

EPA'S CRIMINAL PROSECUTION AND PUNISHMENT OF ENVIRONMENTAL CRIMES

by Joshua Ozymy and Melissa L. Jarrell

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The U.S. Environmental Protection Agency (EPA) has the difficult mission of crafting complex environmental rules and regulations while considering the economic costs of those actions. The Agency must also engage in law enforcement functions to enforce these rules and regulations to ensure compliance, punish appropriately, and deter future offenders. Most of these enforcement actions rely on civil remedies to gain compliance, such as negotiating consent decrees or issuing civil penalties.¹ In cases of willful, chronic, or serious offenses, the Agency can seek criminal penalties.²

High-profile cases, such as the British Petroleum (BP) Texas City refinery explosion where company negligence claimed 16 lives and injured 180 individuals, or the *Deepwater Horizon* disaster, are primary examples of when the Agency sought criminal sanctions. Other examples include the \$2.8 billion criminal fine levied against Volkswagen AG for their multi-year emissions-rigging fraud. In practice, these prosecutions can include the illegal taking of protected animals under the Migratory Bird Act, illegal discharge under the Clean Water Act (CWA),³ federal biofuel credit fraud, or improper disposal of toxic substances under the Resource Conservation and Recovery Act (RCRA).⁴

Little academic and legal research goes beyond explaining civil punishments to describing criminal punishment

outcomes by EPA, particularly across regional offices.⁵ We undertake content analysis of the EPA Summary of Criminal Prosecutions database of all cases in which EPA sought criminal sanctions against environmental offenders from 1983 to 2019.⁶ As the Agency's enforcement efforts are distributed across 10 regional offices, our goal is to explore the universe of criminal prosecution within and across these units to include the number of cases, defendants, types of environmental charging statutes used, non-environmental criminal charges filed against defendants, and the range of punishments.

This research will provide great insight into the Agency's criminal enforcement efforts over the past 37 years, and create a basis for understanding what the Agency does to punish offenders with its criminal enforcement apparatus. We describe the criminal enforcement process below before turning to the analysis.

I. The Criminal Enforcement Process

Most environmental enforcement actions rely on civil remedies.⁷ EPA can seek civil remedies to gain compliance with the law, including administrative or judicial actions that result in civil penalties, settlements, administrative orders on consent, injunctive relief, environmental mitigation plans, or supplemental environmental projects.⁸ EPA

1. Ronald H. Rosenberg, *Doing More or Doing Less for the Environment: Shedding Light on EPA's "Stealth" Method of Environmental Enforcement*, 35 B.C. ENVTL. AFF. L. REV. 175 (2008); David M. Uhlmann, *Environmental Crime Comes of Age: The Evolution of Criminal Enforcement in the Environmental Regulatory Scheme*, 4 UTAH L. REV. 1223 (2009).

2. Michael J. Lynch, *The Sentencing/Punishment of Federal Environmental Green Criminal Offenders, 2000-2013*, 9 DEVIANT BEHAV. 991 (2017).

3. 33 U.S.C. §§1251-1387, ELR STAT. FWPCA §§101-607.

4. 42 U.S.C. §§6901-6992k, ELR STAT. RCRA §§1001-11011; Joshua Ozymy & Melissa L. Jarrell, *Wielding the Green Stick: An Examination of Criminal Enforcement at the EPA Under the Bush and Obama Administrations*, 24 ENVTL. POL. 38 (2015); Environmental Prot. Agency v. BP Prods. N. Am., No. 4:07-CR-434 (S.D. Tex. 2009); Environmental Prot. Agency v. Volkswagen AG, No. 16-CR-20394 (E.D. Mich. 2017); Environmental Prot. Agency v. BP, PLC, No. 2:12-CR-00292-DEK (E.D. La. 2013).

5. Kathleen F. Brickley, *Charging Practices in Hazardous Waste Crime Prosecutions*, 62 OHIO ST. L.J. 1077 (2001); Michael J. Lynch et al., *The Weak Probability of Punishment for Environmental Offenses and Deterrence of Environmental Offenders: A Discussion Based on USEPA Criminal Cases, 1983-2013*, 37 DEVIANT BEHAV. 1095 (2016); Jay P. Shimshack & Michael B. Ward, *Regulator Reputation, Enforcement, and Environmental Compliance*, 50 J. ENVTL. ECON. & MGMT. 519 (2005); Jay P. Shimshack & Michael B. Ward, *Enforcement and Over-Compliance*, 55 J. ENVTL. ECON. & MGMT. 90 (2008).

