Sustainable Development Law & Policy

Volume 23 | Issue 1

Article 5

Toxic Criminals: Prosecuting Individuals for Hazardous Waste Crimes Under the United States Resource Conservation and Recovery Act

Dr. Joshua Ozymy

Dr. Melissa Jarrell Ozymy

Follow this and additional works at: https://digitalcommons.wcl.american.edu/sdlp

Part of the Agriculture Law Commons, Constitutional Law Commons, Energy and Utilities Law Commons, Environmental Law Commons, Food and Drug Law Commons, Health Law and Policy Commons, Human Rights Law Commons, Intellectual Property Law Commons, International Law Commons, International Trade Law Commons, Land Use Law Commons, Law and Society Commons, Law of the Sea Commons, Litigation Commons, Natural Resources Law Commons, Oil, Gas, and Mineral Law Commons, Public Law and Legal Theory Commons, and the Water Law Commons

Recommended Citation

Dr. Joshua Ozymy and Dr. Melissa Jarrell Ozymy () "Toxic Criminals: Prosecuting Individuals for Hazardous Waste Crimes Under the United States Resource Conservation and Recovery Act," *Sustainable Development Law & Policy*: Vol. 23: Iss. 1, Article 5. Available at: https://digitalcommons.wcl.american.edu/sdlp/vol23/iss1/5

This Article is brought to you for free and open access by the Washington College of Law Journals & Law Reviews at Digital Commons @ American University Washington College of Law. It has been accepted for inclusion in Sustainable Development Law & Policy by an authorized editor of Digital Commons @ American University Washington College of Law. For more information, please contact kclay@wcl.american.edu.

TOXIC CRIMINALS: PROSECUTING INDIVIDUALS FOR HAZARDOUS WASTE CRIMES UNDER THE UNITED STATES RESOURCE CONSERVATION AND RECOVERY ACT

Dr. Joshua Ozymy and Dr. Melissa Jarrell Ozymy*

TABLE OF CONTENTS

Abst	ract
I.	Introduction
II.	RCRA OVERVIEW
III.	The Evolution of Environmental Crime Enforcement
IV.	Sanctioning Hazardous Waste Crimes
	Data and Method
VI.	Results
	A. Trends in Prosecutions and Sentencing
	B. Large Penalty Outliers
	C. Themes in Prosecutions
	DISCUSSION
VIII.	Recommendations

^{*} Dr. Joshua Ozymy is an Associate Professor of Political Science in the Department of Political Science and Public Service at the University of Tennessee at Chattanooga. Dr. Melissa Jarrell Ozymy is a Professor of Criminal Justice and Head of the Department of Social, Cultural, and Justice Studies at the University of Tennessee at Chattanooga.

ABSTRACT

The U.S. Resource Conservation and Recovery Act ("RCRA") contains criminal provisions which allow prosecutors to seek substantial penalties when individuals commit hazardous waste crimes involving significant harm or culpable conduct. However, our empirical understanding of enforcement outcomes is limited. We used content analysis of 2,728 criminal prosecutions derived from U.S. EPA criminal investigations from 1983 to 2021 and examined all prosecutions of individual defendants for RCRA violations. Our results show that 222 prosecutions were adjudicated, with over \$72.9 million in monetary penalties, 755 years of probation, and 451 years of incarceration levied at sentencing. Seventeen percent of prosecutions centered on unlawful disposal of hazardous waste, sixteen percent unlawful storage, nine percent unlawful transport, and fifty-six percent a combination of these crimes. We conclude with recommendations to enhance criminal enforcement efforts via increased budgetary appropriations.

