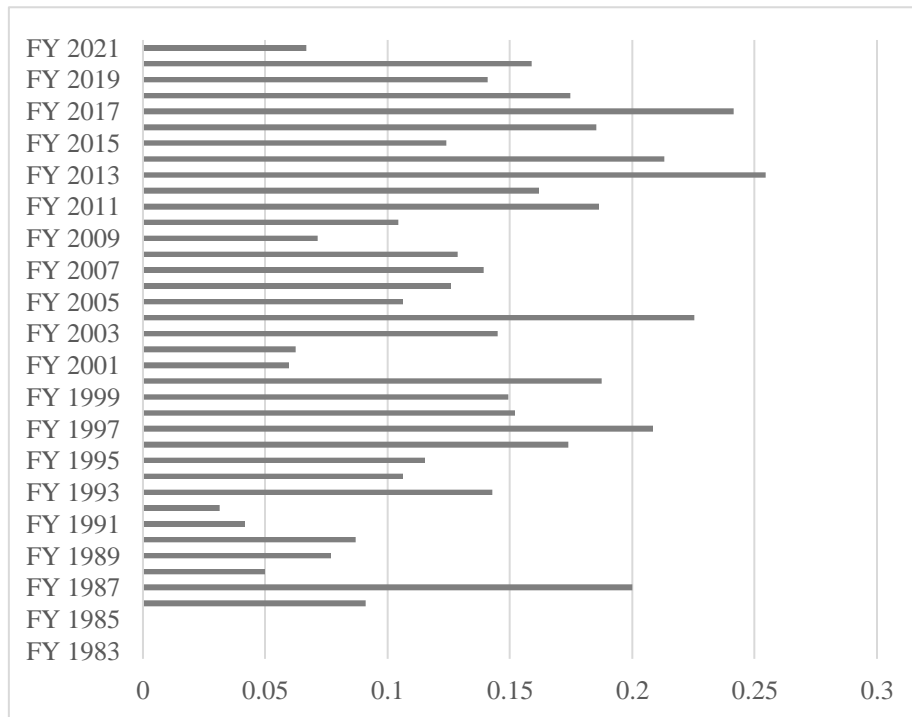
Figure 1: Total Annual CAA Prosecutions Adjudicated by Fiscal Year



Source: EPA Summary of Criminal Prosecutions Database

In Figure 2, we show the total number of annual CAA prosecutions adjudicated as a percentage of all environmental crimes adjudicated in our data. For example, in 1987, a total of 25 environmental crime prosecutions were adjudicated and 5 of those were CAA prosecutions—that is, 20 percent of all environmental prosecutions that year were adjudicated under the CAA. This proportion of yearly CAA prosecutions—as a percentage of total criminal environmental prosecutions—remains steady with a high of 25 percent in 2013. On average, CAA prosecutions were 13 percent of environmental crime prosecutions each year. With a grand total of 2,728 environmental crime prosecutions since 1983, it follows that about 14 percent of cases over time involved CAA violations.

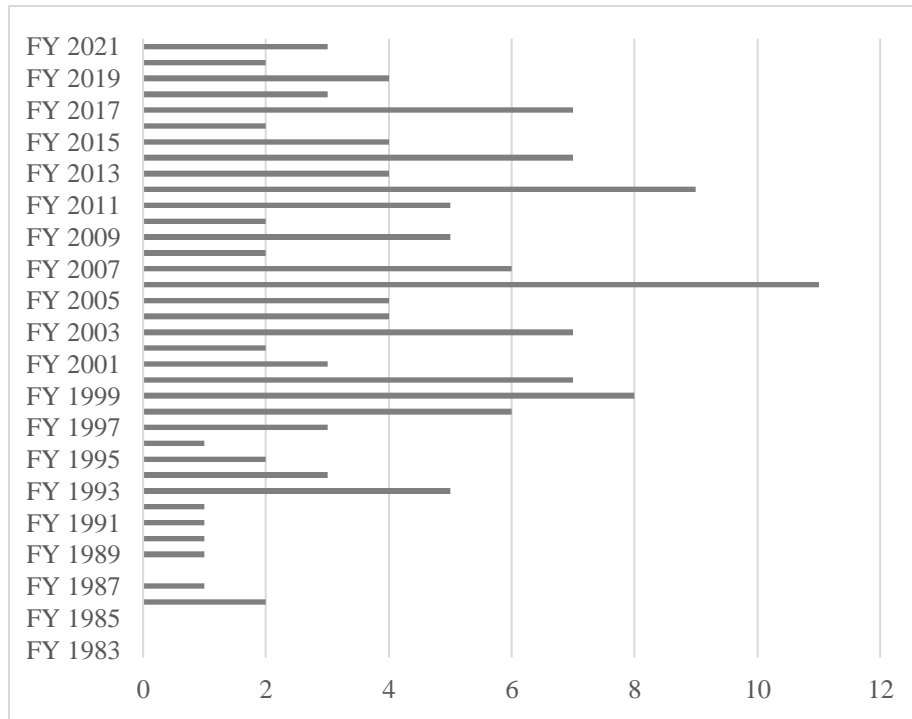
Figure 2: Annual CAA Prosecutions as a Percentage (%) of Total Environmental Crime Prosecutions by Fiscal Year



Source: *EPA Summary of Criminal Prosecutions Database*

In Figure 3, we examine the number of annual CAA prosecutions adjudicated with at least one company as a defendant. Only 4 such cases with a company as a defendant were adjudicated through the 1980s. In the 1990s, prosecutions of companies grew exponentially to a total of 31 cases. From 2000 to 2009, cases increased again to a total of 51 prosecutions with at least one company as a defendant. From 2010 to 2021, there were a total of 52 cases adjudicated involving at least one company as a defendant. In sum, a grand total of 138 prosecutions were adjudicated under the CAA involving at least one company as a defendant.

