# CONTROL OF ENVIRONMENTAL RISK THROUGH THE APPLICATION OF CRIMINAL SANCTIONS: LEGAL AND ECONOMIC CONSIDERATIONS UNDER THE CLEAN WATER ACT

by

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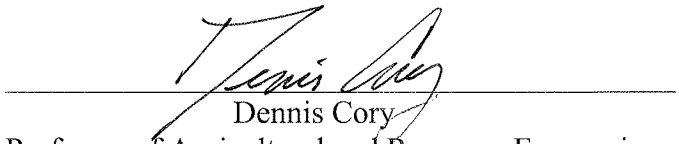

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## DEDICATION

To the love of my life, Claudio.

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## LIST OF ACRONYMS

| | |
|---|---|
| AFO | Animal Feeding Operation |
| AU | Animal Unit |
| BACM | Best Available Control Measure |
| BACT | Best Available Control Technology |
| BAT | Best Available Technology |
| BCT | Best Control Technology |
| BMP | Best Management Practices |
| BPT | Best Practicable Control Technology |
| BOD | Biochemical Oxygen Demand |
| CAA | Clean Air Act |
| CAFO | Concentrated Animal Feeding Operation |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Register |
| CWA | Clean Water Act |
| DOJ | U. S. Department of Justice |
| EPA | U. S. Environmental Protection Agency |
| EPCRA | Emergency Planning & Community |
| ESA | Endangered Species Act |
| FIFRA | Federal Insecticide, Fungicide and Rodenticide Act |
| FR | Federal Register |
| GAO | U.S. General Accounting Office |
| NPDES | National Pollutant Discharge Elimination System |
| NPS | Non Point Source Programs |
| PL | Public Law |
| POTW | Publicly Owned Treatment Work |
| Pub. Law | Public Law |
| RACM | Reasonably Available Control Measure |

| | |
|---|---|
| RCRA | Resource Conservation and Recovery Act |
| RHA | River and Harbor Act |
| SDWA | Safe Drinking Water Act |
| SPCC | Spill Prevention, Containment, and Countermeasure |
| SRA | Sentencing Reform Act |
| TDML | Total Maximum Daily Load |
| TRI | Toxic Release Inventory Countermeasure |
| TSCA | Toxic Substances Control Act |
| TSS | Total Suspended Solids |
| USACE | United States Army Corps of Engineers |
| USC | United States Code |
| USDA | United States Department of Agriculture |
| USSC | United States Sentencing Commission |
| USSG | United States Sentencing Guidelines |
| WQS | Water Quality Standards |

## ABSTRACT

Public Enforcement of the Clean Water Act has been characterized by the increased use of criminal sanctions over the past decade. This sanctioning trend has developed in direct response to the passage of the Sentencing Reform Act (SRA) as part of the Comprehensive Crime Control Act of 1984. New sentencing guidelines were established in 1987 under which courts were required to impose sentences which reflect the seriousness of the offense, provide just punishment for the offense, and afford adequate deterrence to criminal conduct. Legal trends are documented for both industrial and agricultural violations as a result of applying the new federal sentencing guidelines to CWA cases. The efficiency implications of the SRA are evaluated in the context of a model of the public enforcement of environmental law. It is concluded that fault-based standards of liability and the use of mixed fine/incarceration sanctions are appropriate for agricultural violations of the CWA.

# Chapter 1

# INTRODUCTION

*Environmental crime is today no less a crime than theft or blackmail or assault. And more and more assuredly, if you do the crime, you'll do the time.*
William K. Reilly

## 1.1 Introduction

The debate over the use of criminal sanctions in environmental enforcement actions is more intense now than ever. In particular, at the center of public attention is the question, as to whether environmental criminals should be sentenced to prison? Should they be treated as other criminals? Is it justice the evidence of cases in which individual offenders who violate strict liability or negligence standard received a jail time sentence, and cases in which for some egregious violations that caused significant environmental harms, only a mere monetary sanction was imposed?

Specific attention should be dedicated to these questions, specifically when considering the aim that environment needs to be respected and protected. Even though one of the principal reasons for issuing the federal sentencing guidelines was to eliminate judges' discretion and to ensure that similar crimes were treated in a similar fashion, this objective still does not appear to have been reached. In this prospective, economic analysis of criminal law plays an important role in determining how a society can choose to punish individuals who commit a harmful act and what type and degree of sanction, monetary or nonmonetary can be imposed.

A word of background on the release of the environmental sentencing guidelines is necessary. The main objectives of the Sentencing Reform Act[1] were to reduce disparity in sentencing, to ensure certainty and uniformity of punishment, and to establish more serious penalties for specific categories of offenses (e.g. white collar, and violent, repeat offenders), permitting at the same time sufficient judicial flexibility to take into consideration significant aggravating and mitigating factors. The guidelines for organizations were adopted in 1991 but at that time environmental crime was exempted from their application – formally, based on the logic that environmental crime deserved to be treated differently, but more practically, based on the political standpoint that environmental crime was just too controversial.

The purpose of this thesis is to examine the legal and economic theories of criminal law enforcement and to compare them to recent trends in the criminal enforcement under the Clean Water Act. One of the issues that will be addressed is the extent to which sentencing practices are consistent with the economic theory regarding the optimal level of penalty. This qualitative analysis of the different sanctions imposed might be useful to anchor a scale of relative rankings for the severity of sanctions and to examine the essential characteristics of a violation, particularly as compared with other violations.

## 1.2 The Enforcement Problem under the Clean Water Act

The United States Congress attempted to deal with water pollution problems in the Water Quality Act of 1948. In 1956 was emanated the Federal Water Pollution Control

[1] See note 2.

Act but was limited to state actions. A comprehensive plan for federal regulation of water pollution did not emerge until the Federal Water Pollution Control Act of 1972, which represented a completely new way to prevent water pollution. Congress imposed a nationwide system permit on point sources discharges. The National Pollution Discharge Elimination System Permit (NPDES) program prohibits the discharge of pollution into waterways unless the individual has an NPDES permit. When the act was amended in 1977, it was renamed Clean Water Act (CWA) and was characterized by a strong emphasis on the new goals of fishable and swimmable waters and the elimination of pollutant discharges into navigable waters.

The frequency and intensity of criminal enforcement have increased dramatically in recent years. In spite of the fact that the number of criminal environmental cases is still small when compared to the impressive rise in the number of civil enforcement cases, the criminal cases have been receiving increased attention. Today, it is possible to identify situations that five years ago would not have been viewed as criminal, being looked at for possible prosecution. The debate over what role criminal sanctions should play in environmental regulation and enforcement began in the early 1970s but no clear agreement emerged. Numerous good reasons were emphasized in favor of a minimal role for criminal enforcement. It was argued, for example, that the use of criminal sanctions in the environmental framework was generally not appropriate, and diminished agency resources without an equivalent benefit.[2] Various reasons were given for the inefficacy of criminal sanctions. Criminal proceedings were viewed as more complex than

[2] See Kovel, A Case for Civil Penalties: Air Pollution Control, 46 Journal of Urban Law, p. 153, 1969.

administrative or civil proceedings, and not really appropriate for enforcement of regulatory provisions. Despite diverse impediments, the federal government initiated to prosecute criminally in the early 1970s for water pollution using the provisions of the Refuse Act of 1899.[3]

One long-standing institutional obstacle to criminal environmental enforcement was the absence of federal environmental statutes that contained criminal sanctions. The Federal Water Pollution Control Act Amendments of 1972[4] included criminal penalties among the various enforcement options.

In fiscal year 1999, according to the Environmental Protection Agency (EPA) statistics, 241 criminal referrals were brought against a total of 322 defendants, resulting in 2500 months of imprisonment sentenced, and $61 million in criminal penalties. During the same period, 403 civil cases were referred to the Department of Justice (DOJ) for civil suits and 3532 administrative actions were handled by the EPA. Despite the still small number, criminal prosecutions of environmental crimes have witnessed a major change in environmental enforcement over the past 20 years. Civil decisions, surely, carry little public stigma, however, in contrast, criminal sanctions can be used as effective deterrents.

During fiscal year 1999, approximately 57 percent of criminal penalties assessed have involved violations of Resource Conservation and Recovery Act (RCRA) or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provisions. This demonstrates that most federal prosecutions are in response to the illegal

[3] 33 U.S.C. 407 (also known as the Rivers and Harbors Appropriation Act of 1899).

disposal of hazardous waste. The second largest category (34 percent) includes violations of the Clean Water Act. The remaining criminal penalties are for Safe Drinking Water Act (SDWA) (5 percent), Clean Air Act (4 percent) and Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) (1 percent) violations.[5]

One can expect that the increase in environmental crimes and the continuing extensions of individual liability will be matched by more severe sanctions. Some evidence of more severe sanctions is apparent in the impact of the federal sentencing guidelines on environmental crimes. Prior to 1987, when the sentencing guidelines went into effect, only about the 30 percent of individuals convicted of environmental crimes received jail time.

### 1.3 The Clean Water Act and Agriculture

Agricultural activities represent a different reality in regulation under the Clean Water Act since the greatest proportion of activities is non-point source pollution,[6] which generally escape the regulation under the act, and significant agricultural activities that might otherwise be regulated as point sources enjoy specific statutory exemptions.

Pesticide, fertilizer and animal waste runoff from agriculture is the largest contributor to the impairment of rivers and lakes. The incentive for agriculture to ensure the greatest return by means of excessive application of pesticides and fertilizers is a classic example of an environmental externality, since a large amount of the application

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[4] 33 U.S.C. ss. 1251-1376.
[5] See Clifford Mary, *Environmental Crimes*, Aspen Publication, Maryland, 1998.
[6] 33 U.S.C. §. 1251(a).

inevitably ends up in common resources of water. Agricultural pollution through the storage and application of manure to farmlands is one of the largest environmental concerns. In fact, pollution of the waterways continues to increase with the rise in the number of farming operations, and in particular the increasing number of concentrated animal feeding operations (CAFO). An animal feeding operation is a lot or facility where animals have been, or will be, stabled or confined and fed or maintained for a total of forty-five days or more in a twelve-month period, and where crops, vegetation or forage growth cannot be sustained in the normal growing season over any portion of the lot or facility.[7] Livestock waste is now recognized as one of the major contributors to water quality problems across the United States. The ground can absorb only a limited amount of nutrients: the excess remain on the earth's surface and eventually runoff into nearby rivers, lakes and other waterways as a result of wind, rain or snow.

Given the significant contribution of agricultural pollution to the total water pollution problem,[8] it would not be possible to put all agricultural pollution discharges outside the requirements of the NPDES permit program and still hope to be consistent with the primary objectives of the Clean Water Act to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters". The fact that specific agricultural activities have been exempted from point source regulation suggests that other agricultural activities in accordance with the requirements constitute point sources within the application of the CWA. In exempting only specified agricultural activities

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[7] See Flick Dana, "The Future of Agricultural Pollution Following USDA and EPA Drafting of a Unified National Strategy For Animal Feeding Operations", Dickinson Journal of Environmental Law and Policy, 8, Summer 1999, pp. 61-91.

[8] See EPA, *Managing Non-point Source Pollution* 2, 17, January 1992.

from the permit requirements, Congress probably was trying to protect traditional mixed-use agricultural activities.[9] Agricultural activities should not be permitted to pollute by hiding behind exemptions clearly intended to protect traditional mixed-use farms. Several agricultural activities that may otherwise be considered as point sources have been found to be exempt from the provisions under the Clean Water Act due to the general theory that almost all agricultural activities are nonpoint sources and therefore are not subject to the NPDES permit requirements of the Clean Water Act.

The U.S. Court of Appeals for the Second Circuit's decision in the Southview Farm[10] case has raised questions regarding the interpretation of the agricultural exemptions under the Clean Water Act. The basic questions in Southview Farm were whether the defendants discharged the manure pollutant from any point source, and whether the agricultural stormwater exemption or any other limitation applies.[11] One of the determinants of whether Southview Farm was subject to the NPDES permit was the size of the farm: the Court of Appeals concluded that Southview fell under the classification of a CAFO because more than 700 cattle were raised and it was greater than the stated requirement for a CAFO. Therefore, the exception for agricultural activities being nonpoint sources, and not subject to the permit requirements, was not applicable because the discharges of manure were not the result of rainfall but rather from the over saturation of the field with liquid manure. For these reasons, Southview Farms was held liable because the pollutants discharged originated from point sources without obtaining the

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[9] See Hamilton Neil, "Feeding Our Future: Six Philosophical Issues Shaping Agricultural Law", Nebraska Law Review, 72, pp.210-213, 1993.
[10] See Southview, 34F.3d at 120.
[11] See Southview, 34F.3d at 117.

appropriate permit and, thus, was not subject to any agricultural exemption under the Clean Water Act. This decision has expanded the possibility of regulating pollution originating from nonpoint sources, while it continues to be a very severe problem.

The tension between economic feasibility and environmental liability of farmers is substantial, especially when they attempt to resolve their differences. Solving the problems associated with concentrated animal feeding operations is like considering a challenging new agricultural world. The historical and traditional orientation towards regulation has caused time consuming and expensive litigation (years may pass before cases make their way through crowded court dockets).[12]

### 1.4 Structure of Sanctions under the Clean Water Act

The Clean Water Act as it is currently structured establishes regulatory standards and permit requirements for the discharge of pollutants into waters of United States, including wetlands. Criminal sanctions for negligent violations of these conditions include fines of $2,500 to $25,000 per day of violation and up to one year of imprisonment. If the violation is knowing, the criminal penalties are increased to $5,000 to $50,000 per day and up to three years in prison. Under knowing endangerment, a violation requires that the defendant knows that he is placing another person in imminent danger of death or serious bodily injury. The violator may be fined up to $250,000 and sentenced to up to fifteen years of imprisonment. Violators of environmental laws can be subject to many different types of sanctions and degree of punishment. Some of the sanctions imposed on

environmental criminal are imposed by a criminal court, but the largest penalties may originate from actions taken by private parties. Individuals and organizations convicted of environmental crimes can face various penalties, including monetary criminal fines, nonmonetary penalties and jail sentences for individuals. Most individuals receive monetary penalties for an average fine less than $15,000 and for a maximum reported to be more than $ 2 million. Criminal fines for organizations are higher, in general. Even though monetary penalties may be substantial, in some cases they are accompanied by nonmonetary sanctions. Judges may impose nontraditional forms of sanctions, such as community service, probation, or suspension. These nonmonetary sanctions might be more or less punitive than fines.

### 1.5 Organization of the Thesis

The thesis is organized as follows. The historical evolution of the Clean Water Act over time, its objectives, the legal instruments to prevent the discharge of any pollutant into navigable waters, and the structure of the civil, administrative and criminal provisions are presented in the next chapter. Chapter three presents the federal sentencing guidelines as the main indicator of stiffer sanctions on environmental crimes. It is shown how they work, how courts are permitted to depart from the guidelines, how to determine the base offense level and relative adjustments and finally how much discretion is left to the judge in deciding the most appropriate sentence. Since one of the basic purposes for the development of the federal sentencing guidelines was to reduce disparity, sentencing

[12] See Pratt J. Staci, Jones Ron, Cupp Angela, "Alternative Dispute Resolution as a Means of Addressing

courts are bound to apply the guidelines sentences range. A basic question of this research is, how the sentencing guidelines have been applied so far.