I. INTRODUCTION

Roy Hart owned North American Environmental, Inc a business that accepted hazardous waste in Clearfield, Utah.¹ Hart was ordered by The Environmental Protection Agency ("EPA") to not accept additional polychlorinated biphenyl ("PCBs") waste, but chose to ignore the order, eventually abandoning the facility and leaving behind a million pounds of PCB oil and drums of hazardous waste.² A federal judge found Hart in violation of the United States Resource Conservation and Recovery Act ("RCRA") for knowingly storing or disposing of hazardous waste without permit.³ Hart plead guilty and the United States District Court sentenced him to six months of incarceration, thirty-six months of probation, and to pay over \$1.3 million in restitution for cleanup.⁴

When individuals violate hazardous waste laws, environmental agencies generally take the approach of using administrative or civil measures to help regain compliance. However, in the case of criminal action against perpetrators, like Roy Hart, that involve significant harm or culpable conduct, for example, intentional or "knowing" violations of the law, criminal enforcement tools may be used to punish offenders and deter future offenses.5 Hazardous waste crimes often cause significant harm to those living near chemical plants or other industrial facilities. Similarly, hazardous waste crimes are particularly heinous for workers especially when company officers knowingly fail to protect them from harm.⁶ Congress inserted criminal provisions into RCRA in 1984 to send a clear deterrence message to environmental criminals, and such provisions are typically incredibly important for protecting people, animals, and the natural environment from harm. However, there is still little empirical knowledge of the success of prosecutions under RCRA for hazardous waste crimes over time.7

This Article seeks to investigate this knowledge gap through content analysis of 2,728 criminal investigations undertaken by the EPA from 1983 to 2021. This Article's analysis considers all

III. THE EVOLUTION OF ENVIRONMENTAL **CRIME ENFORCEMENT**

By the 1970s, a global movement began affecting the way many countries, including the United States, saw environmental crime, in which many countries sought to provide additional tools to police, prosecute, and punish serious environmental crimes that went beyond civil remedies typically focused on regaining legal compliance with the law.¹⁴ Earlier efforts, such as the Rivers and Harbors Act of 1899¹⁵ and Lacy Act,¹⁶ were among the first statutes to penalize environmental

criminal prosecutions for hazardous waste crimes charged under RCRA, and then further analyzes all cases where individuals were prosecuted for hazardous waste crimes. This approach allows us to examine broad trends in prosecutions and sentencing since federal processes for policing and prosecuting environmental crimes were established in the early 1980s, as well as to discuss large penalty cases that affect these trends and to organize prosecutions across general themes to illustrate patterns in prosecutions. This Article begins with an overview of RCRA and a discussion of the evolution of criminal enforcement tools for the environment. Next, this Article discusses compliance versus deterrence in the context of sanctioning environmental violations. Last, this Article provides an analysis of RCRA hazardous waste prosecutions and conclusions.

II. RCRA OVERVIEW

Public concerns over hazardous waste prompted the passage of RCRA in the 1970s alongside a number of new environmental statutes covering a wide variety of environmental issues, including the Clean Water Act ("CWA"), the Safe Drinking Water Act ("SDWA"), the Toxic Substances Control Act ("TSCA"), the Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA"), and the Clean Air Act ("CAA").8 RCRA empowered the EPA to develop "cradle-to-grave" regulations over entities that generate, store, treat, transport, or export hazardous waste.⁹ Additionally, RCRA empowers the EPA to promulgate rules for managing solid waste throughout the country.¹⁰ RCRA's greatest regulatory success was arguably the development of a national permitting system for the lifecycle of hazardous waste and provision for solid waste.¹¹ Despite these regulatory successes, some major RCRA concerns remain unaddressed, including (1) how EPA classifies hazardous and other wastes for regulation under RCRA and (2) the exemptions Congress added in 1980 that cover much of the extractive industry that remain in force.¹²

EPA's authority under RCRA is organized under Subchapter I-X, including: (I) rules and guidelines for interstate cooperation and various definitions; (II) the establishment of the Office of Solid Waste; (III) recordkeeping requirements and authority over the lifecycle of hazardous waste; (IV) the framework for managing nonhazardous waste; (V) the duties of the Secretary of Commerce; (VI) federal responsibilities; (VII) miscellaneous provisions; (VIII) provisions for research and development; (IX) the regulation of underground storage tanks; and (X) standards for tracking and managing medical waste.13