6. U.S. EPA, *Summary of Criminal Prosecutions*, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm (last updated Apr. 1, 2020).

7. Uhlmann, *supra* note 1.

8. U.S. EPA, *Basic Information on Enforcement*, <https://www.epa.gov/enforcement/basic-information-enforcement> (last updated Jan. 24, 2020).

really has two options—it may seek sanctions in federal court or pursue the matter administratively.⁹

The Agency sought the ability to use criminal sanctions as it became evident that civil remedies were not sufficient to deter serious crime and punish wrongdoing. In 1981, EPA's Office of Environmental Enforcement (currently the Office of Enforcement and Compliance Assurance (OECA)) was founded to empower the Agency to enforce environmental regulations. The U.S. Department of Justice's (DOJ's) Environmental Crimes Section (ECS) was created the following year to assist with investigations and the prosecution of environmental criminals; the federal government only prosecuted 25 environmental crimes prior to the creation of these offices.¹⁰

Federal statutes benefit the Agency's ability to pursue criminal charges, as most environmental criminal statutes do not require the government to prove that the defendant wrongfully intended to discharge a pollutant, but simply require evidence that the individual or entity knew that it was engaging in action likely to lead to release of a pollutant.¹¹ However, while EPA has the authority to investigate environmental crimes, it cannot prosecute directly. It must rely on the U.S. attorneys or ECS if they wish to file criminal charges and prosecute. This makes criminal enforcement a costly enterprise that must often rely on cooperation with state and local environmental agencies, as well as other federal law enforcement agencies.¹²

The Agency faces strong incentives to avoid taking a case to trial. Cooperation and collaboration among prosecutors, law enforcement officials, regulators, laboratories, and legislators are essential because of the growing sophistication of environmental criminals and their defense attorneys. Although there are still numerous cases of "midnight dumping," increasing numbers of businesses systematically and knowingly are violating environmental laws to save money and increase profit margins.¹³

EPA is focused on deterrence, playing the role of a "violation-minimizing policeman" to reduce the chance of future environmental harm; they would need to punish companies stiffly enough to deter future actions and to punish more severely those that commit serious environmental crimes that harm others and the natural environment.¹⁴ Given the costs of criminal prosecution, research

suggests this is reserved to gain compliance with and deter willful offenders, as well as punish serious crimes; while others question the value of the criminal enforcement apparatus to deter environmental crimes.¹⁵ We explore these issues below by examining the available history of the Agency's criminal enforcement prosecutions.

II. Data and Method

Data are collected from the EPA Summary of Criminal Prosecutions database. The OECA provides narrative case summaries for all criminal prosecutions by EPA fiscal year starting with 1983. We coded data from the very first case through the end of calendar year 2019. We collected the following data from each case narrative: case summary, year, defendant docket number, number of defendants, state, region, major environmental charging statutes, non-environmental criminal charges (i.e., false statements, mail fraud, obstruction, etc.), and punishments including probation, incarceration, and fines.

Coding the case narratives was somewhat difficult due to the styles of the various EPA employees who entered the data over so many years. Some cases contained concise narratives and others press releases, while others contained both. We developed our coding protocols by analyzing a series of cases through fiscal year 2005. Once we could see the patterns in the data and how they were coded, we were able to establish a permanent coding protocol. We then piloted this protocol with two coders for four weeks, completing a trial run of a series of cases each week until inter-coder reliability reached above 90%. Two coders then reviewed each case independently with the lead author of this Comment, reviewing for cases of disagreement that were then discussed among the authors until consensus was reached. Typical problems in coding came from complex punishments in cases involving multiple defendants and when there were discrepancies in the case summaries (i.e., in some cases where press releases and manually entered summaries existed, there were conflicting data points or in a few cases no sentence was handed down or recorded as such in the database).