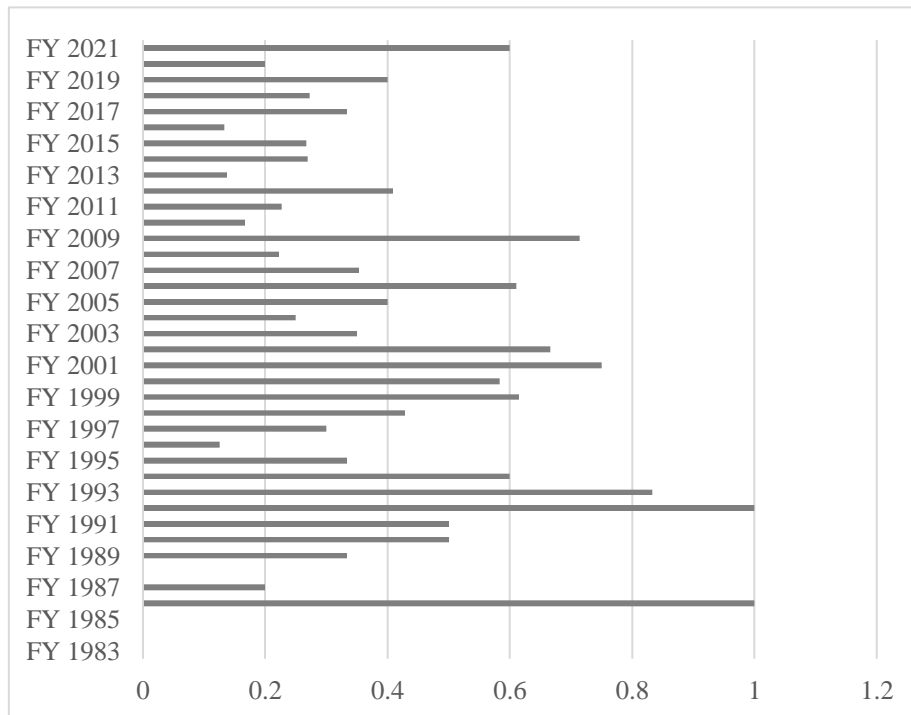
Figure 3: Total Prosecutions under the CAA Involving Companies by Fiscal Year



Source: EPA Summary of Criminal Prosecutions Database

In Figure 4, we examine annual prosecutions involving at least one company defendant as a percentage of annual CAA prosecutions. Through the 1980s, about 22 percent of CAA prosecutions involved at least one company. This number rose to slightly above 52 percent in the 1990s and dropped to about 49 percent from 2000 to 2009. From 2010 to 2021, it dropped again to an average of 28 percent of prosecutions. We find that 35 percent of prosecutions under the CAA since 1983 involve at least one company as a named defendant.

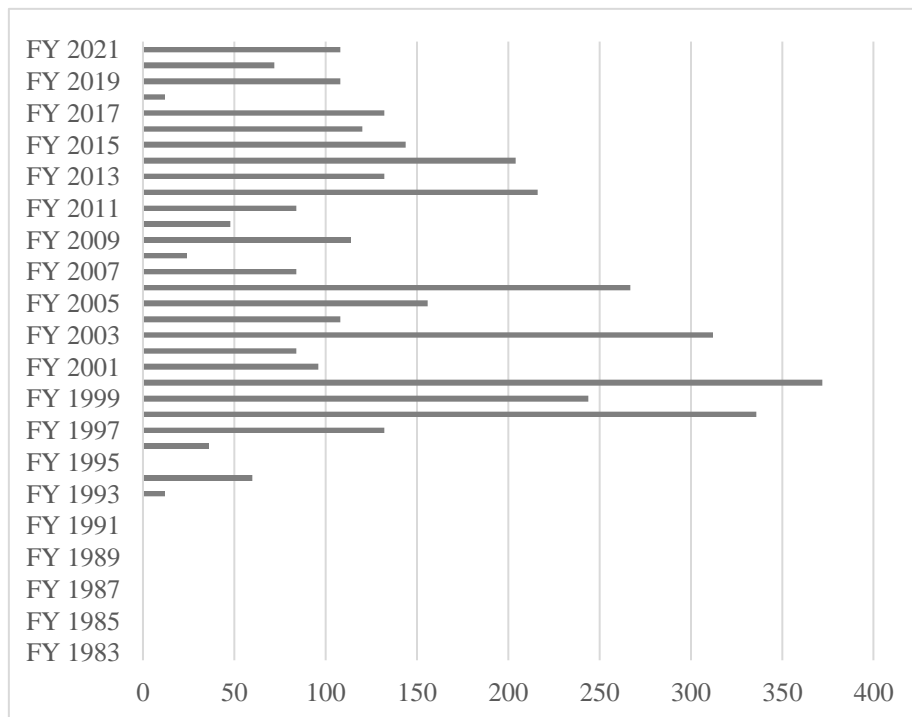
Figure 4: Total Prosecutions under the CAA Involving Companies as a Percentage (%) of Total Annual CAA Prosecutions by Fiscal Year



Source: *EPA Summary of Criminal Prosecutions Database*

In Figure 5, we move to examine broader punishment patterns for companies prosecuted under the CAA by analyzing total probation in months assessed annually to companies at sentencing. We find no probation assessed to companies in CAA prosecutions during the 1980s. During the 1990s, this total increased to 820 months, with a high annual total of 336 in 1998. From 2000 to 2009, probation increased dramatically to 1,617 months, with an annual high of 312 months in 2003. And from 2009 to 2021, a total of 1,380 months of probation was assessed to companies for CAA violations. A grand total of 3,817 months of probation was assessed to companies for CAA violations since 1983.