The response to the above legal considerations and the main results are reported in chapter four. This chapter provides a detailed documentation and analysis of the legal trend for both industrial and agricultural violations as a result of applying the federal sentencing guidelines to Clean Water Act cases. It addresses the question as whether the new application of the sentencing guidelines made any difference and whether there are still signs of unwarranted disparity.

The economic theory of public enforcement of law is described in chapter five. The model employed is the standard economic model of accidents. It is assumed that the world is composed of a fixed number of risk-neutral individuals (in the basic scenario) who are divided into two groups: injurers and victims. The different scenarios of optimal penalties in strict liability standard or fault liability standard are described when the enforcement expenditures are considered fixed.

In chapter six, economic considerations about approaches to adopt to control environmental risk are delineated. Factors supporting the desirability of fault based liability versus strict liability approaches for the control of risk, with regard to agricultural activities are presented in a general light to demonstrate the advantages and disadvantages of the different approaches.

In chapter 7 some general policy suggestions are delineated based on the final results.

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Agricultural pollution", Hamline Law Review, Winter 1996, pp. 395-437.

## 1.6 Summary

This introductory chapter has introduced some issues that provide an important framework for understanding the regulative structure and the sanctioning approach regarding the criminal violation of the Clean Water Act.

The criminal sanction can be an effective medium for bringing positive social change. Recent legal trends demonstrate that the prosecutions of environmental crimes are particularly tough not only with regard to companies but also with regard to individuals. In the past, it was more profitable for companies to continue to ignore regulations than to reduce pollution, given the low fines that were generally applied. In this context, the federal sentencing guidelines resulted in harsher sentences. This is clearly evident from the comparison of actual cases against what would have resulted under the guidelines, that declaim the main objective of promoting proportionality in sentencing, meaning that more egregious acts receive more severe penalties.

The aim of this thesis is to examine, from an economic point of view, the general question of the extent to which polluters, specifically farmers, should be held liable for environmental damages and to evaluate how agricultural exemptions can affect the judicial process.

# Chapter Two

# CLEAN WATER ACT AND AGRICULTURE

## 2.1 Overview and Brief Legislative History

There are more than a dozen major statutes that discipline environmental protection in the United States, nine of which govern the civil and criminal enforcement of federal environmental regulations.[13]

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), is the principal federal law that protects U.S. surface waters, including lakes, rivers, aquifers and coastal areas (see Table 2.1).

**Table 2.1**

**Waters of United States**

| | |
|---|---|
| Rivers and Streams | 3,662,255 miles |
| Lakes, Ponds, and Reservoirs | 41,593,748 acres |
| Estuaries | 90,465 square miles |
| Ocean Shoreline Waters | 66,645 miles |
| Great Lakes Shoreline | 5,521 miles |

Source: U.S. EPA, Office of Water, *National Water Quality Inventory: 1998 Report to Congress.*

The current CWA regulatory framework is the result of almost a century of historical development. The first federal legislation protecting the waters of the U.S. was enacted in 1899 as the Rivers and Harbors Act, known as the Refuse Act, which protected navigable waters from any unauthorized obstruction or depositing of refuse matter. But it is only in

[13] River and Harbor Act of 1899 (RHA); Federal Insecticide, Fungicide and Rodenticide Act of 1947 (FIFRA); Clean Air Act of 1970 (CAA); Endangered Species Act of 1973 (ESA); Safe Drinking Water Act of 1974 (SDWA); Resource Conservation Recovery Act of 1976 (RCRA); Toxic Substances Control Act of 1976 (TSCA); Clean Water Act of 1977 (CWA); Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund Act).

1948, with the authorization of the Water Pollution Control Act,[14] that provisions are introduced to promote the quality of water. The Act authorized federal and local programs to eliminate the pollution of interstate waters and tributaries and improve the sanitary condition of surface and underground waters.

In 1956, the U.S. Congress approved the first major legislative changes in the water pollution control program. Federal grants were authorized to assist States in preparing plans for pollution control and to help localities in building treatment plants. The authority for research and technical assistance was increased and broadened. Measures for controlling pollution of interstate waters were tightened.[15]

Heightened concern over water quality was reflected in the 1965 Water Quality Act[16] that introduced quality standards for interstate navigable waters, allowed for States and interstate organizations to establish and enforce water quality, and created a new agency to administer the federal portion of the program.[17]

The U.S. Congress moved again in 1966 to expand and increase financial assistance for water pollution control and to support the construction of waste treatment plants.[18]

In 1972, in response to growing public concern over serious and widespread water pollution, Congress enacted the first comprehensive revision of national clean water legislation that, with some modifications, is still in place today. The result was the

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[14] Pub. Law 80-845.
[15] See Senate Report no. 92-114 Oct. 28, 1971 in occasion of the adoption of the Federal Water Pollution Control Act Amendments of 1972.
[16] Pub. Law 89-234.
[17] The Federal Water Pollution Control Administration.
[18] Pub. Law 89-753, entitled Clean Water Restoration Act.

Federal Water Pollution Control Act Amendments[19] now commonly referred to as the Clean Water Act.[20]

The amendments totally revised the original act of 1948 and created federal programs designed to achieve the goal of protecting and restoring the physical, chemical and biological integrity of U.S. waters. In addition to strengthening the water quality standards system and introducing the effluent limitation as a new control mechanism, it made unlawful the discharge of pollutants without a permit, it encouraged the use of the best achievable pollution control technology, and provided conspicuous funds for construction of sewage treatment plants. Moreover, the Act introduced the distinction between point sources and non-point sources, and established that the former would be subject to direct federal regulation and the latter would be reserved to State and local governments through "best management practices" pollution abatement programs.

Five years later, in 1977, the Clean Water Act was amended to strengthen controls on toxic pollutants and to allow states to assume responsibility for federal programs.[21] At the same time, the Act exempted farming and related activities from permit requirements and included them in the non-point source program.[22]

A renewed focus on achieving the Act's water quality goals was posed in 1987 with the Water Quality Act.[23] This act, which is the last major amendment of the Clean Water Act, provided for new efforts to control polluted runoff, reauthorization of funds to support the construction of sewage treatment plants, and programs to control water

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[19] Pub. Law 92-500.
[20] 33 U.S.C. §§ 1251-1387.
[21] Pub. Law 95-217.
[22] 33 U.S.C. §§ 1344(f). See Senate Report no. 95-370 July 28, 1977.

pollution from non-point sources and to protect estuaries of national importance. The result of this long legislative process (see Table 2.2) is a corpus of rules that represents one of the most important environmental laws in the U.S. Code.

**Table 2.2**

**Federal Water Pollution Control Act And Major Amendments**

| Year | Act |
|---|---|
| 1948 | Federal Water Pollution Control Act |
| 1956 | Water Pollution Control Act Amendments of 1956 |
| 1961 | Federal Water Pollution Control Act Amendments of 1961 |
| 1965 | Water Quality Act of 1965 |
| 1966 | Clean Water Restoration Act |
| 1970 | Water Quality Improvement Act of 1970 |
| 1972 | Federal Water Pollution Control Act Amendments of 1972 |
| 1977 | Clean Water Act of 1977 |
| 1987 | Water Quality Act of 1987 |

Source: Legal Information Institute, *United States Code*.

The Act has been codified as amended in the U.S. Code, Title 33, Chapter 26, "Water Pollution Prevention and Control"[24] and is divided in six subchapters. Subchapter I[25] contains the declaration of goals and policy of the CWA, and provisions for water pollution research and related programs. Subchapter II[26] provides for federal grants for the construction of wastewater treatment plants[27]. Subchapter III[28] contains the core structure of CWA provisions in matter of standards, effluent limitations and enforcement programs. Subchapter IV[29] includes provisions on permit programs, such as the national pollutant discharge elimination system and the permits for dredge and fill materials.

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[23] Pub. Law 100-4.
[24] 33 U.S.C. §§ 1251-1387.
[25] 33 U.S.C. §§ 1251-1270.
[26] 33 U.S.C. §§ 1281-1299.
[27] The construction program was ended by the 1987 Amendments in favor of a revolving loan fund.

Subchapter V[30] embraces other general regulations, among which the provisions on citizen suits, and Subchapter VI[31] institutes grants to states for establishment of water pollution control revolving funds.

## 2.2 Objectives, Authorities, and Programs

### 2.2.1 Objectives

The Clean Water Act's primary objective is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters" by minimizing the effects of water pollution[32]. The Act focuses on improving the quality of the nation's surface waters and provides a comprehensive framework of standards, technical tools and financial assistance to address the many causes of pollution and poor water quality, including municipal and industrial wastewater discharges, polluted runoff from urban and rural areas, and habitat destruction.

In order to reach its target, the Act declared two goals, originally to be met by the mid 1980's, 1) eliminate the discharge of all pollutants into the nation's waters ("zero discharge" goal), and 2) attain water quality levels good for fishing and recreational activities ("fishable and swimmable" goal). To achieve these goals, the act set up five specific policies: 1) the prohibition of the discharge of toxic pollutants in toxic amounts; 2) the provision of federal financial assistance to construct publicly owned waste treatment works (POTWs); 3) the development and implementation of areawide waste

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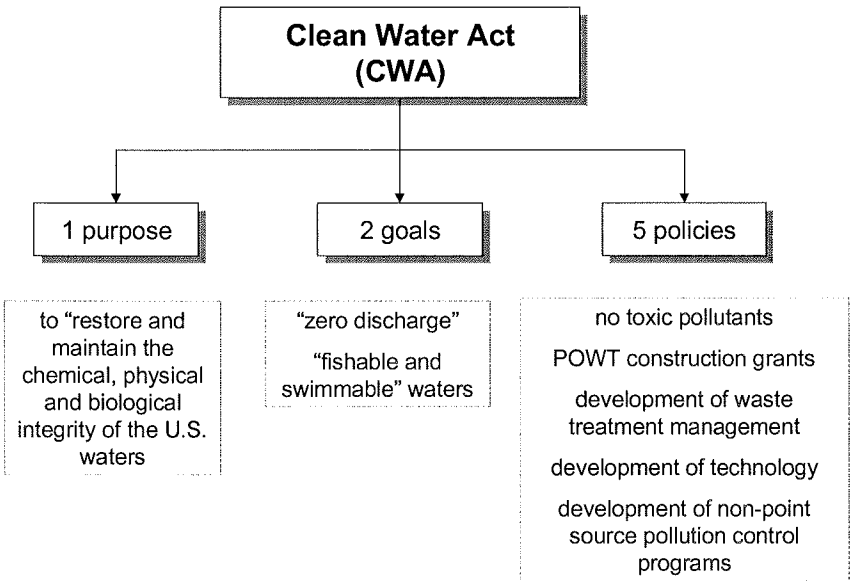
[28] 33 U.S.C. §§ 1311-1330.
[29] 33 U.S.C. §§ 1341-1345.
[30] 33 U.S.C. §§ 1361-1377.
[31] 33 U.S.C. §§ 1381-1387.

treatment management to assure adequate control of sources of pollutants in each State; 4) the development of technology necessary to eliminate the discharge of pollutants into navigable waters; and 5) the development and implementation of programs for the control of non-point sources of pollution.

**Figure 2.1**

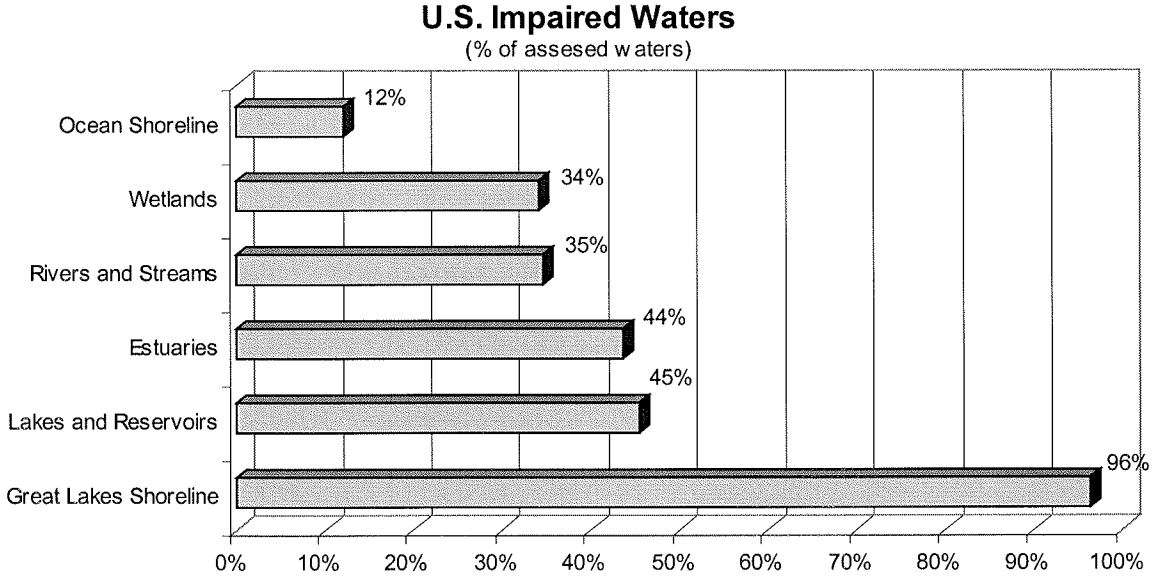



After almost three decades, despite a great deal of effort resulting in an unquestionable improvement in water quality, much remains to be done in achieving the two goals of the CWA. In fact, according to water-quality assessment reports submitted by States to the Environmental Protection Agency, more than forty-four percent of U.S. waters are impaired, with thirty-five percent of rivers, thirty-four percent of wetlands, forty-four percent of estuarine areas, forty-five percent of lakes, and a peak of ninety-six percent of Great Lakes shoreline failing to meet water quality standards (see Figure

[32] Section 101 of the 1972 Act (33 U.S.C. §1251).

2.2)[33]. This picture could be defectively worse if is considered that EPA and local authorities have assessed in average only the thirty-eight percent of the waters, percentage that is not representative of all U.S. waters.

**Figure 2.2**




Source: Author's elaboration on U.S. EPA data.

### 2.2.2 Authorities

The provisions of the CWA are implemented and enforced at the federal level by the United States Environmental Protection Agency (EPA),[34] formed in 1970 from the organizational backbone of the old Federal Water Pollution Control Administration,[35] and

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[33] U.S. EPA, Office of Water, *National Water Quality Inventory: 1998 Report to Congress.*

[34] "Except as otherwise expressly provided [...], the Administrator of the Environmental Protection Agency [...] shall administer this chapter." 33 U.S.C. §1251 (d).