violations;¹⁷ but otherwise, the U.S. lacked environmental criminal law provisions.¹⁸ Major change occurred in the early 1980s when Congress began adding criminal provisions to major environmental laws: RCRA in 1984, followed by the CWA in 1987, and then the CAA in 1990.¹⁹ Around the same time, Congress granted the EPA authority to institutionalize environmental policing resources and the agency organized the Office of Enforcement 1982 that later evolved into the Office of Compliance Assurance.²⁰ In 1981, the EPA hired two criminal investigators.²¹ After 1982, the EPA hired an additional twenty investigators. In 1988, the Medical Waste Tracking Act granted these investigators full law enforcement authority, and in 1989, the U.S. Attorney General authorized them to carry firearms in their official capacity.²² Congress further enhanced resources for fighting environmental crimes in 1990, with the passage of the Pollution Prosecution Act, which expanded the total number of investigative staff to at least 200 individuals.²³ The EPA Criminal Investigation Division ("CID") currently oversees policing of federal environmental crimes in the United States.²⁴

While the EPA is tasked with investigating and policing environmental crimes, it is not the only federal agencies tasked with environmental law enforcement. The Department of Justice ("DOJ") is responsible for prosecuting environmental offenders. DOJ added the Public Lands Division in 1909, as a specialized three-attorney unit focused on environmental crime prosecution, which evolved into the Environmental and Natural Resource Division ("ENRD").²⁵ In 1982, DOJ founded the Environmental Crimes Unit, which became the Environmental Crimes Section ("ECS") in 1987, a five-attorney unit enlisted to prosecute environmental crimes.²⁶ The ECS currently employs forty-three attorneys and a dozen support staff.²⁷ The process for policing environmental crimes is very collaborative, with EPA criminal investigators often working with local, state, and to build cases.²⁸ Investigations of potential environmental crimes may originate from civil inspectors and reports, regulatory filings, former employees of a company, or other sources.²⁹ When criminal investigators at both the state and federal level build a case, they pass along this information to federal prosecutors, who file a criminal investigation or convene a grand jury.³⁰

IV. SANCTIONING HAZARDOUS WASTE CRIMES

When an individual transgresses hazardous waste laws, regulators typically seek to help the individual regain compliance with the law using administrative or civil enforcement tools, rather than applying criminal enforcement tools.³¹ Utilizing administrative tools, the EPA or state agencies may issue individual notices of violation, orders of correction, and fines, or they may pursue a civil judicial remedy.³² Civil remedies may include: issuing administrative orders of consent (where EPA reaches an agreement with a violator) or issuing a unilateral administrative order, either of which requires violators to pay to clean up pollution or to perform a series of actions to remedy pollution; temporary or injunctive relief; or environmental monitoring or mitigation plans.³³ EPA and DOJ can pursue a civil lawsuit and an individual can be found guilty in court and liable for damages. $^{\rm 34}$

Criminal enforcement for the environment is one of many tools. While civil and administrative remedies focus on regaining compliance, criminal remedies center on punishment and deterrence.35 Today, criminal provisions of RCRA provide for significant penalties for the following hazardous waste offenses: knowing endangerment; illegal export of hazardous waste; making false statements or omission of material information; transportation of hazardous waste without a manifest or to an unpermitted facility; the treatment, storage, or disposal of hazardous waste without a permit or in violation of a permit; knowing destruction, concealment, or alteration of records.³⁶ Of particular note is the crime of knowing endangerment, defined as the defendant knowing at the time of the crime in question that their actions placed another person in imminent danger of death or serious bodily injury.³⁷ Penalties for knowing endangerment are the most significant penalties under RCRA's criminal provisions.³⁸ Holding companies and their supervisors or corporate officers accountable for such actions was difficult before Congress amended RCRA in 1984.39 These amendments triggered broader questions regarding what obligations companies and their supervisors have to abide by to safeguard workers and the general public from exposure to hazardous and other toxic materials and how these companies should combat intentional offenses under the law.40