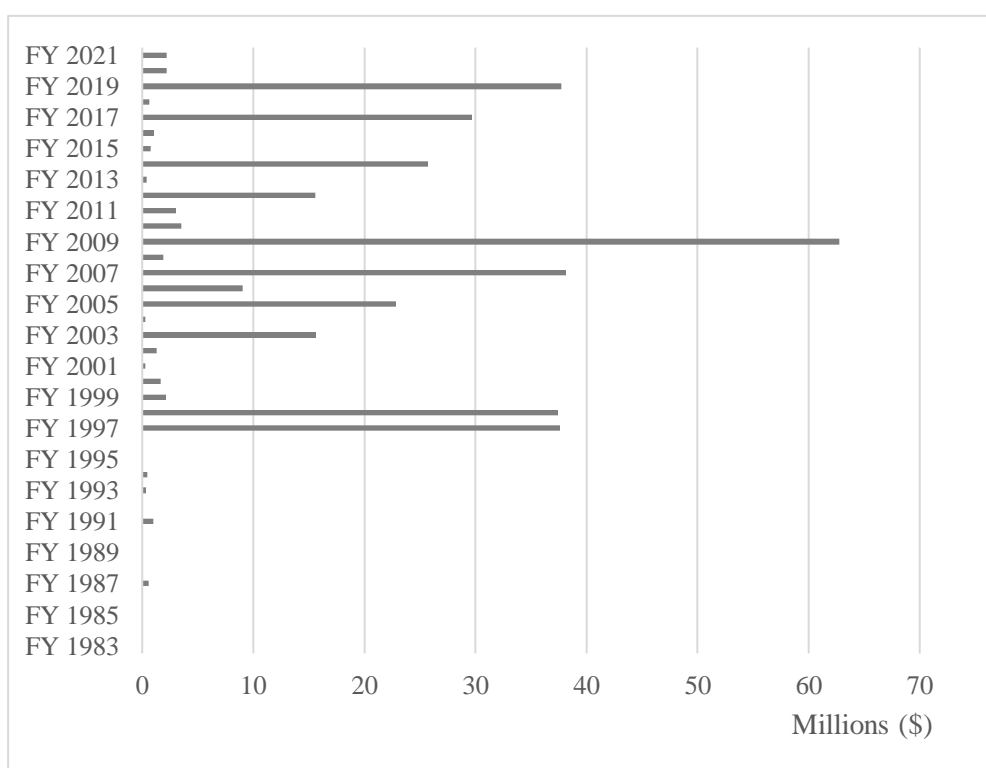
Figure 5: Total Probation Time in Months Assessed to Companies in CAA Prosecutions by Fiscal Year



Source: EPA Summary of Criminal Prosecutions Database

In Figure 6, we explore total monetary penalties assessed to companies for CAA crimes. About \$660,000 in penalties were assessed to companies during the 1980s. By the 1990s, we find this number increased significantly, where over \$79 million in penalties were assessed to companies. From 2000 to 2009, over \$153 million in monetary penalties were assessed to companies. From 2010 to 2021, over \$2.9 billion in monetary penalties were assessed to companies. Overall, we find an estimated \$3.1 billion in monetary penalties were assessed to companies in CAA prosecutions since 1983.

Figure 6: Total Monetary Penalties Assessed to Companies in CAA Prosecutions by Fiscal Year



Source: *EPA Summary of Criminal Prosecutions Database*⁵²

⁵² Because the size of the penalty skews the figure, the \$2.8 billion judgment against Volkswagen AG in 2017 is excluded from Figure 6.

Placing these sentencing patterns in context requires a deeper discussion of significant probation and monetary penalties assessed to companies. Total probation time to companies in the data equaled 3,817 months. The overall pattern is fairly evenly dispersed over time. In 24 prosecutions, the total probation time assessed to companies was 60 months, making up about 38 percent of the overall total in our data. In 27 cases, the total probation assessed to companies at sentencing was 36 months, making up about 25 percent of the total probation. In 18 cases, companies were assessed 24 months at sentencing, making up about 11 percent of total probation. These were the most common sentences in the data, cumulatively representing about 63 percent of the total probation.

Melvin Weintraub and a number of co-defendants were sentenced for the illegal removal and disposal of asbestos in a YMCA building conversion in New Haven, Connecticut.⁵³ The companies were collectively sentenced to serve a 240-month probation, which was the largest probation sentence in our data.⁵⁴

Total monetary penalties were greatly affected by a few large-penalty cases in our data. We list these large-penalty cases in Table 1. Refrigeration USA was prosecuted for illegally importing in excess of 4,000 pounds of CFC-12, commonly known as Freon.⁵⁵ The company and co-defendants also failed to pay \$22 million in excise tax and submitted false bills of lading to EPA.⁵⁶ The company was charged with knowing violations of the CAA, smuggling, conspiracy, and tax evasion.⁵⁷ Co-defendants Diana McNally and Roland Wood were sentenced to 30 days and 37 months of incarceration, respectively.⁵⁸

⁵³ *Criminal Prosecutions Database*, *supra* note 49 (referencing Melvin Weintraub, D. Connecticut N-97-4-58, 2000). The companies and associated co-defendants failed to use a licensed contractor, released asbestos fibers into the ambient air in the presence of workers, failed to properly train or protect workers, and falsified documents.

⁵⁴ *Id.*

⁵⁵ *Id.* (referencing Refrigeration USA, S.D. Florida CR:96-0267-CR-MORENO, 1997).

⁵⁶ *Id.*

⁵⁷ *Id.* The company was also sentenced to serve 36 months of probation.

⁵⁸ *Id.*

Table 1: Five Largest Corporate Monetary Penalties in CAA Prosecutions

<i>Defendant</i>	<i>FY</i>	<i>Crime</i>	<i>Total Penalties (\$)</i>
Refrigeration USA	1997	Unlawful Importation of CFC 12	\$37,372,826
Louisiana Pacific Corporation	1998	Tampering with Pollution Controls	\$37,235,000
BP Products North America	2009	Explosion Kills Workers	\$50,000,000
IAV GmbH	2019	Emissions Testing Fraud	\$35,000,000
Volkswagen AG	2017	Emissions Testing Fraud	\$2,800,000,000

Source: EPA Summary of Criminal Prosecutions Database

Louisiana Pacific Corporation, along with Dana Francis Dulohery and Robert Russell Mann, Jr., were prosecuted after defendants tampered with emissions control equipment and falsified emissions reporting data to regulators to maximize product production in 1991 and 1992.⁵⁹ The defendants were charged with conspiracy, fraud, wire fraud, tampering with a monitoring device in violation of the CAA, and making false statements.⁶⁰ The company was sentenced to pay \$235,000 in restitution, \$500,000 for community projects, and \$36.5 million in other fines.⁶¹ Mann and Dulohery were sentenced to six and ten months of incarceration respectively.⁶² On March 23, 2005, an explosion rocked BP's petroleum refinery in Texas City, Texas, killing 15 workers and injuring some 170 to 180 others.⁶³ The company was prosecuted for

⁵⁹ *Id.* (referencing Louisiana Pacific Corp., D. Colorado 95-CR-215, 1998).