[35] Reorganization Plan 3 of 1970 established the U.S. Environmental Protection Agency (EPA) in the Executive branch as an independent Agency, effective December 2, 1970 (40 C.F.R. §1.1) and transferred to EPA a variety of research, monitoring, standard setting, and enforcement activities related to pollution abatement and control to provide for the treatment of the environment as a single interrelated system (40 C.F.R. §1.3). The U.S. Environmental Protection Agency's basic organization consists of Headquarters and

in limited cases by the U.S. Army Corps of Engineers (USACE).[36] At the local level, the EPA shares its authority with state and local governments, by delegating the responsibility for administering programs. According to this arrangement, EPA has promulgated a set of regulations[37] to apply at federal level the statutory provisions of the Act and, with EPA approval, States have made at local level their own permitting programs, that must be at least as stringent as federal.[38]

### 2.2.3 Programs

To achieve its goals, the Clean Water Act has established several regulatory programs including effluent limitations,[39] water quality standards (WQS),[40] total maximum daily loads (TMDLs),[41] pretreatment effluent standards and programs,[42] stormwater discharge program,[43] National Pollutant Discharge Elimination System (NPDES) permits,[44] non-point source management programs (NPS),[45] and dredge and fill

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10 Regional Offices. EPA Headquarters in Washington D.C. maintains overall planning, coordination and control of EPA programs (40 C.F.R. §1.5a).

[36] See 33 U.S.C. §1344 and 33 C.F.R. §123.

[37] See Code of Federal Regulations, Title 40 "Protection of Environment," Chapter I "Environmental Protection Agency," Subchapter D "Water Programs" (40 C.F.R. §§104-140) and Subchapter H "Ocean Dumping" (40 C.F.R. §§230-238.)

[38] As of January 1999, 43 states had been delegated the permit program.

[39] An "effluent limitation" is a technology-based or water-quality based limit posted to control quantity, discharge rates, and concentration of each pollutant a facility may discharge from point source into waters. See 33 U.S.C. §1312.

[40] 33 U.S.C. §1313. Under the water quality standards program, States adopt EPA-approved standards to define the amounts and kinds of pollutants can be discharged according the designated uses of water bodies.

[41] 33 U.S.C. §1313(d). States can develop TMDLs programs to calculate the maximum allowable pollutant load and provide a quantitative basis for the pollution reduction necessary to meet water quality standards for high priority water bodies.

[42] 33 U.S.C. §1317.

[43] 33 U.S.C. §1345.

[44] 33 U.S.C. §1342 and 40 C.F.R. §122.

[45] 33 U.S.C. §1329.

materials permits.[46]

The most important and renowned program, the NPDES, controls direct discharges into navigable waters by requiring permits for the discharge of pollutants from any point source by any individual or organization.

According to the definition given by the CWA, the term "pollutant" means any pollutant that can alter water quality. Pollutants can be classified as "toxic," "conventional" and "non-conventional."[47] "Toxic" pollutants are principal pollutants that include various toxic substances particularly harmful to the environment.[48] "Conventional" pollutants come from sanitary wastes and include substances as suspended solids, fecal coliforms, oil and grease. "Non-conventional" pollutants include any other non-identified substance.[49] "Navigable waters" implies any stream, lake, or surface water that eventually leads to a river or ocean and those underground sources that have a direct hydrologic connection to a surface stream.[50] "Point source" indicates any "discernible, confined, and discrete conveyance" from which pollutants are or may be discharged.[51] Examples include a sewer, a pipe, a ditch, a channel, a tunnel, a conduit, a

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[46] 33 U.S.C. §1344.

[47] For purposes of the Clean Water Act, "pollutant" includes dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials [...], heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water (40 C.F.R. §122.2).

[48] Toxic pollutants include pesticides, solvents, polychlorinated biphenyls, dioxins and metals as mercury, copper, chromium, zinc, nickel and cadmium.

[49] Nutrients, such as nitrogen and phosphorus, are "non conventional" pollutants.

[50] 40 C.F.R. §122.2. According to several judicial opinions "navigable waters" include all waters in geographic sense i.e. lakes, rivers, reservoirs, streams, tributaries, creeks, dry creekbeds, arroyos, intermittent streams, man-made canals, ditches, wetlands, swamps, marshes, freshwater wetlands, and sloughs. See O'Connell Angela, Coppedge Susan, *Clean Water Act Outline of Cases Interpreting Definition of Navigable Waters and Waters of the United States under Section 311 of the Clean Water Act*, U.S. Department of Justice, July 1996.

[51] See 33 U.S.C. §1362(14).

container, a landfill, a vessel, or anything else that brings the discharge direct to the water.[52] Typical examples of "point source" pollution are wastes released from industrial facilities, sewage treatment plants, and municipal storm sewer systems. Although technically not a "point source," concentrated animal feeding operations (CAFOs) in feedlots of over 1000 "animal units"[53] are explicitly considered direct discharges (i.e. point sources) like industrial sources and require a permit under the Clean Water Act.[54] On the other hand, even though considered a "point source," agricultural storm water runoff and return flows from irrigated agriculture[55] are expressly exempted from the permit requirements under the Clean Water Act.

"Non-point sources" of pollution can be described as a residual category of all causes of pollution not generated by point sources and mainly "caused by diffuse sources that are not regulated as point sources and normally associated with agricultural, silvicultural and urban runoff."[56]

Thus, as a result of the NPDES program, industrial plants, public wastewater treatment plants,[57] CAFOs, and anyone else who wants to discharge something into U.S.

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[52] See 40 C.F.R. §122.2.
[53] "Animal Unit" (AU) is a standard measure, based on feed requirements, used to combine various classes of livestock according to size, weight, age, and use. See 40 C.F.R. §122 appendix B.
[54] 33 U.S.C. §1342 & §1362.
[55] Return flow is surface and subsurface water that leaves the field after the application of irrigation water.
[56] Non-point source pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even underground sources of drinking water. These pollutants include: excess fertilizers, herbicides, and insecticides from agricultural lands and residential areas; oil, grease, and toxic chemicals from urban runoff and energy production; sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks; salt from irrigation practices and acid drainage from abandoned mines; bacteria and nutrients from livestock, pet wastes, and faulty septic systems; pollutants resulting from atmospheric deposition and hydromodification. U.S. EPA, *Non-point Source Guidance Document*, 3 (Dec. 1987).
[57] Called also Publicly Owned Treatment Works (POTWs).

waters must receive a permit before initiating a discharge. The permit is obtained from EPA, or an authorized State or tribe,[58] only if it is shown through quantitative analytical data that the discharge of pollutants will not affect the attainment of water quality standards. Based on best-available technology,[59] water quality conditions,[60] and health-based standards,[61] the permit - that has to be renewed every five years - establishes specific conditions and effluent limits to comply, and includes standard and site-specific monitoring and reporting requirements.

The NPDES does not apply to non-point source discharges. Due to their diffuse nature and peculiar difficulty to identify and to monitor, they are not regulated under enforceable mechanisms like the water discharge-permitting program, but are controlled through non-regulatory means. In fact, the Clean Water Act does not give the EPA permit and enforcement authority, but instead requires local authorities to develop and implement specific programs to control non-point sources of pollution through assessment reports, incentive mechanisms and voluntary best management practices.[62]

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[58] States have regulations similar to the NPDES program. EPA delegates authority to the States for the regulation of NPDES discharge permits. These permits are often joint permits issued pursuant to both Federal CWA and State legislation. Sometimes, the State will not administer the NPDES program but will issue a State permit even though EPA has issued an NPDES permit. The States and EPA normally cooperate in the permit issuance process to ensure that the two permits are consistent, but there may be differences in monitoring requirements and the number of pollutants limited.

[59] Technology-based limits are based on the best-available technology and do not take into consideration the condition of the water into which the source discharges. The CWA employs four technology-based water pollution control standards: a) best practicable control technology currently available (BPT), b) best available technology economically achievable (BAT), c) best conventional pollutant control technology (BCT), d) best available demonstrated control technology (BACT).

[60] Water quality based limits are set on the quality of the water receiving a discharge.

[61] Health-based standards are set by EPA when the best available technology does not provide an "ample margin of safety" to protect the environment and public health.

[62] The 1987 Amendments added a new section to the CWA, under which States are required to develop and implement programs to control non-point sources of water pollution. See 33 U.S.C. §1329.

## 2.3 Clean Water Act and Agricultural Uses

Among the principal sources of water pollution in the U.S. (municipal point sources, urban runoff, agriculture, industrial discharges, and natural sources), agriculture[63] is ranked as the number one cause of impaired rivers, streams, and lakes,[64] and the leading cause of introducing sediments, nutrients, pathogens, and chemicals into waterways. According to the U.S. Environmental Protection Agency, agricultural activities[65] affect fifty-nine percent of impaired river miles, thirty-one percent of impaired lakes, and fifteen percent of impaired estuarine areas,[66] while feedlots impair more river miles than combined sewer overflows, storm sewers, or industrial sources.[67] Typical pollutants from agricultural sources are siltation, nutrients like nitrogen and phosphorus, pesticides, soil particles and organic substances. Among the types of agricultural activities that can jeopardize water quality, irrigated and non-irrigated crop production represents on average forty-three percent of rivers and lakes agricultural pollution, while livestock operations constitutes thirty-four percent of rivers miles and thirty-nine percent of lake acres impaired by agriculture (see Figures 2.3, 2.4 and 2.5).

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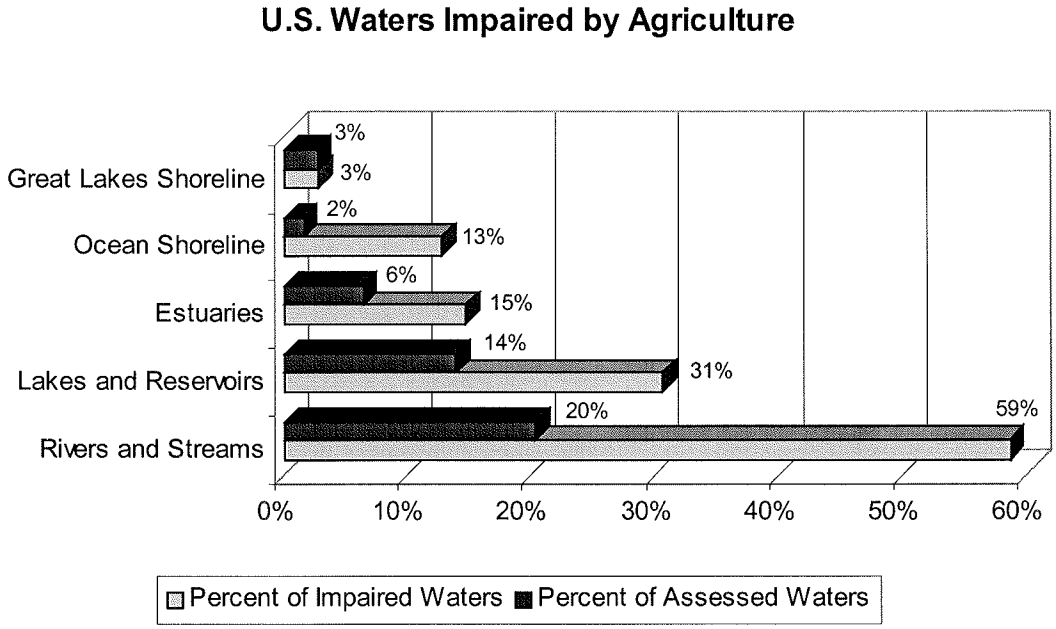
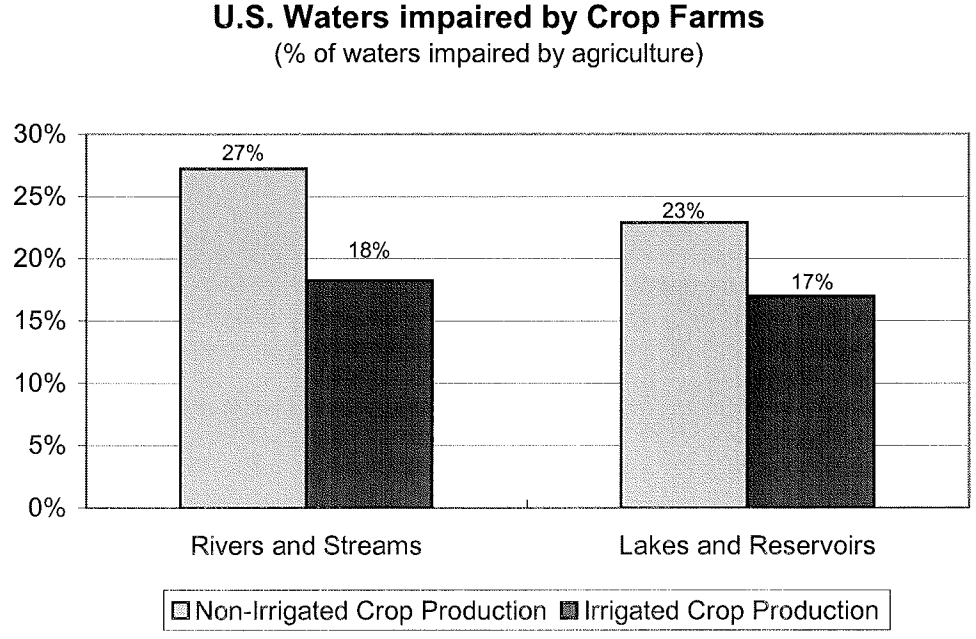
[63] Crops and animal husbandry.
[64] U.S. General Accounting Office Report, *Animal Agriculture, Information on Waste Management and Water Quality Issues*, June 1995.
[65] Excluding forestry.
[66] U.S. EPA, Office of Water, *National Water Quality Inventory: 1998 Report to Congress*.
[67] U.S. EPA, *State Feedlot Workgroup Report*, 1993.

**Figure 2.3**



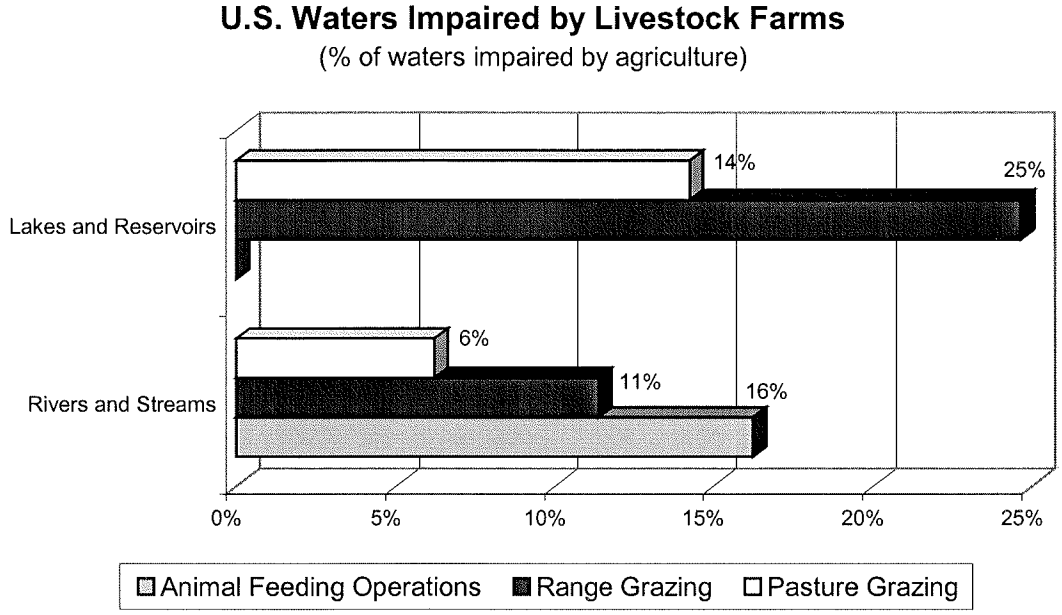

Source: Author's elaboration on U.S. EPA data.