The value of criminal enforcement for deterring hazardous waste crimes is still under debate.⁴¹ By creating criminal provisions in environmental statutes. Congress has demonstrated position that environmental crimes are serious violations of law deserving of significant penalties, even incarceration, which sends a clear deterrent message for environmental criminals.⁴² Despite a lack of enhanced funding over time from Congress, prosecutions have commenced and remained consistent over time, achieving significant penalty outcomes at sentencing.⁴³ Research shows that prosecutors are not afraid to seek significant penalties or pursue corporations and other well-resourced defendants in environmental crime prosecutions.44 Furthermore, research demonstrates that aggregating factors are linked to both case selection and punishment severity in environmental crime prosecutions.⁴⁵ There are still few empirical studies of the prosecution of hazardous waste crimes under RCRA present in the scholarly literature, and we aim to fill this gap through an analysis of prosecutions and sentencing. This allows for a presentation of general themes for the prosecution of individuals for hazardous waste crimes since the institutionalization of the criminal enforcement process in the United States.⁴⁶

V. DATA AND METHOD

All data for our analysis comes from the EPA's Summary of Criminal Prosecutions Database, which provides case summaries of all EPA-CID environmental crimes prosecutions that result in criminal prosecution.⁴⁷ After experimenting with numerous search strategies, we found the most accurate method to capture all of the cases was to search by fiscal year (FY). We gathered a total of 2,728 criminal cases from the first adjudicated case in 1983 to the conclusion of data collection on April 30, 2022. Once we recorded all prosecutions, we selected cases prosecuted under RCRA and then further filtered for all cases where only individual defendants (but not companies or corporations) were named defendants in the prosecution. Once we selected for these characteristics, we had 222 adjudicated environmental crimes prosecutions during this period. We then collected the following data from each of the 222 case summaries: fiscal year identifier; narrative summary of the prosecution; charging statutes; whether a company was a named defendant in the case; state identifier where the crime took place; number of named defendants in the prosecution; docket number; presence of any contributing crimes, such as false statements, conspiracy, fraud, or otherwise; and then sentencing outcomes, including probation and incarceration in months; and all monetary penalties including fines, fees, assessments, community service payments, restitution, or otherwise levied at sentencing.

Our analytical strategy was to use content analysis to record, interpret, and code the data. Two individuals coded data independently of one another and undertook a test pilot for four weeks to better understand patterns in the data and identify common problems in data collection.⁴⁸ Once we were confident moving forward, the individuals commenced coding the data and we met to find consensus when discrepancies arose. Cases involving ambiguous data or complex charging and sentencing data were often to blame for differences in the data gathered by the coders. Our inter-coder reliability for the dataset as a whole was roughly ninety-five percent.⁴⁹

VI. RESULTS

Our analysis is broken down into three parts. In the first section, we explore trends in prosecutions and sentencing. In the next section, we describe large penalty sentences for incarceration and monetary penalties that affect the overall totals described in the first section to give context for those figures. In the final section, we order prosecutions by the primary crime in the case to explore dominant themes in prosecutions since the criminal enforcement apparatus institutionalized in the early 1980s.

A. TRENDS IN PROSECUTIONS AND SENTENCING

In the first section of the analysis, we explore trends in prosecutions and sentencing of RCRA crimes committed by individual offenders.

In Figure 1, we display the number of prosecutions adjudicated by fiscal year, from 1983 to 2021. The first prosecutions were adjudicated in 1985 and across that decade, a total of nineteen prosecutions were adjudicated. Prosecutions increase significantly through the 1990s, when a total of seventy-six were adjudicated during the decade. Prosecutions dip a bit from 2000 to 2009, when sixty-two prosecutions were adjudicated; from 2010 to 2021, we see a slight increase to sixty-five prosecutions. The general trend appears to be a rising number of adjudicated prosecutions through the 1990s that dips in the early 2000s, but regains momentum over time, without reaching the former peak. We catalog a grand total of 222 prosecutions of individual defendants in our analysis.