By dividing the agreed-upon items by total items coded,¹⁶ the level of agreement for the 2,588 cases in the data set was approximately 95%. In 17 cases, no state, region, or geographic identifier could be found by any means, and those are excluded in the analysis accordingly, which results in 2,571 valid cases in the analysis. This total does not include the criminal settlement against BP for its role in the *Deepwater Horizon* case. In an odd quirk, it could not be found by searching the database and only by

9. Jeremy Firestone, *Agency Governance and Enforcement: The Influence of Mission on Environmental Decisionmaking*, 21 J. POL'Y ANALYSIS & MGMT. 409, 410 (2002).

10. CELIA B. CAMPBELL-MOHN, *SUSTAINABLE ENVIRONMENTAL LAW* (West Publishing Co. 1993); EARL E. DEVANEY, *THE EVOLUTION OF ENVIRONMENTAL CRIMES ENFORCEMENT AT THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY* (1994), available at https://www.inece.org/assets/Publications/57a8be53a90ea_SpecialTopicTheEvolutionOfEnvironmental-Crimes_Full.pdf.

11. John F. Cooney, *Multi-Jurisdictional and Successive Prosecution of Environmental Crimes: The Case for a Consistent Approach*, 96 J. CRIM. L. & CRIMINOLOGY 435, 436 (2006).

12. DOJ, JUSTICE MANUAL 9-27.220B (1997).

13. Evan J. Ringquist & Craig E. Emmert, *Judicial Policymaking in Published and Unpublished Decisions: The Case of Environmental Civil Litigation*, 52 POL. RES. Q. 12 (1999); THEODORE M. HAMMETT & JOEL EPSTEIN, U.S. DEPARTMENT OF JUSTICE, *LOCAL PROSECUTION OF ENVIRONMENTAL CRIME* xvi (1993).

14. Devon Garvie & Andrew Keeler, *Incomplete Enforcement With Endogenous Regulatory Choice*, 55 J. PUB. ECON. 141 (1994).

15. Kimberly L. Barrett et al., *Monetary Penalties and Noncompliance With Environmental Laws: A Mediation Analysis*, 43 AM. J. CRIM. JUST. 530 (2017); KATHLEEN F. BRICKEY, *ENVIRONMENTAL CRIME: LAW, POLICY, PROSECUTION* (Aspen Publishers, Inc. 2008); Joshua Ozyim & Melissa 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 RES. 71 (2016); Lynch et al., *supra* note 5.

16. OLE R. HOLSTI, *CONTENT ANALYSIS FOR THE SOCIAL SCIENCES AND HUMANITIES* (Addison Wesley 1969).

web search, so it is excluded here and in the analysis, as it did not meet the selection criterion for the other cases that they be found by searching the database by fiscal year.¹⁷

There are a few limitations to our approach. The first is our inability to understand the role of the prosecutor in the cases. We cannot know the role of state and local environmental agencies and prosecutors in these cases. Most enforcement actions occur in the states, or arguably many if not most of these prosecutions involve state- and/or local-level cooperation. Finally, the data set is only as complete as EPA's database. The Agency could have failed to include cases, and other agencies may have undertaken environmental criminal prosecutions that are not represented herein. These limitations aside, this data set represents the most complete accounting of EPA criminal prosecutions in the literature. It helps us understand how these prosecutions are distributed geographically within and across regional offices, as well as the nature of defendants and punishments.

III. Results

Figure 1 displays the total number of prosecutions per regional office from 1983 to 2019. Total prosecutions range from 139 in Region 1 to 391 in Region 4, with an average of 257 prosecutions per region over this time period. These numbers represent the total prosecutions found in the database for each region from the beginning of fiscal year