**Figure 2.4**




Source: Author's elaboration on U.S. EPA data.

**Figure 2.5**




Source: Author's elaboration on EPA data

Despite the significant role of agriculture in causing "non-point source" pollution, many agricultural activities are not affected by the provisions of the Clean Water Act and most water pollution caused by agricultural activities is outside direct federal regulation.[68] So, while some statutory provisions give specific directives to carry out a comprehensive study and research program to determine new and improved methods of preventing, reducing, and eliminating pollution from agriculture,[69] others directly regulate only point sources and give specific exemptions for the greater part of agricultural activities that might be considered as "point sources."[70]

In fact, according to the CWA, 1) the term "point source" does not include

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[68] Gould, George A., *Agriculture, Non-point Source Pollution and Federal Law*, 23 U.C. Davis Law Review, pages 461-498, 1990.
[69] U.S.C. §1254 (p).

"agricultural stormwater discharges" and return flows from irrigated agriculture;[71] and 2) the discharge of dredged or fill material into navigable waters is not prohibited and is not subject to the previous obtainment of a permit if it is the continuation of normal farming, silviculture and ranching activities.[72]

However, there is one area of agricultural activity specifically designated by the Clean Water Act as a point source of discharge: concentrated animal feeding operations.[73] CAFOs with more than 1,000 animal units, or more than 300 animal units discharging directly into the waters, are required to obtain a National Pollution Discharge Elimination System permit.[74] Smaller animal feeding operations (AFOs) are not required to obtain an NPDES permit and are addressed under "non-point source" program.[75]

Over 640,000 farms with livestock, there are about 450,000 farms with feedlots where animals (including cattle, dairy, poultry, and hog) are raised in confined

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[70] U.S. EPA, *Summary of Major Existing EPA Laws and Programs that could Affect Producers of Agricultural Commodities*, Feb. 1996.

[71] The provision that the term "point source" does not include return flows from irrigated agriculture was added by 1977 Amendment, now in 33 U.S.C. §1362(14). The exemption concerns any use (such as furrow irrigation, sprinkler irrigation, trickle irrigation, and flooding) of water or wastewater, sometimes combined with nutrients, to provide crops with the necessary quantity of water.

[72] 33 U.S.C. §1344(f) and 40 C.F.R. §232.3.

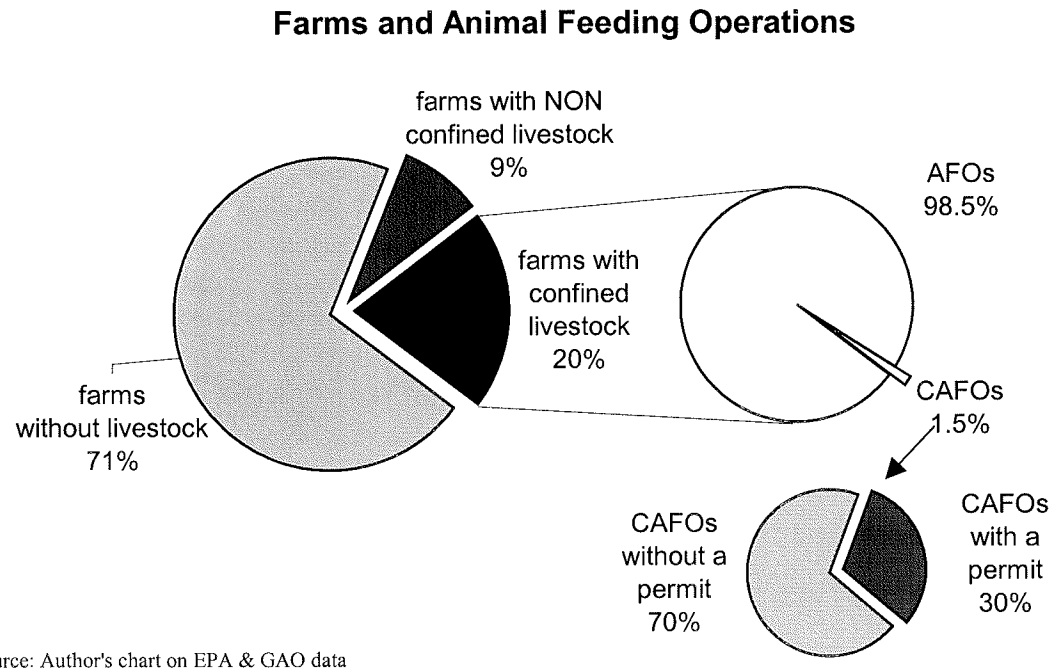
[73] According to the existing federal regulations animal feeding operations are considered concentrated when 1,000 Animal Units are "stabled" or "confined" and feed for a total of 45 days or more in any 12-months period. The conventional number of 1,000 "Animal Units" is equivalent to 500 horses, 700 mature dairy cattle (whether milkers or dry cows), 1,000 slaughter and feeder cattle, 2,500 hogs (weighing over 55 pounds), 5,000 ducks, 10,000 sheep or lambs, 30,000 laying hens or broilers (when the facility has liquid manure handling system), 55,000 turkeys, 100,000 laying hens or broilers (when the facility has unlimited continuous flow watering system), or a combination of 1,000 slaughter steers and heifers, mature dairy cattle, swine over 55 pounds and sheep. See 40 C.F.R. §122 appendix B.

[74] 40 C.F.R. §122.23 and 33 U.S.C. §1342 & §1362.

[75] 40 C.F.R. §130 and 33 U.S.C. §1329. Also concentrated aquatic feeding operations are direct discharges and require a NPDES permit if they meet the following general conditions: 1) produce more than 20,000 pounds of cold water fish (e.g. trout, salmon); or 2) more than 100,000 pounds of warm water fish (e.g. catfish, sun fish, minnows). See 40 C.F.R. 122.24 and 33 U.S.C. 1328 & 1342.

situations.[76] Although about eighty-five of these farms have fewer than 250 animal units, there are 6,600 estimated farms with more than 1,000 animal units that represent something like thirty-five percent of the total livestock population.[77] Currently, the EPA and the States issued about 2,000 NPDES permits to large AFOs that represent approximately thirty percent of the estimated number of farms that meet the CWA definition of CAFOs[78] (see Figure 2.6). The primary source of pollution from animal feeding operations is manure, commonly associated with ammonia, nutrients, pathogens and oxygen-depleting substances, and estimated to be thirteen times the human sanitary waste.[79]

**Figure 2.6**




Source: Author's chart on EPA & GAO data

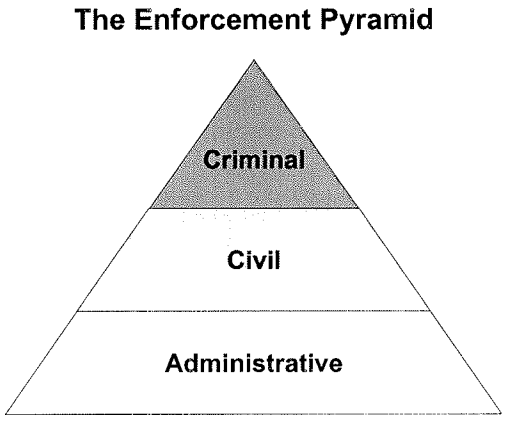
[76] General Accounting Office, *Animal Agriculture: Information on Waste Management and Water Quality Issues*, June 1995.
[77] U.S. EPA, Office of Enforcement and Compliance Assurance, *Compliance Assurance Implementation Plan for Concentrated Animal Feeding Operations*, March 1998.
[78] USDA, U.S. EPA, *Unified National Strategy for Animal Feeding Operations*, March 1999.
[79] U.S. EPA, Office of Water, *Feedlots Point Source Category Study*, January 1999.

## 2.4 The Enforcement Framework

The Clean Water Act provides a strong regulatory scheme to control and prevent water pollution through the definition of violations, compliance remedies, and sanctions.

As in other environmental statutes, the CWA enforcement framework consists of three basic forms: administrative, civil, and criminal enforcement.[80] In addition to these three government enforcement options, the Act provide also that civil actions seeking for injunctions and civil penalties can be pursued by individual citizens or organizations through citizen suits.[81] This composite system can be viewed as a pyramid formed by a base level where a large number of relatively minor violations is handled through administrative actions, followed by an intermediate level where a smaller number of more serious violations is handled through civil (government and citizen) actions, and finally a superior and last level where a small number of very serious violations is handled though criminal prosecution.[82]

**Figure 2.7**




[80] 33 U.S.C. §1319 subsections (g), (b) and (c), respectively.
[81] 33 U.S.C. §1365.

On the other side, the Act provides a list of cases that configure a violation of the regulatory system. The result is that almost every provision of the Act, any regulation emanated by EPA or a delegated state authority, and any permit condition is assisted by one or more enforcement options (see Table 2.3).

**Table 2.3**

**Clean Water Act Violations**

| Violation | Section | A | C |
|---|---|---|---|
| • Violation of specific limits of particular pollutants in the discharge | 1311 | X | X |
| • Violation of effluent limitations for the maintenance of water quality | 1312 | X | X |
| • Violation of standards for the control of the discharge of pollutants for the reduction considered achievable through application of the best available technology | 1316 | X | X |
| • Violation of pretreatment standards | 1317 | X | X |
| • Violation of the duty to have and maintain records, make reports, install, use, and maintain monitoring equipment | 1318 | X | X |
| • Violation of the duty to notify the appropriate federal official as soon as there is knowledge of the discharge of a considerable quantity of oil or hazardous materials | 1321 (b)(3) | | X |
| • Violation of aquaculture programs | 1328 | X | X |
| • Violation of any condition or limitation included in an NPDES permit | 1342 | X | X |
| • Violation of any condition or limitation included in a "dredge and fill" permit | 1344 | X | X |
| • Violation of any provision for disposal or use of sewage sludge | 1345 | X | X |
| • Violation of any requirement imposed in pretreatment program approved under section 1342(a)(3) | 1342 (a)(3) | | X |
| • Knowing false statement in any application, record or report | | | X |
| • Knowing tampering of any monitoring device or method | | | X |
| • Introduction into a sewer system or a publicly owned treatment work of any pollutant or hazardous substance that could cause personal injury or property damage | | | X |

**A**= enforceable through administrative or civil action **C**= enforceable through criminal prosecution

Source: Author

The choice to proceed through one or another tool relies on both statutory provisions and opportunity factors. In particular, while the alternative between administrative and civil actions depends more on opportunity and policy considerations (like the necessity to

[82] Mandiberg Susan F. & Smith Susan L., *Crimes Against the Environment*, 1999.

have the prompt enforcement powers typical of judicial actions), the option between civil and criminal proceedings is more dependent on elements of the violation (like the offender's intent or "*mens rea*"). However, due the presence in the Clean Water Act of criminal provisions even for negligent violations, this distinction is not always clear and often is technically possible to pursue both civil and criminal actions ("parallel proceedings").

Finally, while the choice of electing the administrative action belongs only to the environmental agency, the use of civil and criminal proceedings requires the involvement of other authorities, like the Department of Justice (DOJ) and the U.S. Attorneys, and implies an increase of times and costs of enforcement.[83]

### 2.5 Civil and Administrative Provisions

In the administrative enforcement the violator is ordered to stop the activity. If the violator complies, then the case is ended, otherwise informal negotiations will begin in order to reach a settlement. If the negotiations do not achieve a resolution, an administrative enforcement action will be pursued. Before issuing an order assessing a penalty, EPA or the delegated state agency has to give to the violator written notice of the assessing of such penalties and the opportunity to request a hearing on the proposed order. During 1998, EPA issued 849 CWA administrative compliance orders (over a total of 1,721 for all environmental statutes), 389 CWA administrative penalty orders (over a

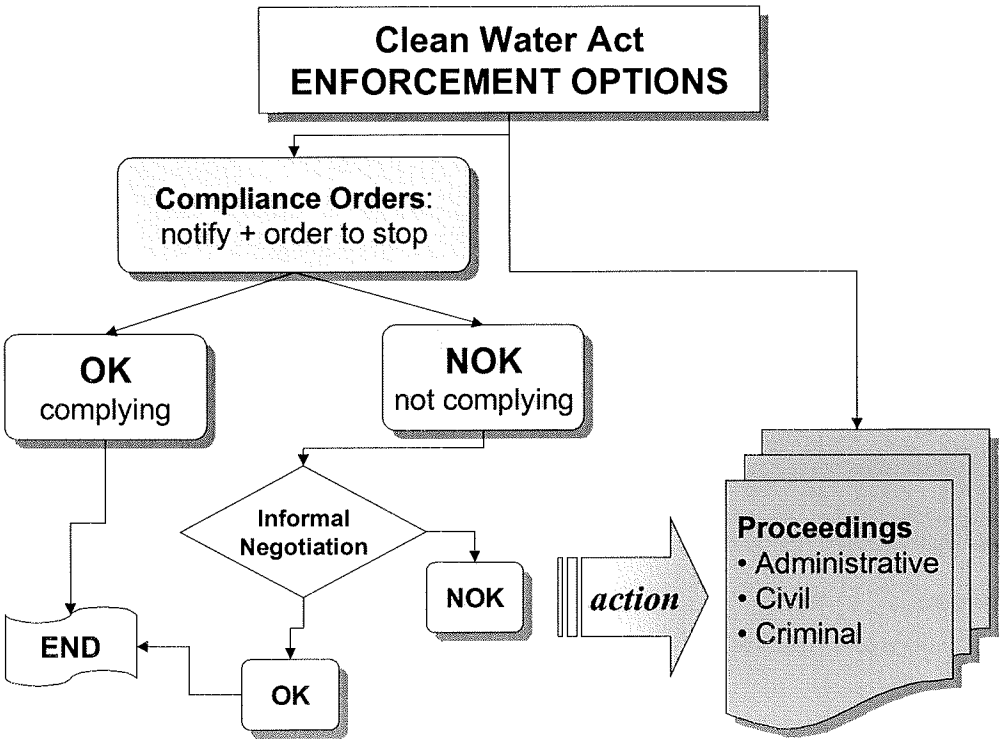
[83] For a review of the environmental enforcement framework, see Reich, Edward E. and Shea, Quinlan J., *A Survey of U.S. Environmental Enforcement Authorities, Tools and Remedies*, International Conference on Environmental Compliance and Enforcement, INECE, 1990, vol. 1, pp. 55-86.

total of 1,400), and 324 administrative penalty settlements (over 1245).[84]

If the case cannot be resolved in the administrative process, the EPA will refer it to the Department of Justice for civil or criminal prosecution. In 1998 EPA referred 81 CWA civil cases to DOJ (over a total of 411).[85]

The DOJ, analyzing all the fact, makes a determination about how to proceed. If the case is not so complex, it will be handled through the civil enforcement process. If the case is more serious, a criminal enforcement can be pursued: the violator will be prosecuted in the criminal court.[86]

**Figure 2.8**




[84] U.S. EPA, Office of Enforcement and Compliance Assurance, *Enforcement and Compliance Assurance FY 1998 Accomplishments Report*, June 1999.
[85] Ibid.
[86] Clifford Mary, *Environmental Crime – Enforcement, Policy and Social Responsibility*, 1998.