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² *Id.*

⁶³ The case summary notes 15 killed and 170 injured, but official reports list the injured at 180. BP had been prosecuted previously for accidents at their industrial facilities that demonstrated a lack of repair, maintenance, and other issues that persisted prior to the Texas City case and similar issues emerged later in the Deepwater Horizon case that polluted the Gulf of Mexico. There was also a significant civil suit that followed. See U.S. CHEM. SAFETY & HAZARDOUS INVESTIGATION BD., BP AMERICA (TEXAS CITY) REFINERY EXPLOSION: FINAL INVESTIGATION REPORT 17 (2007), <https://www.csb.gov/bp-america-refinery-explosion/>; see also *Criminal Prosecutions Database*, *supra* note 49 (referencing BP Exploration Alaska, D. Alaska A99-0141, 2000); *id.* (referencing BP Exploration Alaska, Inc., D. Alaska 3:07-CR-00125-TMB, 2008); *BP North America Settlement*, U.S. EPA, <https://www.epa.gov/enforcement/bp-north-america-settlement> (last updated Jan 8, 2024); *Deepwater Horizon – BP*

allowing accidental releases that led to death and paid a \$50 million fine, as well as 36 months of probation.⁶⁴

In two related prosecutions, IAV GmbH and Volkswagen AG were prosecuted for a long-term emissions rigging scheme related to the latter's "clean diesel" vehicles.⁶⁵ Volkswagen installed software to circumvent emissions testing equipment, concealed material facts related to the crime, obstructed justice by destroying related documents, and imported vehicles by means of false statements.⁶⁶ The company paid the largest CAA criminal penalty to date of \$2.8 billion.⁶⁷ IAV GmbH was prosecuted for conspiring to defraud the United States and violations of the CAA, by working to design, test, and implement the software used to cheat emissions equipment on Volkswagen's vehicles.⁶⁸ The company paid a \$35 million criminal penalty for their role in the conspiracy and agreed to appoint an independent compliance monitor for two years.⁶⁹

The five prosecutions in Table 1 represent significant penalties against corporations and their officials for CAA crimes. The cumulative monetary penalties in these five cases alone, in excess of \$2.9 billion, are responsible for almost 94 percent of all monetary penalties assessed to companies in our data.

In Table 2, we move to explore these prosecutions thematically. We read through the case summaries for each prosecution in the analysis and attempt to use our best judgment to identify the key crime in the prosecution that falls under the CAA. Next, we consider the primary theme that defines each case, based on our overall analysis of each case relative to the whole, to identify themes that are persistent across cases and can be used to categorize each case.⁷⁰ In our judgment, most of the

Gulf of Mexico Oil Spill, U.S. EPA, <https://www.epa.gov/enforcement/deepwater-horizon-bp-gulf-mexico-oil-spill> (last updated Aug. 14, 2023).

⁶⁴ *Criminal Prosecutions Database*, *supra* note 49 (referencing BP Products North America, S.D. Texas 4:07-CR-434, 2009).

⁶⁵ *Id.* (referencing Volkswagen AG, E.D. Michigan 16-CR-20394, 2017).

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.* (referencing IAV GmbH, E.D. Michigan 16-CR-20394, 2019).

⁶⁹ *Id.*

⁷⁰ We caution here that this figure represents our best judgment, based on the case summaries, of the primary crime and charging statute used. In some of these cases, it was more difficult than others when defendants were charged under multiple statutes. A good example is the prosecution of Hyundai Construction Equipment Americas, *see id.* (referencing N.D. Georgia 1:18-CR-00379, 2019). The defendant imported engines that did not comply with CAA emissions standards. The company was warned that it had exceeded its quota for non-conforming imports during a transition phase, but the defendant persisted and submitted false documents and was sentenced to pay a \$1.95 million criminal penalty. We include this in the category as a vehicle emissions crime, because we felt that was the primary offense, although the company also engaged in

analyzed cases can be organized across six categories: asbestos crimes, mobile source crimes, renewable fuel credit crimes, trade in restricted refrigerants, false reporting, and operational crimes. Table 2 provides a distribution of prosecutions per crime type.

Table 2: Dominant Themes in CAA Corporate Prosecutions

<i>Theme</i>	<i>Number of Prosecutions</i>	<i>Percent of Total Prosecutions (%)</i>
Asbestos Crime	71	51
Operational Crime	38	28
False Reporting Crime	15	11
Vehicle Emissions Crime	8	6
Trade in Restricted Refrigerants Crime	4	3
Renewable Fuel Credit Crime	2	1
<i>Total</i>	138	100

**Percentages are rounded to the nearest whole number.*

The most common crime prosecuted in our data was for asbestos violations. A total of 71 prosecutions, or 51 percent of total cases, related to asbestos crimes. EPA's compliance monitoring strategy for the CAA lists asbestos demolition and renovation as covered under NESHAP, which "applies to asbestos generation during mining, manufacturing/fabricating, renovation and demolition and waste disposal."⁷¹ We found that the vast majority of cases in this category involve companies violating NESHAP standards for HAPs when they illegally demolish buildings, remove ceiling tiles or pipe insulation or related applications that contain asbestos and fail to obtain proper permits, use approved methods for removal and disposal, or fail to adequately train or protect workers.⁷² Because these crimes directly

submitting false reports, which was critical to the prosecution, but we felt in our best judgment was not the primary crime. Our broader point here is that sometimes crimes cross categories in that defendants committed multiple crimes, particularly when it comes to making false statements or falsifying reports, but we tried to do our best with our understanding of the cases to choose the primary offense and list it accordingly.