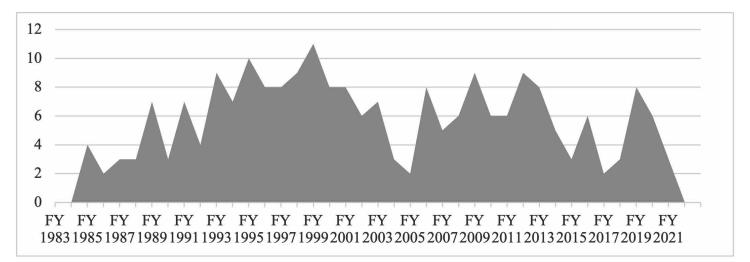


FIGURE 1. TOTAL RCRA PROSECUTIONS OF INDIVIDUAL DEFENDANTS ADJUDICATED BY FISCAL YEAR.

Source: EPA Summary of Criminal Prosecutions Database

In Figure 2, we display the total number of individual defendants prosecuted under RCRA from 1983 to 2021. Through the 1980s, a total of twenty-eight individual defendants were prosecuted. During the 1990s, a total of 105 defendants were prosecuted. From 2000 to 2009, the total number of defendants prosecuted dropped a bit to ninety-four, and from 2010 to 2021, the total number of individual defendants dropped again to eighty-seven. As with Figure 1, the general trend here is a rise in prosecutions through the 1990s, a drop in the early 2000s, with some momentum gained, but not to the high point reached in the 1990s. Our data shows a grand total of 314 defendants were prosecuted from 1983 to 2021.

In Figure 3, we illustrate sentencing patterns, with an analysis of total probation time (in months) calculated at sentencing to individual defendants in RCRA prosecutions from1983 to 2021. Courts assessed a total of 1,020 months of probation to individual defendants in RCRA prosecutions in the 1980s. That number more than doubles in the 1990s, where courts assessed a total of 2,907 months of probation to individual defendants for hazardous waste crimes under RCRA. Total probation climbed slightly to 2,978 months from 2000 to 2009, and then decreased to 2,160 months from 2010 to 2021. As with the previous trends in Figures 1 and 2, by the early 2000s, total probation started to decrease. While this figure does not drop precipitously over the following two decades, it does not reach the high point of the 1990s. We catalog a grand total of 9,065 months of probation from 1983 to 2021.

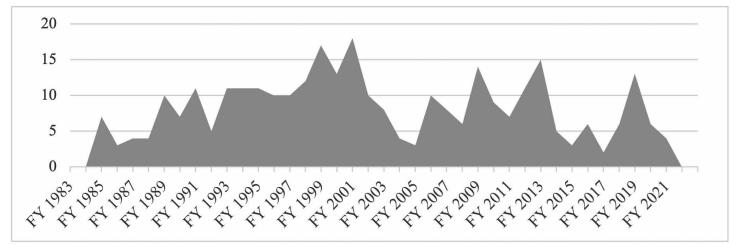


FIGURE 2. NUMBER OF INDIVIDUAL DEFENDANTS IN RCRA PROSECUTIONS BY FISCAL YEAR.

Source: EPA Summary of Criminal Prosecutions Database

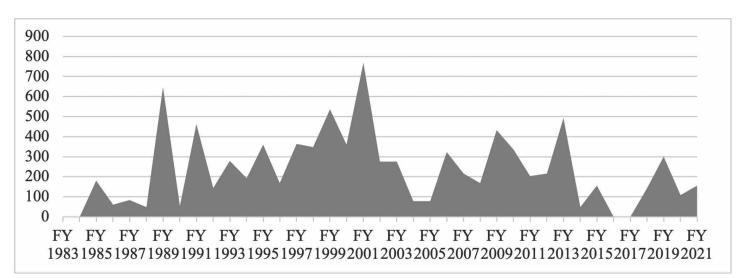
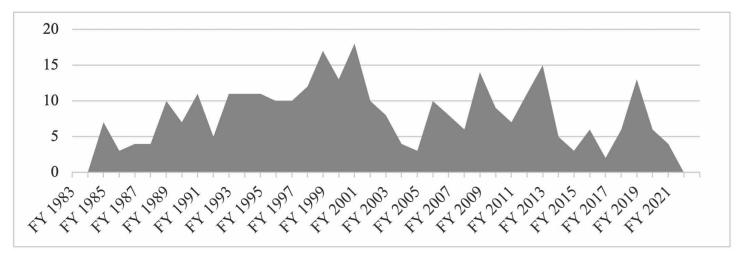


FIGURE 3. TOTAL PROBATION TIME IN MONTHS ASSESSED TO INDIVIDUAL DEFENDANTS IN RCRA PROSECUTIONS BY FISCAL YEAR.