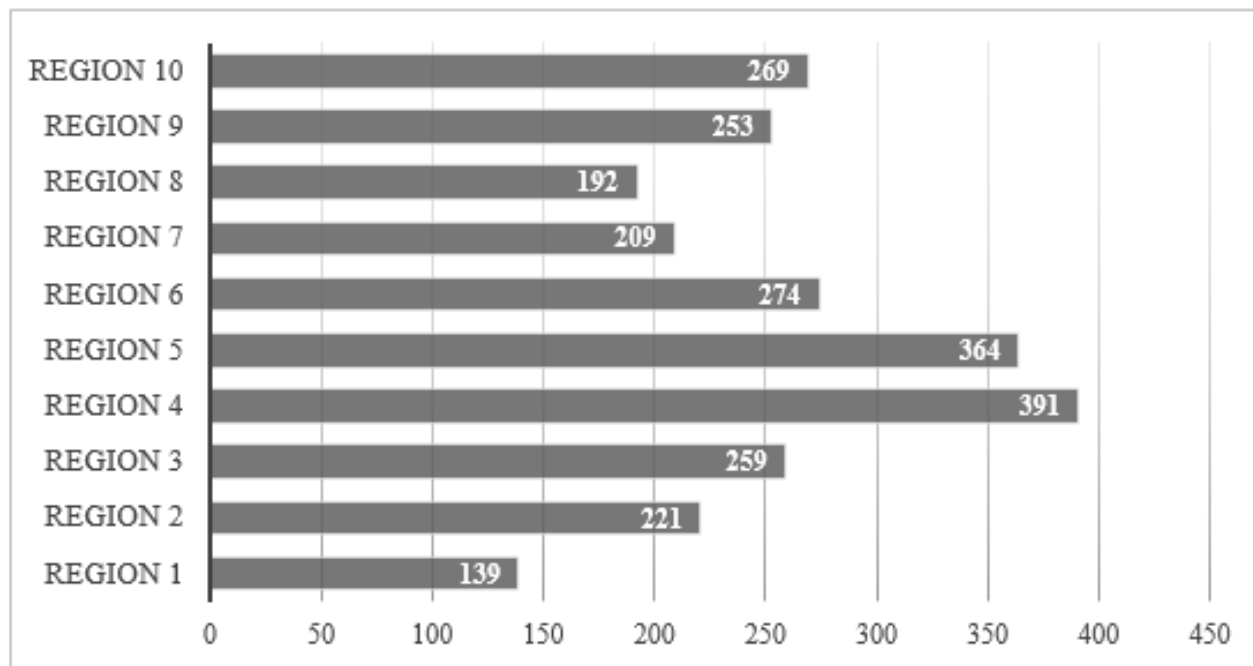
1983 to the end of calendar year 2019. As with all results below, the 2019 fiscal year for EPA had not yet ended and data collection ended as of December 2019. The total prosecutions equaled 2,571 cases in the data set.

Table 1 breaks down the prosecutions by major federal environmental law across all 10 EPA regions, from 1983 to 2019. These figures are generated through content analysis, where we identify major charging statutes in each prosecution. In this vein, one case may use multiple federal environmental statutes to charge defendants depending on the nature of the crime(s).

For example, in Region 1, there were 38 cases where defendants were charged under the CWA. In this same region, we found 16 cases where defendants were charged under the Clean Air Act (CAA),¹⁸ 25 under RCRA, six cases where the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)¹⁹ was used to prosecute offenders, six cases involving the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),²⁰ and six cases involving the Toxic Substances Control Act (TSCA).²¹ In 23 criminal cases, defendants were charged under a variety of state laws. At 827 cases, the CWA was by far the most used statute to prosecute environmental crimes in the data set. Both the CAA and RCRA were used in similar numbers (376 and 396, respectively).

Common scenarios for explaining the prevalence of CWA prosecutions include illegal discharge and improper recordkeeping for public and private organizations. Illegal

Figure 1. Total Criminal Prosecutions Per EPA Region, 1983-2019



Source: EPA Summary of Criminal Prosecutions database.

17. U.S. EPA, *Summary of Criminal Prosecutions*, https://cfpub.epa.gov/compliance/criminal_prosecution/index.cfm?action=3&prosecution_summary_id=2468 (last updated Apr. 1, 2020).

18. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618.

19. 7 U.S.C. §§136-136y, ELR STAT. FIFRA §§2-35.

20. 42 U.S.C. §§9601-9675, ELR STAT. CERCLA §§101-405.

21. 15 U.S.C. §§2601-2692, ELR STAT. TSCA §§2-412.