⁷¹ *Clean Air Act (CAA) Compliance Monitoring*, *supra* note 16.

⁷² Illustrative case examples in this category include the following prosecutions, listed in the *Criminal Prosecutions Database*, *supra* note 49.

(1) The AI Prince Corporation (S.D. California 09CR1811-DMS, 2009) was prosecuted for hiring day laborers to remove asbestos without giving proper notice or complying with workplace safety requirements and was sentenced to pay a \$100,000 fine and restitution totaling \$2,347.

cause or are related to the release of asbestos-containing materials into the ambient air, they are prosecuted as air pollution crimes. Unlike other crimes involving toxic emissions, the physical presence of the asbestos-containing materials and widespread public knowledge of asbestos hazards likely aids in prosecution or at least in part helps to explain the fact that essentially one in two company prosecutions under the CAA in our analysis are for asbestos crimes.

In 38 prosecutions, or 28 percent of our cases, we classify the primary crime as an operational crime. This is a very broad category. We feel it mostly represents crimes that occur at stationary sources of pollution, where emissions controls are not properly maintained or monitoring devices are intentionally tampered with to circumvent emissions controls, or explosions or negligent emissions releases that occur at a facility.⁷³ These cases would probably best exemplify, as with

(2) The Elbert Building Company (N.D. Ohio 1:12CR104, 2012) was prosecuted for notifying the Ohio EPA that a licensed asbestos removal company was slated to remove asbestos from a commercial building, but that the materials had been removed improperly by unknown individuals. The company pled guilty to a knowing violation of the CAA and was fined \$2,500.

(3) CES Environmental Services, Inc. (N.D. New York CR-5:2009-319, 2016) is a common example of a company that provided fraudulent air monitoring and sampling services for asbestos demolition and removal services. The company was charged with a series of offenses including mail fraud and CAA violations and was sentenced to 60 months of probation and to pay \$409,830 in restitution.

⁷³ Representative cases in this category include the following prosecutions, listed in the *Criminal Prosecutions Database*, *supra* note 49.

(1) Belvan Corporation (N.D. Texas 6-11CR0050-C, 2012). The defendant owned the Belvan Midway Lane Gas Processing Plant in Crockett, County Texas. For over three years, the Sulfur Recovery Unit, which recovers sulfur from gaseous hydrogen sulfide, was shut down, allowing for the combustion of harmful emissions into the air, including hydrogen sulfide, sulfur dioxide, and other pollutants. The company did not report the emissions. The company was charged with failure to notify under the CAA and was sentenced to serve 60 months of probation and pay a \$500,000 fine.

(2) Roberts Chemical Company, Inc. (D. Rhode Island CR, 2015) was charged with violations of the CAA for failing to implement a risk management plan to protect workers, first responders, and the community, in their facility that processed ethyl ether, a highly flammable liquid chemical. The defendant pled guilty and was sentenced to serve 60 months of probation and pay a \$200,000 fine.

(3) KMTEX Ltd. (E.D. Texas 1:16-CR-00075-001, 2017) was prosecuted for a tank explosion that released hazardous materials into the ambient air, which injured two workers and killed a third, when the tank spilled burning product and collapsed. The defendants in the case falsified hot work permits for welding and failed to properly decontaminate and drain the tank as required by OSHA regulations. The defendants including KMTEX and three related companies were sentenced to pay \$3.3 million in fines and make a \$200,000 community service payment.

(4) Honeywell International (M.D. Louisiana 07-31-FJP-SCR, 2007) was prosecuted for knowingly labeling a cylinder containing antimony pentachloride incorrectly. When the cylinder was opened by a worker, he died from injuries related to the release of the chemical. The company was charged for negligently releasing a hazardous air pollutant into the ambient air and was sentenced to pay a \$8 million fine, \$2 million payment to the victim's family, and \$2 million to state agencies.

many in the false reporting category, government efforts to prosecute companies for emissions crimes at stationary sources.

In 15 cases, or 11 percent of prosecutions, the crimes were centered on false reporting.⁷⁴ Choosing cases for this category was difficult, as it was very common for prosecutors to charge companies for making false statements to officials or falsifying documents.⁷⁵ Many of these cases involved companies charged for failing to maintain emissions equipment and falsifying logs or official reports in order to conceal a crime.⁷⁶

⁷⁴ Examples of these prosecutions include the Louisiana Pacific Corporation (D. Colorado 95-CR-215, 1998) prosecuted for tampering with emissions control equipment and falsifying emissions data; Calumite Company LLC (N.D. Indiana 2:14CR86, 2015) prosecuted for failing to properly maintain emissions equipment and submitted false statements to regulators; and Syntac Coated Products, LLC (D. Connecticut 3:17CR10, 2017) prosecuted for failure to report excess air emissions to regulators. See *Criminal Prosecutions Database*, *supra* note 49.

⁷⁵ This is often the case because criminal cases can result from official reports and inspections. Criminal behavior is often revealed when required documents submitted to regulators are found to be falsified and/or company officials make false statements to investigators. In such cases, it is relatively simple to charge a company for false statements or omission of material facts, and this behavior is also an indicator of culpable conduct, as a company or its officials actively intended to break the law. See Mintz, *supra* note 38, at 10495.

⁷⁶ Representative cases here include the following, listed in the *Criminal Prosecutions Database*, *supra* note 49.

(1) Calumite Company LLC (N.D. Indiana 2:14CR86, 2015) was a manufacturer of an additive used in the making of glass products. The defendant plead guilty to two counts of making false statements under the CAA. While making false statements was the primary charge(s) in the case, they stemmed from their failure to properly operate emissions equipment required in their Title V air permit, specifically several baghouses to capture particulate matter. From December 2008 to July 2009, one baghouse was not operational. Yet, daily logs were filled out indicating that the baghouses were operational, and thus, in this particular case the central issue was not that the company operated without emissions controls, which may not be a criminal offense in itself. Rather, the central issue was that the company made material false statements in their logs and quarterly reports that were knowingly false and which were criminal offenses under the CAA. The company was sentenced to 24 months of probation and a fine of \$325,000. Due to the false statements being the primary crime, we chose to include it in this category as opposed to the operational crimes category.