Source: EPA Summary of Criminal Prosecutions Database

FIGURE 4. TOTAL MONETARY PENALTIES ASSESSED TO INDIVIDUAL DEFENDANTS IN RCRA PROSECUTIONS BY FISCAL YEAR.



Source: EPA Summary of Criminal Prosecutions Database

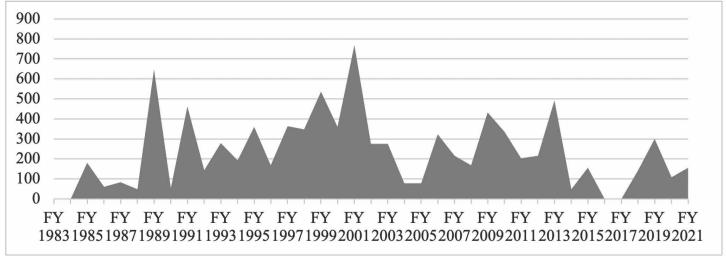


FIGURE 5. INCARCERATION ASSESSED TO INDIVIDUAL DEFENDANTS IN RCRA PROSECUTIONS BY FISCAL YEAR.

Source: EPA Summary of Criminal Prosecutions Database

In Figure 4, we display total monetary penalties assessed to individual defendants in RCRA prosecutions from 1983 to 2021. During the 1980s, we find in excess of \$836,000 in monetary penalties assessed to defendants at sentencing. In the 1990s, these numbers increased substantially to over \$5.8 million in monetary penalties. From 2000 to 09, courts secured over \$11 million in penalties at sentencing; from 2010 to 2021, the courts assessed over \$54 million in monetary penalties at sentencing.⁵⁰ Courts assessed over \$72.9 million in monetary penalties to individuals for RCRA crimes in our data from 1983 to 2021.

In Figure 5, we illustrate total incarceration penalties assessed at sentencing from RCRA crimes, 1983-2021. Incarceration at sentencing grew steadily throughout the 1980s, with a total of 843 months assessed at sentencing. In the 1990s, incarceration continued to grow significantly, with 1,336 months assessed at sentencing. From 2000 to2009, incarceration grew again, exceeding 2,244 months. Reversing previous trends in the analysis, from 2010 to 2021, incarceration shrank significantly to about 994 months during this period. We catalog a grand total of 5,417 months of incarceration assessed at sentencing in our data.

B. LARGE PENALTY OUTLIERS

We now move to the second section of our analysis, where we discuss significant outliers in incarceration and monetary penalties that affect the results of the figures in the previous section. In Table 1, we illustrate four cases organized by primary defendant, fiscal year, RCRA crime, and total incarceration assessed. These four cases alone total 1,946 months of incarceration or about thirty-six percent of all incarceration assessed at sentencing in our data.

The Eastern District of Missouri prosecuted M. Dorner along with eight co-defendants for the production of methamphetamines.⁵¹ The defendants produced a significant amount of methamphetamines on an eighty-acre site and illegally disposed of hazardous chemicals from their drug lab. Prosecutors charged C. Arcangelo and nine co-defendants for illegal disposal of hazardous waste under RCRA, alongside a fifteen-count indictment under the Racketeer Influenced and Corrupt Organization Act (RICO) for a variety of other criminal activity.⁵² C. Callihan was prosecuted alongside four other co-defendants for his role in a criminal conspiracy that defrauded the United States Army, involved the illegal transport of hazardous waste, and caused an explosion at a military basis and subsequent evacuation of a nearby town.53 A. Elias was prosecuted for knowing endangerment and illegal disposal under the RCRA when he directed employees to clean a 25,000 gallon tank that contained sludge mixed with cyanide, which left one employee with permanent brain damage.54