Administrative penalties are subdivided in two classes. After consultation with the State in which the violation occurred, it can be assessed a Class I civil penalty or a Class II civil penalty. The amount of a Class I civil penalty may not exceed $10,000 per violation, within a maximum amount of $25,000. The amount of Class II civil penalty may not exceed $10,000 per day of violation within a maximum amount of $125,000.[87] The total of administrative penalties assessed during 1998 was $28 million, of which almost $5 million only for violations to the Clean Water Act. The amount of the average CWA administrative penalty was more than $12,000.[88]

On the other hand, civil action can result in judicial injunctions and civil judicial penalties that may not exceed $25,000 per day without a maximum limit. The total of civil judicial penalties assessed in 1998 for environmental violations was more than $63 million, of which $18.5 million for violations to the Clean Water Act, while the value for CWA injunctive relieves was equal to $860 million.[89]

In determining the amount of penalties, both environmental agencies in administrative actions and courts in civil proceedings, have to consider substantially the same elements. These are the seriousness of the violations (nature, circumstances, extent and gravity), the economic benefit resulting from the violation, any history of previous violations, any good-faith efforts to comply with the applicable requirements, the economic impact of the penalty on the violator and all the other elements "as justice may

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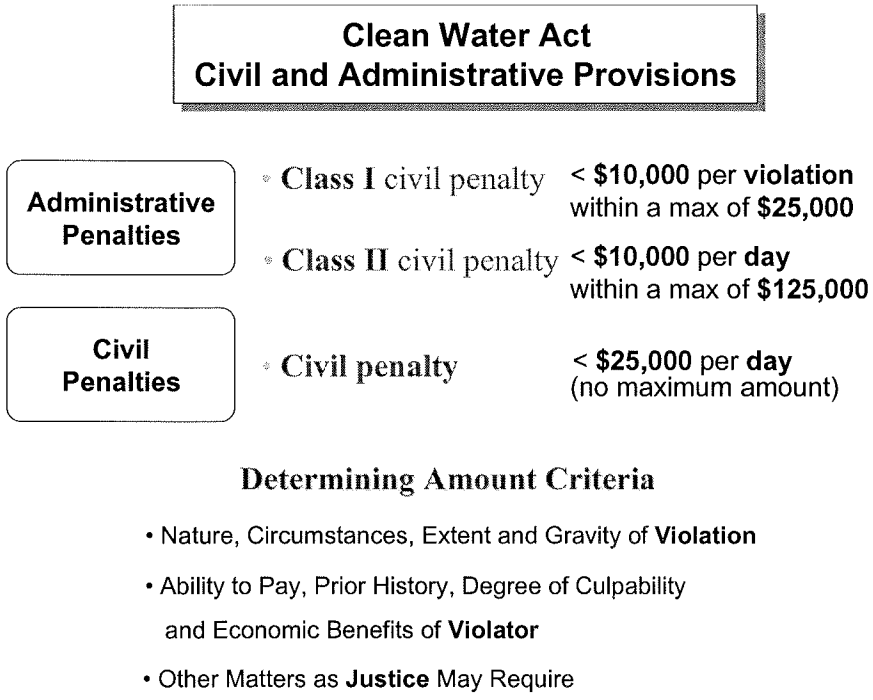
[87] 33 U.S.C. §1319 (g).
[88] U.S. EPA, Office of Enforcement and Compliance Assurance, *Enforcement and Compliance Assurance FY 1998 Accomplishments Report*, June 1999.
[89] Ibid.

require."[90]

**Figure 2.9**




## 2.6 Criminal Provisions

Criminal prosecution is the last and higher enforcement alternative. It is assisted by the maximum level deterrence due to the social stigma proper of this kind of prosecution and the high impact of liberty depriving sanctions.

While all U.S. environmental statutes contain provisions for criminal prosecution only of knowing or willful violations, the Clean Water Act, together with the Clean Air Act, contains such provisions also for negligent violations. Thus, if generally the presence of knowing violation is the borderline between civil and criminal liability, in the CWA it is possible to have this last type of liability even for lower culpable mental states.

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[90] 33 U.S.C. §1319 (g)(3) for administrative penalties and §1319 (d) for civil penalties..

The difference between negligence and willingness, together with the dangerousness of the action, is used to grade the sanctions applicable to each violation. The result is a system of crimes divided in negligent violations, knowing violations, knowing endangerment and knowing false statement, with sanctions up to $2 million in fines and 30 years in prison. During 1998, were sentenced more than 2,000 months in prison and almost $93 million in criminal fines, of which $36 million only for violations to the Clean Water Act.[91]

The term "negligence" means failure to use a reasonable level of care. Reasonable is the care, which a reasonable careful person would use under similar circumstances. Negligence may consist of doing something that a reasonably careful person would not do under similar circumstances. Under the CWA, a company or individual[92] that discharges a pollutant in violation of the permit system can be held liable if the discharge is a result of a negligent behavior of the company or the individual. To give proof of the negligence, the plaintiff needs only to show that the violator failed to exercise the due level of care (established by the court or by law). The criminal penalties for a negligent violation can include a fine, imprisonment, or both. If a fine is imposed, it must fall within a range between $2,500 and $25,000 per day of violation for a first-time conviction. A prison term of up to one year may also be assessed. An individual or corporation after a first conviction of a negligent violation is subject to a fine of up to

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[91] U.S. EPA, Office of Enforcement and Compliance Assurance, *Enforcement and Compliance Assurance FY 1998 Accomplishments Report*, June 1999.

[92] The CWA allows criminal convictions against a broad variety of "persons," including individuals, organizations and governmental entities. It also expands the definition of person to include "responsible corporate officers." In some cases corporate officers and directors have been held liable based only on their position of authority in the company and without even the need to show the knowledge of the specific acts

$50,000 per day of violation, up to two years imprisonment, or both.

Even if the term "knowing violations" is not generally defined by statute, the courts have imposed criminal liability when the defendant is simply aware that acts have occurred that constitutes violation, not of the fact that the acts violate the statute or a permit condition. So, the government doesn't have to proof that the defendant knew that the act violated a permit or the law. Knowing violations require higher penalties: fines must fall between $5,000 and $50,000 per day of violation, and prison terms of up to three years may be awarded. After a first conviction of a knowing violation the penalties will be doubled.

Knowing endangerment is when the violator knows that he can place another person in imminent danger of death or seriously bodily injury. Individuals convicted of "knowing endangerment" are subject to a fine of up to $250,000 and imprisonment of up to 15 years. Corporations are subject to a fine of up to $1 million. If either an individual or corporation has been previously convicted for a knowing endangerment violation, the maximum fine and imprisonment is doubled.

Any person who knowingly makes a false statement in any document filed or required to be filed or who tampers with any monitoring device required to be maintained, is subject to a fine of not more than $10,000 or imprisonment up to two years or both. If a person is convicted for a violation committed after a first one, punishment shall be by a fine of not more than $20,000 per day of violations, or by imprisonment of not more than 4 years, or by both.

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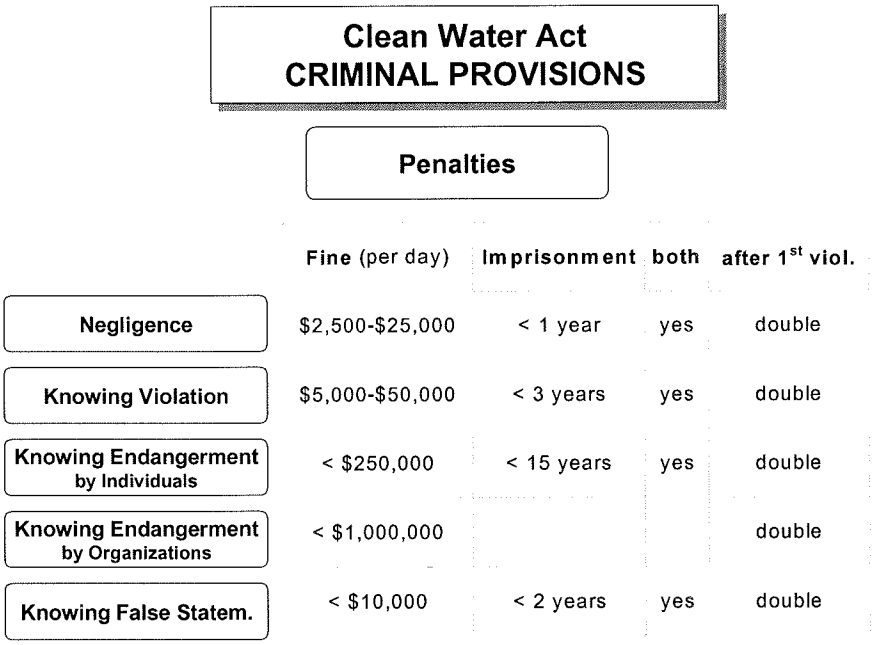
that constituted criminal violation.

**Figure 2.10**




## 2.7 Summary

The Clean Water Act is the principal U.S. law that protects the enormous treasure represented by water, providing a strong regulatory scheme to control and to prevent water pollution. To reach its goal, the Act on one side establishes specific objectives, authorities, and programs and, on the other side, provides violations, compliance remedies and sanctions. The result is a complex system where water quality is achieved through the application of a combination of a technologically up-to-date permitting system with one of the most severe enforcement framework with administrative, civil and criminal sanctions up to $2 million in fines and 30 years in imprisonment.

Obviously, in this context, agriculture plays an important role as water consuming activity and pollution source. In consideration of this, the CWA provides specific

agricultural related provisions with controls for high pollutant agricultural activities, like concentrated animal feeding operations, and exemptions that allow carrying out of normal farming activities without incurring in sanctions.

# Chapter Three

# THE FEDERAL SENTENCING GUIDELINES

## 3.1 Introduction and Historic Overview

In 1984, after several years of political debate and research, the U.S. Congress passed the Sentencing Reform Act (SRA),[93] as part of the Comprehensive Crime Control Act,[94] that completely transformed the traditional sentencing process in an attempt to reduce unwarranted disparity in sentencing

The main objectives of the Sentencing Reform Act[95] were to reduce unwarranted disparity in sentencing, to ensure certainty, proportionality and uniformity of punishment, and to establish more serious penalties for specific categories of offenses. In order to achieve these goals, Congress created the United States Sentencing Commission[96] as an independent, permanent agency in the judicial branch with the main purpose to develop an unprecedented body of laws to regulate federal sentencing: the federal sentencing guidelines.[97]

Before guidelines were developed, federal judges were not required to use the same sentencing standards and could impose a sentence that ranged anywhere from straight probation to the maximum imprisonment established in applicable statutes.

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[93] Sentencing Reform Act of 1984, Pub. L. 98-473, Title II, Ch. II, Oct. 12, 1984, 98 Stat. 1987, codified at 28 U.S.C. §§991-998. See United States Sentencing Commission, *The Sentencing Reform Act*, 1996.

[94] Comprehensive Crime Control Act of 1984, Pub. L. 98-473, Title II, Oct. 12, 1984, 98 Stat. 1976, codified at 18 U.S.C. §§3551-3742.

[95] See note 94.

[96] On the Commission activities see United States Sentencing Commission, *Annual Report*, 1986-present, and United States Sentencing Commission, *Sourcebook of Sentencing Statistics*, 1996-present.

The sentencing guidelines went into effect November 1987, and apply to all federal crimes committed on or after that date. The enactment of the guidelines caused chaos in the circuit and district courts.[98] Some of the courts considered the guidelines unconstitutional and refused to apply them.[99] Other courts imposed alternate sentence, one under the guidelines and another under pre-guidelines sentencing procedures, to prevent resentencing in the event of guidelines unconstitutionality.[100]

Every year, the Commission assesses the guidelines' effectiveness in achieving the sentencing purposes of just punishment, deterrence, incapacitation, and rehabilitation and, eventually, amends the guidelines as necessary, submitting amendments to Congress.[101] The Sentencing Guidelines and the subsequent amendments[102] are then collected in the United States Sentencing Commission Guidelines Manual,[103] which includes a specific part regarding offenses involving the environment.[104]

### 3.2 The Sentencing Guidelines

The Comprehensive Crime Control Act[105] requires courts to impose sentences

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[97] United States Sentencing Commission, *1998 Guidelines Manual* (Amendments effective 11/01/1998). For a summary of the Commission's Guidelines development process, see *Supplementary Report on the Initial Sentencing Guidelines and Policy Statements*, 1987.

[98] See Nagel Ilene, "Structuring Sentencing Discretion: The New Federal Sentencing Guidelines", Journal of Criminal Law and Criminology, 80, 1990, pp. 883-893.

[99] See Karle Theresa, Sager Thomas, "Are the Federal Sentencing Guidelines Meeting Congressional Goals?: An Empirical and Case Law Analysis, Emory Law Journal, 40, 1991, pp. 393-412.

[100] See Rebello Lisa M., "Sentencing Under the Federal Sentencing Guidelines: Five Years of Guided Discretion", Suffolk University Law Review, 26, Winter 1992, pp. 1031-1061.

[101] The Commission can submit the guidelines amendments between the beginning of a regular congressional session and May 1. Unless a law is enacted to the contrary, amendments automatically take effect 180 days after submission. 28 U.S.C. §994(p).

[102] As of May 1, 2000, 590 amendments have been made to the U.S. Sentencing Guidelines. For a full list, see United States Sentencing Commission, *1998 Guidelines Manual*, Appendix C and *Supplement to the 1998 Guidelines Manual*, May 2000.

[103] United States Sentencing Commission, *1998 Guidelines Manual*, §3E1.1, hereinafter cited as U.S.S.G., available on line on the United States Sentencing Commission web site (www.ussc.gov).

"which reflect the seriousness of the offense," "promote respect for the law," "provide just punishment for the offense," "afford adequate deterrence to criminal conduct," "protect the public from further crimes of the defendant" and "provide the defendant with correctional treatment in the most effective manner." The sentencing guidelines consider these entire factors through the evaluation of the gravity of the criminal offense and the defendant's criminal history.

Each crime[106] is assigned a base offense level corresponding to the seriousness of the offense, from level 1 (least serious) to level 43 (most serious). The base level can then be increased or decreased depending upon "specific offense characteristics" and "general adjustments." Each offender is assigned a category based upon the criminal history of the defendant, from category I (first conviction offender) to VI (career criminal). Combined, the offense levels and the criminal history categories create the grid of the sentencing table,[107] and the point at which the offense level and the criminal history category of a specific case intersect on the sentencing table determines the offender's guideline range.