Table 1. Total Criminal Prosecutions Per EPA Region by Major Environmental Statute, 1983-2019

EPA Region	CWA	CAA	RCRA	FIFRA	CERCLA	TSCA	State Law
Region 1	38	16	25	6	6	6	23
Region 2	44	60	25	7	13	8	38
Region 3	111	48	37	3	9	13	11
Region 4	122	49	77	35	9	3	35
Region 5	113	70	42	15	7	11	62
Region 6	103	38	50	10	6	3	38
Region 7	75	25	34	12	11	13	19
Region 8	56	16	31	13	5	2	57
Region 9	75	33	35	17	4	6	43
Region 10	90	21	40	5	7	6	70
Total	827	376	396	123	77	71	396

Source: EPA Summary of Criminal Prosecutions database.

disposal and transport were very common scenarios for RCRA charges, as well as improper or illegal discharge of regulated substances under the CAA, which were typically assessed to stationary sources of pollution. Other common occurrences were the illegal application or storage of pesticides in home and commercial application (FIFRA cases) or the illegal use of pesticides to kill wildlife, which were often prosecuted in conjunction with the Migratory Bird Act.

While it is beyond the scope of this Comment to explore whether criminal sanctions have their deterrent effect or are always used for serious offenses or chronic infractions, we can speak to the latter issue in Table 2 (on page 10456). In the second column, we collect data on the total number of cases per region that involved non-environmental criminal charges. While these charges may have been filed in addition to an environmental crime, they represent the Agency’s efforts to punish serious offenses. We see a variety of criminal charges in the cases, but they cluster around false statements, obstruction, wire and mail fraud, and in more limited cases charges such as embezzlement, manslaughter, and Racketeer Influenced and Corrupt Organizations Act charges.

Looking at the cases more organically, we can see there is a mix of prosecutions, from very serious cases such as the BP Texas City refinery explosion or the *Deepwater Horizon* disaster, to the Volkswagen AG emissions-rigging fraud, to cases where company negligence led to death. There are many other cases where the act might arguably be seen as marginal for the resources of a criminal prosecution (e.g., illegal use of pesticides that killed migratory birds), but it is impossible across so many cases to gauge the intent of the defendants and motivations of the prosecutors over 37 years of criminal prosecutions. Our sense is that many of these are willful violations and repeat offenses that were likely the result of previous state and federal civil actions against the defendants. Outside of those cases with serious environmental or human impacts, many of these cases

look like examples of defendants engaging in willful acts to subvert the law (i.e., false statements in conjunction with CWA or CAA violations were common). Overall, we find that 951 cases contain at least one non-environmental criminal charge, or approximately 38% of the cases in the analysis.

Another measure we use to gauge the seriousness of the charges is the number of identifiable victims. In Column 3, we aggregate the number of cases per region where at least one individual was injured or killed. We used a strict protocol here to identify cases where the case summary itself mentions a person was directly impacted in the case. We find 93 cases across the regions that fit these criteria.

In Column 4, we aggregate the total number of defendants across the cases in each region to give a better sense of the number of individuals prosecuted within these 2,571 cases. We find evidence that 4,402, or an average of approximately 1.7 defendants, were prosecuted per case in the data set. Because it is difficult to ascertain which defendants are incorporated versus those business organizations that are not in the data set, we used the blanket term “company defendant” to refer to any case where an organization was prosecuted. This measure gives us a sense of the number of cases in which EPA was willing to pursue charges against an entity that is arguably going to have more resources than an individual. We find that 1,089 such defendants were prosecuted across the data set.

Table 3 aggregates the total penalties assessed to individual and company defendants in the analysis, from 1983 to 2019. In the second column, we find \$11,619,400 in fines assessed to individual defendants in Region 1. We find 3,689 months of probation assessed to individuals in this region, as well as 1,536 months of incarceration. Company defendants were assessed almost \$108 million in fines and 1,585 months of probation. If we include the \$2.8 billion fine against Volkswagen AG, company defendants were assessed more than \$5 billion in fines across all regions over the 37 years in the data set. Individuals were assessed

Table 2. Total Non-Environmental Criminal Charges, Victims, Defendants, and Company Defendants Per EPA Region, 1983-2019

EPA Region	Criminal Charges	Victims	Defendants	Company Defendants
Region 1	50	2	230	70
Region 2	97	14	453	108
Region 3	110	8	439	100
Region 4	158	9	700	154
Region 5	139	9	643	151
Region 6	103	13	506	123
Region 7	62	4	306	83
Region 8	56	10	299	88
Region 9	95	16	407	110
Region 10	81	8	419	102
Total	951	93	4,402	1,089

Source: EPA Summary of Criminal Prosecutions database.