In Table 2, we display the largest monetary penalties assessed to individual defendants in our analysis. The courts levied the largest penalty against C. Callihan and his co-defendants, of over \$35 million in restitution.⁵⁵ K. Gravitt pled guilty to conspiracy for crimes related to the unlawful handling and storage of hazardous waste.⁵⁶ Prosecutors charged J. Cooke for illegally storing vinyl acetate in aboveground storage tanks in Houston, Texas.⁵⁷ Prosecutors charged T. Toy for illegally storing hazardous waste.⁵⁸ Prosecutors charged A. Hersh for abandoning thousands of barrels of hazardous waste at a former company site.⁵⁹ These five cases amount to over \$51 million in monetary penalties, or about seventy-one percent of total monetary penalties, in our analysis. This shows that the broader trends in penalties are significantly impacted by a few outliers in the data.

C. THEMES IN PROSECUTIONS

In the final section of the analysis, we place each case into a typology, to better organize the themes that define historical RCRA criminal prosecutions. Since RCRA crimes revolve around a set of crimes related to illegal storage, production, transport, or disposal of hazardous waste, the nature of the crimes is very similar. We list these in Table 3.

Environmental criminals in our analysis are either engaged in unlawful disposal, storage, or transport of hazardous waste,

TABLE 1. LARGEST INCARCERATION SENTENCES ASSESSED TO INDIVIDUAL DEFENDANTS IN RCRA PROSECUTIONS.

Defendant	Fiscal Year	Crime	Total Incarceration (Months)
M. Dorner	2001	Unlawful Disposal	953
C. Arcangelo	1989	Unlawful Disposal	564
C. Callihan	2019	Unlawful Storage + Transport + Disposal	225
A. Elias	2003	Unlawful Disposal	204

Source: EPA Summary of Criminal Prosecutions Database

TABLE 2. LARGEST MONETARY PENALTIES ASSESSED TO INDIVIDUAL DEFENDANTS IN RCRA PROSECUTIONS.

Defendant	Fiscal Year	Crime	Total Monetary Penalties
C. Callihan	2019	Unlawful Storage + Transport + Disposal	35,397,347
K. Gravitt	2019	Unlawful Storage + Transport + Disposal	5,540,709
J.Cooke	2000	Unlawful Storage + Transport + Disposal	4,844,244
Т. Тоу	2020	Unlawful Storage	4,200,000
A.Hersh	2009	Unlawful Storage + Transport + Disposal	1,700,000

Source: EPA Summary of Criminal Prosecutions Database; * Numbers are rounded

TABLE 3. DOMINANT THEMES THAT EMERGE WHEN INDIVIDUALS ARE PROSECUTED FOR RCRA CRIMES.

Theme	Number of Prosecutions	Percentage of Total
Unlawful Storage + Transport + Disposal	125	56
Unlawful Disposal	37	17
Unlawful Storage	35	16
Unlawful Transport	21	9
False Statements	3	1
Unclear*	1	
Total	222	

*Percentages are rounded

or a combination of one or more of these crimes. In three cases, we felt that giving false statements was the central crime in the prosecution⁶⁰ In one prosecution, the central crime was unclear from the case summary.⁶¹ By far the most common theme that emerged is that in 125 prosecutions, or roughly fifty-six percent of the data, defendants engaged in one or more crimes involving production, storage, or transport under RCRA's cradle-to grave regulations involving hazardous waste.⁶² In thirty-seven cases, or seventeen percent of the prosecutions in the analysis, the case centered on the unlawful disposal of hazardous waste.⁶³ In thirty-five cases, or sixteen percent of the prosecutions in the analysis, the prosecution centered on unlawful storage of hazardous waste.⁶⁴ In twenty-one prosecutions in our analysis, or nine percent, the crime centered on unlawful transport of hazardous waste.⁶⁵