(2) Pelican Refining Company, LLC (W.D. Louisiana 2:11-CR-00227, 2012) was prosecuted for obstruction of justice, for providing false information to the State of Louisiana concerning asphalt laboratory testing. Upon an inspection, the company was also found to have malfunctioning emissions control equipment, no environmental manager, and a series of other violations. The company was sentenced to pay a \$12 million penalty, including a \$10 million fine and \$2 million community service payment. The company was prohibited from future operations until it implemented an environmental compliance plan.

(3) Syntac Coated Products, LLC (D. Connecticut 3:17CR10, 2017) failed to report that its emissions control equipment was not functioning properly, even though they conducted testing that affirmed such findings. The company pled guilty for failure to notify or report and was fined \$200,000 and ordered to make a community service payment of \$200,000.

(4) Heraeus Metal Processing (E.D. Tennessee 3:08-CR-159, 2009) operated a precious metals refinery in Wartburg, Tennessee. The company was required to operate pollution control devices and make appropriate logs for the performance of the equipment, but failed to do so. The Operations Manager and co-defendant, Brent Anderson helped to create false logs that were

In eight prosecutions, or about six percent of cases in our analysis, the primary crime involved crimes related to vehicle or mobile source emissions. Crimes in this category ranged from the aforementioned prosecutions of Volkswagen AG and IAV GmbH for installing emissions cheating devices in vehicles, illegally importing engines or vehicles in violation of CAA standards, or issuing fraudulent emissions certificates.⁷⁷ Notably, of all the CAA prosecutions we analyzed in our study, a very small percentage involved mobile source emissions, as opposed to the outsized portion of asbestos crimes.⁷⁸

In four cases, or about three percent of prosecutions, we categorize the primary crime as trade in restricted refrigerants.⁷⁹ When EPA mandated a phaseout of CFCs and other ozone depleting substances, importing or exporting these chemicals or selling products containing them became criminal acts.⁸⁰

In two cases, or about one percent of prosecutions in our data, defendants were charged under the CAA for defrauding federal renewable energy rules.⁸¹ Under the Energy Independence and Security Act of 2007, companies were incentivized to produce biofuels, and in doing so could claim tax credits and sell renewable energy credits to

submitted to the Tennessee Department of Environment & Conservation. The defendants were charged with making material false statements, and the company was sentenced to 18 months of probation, a \$350,000 fine, and a \$400 special assessment. Anderson was sentenced to 12 months of probation and 50 hours of community service.

⁷⁷ A good example of illegal importation is the prosecution of Kaizo Industries, Inc. prosecuted for conspiring to smuggle non-conforming vehicles into the United States by way of false statements. The company was charged under the CAA for the violations and sentenced to 24 months of probation. See *Criminal Prosecutions Database*, *supra* note 49 (referencing Kaizo Industries, Inc., C.D. California SA CR 10-0212, 2011).

⁷⁸ Like Volkswagen AG and IAV GmbH, Rockwater Northeast LLC was also prosecuted for illegally installing emissions defeating devices on 31 diesel trucks that disabled their emissions systems. The company was charged with 31 violations of the CAA and was sentenced to pay a \$2 million in fines and \$12,400 in special assessments. See *Criminal Prosecutions Database*, *supra* note 49 (referencing Rockwater Northeast LLC, M.D. Pennsylvania 4:20-CR-00230, 2021).

⁷⁹ The four cases are the following: Refrigeration USA (S.D. Florida CR:96-0267-CR-MORENO, 1997); Medina Forwarding Company (S.D. Texas CR-H-98-6100, 1999); Scott Campion (D. Maine 97 ME 124, 2000); and E Air LLC (S.D. Florida 1:14-CR-20392-CMA, 2014). See *Criminal Prosecutions Database*, *supra* note 49.

⁸⁰ The prosecution of E Air LLC is a representative case here. See *Criminal Prosecutions Database*, *supra* note 49 (referencing E Air LLC, S.D. Florida 1:14-CR-20392-CMA, 2014). The defendant was prosecuted for the illegal sale and distribution of refrigeration equipment containing hydrochlorofluorocarbon-22. The company knowingly imported some 5,033 air conditioning units or components after January 1, 2010, which was the cut-off date for selling pre-charged refrigeration components. The defendant was ordered to serve 60 months of probation, pay a \$200,000 federal fine, and \$75,000 in community service payments.

⁸¹ The two cases are E-biofuels, LLC (S.D. Indiana 1:13-CR-0189SEB-TAB, 2017) and HTG Trucking (E.D. Washington 4:17-CR-6020-SMJ, 2020). See *Criminal Prosecutions Database*, *supra* note 49.

companies that failed to produce alternatives.⁸² One could profit by illegally claiming to have produced biofuels that did not exist, fraudulently claim tax credits, and then sell the renewable energy credits.⁸³

VI. DISCUSSION

Total probation and monetary penalties assessed to companies, along with the trend that some 35 percent of CAA prosecutions have historically had at least one company as a named defendant, suggest the vigorous prosecution of companies over time that have committed CAA crimes. In part this is true. Securing some 318 years of probation and over \$3.1 billion in monetary penalties is a significant accomplishment for EPA-CID and DOJ, who investigated and prosecuted these crimes. CAA prosecutions generally tick up through the 1980s during the period of institutionalization of criminal enforcement processes,⁸⁴ increase steadily through the 1990s, and then continue on upwards through the Bush and Obama administrations, after which prosecutions enter a period of decline. While probation was fairly evenly distributed over the decades, monetary penalties were concentrated in a few high-profile cases, and when these few cases were excluded, the overall monetary penalties won in court drastically reduced. In other words, absent the few high-profile cases, the impact of CAA prosecutions on aggregate penalties is lower than it may initially seem. Furthermore, most of the high-penalty outliers that define much of the sentencing totals do not

⁸² Energy Independence and Security Act of 2007, Pub. L. No. 110-140, §§ 201–02, 121 Stat. 1492, 1519–29.