The sentencing judge must impose a sentence within the guideline range, unless the court finds that there exists "an aggravating or mitigating circumstance of a kind, or to a degree, not adequately taken into consideration by the Sentencing Commission in formulating the guidelines that should result in a sentence different from that

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[104] U.S.S.G. §2Q1 "Offenses Involving the Environment."
[105] 18 U.S.C. §§3551-3742.
[106] The sentencing guidelines do not apply to any count of conviction that is a Class B or C misdemeanor or an infraction. A "Class B" misdemeanor is any offense for which the maximum authorized term of imprisonment is more than thirty days but not more than six months. A "Class C" misdemeanor is any offense for which the maximum authorized term of imprisonment is more than five days but not more than thirty days. An "infraction" is any offense for which the maximum authorized term of imprisonment is not more than five days. See U.S.S.G. §1B1.9 and 18 U.S.C. §3559(a).

described."[108] In this case, with appropriate written motivations, the judge can adopt a departure upward or downward from the guideline range.[109]

Specific rules are provided for sentencing when the offender is an organization.[110] Introduced in 1991, these provisions apply to corporations, non-profit entities, and governmental units, and are designed to ascribe criminal liability to organizations whenever an employee commits an illegal action, even if he/she acted in direct violation of company policy.[111]

### 3.3 How the Sentencing Guidelines Work

In the sentencing process the judge has to follow a step-by-step process enumerated in the guidelines.[112] The first step is the determination of the base offense level.[113] The guidelines - in order to ensure that similar offenses are treated similarly and to establish an objective relationship among offenses according to their relative seriousness - rank the offense categories in 43 base offense levels.

For example, the base offense level for "knowing endangerment" resulting from

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[107] U.S.S.G. §5A.
[108] 18 U.S.C. §3553(b) and U.S.S.G. §5K2.0.
[109] For a summary of departures approved and disapproved by appellate courts, see United States Sentencing Commission, *Guideline Departures 1989-1999*.
[110] While Chapters 1 to 7 of Guidelines contain the sentencing guidelines applicable to individual defendants, Chapter 8 contains specific guidelines applicable to organizations. However, some of the provisions set for individuals (as offense level, departures, etc.), are equally applicable to organizational defendants. For a complete overview on the introduction and the purposes of organizational defendants guidelines, see United States Sentencing Commission, *Supplementary Report on Sentencing Guidelines for Organizations*, 1991.
[111] Desio Paula, *An Overview of the Organizational Guidelines*, United States Sentencing Commission, 2000.
[112] The process is summarized in special worksheets that help the judge in determining the appropriate sentence. See United States Sentencing Commission, *Worksheets* (Individuals and Organizations).
[113] See U.S.S.G. Chapter Two.

mishandling of any pollutant is 24, that is the same level provided for "kidnapping," "abduction," "unlawful restraint", "tampering with restricted data concerning atomic energy", "transmitting national defense information", and right away above the level provided for "money laundering" (23), "demanding or receiving ransom money" (23), "peonage, involuntary servitude, and slave trade" (22), "robbery" (20), and immediately below the level provided for "voluntary manslaughter" (25), "criminal sexual abuse" (27), "conspiracy or solicitation to commit murder" (28).

The second step in the sentencing process is the application of any applicable specific offense characteristic contained in the particular section of the guidelines. The court has to determine whether specific elements correlated to that type of offense are present in the case. For example, "mishandling of toxic substances" has a base offense level of 8, that can be increased up to 9 levels if the offense resulted in a substantial likelihood of death or serious bodily injury or decreased by 2 levels if the offense involved a simple recordkeeping or reporting violation. On average, each offense-level increment changes the sentence by about 12 percent. Thus, a 4-level enhancement equates to about 50 percent increase in sentence; an 8-level enhancement effectively doubles the sentences.

Once the base offense level has been determined and any increases or decreases have been calculated, the third step is the consideration of generic adjustments applicable to any kind of offense. So, adjustments may be made upon aggravating (up to 12 levels or, in percentage, up to +144%) and mitigating (up to 4 levels or, in percentage, up to –48%) factors related to:

- the characteristic of the victim of the offense (up to +12 levels), i.e.: vulnerable victim, discrimination, official victim, restraint of the victim, terrorism;[114]
- the defendant's role in the offense (up to +/-4 levels), i.e.: organizer or leader of criminal activity, minimal or minor participant, abuse of position or use of special skill;[115]
- the defendant's obstructive conduct (+2 levels), i.e.: obstructing or impeding the administrations of justice;[116]
- multiple counts of conviction (up to +5 levels): the guidelines prescribe special rules for sentencing in cases that involve multiple occurrences or several harms;[117]
- acceptance of responsibility and collaboration (up to -3 levels).[118]

The fourth step in the sentencing process is the assessment of the defendant's criminal history.[119] The guidelines provide specific rules to assess the defendant's prior

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[114] See U.S.S.G. Chapter Three, Part A.
[115] See U.S.S.G. Chapter Three, Part B.
[116] See U.S.S.G. Chapter Three, Part C.
[117] See U.S.S.G. Chapter Three, Part D, where, basically, is established that 1) when the conduct involves fungible items, the amounts are added and the guidelines apply to the total amount; 2) when non-fungible harms are involved, the offense level for the most serious count is increased (according to a diminishing scale) to reflect the existence of other counts of conviction. U.S.S.G. §1A(e).
[118] See U.S.S.G. Chapter Three, Part E.
[119] See U.S.S.G. Chapter Four and the following table:

**Table 3.1**

**Criminal History**

| Total Points | Category |
|---|---|
| 0-1 | I |
| 2-3 | II |
| 4-6 | III |
| 7-9 | IV |
| 10-12 | V |
| ≥13 | VI |

Source: author's elaboration from U.S.S.G. Chapter Four

criminal conduct, assigning from 1 to 13 (or more) points that are converted into six categories (from I to VI).

In order to maintain the sentencing purpose of avoiding disparities in the calculation of criminal history, points are assigned on the basis of number and length of previous sentences imposed and not on characterization of prior crimes as felonies or misdemeanors.[120]

The fifth and last step is the determination of the applicable sentencing range expressed in months of imprisonment. The court has to apply the range resulting from the sentencing table[121] by matching the pertinent offense level and criminal history category (see Table 3.2).[122] In determining the type of sentence to impose, the sentencing judge should consider the nature and seriousness of the conduct, the statutory purpose of sentencing, and the pertinent offender characteristics. Within the applicable range, the judge has full discretion to pick the sentence from any point and to choose different sentencing options that combine fines,[123] probation,[124] supervised release,[125] imprisonment and imprisonment substitutes (home detention, community confinement and intermittent confinement).[126]

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[120] See Susan F. Mandiberg & Susan L. Smith, *Crimes against the environment*, 1997, p. 548.
[121] U.S.S.G. §5A.
[122] It is important to note that if a specific statute prescribes different minimum or maximum term of imprisonment, the guideline range is consequently adjusted to fit the statutory provisions. See U.S.S.G. §5G1.1.
[123] U.S.S.G. §5E.
[124] U.S.S.G. §5B.
[125] U.S.S.G. §5D.
[126] U.S.S.G. §5C.

**Table 3.2**

## Sentencing Table

(in months of imprisonment)

| Zone | Offense Level | Criminal History Category (points) | | | | | |
|---|---|---|---|---|---|---|---|
| | | I (0 or 1) | II (2 or 3) | III (4, 5, 6) | IV (7, 8, 9) | V (10, 11, 12) | VI (13 or more) |
| A | 1 | 0-6 | 0-6 | 0-6 | 0-6 | 0-6 | 0-6 |
| | 2 | 0-6 | 0-6 | 0-6 | 0-6 | 0-6 | 1-7 |
| | 3 | 0-6 | 0-6 | 0-6 | 0-6 | 2-8 | 3-9 |
| | 4 | 0-6 | 0-6 | 0-6 | 2-8 | 4-10 | 6-12 |
| | 5 | 0-6 | 0-6 | 1-7 | 4-10 | 6-12 | 9-15 |
| | 6 | 0-6 | 1-7 | 2-8 | 6-12 | 9-15 | 12-18 |
| | 7 | 0-6 | 2-8 | 4-10 | 8-14 | 12-18 | 15-21 |
| | 8 | 0-6 | 4-10 | 6-12 | 10-16 | 15-21 | 18-24 |
| B | 9 | 4-10 | 6-12 | 8-14 | 12-18 | 18-24 | 21-27 |
| | 10 | 6-12 | 8-14 | 10-16 | 15-21 | 21-27 | 24-30 |
| C | 11 | 8-14 | 10-16 | 12-18 | 18-24 | 24-30 | 27-33 |
| | 12 | 10-16 | 12-18 | 15-21 | 21-27 | 27-33 | 30-37 |
| D | 13 | 12-18 | 15-21 | 18-24 | 24-30 | 30-37 | 33-41 |
| | 14 | 15-21 | 18-24 | 21-27 | 27-33 | 33-41 | 37-46 |
| | 15 | 18-24 | 21-27 | 24-30 | 30-37 | 37-46 | 41-51 |
| | 16 | 21-27 | 24-30 | 27-33 | 33-41 | 41-51 | 46-57 |
| | 17 | 24-30 | 27-33 | 30-37 | 37-46 | 46-57 | 51-63 |
| | 18 | 27-33 | 30-37 | 33-41 | 41-51 | 51-63 | 57-71 |
| | 19 | 30-37 | 33-41 | 37-46 | 46-57 | 57-71 | 63-78 |
| | 20 | 33-41 | 37-46 | 41-51 | 51-63 | 63-78 | 70-87 |
| | 21 | 37-46 | 41-51 | 46-57 | 57-71 | 70-87 | 77-96 |
| | 22 | 41-51 | 46-57 | 51-63 | 63-78 | 77-96 | 84-105 |
| | 23 | 46-57 | 51-63 | 57-71 | 70-87 | 84-105 | 92-115 |
| | 24 | 51-63 | 57-71 | 63-78 | 77-96 | 92-115 | 100-125 |
| | 25 | 57-71 | 63-78 | 70-87 | 84-105 | 100-125 | 110-137 |
| | 26 | 63-78 | 70-87 | 78-97 | 92-115 | 110-137 | 120-150 |
| | 27 | 70-87 | 78-97 | 87-108 | 100-125 | 120-150 | 130-162 |
| | 28 | 78-97 | 87-108 | 97-121 | 110-137 | 130-162 | 140-175 |
| | 29 | 87-108 | 97-121 | 108-135 | 121-151 | 140-175 | 151-188 |
| | 30 | 97-121 | 108-135 | 121-151 | 135-168 | 151-188 | 168-210 |
| | 31 | 108-135 | 121-151 | 135-168 | 151-188 | 168-210 | 188-235 |
| | 32 | 121-151 | 135-168 | 151-188 | 168-210 | 188-235 | 210-262 |
| | 33 | 135-168 | 151-188 | 168-210 | 188-235 | 210-262 | 235-293 |
| | 34 | 151-188 | 168-210 | 188-235 | 210-262 | 235-293 | 262-327 |
| | 35 | 168-210 | 188-235 | 210-262 | 235-293 | 262-327 | 292-365 |
| | 36 | 188-235 | 210-262 | 235-293 | 262-327 | 292-365 | 324-405 |
| | 37 | 210-262 | 235-293 | 262-327 | 292-365 | 324-405 | 360-life |
| | 38 | 235-293 | 262-327 | 292-365 | 324-405 | 360-life | 360-life |
| | 39 | 262-327 | 292-365 | 324-405 | 360-life | 360-life | 360-life |
| | 40 | 292-365 | 324-405 | 360-life | 360-life | 360-life | 360-life |
| | 41 | 324-405 | 360-life | 360-life | 360-life | 360-life | 360-life |
| | 42 | 360-life | 360-life | 360-life | 360-life | 360-life | 360-life |
| | 43 | life | life | life | life | life | life |

Source: U.S.S.G. Chapter Five, Part. A

The guidelines require that specific criteria be meet for each possible combination of sentencing options, and divide the table into four zones (from Zone A to Zone D) based on the maximum term of imprisonment. Within each zone, the judge can combine the different options according to the instructions (see Table 3.3).

**Table 3.3**

**Individuals Sentencing Options**

| **Zone (levels)** | **Straight Probation** [a] | | **Probation with imprisonment substitutes** [b] | | **Imprisonment with substitutes** [c] | | **Straight Imprisonment** | | **Fine** [d] |
|---|---|---|---|---|---|---|---|---|---|
| **A** (1-8) | yes | or | yes | or | yes | or | yes | or/ & | yes |
| **B** (9-10) | no | | yes with at least the minimum term in substitutes | or | at least one month in prison, plus substitutes | or | at least the minimum term | & | yes |
| **C** (11-12) | no | | no | | at least half minimum in prison, plus substitutes | or | at least the minimum term | & | yes |
| **D** (13-43) | no | | no | | no | | at least the minimum term | & | yes |

Source: author's elaboration from U.S.S.G. Chapter Four.

[a] The term of probation is 1 to 5 years for base offense level of 6 or greater, and no more than 3 years in any other case. According to the Comprehensive Crime Control Act of 1984, probation is a sentence in and of itself and may be used as an alternative to incarceration. See 18 U.S.C. §3561 and U.S.S.G. Chapter Five, Part B, Introductory Commentary.

[b] In this case, the judge should impose a term of probation up to 5 years (see previous note) with a "special condition" that replaces the minimum term of imprisonment with home detention, community confinement or intermittent confinement. See U.S.S.G. §5B1.1(a)(2).

[c] In this case, the court should impose a term of supervised release from 1 to 5 years, depending on the class of the committed crime, with a "special condition" that substitutes home detention or community confinement for imprisonment. See U.S.S.G. §5C1.1 and U.S.S.G. §5D.

[d] A fine may be imposed in addition to a term of imprisonment, or may be the sole sanction if the guidelines do not require a term of imprisonment. See U.S.S.G. §5E1.2, Application Note 1.

Thus, if the applicable range is in Zone A (levels 1 through 8) of the sentencing table, the judge can impose 1) a fine, 2) straight probation, and 3) imprisonment or a

combination of these sanctions. For example, if the defendant has an offense level of 8 and a criminal history category of I, the applicable guideline range is 0-6 months of imprisonment. In this case a sentence of imprisonment is authorized but not required, and the court may impose a sentence of probation with or without conditions requiring confinement or home detention, or else a sentence of a sole fine.

If the range is in Zone B (levels 9 through 10) of the table the options are 1) imprisonment, 2) imprisonment of at least one month plus supervised release with community confinement or home detention, and 3) probation with intermittent confinement, community confinement or home detention. For example, if the defendant has an offense level of 9 and a criminal history category of II, the applicable guideline range is 6-12 months of imprisonment. Assuming that the court would impose a sentence of 8 months, it is possible to choose within three alternatives and to impose a sentence of imprisonment of 8 months or a sentence of imprisonment of 1 month plus 7 months of confinement or home detention, or a sentence of probation plus 8 months of confinement or home detention.

If the range is in Zone C (levels 11 through 12) of the table the options are 1) imprisonment and 2) imprisonment of at least one half minimum term plus supervised release with community confinement or home detention. For example, if the offense level is 12 and a criminal history category of I, the guideline range is 10-16 months of imprisonment. Assuming that the court would impose a sentence of 10 months, it is possible to choose within two alternatives and to impose a sentence of imprisonment of 10 months or a sentence of imprisonment of 5 months plus 5 months of confinement or

home detention.

If the range is in Zone D (levels 13 through 43) of the table the only option for the minimum term is the imprisonment.