VII. DISCUSSION

Our findings provide insights into the criminal prosecution of hazardous waste crimes under RCRA in the United States. We find that prosecutors were able to pursue and obtain significant penalties against offenders. With 755 years of probation, 451 years of incarceration, and over \$72.9 million in monetary penalties assessed at sentencing, hazardous waste prosecutions of individuals since 1983 have yielded substantive results. Yet to place this in context, while probation is more evenly distributed over time, prison time is affected by a few outliers. A few key prosecutions significantly affected trends in monetary penalties, and some of the stiffer penalties assessed came from hazardous waste crimes under RCRA that were committed in conjunction with drug crimes, fraud, or other criminal acts. This does not diminish the significance of these cases or the broader trends in the first part of our analysis, but speaks more to the nature of inter-agency cooperation between EPA-CID and other federal law enforcement agencies working in tandem with each other and prosecutors to collaborate and secure important victories at sentencing.66

A second finding of import is that prosecutors pursued crimes involving aggravating factors and significant harm and or culpable conduct. Additionally, we found quite a few prosecutions involved crimes of intent such as fraud, conspiracy, and false statements. In sixty-two cases, or roughly twenty-eight percent of the prosecutions in our data, the case involved one or more of these charges.⁶⁷

A final key finding is that prosecutions do not follow a linear pattern over time. We find more of an uptick through the 1980s and a major evolution that occurs through the 1990s to the early 2000s. Yet by the early to mid-2000s, prosecutions begin to level out and decline a bit. This trend seems to hold through 2021.⁶⁸

VIII. RECOMMENDATIONS

Criminal enforcement of hazardous waste crimes got off to a rocky start in the 1980s, but managed to gain traction and evolve over time. Political attacks by the Reagan Administration made it hard to institutionalize policing resources within EPA and prosecutorial resources in DOJ and to enhance criminal provisions within major environmental statutes. This evolution was aided by limited bipartisanship over enhancing punishments for a range of crimes, but it was also bolstered by the efforts of Congress to enhance and standardize punishments for federal crimes generally via the United States Sentencing Guidelines.⁶⁹

By the end of the 1990s, added financial resources were no longer increasing in real budgetary terms under either Republican or Democratic Parties. Any remaining bipartisanship waned, alongside concerns from the business and legal community that prosecutors may have gone too far in prosecuting corporate officers and businesses for criminal offenses under RCRA and other statutes.⁷⁰ We see these trends within individuals convicted of hazardous waste crimes in our data, where prosecutions reach a high point in the Clinton Administration and begin a subsequent decline and leveling off and this may be attributed in great part to the organizational missions and strength of environmental law enforcement agencies to meet their objectives within an increasingly difficult political environment, colored by long-term budgetary underinvestment by both political parties.⁷¹ Now for EPA in particular, the idea of working under a hostile political regime like the Trump Administration was nothing new: criminal enforcement came of age in a similar environment.⁷² Criminal enforcement has operated without significant investment for some time and an infusion of budgetary support is warranted.⁷³

One can see this underinvestment by adjusting EPA's budget for inflation, where the high point of investment in the EPA was in 1980 when its budget appropriation was \$16 billion and staffing was at its peak in 1999 at 18,110 personnel.⁷⁴ ENRD's budget has also been stagnant for a number of years in real terms.⁷⁵ A related problem is increases to the mission of these agencies without enhancing funding in a significant manner for their core functions. While the Biden Administration has infused funding in the EPA and DOJ for enhanced enforcement in environmental justice communities. These investments are positive steps but should not compete with existing priorities for funding or staffing.⁷⁶

Funding should be enhanced for environmental law enforcement. The first change is to set goals returning EPA staffing to its highest level of 18,110 in FY 1999. The second change is to bring back its budget to inflation-adjusted highs from FY 1980, when Congress was more generous and recognized the complexity and importance of the agency's mission. A third change is that funding can be used in target ways outside of enhancing EPA or ENRD's budget and one direction is to create funding for environmental enforcement associations and funds for statelevel policing and prosecution of environmental crime.⁷⁷ The current FY 2022 budgetary appropriation is a step in the right direction, but still remains insufficient to the task.⁷⁸ Priorities will shift in Congress towards mitigating the effects of climate change as they grow and become more pernicious, and the costs of complying with laws targeted at reducing carbon emissions will likely increase, as will the incentives for environmental crime-criminal enforcement needs. Significant funding is needed now to help contain these problems.