⁸³ *Id.*; see also *Summary of the Energy Independence and Security Act*, U.S. EPA, <https://www.epa.gov/laws-regulations/summary-energy-independence-and-security-act> (last updated Apr. 25, 2023).

An important prosecution for biofuel credit fraud was the prosecution of E-biofuels, LLC. See *Criminal Prosecutions Database*, *supra* note 49 (referencing E-biofuels, LLC, S.D. Indiana 1:13-CR-0189SEB-TAB, 2017). The company and nine co-defendants were prosecuted for a variety of offenses including CAA violations, tax fraud, wire fraud, and other charges. Many of the corporate officers were sentenced to prison and the defendants were jointly sentenced to pay over \$56 million in restitution.

HTG Trucking and Freedom Fuel, along with owners Hector and Tammy Garza were prosecuted for falsely claiming production of biofuel, selling \$296,000 worth of renewable energy credits, and filing false claims with the IRS for \$284,546 in excise credit refunds. The companies were placed on three years of probation, Hector Garza was sentenced to two years in prison and three years of supervised release, Tammy Garza was sentenced to four months in prison and one year of supervised release, and the defendants were sentenced to pay a \$100,000 and \$284,546 in restitution to the IRS. See *id.* (referencing HTG Trucking, E.D. Washington 4:17-CR-6020-SMJ, 2020).

⁸⁴ See *supra* Part II.

focus on excess emissions at stationary sources, which is a significant problem for protecting environmental justice communities as well as for the eventual possibility of regulating carbon emissions which will require strong criminal enforcement—these two issues will be further discussed in Part VII of this Essay.⁸⁵ Instead of targeting stationary source emissions, the data reveals that more than half of all CAA prosecutions are for asbestos crimes.

The overall picture of prosecuting companies for CAA crimes over the decades might be touted as a success, given the resources available for monitoring and prosecuting complex crimes. However, additional work is needed, as discussed in Part VII.

VII. MOVING FORWARD: RECOMMENDATIONS

In order to improve outcomes for criminally prosecuting companies for CAA crimes, we suggest increasing resources for environmental law enforcement agencies and refocusing efforts towards policing and prosecuting stationary sources of pollution. In turn, this would aid environmental justice communities and facilitate the consideration of the use of the CAA to police carbon emissions, should such action be feasible, at a future date.

Our first recommendation is to improve the budgetary reality for EPA and the ENRD. If one examines EPA's general budget, controlling for inflation, its high point was 1980, when the inflation-adjusted budget was \$17 billion.⁸⁶ After some budget cuts during the Reagan administration, the budget increased nominally most years, but adjusted for inflation, it began to decline years ago, with the only increase in funding during the Obama administration in FY 2009–10.⁸⁷ But this trend was brief and declined again after the financial crisis.⁸⁸ Staffing at EPA peaked at 18,110 in FY 1999 and began to drop for years, reaching a low point of 14,172 under President Trump.⁸⁹ The budget for ENRD has also been stagnant in nominal terms for many years.⁹⁰ The Biden

⁸⁵ See *infra* Part VII.

⁸⁶ *EPA's Budget and Spending*, U.S. EPA, <https://www.epa.gov/planandbudget/budget> (last updated July 26, 2023); *U.S. Inflation Calculator*, <https://www.usinflationcalculator.com/> (last visited Mar. 1, 2024).

⁸⁷ *EPA's Budget and Spending*, *supra* note 86.

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ *Budget and Performance*, U.S. DEP'T JUST., <https://www.justice.gov/doj/budget-and-performance> (last updated Nov. 15, 2023); U.S. DEPARTMENT OF JUSTICE, ENVIRONMENT AND NATURAL RESOURCES DIVISION: FY 2023 PERFORMANCE BUDGET 15, <https://www.justice.gov/>

administration made budgetary commitments of \$11 billion and 15,000 staff for EPA.⁹¹ The proposed increase for ENRD of \$133 million was historically insignificant, given its FY 2012 budget was about \$132 million.⁹² It is unlikely that bipartisanship over environmental enforcement will return and that Democrats in Congress will be willing or able to bring EPA and ENRD significant funding increases in the future, so these agencies may still have to persist and operate with less and less over time.

Declining or stagnant resources for criminal enforcement may present a significant problem for federal agencies moving forward. After the funding heydays of the 1990s, these agencies learned to live with nominally stagnant budgets, but adjusted for inflation, these budgets have been declining. Moreover, falling staff numbers arguably resulted in these agencies “running on fumes” even prior to the difficulties encountered during the Trump administration.⁹³ Congress and the White House will need to build on the budgetary infusions for environmental enforcement provided by the Biden Administration if they are to counteract these historical trends and work to enhance efforts to reduce climate change-related harms and environmental injustices in marginalized communities.

Our findings also indicate there has been a historical deficit in prosecuting companies for CAA crimes related to operating large stationary sources of pollution. Many environmental justice communities live near or downstream from these facilities, and a lack of criminal enforcement means that appropriate tools are not being sufficiently used to protect them from harm.⁹⁴ We suggest EPA-CID and DOJ refocus their efforts towards targeting stationary sources for enhanced monitoring and policing activities near environmental justice communities. EPA has good knowledge of the whereabouts and burdens these communities face.⁹⁵ With the Biden administration shifting

jmd/page/file/1491706/download (2022) [hereinafter ENRD FY 2023 PERFORMANCE BUDGET] (depicting the ENRD budget from 2012 to 2021).

⁹¹ *Statement by Administrator Regan on the President's FY 2022 Budget*, U.S. EPA, <https://www.epa.gov/newsreleases/statement-administrator-regan-presidents-fy-2022-budget> (June 2, 2021).

⁹² ENRD FY 2023 PERFORMANCE BUDGET, *supra* note 90, at 15.