Table 3. Total Penalties Assessed to Individuals and Companies Per EPA Region, 1983-2019

EPA Region	Individual Fine	Individual Probation	Prison	Company Fine	Company Probation
Region 1	11,619,400	3,689	1,536	107,992,598	1,585
Region 2	112,474,060	7,140	5,177	243,876,125	2,604
Region 3	68,817,728	7,966	3,397	70,909,704	3,286
Region 4	96,173,152	11,972	5,513	328,741,604	4,401
Region 5	205,098,760	8,716	5,713	2,952,490,178	3,005
Region 6	254,594,092	8,912	2,696	648,939,446	3,198
Region 7	10,783,610	5,638	2,464	159,573,041	1,560
Region 8	8,409,258	4,476	1,195	121,140,651	1,530
Region 9	30,542,110	7,053	1,837	242,310,441	2,553
Region 10	53,743,722	7,336	1,823	141,778,977	3,507
Total	852,255,892	72,898	31,351	5,017,752,765	27,229

Source: EPA Summary of Criminal Prosecutions database.

Note: Individual and company fines in nominal dollars; probation and incarceration in months. Large company fine totals in Region 5 include the \$2.8 billion fine for emissions-rigging assessed to Volkswagen AG in Michigan.

more than \$850 million in fines, and all defendants were assessed more than 100,000 months of probation.

In many cases, defendants were assessed alternative punishments to fines, probation, and incarceration. These alternative penalties included community service, home confinement, and community corrections. In the second column in Table 4, we show that more than 107,000 hours of community service were assessed to all defendants across regions, from 1983 to 2019. We find 1,886 months of home confinement assessed to defendants across all regions as well. Finally, there were 3,531 months of community corrections assessed to defendants in the data set.

In the final table in the analysis, we aggregate punishments across regions to show the total fines and probation assessed to all defendants by region from 1983 to 2019. Excluding the \$2.8 billion Volkswagen fine, total fines range from approximately \$119 million in Region 1 to over \$900 million in Region 6. Total probation ranges from 5,274 months in Region 1 to 16,373 months in Region 4. In Column 4, we use EPA's Enforcement and Compliance History Online (ECHO) database to measure the total number of regulated facilities per state or U.S. territory

Table 4. Alternative Penalties Assessed Per EPA Region, 1983-2019

EPA Region	Community Service	Home Confinement	Community Corrections
Region 1	5,160	72	58
Region 2	7,990	188	96
Region 3	17,261	204	357
Region 4	16,294	418	630
Region 5	17,709	364	815
Region 6	13,993	153	209
Region 7	2,465	84	248
Region 8	7,382	92	288
Region 9	8,965	167	227
Region 10	10,594	144	603
Total	107,813	1,886	3,531

Source: EPA Summary of Criminal Prosecutions database.

Note: Community service is assessed in hours; home confinement and community corrections are assessed in months.

Table 5. Total Fines, Total Probation, Total Regulated Facilities, and Average Fine Per Facility by EPA Region, 1983-2019

EPA Region	Total Fine	Total Probation	Total Facilities	Average Fine Per Facility
Region 1	119,611,998	5,274	54,516	2,194
Region 2	356,350,185	9,744	82,214	4,334
Region 3	139,727,432	11,252	116,973	1,195
Region 4	424,914,756	16,373	177,374	2,396
Region 5*	357,588,938	11,721	196,915	1,816
Region 6	903,533,538	12,110	136,026	6,642
Region 7	170,356,651	7,198	55,322	3,079
Region 8	129,549,909	6,006	60,310	2,148
Region 9	272,852,551	9,606	246,717	1,106
Region 10	195,522,699	10,843	30,254	6,463

* These figures exclude the \$2.8 billion fine levied against Volkswagen AG in Region 5 to provide comparable estimates.

Source: EPA Summary of Criminal Prosecutions database.

Note: Total fine in nominal dollars, total probation in months, total regulated facilities from ECHO, and average fine per facility in nominal dollars.

as of March 1, 2020, and aggregate those per region.²² By example, Region 9 has 246,717 regulated facilities.

While this is very imperfect as we are aggregating historical data with a snapshot of data given one point in time, we divide regulated facilities per region by total fines, 1983-2019, to give a sense of the average fine per facility if the number of facilities were static. Doing so estimates that if all fines over these 37 years were averaged over all the regulated facilities in Region 1, the average fine per facility would equal \$2,194.