Similar to the mechanism adopted for determining months of imprisonment, the guidelines contain a specific table for calculating the minimum and maximum amount of fines.[127] Except where the defendant is unable to pay,[128] in all cases the judge is required to impose a fine based on the offense level. The amount of the fine should always be sufficient to ensure that the fine, taken together with other sanctions imposed, is punitive.[129] The maximum fine defined in the table does not apply if the maximum fine established by statutes is greater, or if the statutes provide a fine for each day of violation.[130] This implies that in the case of violations of statutes as the Clean Water Act, in which are provided per-day fines,[131] the maximum amount of the fine table of the sentencing guidelines does not apply.

**Table 3.4**

**Fine Table**

| Offense Level | A Minimum | B Maximum | Offense Level | A Minimum | B Maximum |
|---|---|---|---|---|---|
| **3 and below** | $100 | $5,000 | **18-19** | $6,000 | $60,000 |
| **4-5** | $250 | $5,000 | **20-22** | $7,500 | $75,000 |
| **6-7** | $500 | $5,000 | **23-25** | $10,000 | $100,000 |
| **8-9** | $1,000 | $10,000 | **26-28** | $12,000 | $125,000 |
| **10-11** | $2,000 | $20,000 | **29-31** | $15,000 | $150,000 |
| **12-13** | $3,000 | $30,000 | **32-34** | $17,500 | $175,000 |
| **14-15** | $4,000 | $40,000 | **35-37** | $20,000 | $200,000 |
| **16-17** | $5,000 | $50,000 | **38 and above** | $25,000 | $250,000 |

Source: U.S.S.G. Chapter Five, Part. E

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[127] U.S.S.G. §5E1.2.
[128] U.S.S.G. §5E1.2(a) and (f).
[129] U.S.S.G. §5E1.2(d).
[130] U.S.S.G. §5E1.2(c)(4).
[131] 33 U.S.C. §§1251-1387.

In recognition of the "special and unique problems" posed by environmental crimes, the Commission excluded environmental crimes from the general fine provisions of the organizational sentencing guidelines,[132] leaving the regulatory framework to statutory provisions.

To give a certain degree of flexibility, the guidelines manual provides that the sentencing court can consider a departure from the guideline range when 1) the defendant has provided substantial assistance to the government,[133] or 2) the criminal history score derived does not reflect the defendant's past criminal conduct or dangerousness,[134] or 3) the offense involves aggravating and mitigating factors identified by the Commission[135] in general, or specifically for each categories of the offense.[136] On the basis of the consideration that it is difficult to lay down an exact scenario of guidelines that covers the limitless range of human behavior, the Guidelines Manual identifies a non-exhaustive list of factors that may constitute grounds for departures that range from the concrete assistance for the course of justice to defendant's mental and emotional conditions.[137]

### 3.4 The application of the Sentencing Guidelines in Environmental Crimes

The sentencing guidelines provide offense levels for nineteen groups[138] of criminal conduct that account for approximately 90 percent of the statutory criminal provision of

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[132] U.S.S.G. §8C2.1 and Application Note 2. See Susan F. Mandiberg & Susan L. Smith, *Crimes against the environment*, 1997, p. 575.
[133] U.S.S.G. §5K1.1.
[134] U.S.S.G. §4A1.3.
[135] U.S.S.G. §5K2.0.
[136] For departures on environmental crimes, see *infra* section 4.4.3.
[137] See U.S.S.G. §1A(4)(b) and for a comprehensive overview, see United States Sentencing Commission, Office of General Counsel, *Departures*, March 2000.

U.S. Code. The introduction of specific provisions for environmental violations in the Federal Sentencing Guidelines - resulting in considerable increases in both fines and terms of imprisonment[139] - is an important indicator of the augmented concern of the U.S. Congress and of the public opinion about the enforcement and the prosecution of the environmental crimes.

The violations against the Clean Water Act[140] and the other environmental statutes are grouped in the part Q of Chapter 2 of the Guidelines entitled "Offenses involving the Environment."[141] In turn, part Q is divided in two sub-parts: 1) "Environment" and 2) "Conservation and Wildlife."

### 3.4.1 Guidelines Applicable to the CWA

The "Environment" sub-part of the Guidelines is further broken down into six sections covering various environmental statutes.[142] Only the first three sections are applicable to the Clean Water Act:[143]

1) "knowing endangerment resulting from mishandling hazardous or toxic substances, pesticides or other pollutants", with a base offense level of 24,[144] corresponding to a range of 51-63 months of imprisonment for a first conviction offender;

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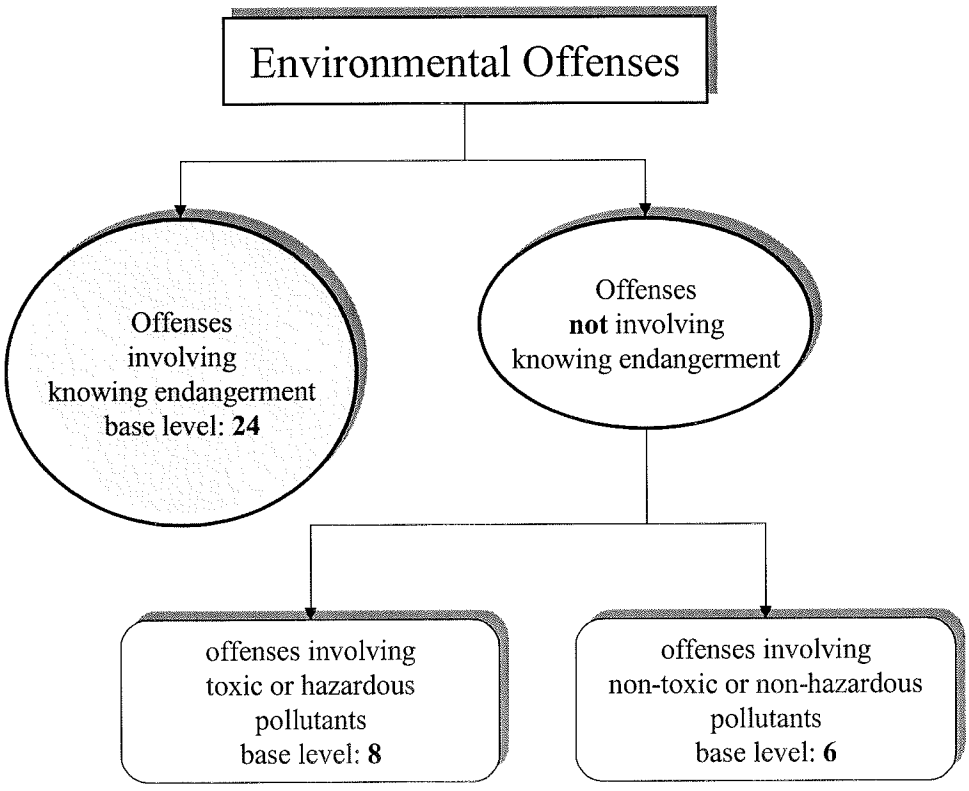
[138] U.S.S.G. Chapter 2, from Part A to Part X.
[139] Susan F. Mandiberg & Susan L. Smith, *Crimes Against the Environment*, 1997, pp. 525-526. Robert S. Bennet et al., *Internal Investigations of Potential Criminal Misconduct Under Environmental Laws,* Environmental Reporter, 1995, 25, p. 1887.
[140] 33 U.S.C. §§1251-1387.
[141] U.S.S.G. §2Q.
[142] Including, among the others, Rivers and Harbors Act (RHA) of 1899; Clean Air Act (CAA) of 1970; Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) of 1972; Safe Drinking Water Act (SDWA) of 1974; Resource Conservation Recovery Act (RCRA) of 1976; Toxic Substances Control Act (TSCA) of 1976; Clean Water Act (CWA) of 1977.
[143] 33 U.S.C. §§1251-1387.

2) "mishandling of hazardous or toxic substances, pesticides; recordkeeping, tampering, and falsification; [...]", with a base offense level of 8,[145] corresponding to a range of 0-6 months of imprisonment for a first conviction offender;
3) "mishandling of other environmental pollutants; recordkeeping, tampering, and falsification", with a base offense level of 6,[146] corresponding to a range of 0-6 months of imprisonment for a first conviction offender.

**Figure 3.1**




Essentially, the guidelines distinguish the environmental crimes between offenses involving (section 1) or not involving (section 2 and 3) knowing endangerment, further

[144] See U.S.S.G. §2Q1.1.
[145] See U.S.S.G. §2Q1.2.

differentiating the latter into offenses involving hazardous and toxic pollutants (section 2) and offenses involving non-hazardous or non-toxic pollutants (section 3).

Thus, the two key questions in establishing the appropriate offense category are, does the offense fall into the knowing endangerment category (section 1) or one of the regulatory violations (sections 2 or 3), and is the regulatory violation one that involves hazardous and toxic substances (section 2) or not (section 3).

### 3.4.2 Specific Offense Characteristics

Each section also lists "specific offense characteristics" which are used for classifying offenses according to the seriousness of the actual or potential harm and other aggravating factors.[147]

Specific offense characteristics are not provided for knowing endangerment violations; the others two groups of offenses are provided specific offense characteristics that can significantly enhance or reduce the base offense level. Specifically, if the offense resulted in actual discharge, release, or emission into the environment, the base offense level is increased by 4 levels[148] or 6 levels if the violation was ongoing, continuous, or repetitive.[149] So, the actual release into the environment of a non-toxic pollutant has an adjusted offense level of 10 for a single event or 12 for a continuos discharge, increasing the range of imprisonment, for a first conviction offender, from 0-6 months to 6-12 and to 10-16 months, respectively.

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[146] See U.S.S.G. §2Q1.3.
[147] Barrett Jane, *Sentencing Environmental Crimes under the United States Sentencing Guidelines – A sentencing lottery*, Environmental Law, 1992, 22, p. 1421.
[148] U.S.S.G. 2Q1.2(b)1(B) and U.S.S.G. 2Q1.3(b)1(B).
[149] U.S.S.G. 2Q1.2(b)1(A) and U.S.S.G. 2Q1.3(b)1(A).

If the offense resulted in a substantial likelihood of death or serious bodily injury, the base offense level is increased to level 17, obtained by adding 9 levels to the base offense level of 8 provided for mishandling of toxic substances, and adding 11 levels to the base offense level of 6 provided for mishandling of non-toxic substances.[150] If the offense resulted in disruption of public utilities, evacuation of a community, or cleanup requiring a substantial expenditure, the base offense level is increased by 4 levels.[151] If the offense involved a discharge without or in violation of a permit the base offense level is increased by 4 levels.[152] If a recordkeeping offense reflected an effort to conceal a substantive environmental offense, use the offense level for the substantive offense.[153] If the offense involved a negligent simple recordkeeping or reporting violation only for hazardous or toxic substances, the base offense level is decreased by 2 levels.[154]

### 3.4.3 Departures

After defining the specific offense characteristics, in the application notes of the Guidelines Manual, the Commission provides six specific cases in which a departure can be warranted.[155]

These include three departures valid for all kind of violations and without a specific

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[150] U.S.S.G. 2Q1.2(b)2 and U.S.S.G. 2Q1.3(b)2.
[151] U.S.S.G. 2Q1.2(b)3 and U.S.S.G. 2Q1.3(b)3.
[152] U.S.S.G. 2Q1.2(b)4 and U.S.S.G. 2Q1.3(b)4.
[153] U.S.S.G. 2Q1.2(b)5 and U.S.S.G. 2Q1.3(b)5.
[154] U.S.S.G. 2Q1.2(b)6. Note that similar provision is not given for non-toxic and non-hazardous substances in order to give the same "adjusted" offense level of 6 for violation consisting in "simple recordkeeping or reporting violation" regardless of the substance.
[155] Note that the provision of these specific departures does not exclude the application of the general departures provided for all crimes.

departure amount: 1) an upward departure when death or serious bodily injury resulted,[156] 2) a downward departure when the defendant's *mens rea* was negligence,[157] 3) an upward departure when the defendant has previously engaged in similar misconduct in a civil case or has failed to comply with an administrative order.[158]

The other three departures are applicable to specific violations and provide for an explicit departure amount: 4) an upward or downward departure up to two levels depending upon the harm, the nature of the pollutant, the duration of the offense, and the risk associated with the violation in the case of actual discharge, release, or emission into the environment,[159] 5) an upward or downward departure up to two levels depending upon the nature of the contamination involved in the case of disruption of public utilities or evacuation of a community, or cleanup,[160] 6) an upward or downward departure up to two levels depending upon the nature of the substances involved and the risk associated with a discharge without permit or in violation of a permit.[161]

### 3.5 Summary

In 1987 a system of sentencing guidelines was introduced in the U.S. federal criminal justice system in the attempt to reduce unwarranted disparity in sentencing and to ensure certainty, proportionality and uniformity of punishment.

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[156] U.S.S.G. 2Q1.1 Application Note 1, U.S.S.G. 2Q1.2 Application Note 6 and U.S.S.G. 2Q1.3 Application Note 5, that recall the general provision provided by Chapter Five, Part K of U.S.S.G.
[157] Note that, except for the case of "simple recordkeeping," all the offenses considered assume "knowing conduct." U.S.S.G. 2Q1.2 Application Note 4 and U.S.S.G. 2Q1.3 Application Note 3.
[158] U.S.S.G. 2Q1.2 Application Note 9 and U.S.S.G. 2Q1.3 Application Note 8, that recall the general provision provided by U.S.S.G. 4A1.3 in matter of adequacy of criminal history category.
[159] U.S.S.G. 2Q1.2 Application Note 5 and U.S.S.G. 2Q1.3 Application Note 4.
[160] U.S.S.G. 2Q1.2 Application Note 7 and U.S.S.G. 2Q1.3 Application Note 6.

The system requires federal judges to impose sentences within a range, expressed in months of imprisonment, resulting from the match of the "offense level" and the defendant's "criminal history category" on the matrix of the "sentencing table."

Within the applicable range and following specific criteria the judge can impose a sentence that goes from the sole fine to probation, imprisonment, detention alternatives or a combination of these. To reach the decision, the court has to follow a specific path in which the "guidelines" provide determined factors for the evaluation of the gravity of the criminal offense and the offender's characteristics. To ensure a certain degree of flexibility, the sentencing judge can upward or downward from the guidelines in presence of specific elements that may constitute ground for departures.

In the effort of sustain the battle for the environmental protection, the federal sentencing guidelines provide specific provisions with considerable offense levels and departures for environmental crimes, applicable, thus, also to the criminal offenses of the Clean Water Act.

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[161] U.S.S.G. 2Q1.2 Application Note 8 and U.S.S.G. 2Q1.3 Application Note 7.