⁹³ Joel A. Mintz, *Neither the Best of Times Nor the Worst of Times: EPA Enforcement During the Clinton Administration*, 35 ENV'T L. REP. 10390 (2005); Joel A. Mintz, *Running on Fumes: The Development of New EPA Regulations in an Era of Scarcity*, 46 ENV'T L. REP. 10510, 10510–19 (2016).

⁹⁴ *See, e.g.*, NRDC, EVALUATION OF VULNERABILITY AND STATIONARY SOURCE POLLUTION IN HOUSTON 33 (2019).

⁹⁵ EPA has developed EJScreen, a tool for mapping and screening socioeconomic and pollution indicators, which helps with this end, as well as countless academic and community

significant resources towards reducing environmental injustices, funding attorneys and tasking DOJ and EPA specifically with this goal, agencies seem prepared to move towards addressing environmental crimes that impact environmental justice communities.⁹⁶

Lastly, a final recommendation to improve criminal enforcement outcomes is to think prospectively about climate change within the CAA framework, particularly in relation to power plants and other carbon emitting facilities. Increasing criminal enforcement will have a significant role to play in any future attempts to regulate carbon emissions under the CAA, especially if emissions contributing to climate change are to be reduced promptly and effectively. If regulatory or congressional action moves in this direction, there will be very high stakes for facilities to comply with any legal requirements to reduce carbon emissions. In particular, criminal enforcement may be necessary to bring substance to any future amendments to the CAA or otherwise that will result in EPA and DOJ being tasked with policing and prosecuting carbon emissions crimes. Unlike the Clean Power Plan, current efforts—like the IRA—seek to incentivize the adoption of alternatives through grants and other financial incentives.⁹⁷ One major reason that prosecuting air pollution crimes is decidedly less common as a tactic to address climate change and air pollution in the United States more broadly is that policing complex industrial facilities is a vexing ordeal, and for EPA to determine rules—and for companies to comply with these rules—has been daunting. This explains why EPA has often

studies identifying these communities. See *EJScreen: Environmental Justice Screening and Mapping Tool*, U.S. EPA, <https://www.epa.gov/ejscreen> (last updated Jan. 23, 2024). EPA could also broaden its Small Grants program to help non-governmental organizations and community groups monitor facilities in real time. See *Environmental Justice Small Grants Program*, U.S. EPA, <https://www.epa.gov/environmentaljustice/environmental-justice-small-grants-program> (last updated Jan. 5, 2024); see also Joshua Ozyzy & Melissa L. Jarrell, *Righting and “Writing” Wrongs: A Postmortem on a Decade of Environmental Justice Activism in Corpus Christi, Texas*, 11 ENV’T JUST. 23 (2019).

⁹⁶ *Justice Department Launches Comprehensive Environmental Justice Strategy*, U.S. DEP’T JUST. OFF. PUB. AFFAIRS, <https://www.justice.gov/opa/pr/justice-department-launches-comprehensive-environmental-justice-strategy> (May 5, 2022); *New Enforcement Strategy Advances President Biden’s Environmental Justice Agenda*, U.S. EPA, <https://www.epa.gov/news-releases/new-enforcement-strategy-advances-president-bidens-environmental-justice-agenda> (May 5, 2022). EPA’s new enforcement strategy takes a step in the right direction here, as it plans to increase inspections in areas of concern in FY 2022 to about 45% from the current 30%. See *Environmental Justice in Enforcement and Compliance Assurance*, U.S. EPA, <https://www.epa.gov/enforcement/environmental-justice-enforcement-and-compliance-assurance> (last updated Dec. 18, 2023).

⁹⁷ Inflation Reduction Act of 2022, Pub. L. No. 117-169, 136 Stat. 1818; U.S. EPA, INFLATION REDUCTION ACT (IRA) OVERVIEW: CLIMATE AND CLEAN-AIR RELATED PROVISIONS 2, <https://www.epa.gov/system/files/documents/2022-09/IRA%20Overview.pdf> (last visited Mar. 1, 2024).

been a “technology forcing” agency when it comes to reducing emissions—developing standards and policing stationary sources in real time are difficult tasks.⁹⁸ Nonetheless, a combination of sticks and carrots will be needed to continually reduce emissions from these facilities and refocusing criminal enforcement goals towards such facilities sets the stage for greater reductions of toxic air pollution, accounts for the harms experienced by environmental justice communities, and may also aid future carbon reductions.

CONCLUSION

In order to fill the gap in our understanding of prosecutions under the CAA, this Essay assesses CAA prosecutions from 1983 to 2021. Our study reveals that corporate entities are frequently subject to CAA prosecutions and face significant monetary penalties and probation time. Though the statistics on prosecutions of companies under the CAA may point towards success, a large portion of CAA criminal penalties derive from just five cases that are responsible for about 94 percent of these penalties, and over half of all CAA prosecutions are for asbestos crimes. This suggests that CAA criminal penalties may be confined to a narrow class of cases, and that there is room for improvement. Accordingly, to ensure that the tool of criminal enforcement is being optimally leveraged under the CAA, it is important to increase prosecution resources for EPA and DOJ and shift criminal enforcement efforts towards large stationary sources of pollution and carbon-emitting facilities. Such refocusing will result in improved outcomes for environmental justice communities and potentially allow for prosecution of egregious carbon pollution to better abate climate change.

⁹⁸ *Forcing Technology: The Clean Air Act Experience*, 88 YALE L.J. 1713 (1979); David Coursen, *Biden’s EPA gets Serious About Funding Environmental Justice*, THE HILL (Apr. 15, 2021), <https://thehill.com/opinion/energy-environment/548369-bidens-epa-gets-serious-about-funding-environmental-justice/>. Civil lawsuits, negotiated settlements, and other civil enforcement tools are also used and can be effective here to these ends. For an excellent review of the difficulties inherent in managing air emissions from industrial facilities, see Thomas O. McGarity, *Hazardous Air Pollutants Migrating Hot Spots, and the Prospect of Data-Driven Regulation of Complex Industrial Processes*, 86 TEX. L. REV. 1446 (2008).