22. U.S. EPA, *Enforcement and Compliance History Online (ECHO)*, <https://echo.epa.gov/> (last updated Apr. 1, 2020).

IV. Conclusion

It is less costly and politically more tenable to seek civil remedies rather than pursue criminal charges against individuals and well-resourced companies.²³ EPA faces extraordinary policy responsibilities relative to its staff and enforcement abilities. It is not surprising, given the cost of criminal prosecution, that the Agency favors civil rem-

23. Mark Atlas, *Enforcement Principals and Environmental Agencies: Principal-Agent Relationships in a Delegated Environmental Program*, 41 *LAW & SOC'Y REV.* 939 (2007); Kathleen F. Brickey, *Environmental Crime at the Crossroads: The Intersection of Environmental and Criminal Law Theory*, 71 *TUL. L. REV.* 494 (1996).

edies. Political support for the Agency is also often mixed or nonexistent. Does the Agency reserve criminal prosecution for serious and/or chronic cases of offending?

Our findings represent the first effort to catalog the history of environmental criminal prosecutions within and across EPA regional offices. We find the Agency pursued criminal charges to prosecute 2,571 cases of environmental offenses criminally in the past 37 years that we could properly identify across these regional offices. Those defendants charged criminally were predominantly charged under the CWA, CAA, and RCRA, as well as a variety of other federal environmental statutes and state laws.

In terms of the severity of the charges levied against defendants, we find that in 38% of cases, defendants were charged with non-environmental criminal charges, sometimes exclusively, but often in conjunction with charges under a limited set of federal environmental statutes. We were also able to identify 93 cases with victims and more than 1,089 cases with companies as defendants. Cumulatively, 4,402 defendants were prosecuted across the regional offices in our analysis.

Punishments and caseloads varied across regions. While Region 4 had the largest number of prosecutions, Region 5 fined defendants more money than any other region, but that number includes the \$2.8 billion fine against Volkswagen AG, and we do not include the largest fine against BP for the *Deepwater Horizon* disaster as it was not searchable in the database. Absent a half-dozen large-penalty cases, it is difficult to assess whether these penalties occur because of differences in the regional cultures of the offices or they are more opportunistic. Using a rough measure of fines per regulated facility would suggest Regions 6 and 10 to be the most punitive, or Regions 4 and 6 if the measure were total probation.

Our more organic estimate, having spent thousands of hours reviewing these cases in detail and spending time participating in a multi-year criminal prosecution of environmental crimes from investigation to sentencing and appeal, suggests to us that EPA is not wasting its resources

to cherry-pick easy cases. Punishing someone criminally for intentionally killing a bald eagle with registered pesticides may have resulted from a one-time offense, but our guess is that most of these cases are undertaken because of chronic violations. Certainly, there are many cases where companies could have been prosecuted criminally and are not included in the data set, but the Agency decided against it or, just as likely, the federal resources in the form of prosecutorial support were not available.

The authors had the opportunity to spend the better part of a decade assisting DOJ prosecutors in pursuing criminal charges against a large foreign corporation for violations of the CAA and Migratory Bird Act. We saw firsthand the amount of resources it took to target a company that had been a chronic violator at the state and federal levels, and the amount of cooperation and resources it took to create a legal team that could adequately investigate and bring charges and prosecute the case. We also saw sentencing take years, only to have a guilty verdict overturned later upon appeal. Reading these case narratives allowed us to see similar narratives unfold across time and space not to the same degree of detail, but it cast doubt in our minds that the Agency expends considerable resources on criminal investigation and prosecution if the matter is not serious or chronic.

If we have evidence the Agency pursues criminal charges with the intent of punishing willful or chronic violators, what is the deterrent effect of their efforts? Our analysis cannot speak to this directly, but one must weigh the evidence in the context of the vast array of facilities EPA regulates, and the number of cases prosecuted over almost four decades. Region 6 encompasses a vast oil and gas empire across Louisiana, Oklahoma, and Texas, as well as Arkansas and New Mexico, but prosecuted only 274 cases since 1983. Does this have a deterrent effect on environmental crime? A fuller answer requires deeper analysis following the path of civil sanctions through criminal prosecutions and tracking an array of defendants over time.