# Chapter Four

# CRIMINAL SANCTIONS AND CWA ENFORCEMENT: LEGAL CONSIDERATIONS

## 4.1 Criminal Sanctions and Judicial Discretion: Some Historical Background

In the early 1970's, both the federal courts and Congress expressed disapproval of the wide discretion accorded federal judges in imposing sentences.[162] One of the most eloquent advocates of sentencing guidelines, and a persistent critic of the disparity resulting from the unfettered sentencing discretion accorded federal judges, is Marvin E. Frankel, former United States District Judge for the Southern District of New York. In his critique, Judge Frankel noted: *"those of us whose profession is the law must not choose any longer to tolerate a regime of unreasoned, unconsidered caprice for exercising the most awful power of organized society, the power to take liberty and...life by process of what purports to be law."*[163]

The sentencing reform movement grew in influence and numbers throughout the late 1970's and early 1980's, culminating in congressional legislation in 1984.[164] Specifically, after several years of political debate and legal research, the U.S. Congress enacted a landmark reform[165] of the federal criminal justice system, the Sentencing Reform Act

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[162] See S. 2699, 94th Cong.,1st Sess.,121 Cong. Rec. 37, 563-64 (daily ed. Nov. 20, 1975).
[163] For a more detailed elaboration of Judge Frankel's view, see M. Frankel, *Criminal Sentences: Law without Order*, 1973.
[164] For a discussion see Ogletree Charles J., "The Death of Discretion? Reflections on the Federal Sentencing Guidelines", Harvard Law Review, 101, June 1988, pp1938-1960.
[165] Some authors defined the reform a revolution of criminal sanctions in federal court. For all, see Mandiberg, Susan F. & Smith, Susan L. *Crimes against the environment*, Virginia: Michie Law Publishers, 1997.

(SRA)[166] as part of the Comprehensive Crime Control Act.[167] The main objectives of the Sentencing Reform Act[168] were 1) to reduce unwarranted disparity in sentencing, 2) to ensure certainty, proportionality and uniformity of punishment, and 3) to establish more serious penalties for specific categories of offenses (e.g., white collar and violent, repeat offenders), while permitting sufficient judicial flexibility to take into consideration significant aggravating and mitigating factors. The first guidelines went into effect November 1987, with full implementation postponed as questions of the constitutionality[169] of guidelines and of Sentencing Commission were adjudicated. In January 1989, the U.S. Supreme Court rejected these challenges and confirmed their constitutionality.[170]

Early evaluations of the guidelines efficacy were not encouraging. Interjudge sentencing disparity, defined as the difference in average nominal prison sentence lengths for comparable caseloads assigned to different judges, was estimated to be 17 percent (or 4.9 months) in 1986-87 prior to the guidelines and to have fell to about 11 percent (or 3.9 months) in 1988-93 during the early years of the guidelines.[171] Other commentators have argued that continued sentencing disparity is to be expected and welcomed.[172] The

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[166] Sentencing Reform Act of 1984, Pub. L. 98-473, Title II, Ch. II, Oct. 12, 1984, 98 Stat. 1987, codified at 28 U.S.C. §§991-998. See United States Sentencing Commission, *The Sentencing Reform Act*, 1996.
[167] Comprehensive Crime Control Act of 1984, Pub. L. 98-473, Title II, Oct. 12, 1984, 98 Stat. 1976, codified at 18 U.S.C. §§3551-3742.
[168] See note 2.
[169] More than 300 defendants challenged the constitutionality of the Sentencing Reform Act on the basis of improper legislative delegation and violation of the separation of powers doctrine.
[170] *Mistretta v. United States 488 U.S. 361 (1989).* See also United States Sentencing Commission, *Brief for United States Sentencing Commission as amicus curiae in Mistretta v. United States, 488 U.S. 361 (1989).*
[171] See Anderson James, Kling Jeffrey, Stith Kate, "Measuring Interjudge Disparity: Before and After the Federal Sentencing Guidelines", Journal of Law and Economics, 42, April 1999, pp. 271-307.
[172] See Rebello Lisa M., "Sentencing Under the Federal Sentencing Guidelines: Five Years of Guided Discretion", Suffolk University Law Review, 26, Winter 1992, pp. 1031-1061.

sentencing guidelines base offense level provides an equal starting point from which judges may adjust a sentence in accordance with the crime committed. The guidelines do not take into account many offender characteristics, but the judge may use the departure mechanism in many cases to modify an otherwise inappropriate sentence. To the extent the guidelines prohibit consideration of offender characteristics, the sentencing scheme is inadequate to fulfill the goal of proportionality. The short-run impact of implementing the Federal Sentencing Guidelines established under the SRA was twofold: 1) a modest decline in sentencing disparity occurred in the early 1900's, and 2) a lively debate developed over the desirability of reducing the disparity further. Regardless of these generic legal trends in implementing the federal sentencing guidelines, early application to environmental crimes reflected the reluctance of judges to impose significant incarceration for violations of environmental law. That is, the uniform and determinant sentencing goals of the SRA were not being met in the environmental area.[173]

### 4.2 Sentencing CWA Violations under the U.S. Sentencing Guidelines: Early Cases

Despite clear Congressional intent that environmental crimes should be treated as serious crimes and not mere regulatory annoyances, environmental criminals continued to receive sentences of straight probation and incarceration of less than one year, even for the commission of substantive environmental crimes. Prosecution of CWA violations in the early 1990's was not immune to the critique of lenient enforcement and lax discretion, as the following cases illustrate.

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[173] See Barrett Jane, "Sentencing Environmental Crimes Under the United States Sentencing Guidelines –

### 4.2.1 Early Industrial Case (1): *United States v. Wells Metal Finishing*

In *United States v. Wells Metal Finishing*,[174] John Wells and his metal finishing company were convicted of knowingly discharging hazardous pollutants in violation of Clean Water Act provisions.[175] Wells was found guilty of systematically discharging wastewater into the municipal sewer system. The discharge contained levels of zinc and cyanide vastly in excess of federal pretreatment limits that inhibited the sludge process of the treatment plant of the City of Lowell (Massachusetts) that flows into the Merrimack River, a drinking supply for numerous downstream communities.

To determine the appropriate sentence under the Sentencing Guidelines, the district court assigned a base offense level of 8 for mishandling of hazardous or toxic substances.[176] Then the court made a 6-level upward adjustment, as required by the specific offense characteristics for crimes involving an ongoing, continuous, or repetitive

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A Sentencing Lottery", Environmental Law, 22, 1992, pp. 1421-1448.

[174] 922 F.2d 54 (1st Circuit 1991).

[175] 33 U.S.C. §§1317(b), 1317(d), and 1319(c)(2). 33 U.S.C. § 1317(b) "The Administrator shall, [...] publish proposed regulations establishing pretreatment standards for introduction of pollutants into treatment works [...] which are publicly owned for those pollutants which are determined not to be susceptible to treatment by such treatment works or which would interfere with the operation of such treatment works. [...]."

33 U.S.C. § 1317 (d) "After the effective date of any effluent standard or prohibition or pretreatment standard promulgated under this section, it shall be unlawful for any owner or operator of any source to operate any source in violation of any such effluent standard or prohibition or pretreatment standard."

33 U.S.C. §, 1319(c)(2)(B) "Any person who [...] knowingly introduces into a sewer system or into a publicly owned treatment works any pollutant or hazardous substance which such person knew or reasonably should have known could cause personal injury or property damage or, other than in compliance with all applicable Federal, State, or local requirements or permits, which causes such treatment works to violate any effluent limitation or condition in a permit issued to the treatment works under section 1342 of this title by the Administrator or a State; shall be punished by a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $100,000 per day of violation, or by imprisonment of not more than 6 years, or by both."

[176] U.S.S.G. § 2Q1.2(a): "Mishandling of Hazardous or Toxic Substances or Pesticides; Recordkeeping, Tampering, and Falsification; Unlawfully Transporting Hazardous Materials in Commerce. Base Offense Level: 8."

discharge, release, or emission of a hazardous or toxic substance into the environment,[177] and a 2-level upward adjustment for disruption of a public utility.[178] Subsequently, the district court adjusted the offense level by a 2-level decrement because the defendant accepted his responsibility.[179] In the end, the base offense level of 8 was enhanced by a total of 6 levels and the resulting adjusted offense level adopted was 14, corresponding to an imprisonment range of 15-21 months. The final sentence, as affirmed later by the Court of Appeals,[180] condemned Wells to 15 months of imprisonment and 1 year of supervised release.[181]

If compared to other sentences imposed in similar cases before the advent of the sentencing guidelines, Wells' sentence could be considered severe, but under the guidelines as presently structured, the sentence could have been much more severe. In fact, a straight application of the sentencing guidelines would consider a base offense level of 8,[182] plus an enhancement of 6 levels for ongoing, continuous, or repetitive discharge of a hazardous or toxic substance into the environment,[183] an increase of 4 levels for disruption of a public utility,[184] an additional 4-level enhancement because the

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[177] U.S.S.G. § 2Q1.2(b)(1)(A): "If the offense resulted in an ongoing, continuous, or repetitive discharge, release, or emission of a hazardous or toxic substance or pesticide into the environment, increase by 6 levels."

[178] U.S.S.G. § 2Q1.2(b)(3): "If the offense resulted in disruption of public utilities or evacuation of a community, or if cleanup required a substantial expenditure, increase by 4 levels." In this case, the district court assigned 2-level upward adjustment to the base offense level rather than the 4-level required by the Sentencing Guidelines for disruption of a public utility.

[179] U.S.S.G. § 3E1.1(a): "Acceptance of Responsibility. If the defendant clearly demonstrates acceptance of responsibility for his offense, decrease the offense level by 2 levels."

[180] 922 F.2d 54 (1st Circuit 1991).

[181] Aware of Wells' enormous personal debt, the court declined to impose its own fine, although the law authorizes fines of "not less than $5,000 nor more than $50,000 per day" for knowing violations of 33 U.S.C. § 1317. See 33 U.S.C. § 1319(c)(2)(A).

[182] U.S.S.G. § 2Q1.2(a).

[183] U.S.S.G. § 2Q1.2(b)(1)(A).

[184] U.S.S.G. § 2Q1.2(b)(3).

discharge was in violation of a permit,[185] and a downward adjustment of 2 levels for acceptance of responsibility.[186] The resulting adjusted offense level would be 20, corresponding to an imprisonment range of 33-41 months. Even without taking into consideration the 4-level increase for violation without a permit, the final offense level would be 16, corresponding to an imprisonment range of 21-27 months. In either case the sanction would be significantly harsher than the one court actually imposed. In this respect, the sentence is clearly lenient since the amount of jail imposed is less than half the time that could have been sentenced under the federal guidelines.

### 4.2.2 Early Industrial Case (2): *United States v. Boldt*

In a similar case, *United States v. Boldt*,[187] adjudicated just three months later before the same court, the final sentence was completely different. David Boldt, a chemical engineering manager for a corporation that manufactured printed circuits, was convicted of knowingly discharging hazardous pollutants in violation of Clean Water Act provisions.[188] Boldt was found guilty of authorizing discharge of industrial wastewater containing excessively high concentration of toxic metals from electroplating process, at the rate of approximately 58,000 gallons a day, directly into sewer system of Lowell.

The Clean Water Act requires manufacturers to pretreat their industrial waste in order to remove toxic metals, such as copper, before discharging that waste into a city

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[185] U.S.S.G. § 2Q1.2(b)(4): "If the offense involved transportation, treatment, storage, or disposal without a permit or in violation of a permit, increase by 4 levels."
[186] U.S.S.G. § 3E1.1(a).
[187] 929 F.2d 35 (1st Circuit 1991).
[188] 33 U.S.C. 1319(c).

sewer system.[189] The company had been engaged in this activity from approximately May 1984 to April 1988 and its pretreatment facilities were completely inadequate. The evidence established that Boldt was employed as the company's chemical processing engineering manager from June 1987 through January 1988 and supervised the illegal discharges that occurred during this period. In particular, the court found that Boldt on January 7, 1988 directly ordered his subordinate to dump 3,100 gallons of copper wastewater.

Using its discretion under the sentencing guidelines, the district court found an applicable range of imprisonment between zero and 6 months and sentenced Boldt to $1,000 fine and a mere 2 days of imprisonment with 1 year of probation.

A straightforward application of the guidelines could have given a widely divergent outcome. Given the fact that the violation involved the discharge of hazardous or toxic substances, the base offense level would be 8.[190] Additionally a 6-level upward adjustment is applicable for the ongoing release of a hazardous or toxic substance,[191] a 2-level upward adjustment for the aggravating role of supervisor,[192] a 4-level enhancement for violation of a permit,[193] and a 2-level downward adjustment since the defendant

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[189] 33 U.S.C. § 1317(b).
[190] U.S.S.G. § 2Q1.2(a).
[191] U.S.S.G. § 2Q1.2(b)(1)(A).
[192] U.S.S.G. §3B1.1(c) "If the defendant was an organizer, leader, manager, or supervisor in any criminal activity other than described in (a) or (b), increase by 2 levels." According to the application notes of the Guidelines Manual, to qualify for an adjustment under this provision, the defendant must have been the organizer, leader, manager, or supervisor of one or more other participants.
In reality, the court, even if was clearly that at least in one occasion Boldt directly ordered a subordinate to dump copper wastewater, refused to recognize the role of supervisor and gave the defendant a downward departure as minimal participant pursuant section 3B.1.2(a) of the sentencing guidelines.
[193] U.S.S.G. § 2Q1.2(b)(4).

accepted responsibility.[194] Therefore, the final adjusted level would be 18, equivalent to an imprisonment range of 27-30 months. Even ignoring the 4-level upward for violation of the permit, the adjusted offense level would be 14, equivalent to an imprisonment range of 15-21 months.

The dramatic divergence between the 2 days of imprisonment imposed in the sentence and the minimum of 15 months hypothetically applicable given a straightforward application of the guidelines is evident. Moreover comparing this sentence to the 15 months of imprisonment imposed on Wells illustrates in an equally dramatic fashion the impact of judicial discretion on sentencing disparity.

Examples of the exercise of judicial discretion resulting in notable sentencing disparity and a lack of proportionality are not limited to industrial CWA cases. In fact, the potential for abuse of discretion in agricultural cases is manifest, as the following early cases illustrate.

### 4.2.3 Agricultural Cases: *Misty Meadow Dairy* and *Gienger Farms*

In the context of the violations to the Clean Water Act, agriculture plays a very unique role. On the one hand, agricultural activities are one of the greatest sources of water pollution.[195] On the other hand, agricultural producers benefit from favorable legislative treatment. Ironically based on appeals to the family-operated farm, modern industrialized farmers are still considered a sector that deserves legal protection, even when the resulting environmental impact can be as destructive as chemical industries and

[194] U.S.S.G. § 3E1.1(a).

municipal sewer systems.

So, while traditional mixed agricultural activities take advantage of specific statutory exemptions, the few remaining regulated activities profit from a favored approach adopted by environmental prosecutors and judges. The consequence of this situation is that much of agricultural pollution is not prosecuted at all, or is prosecuted only leniently, through monetary penalties. A comparison of the industrial cases analyzed above with two very recent agricultural cases, one prosecuted criminally and the other one administratively illustrates the latitude that can be provided to agricultural operations through the use of judicial discretion.

In the early application of the sentencing guidelines, the EPA sanctioned *Misty Meadow Dairy* for unlawfully discharging CAFO manure at the rate of 685,000 pounds per year, without a permit into navigable waters. The company, which operated a beef cattle farm in Oregon, disposed of manure directly into Tillamok Bay, without an NPDES permit and was sentenced to pay a civil fine of $6,000. In this case a criminal indictment imposed in full compliance with the sentencing guidelines would have resulted in prison or, at least, years of probation. In fact, following a straightforward computation of the sentencing guidelines, the final sanction would be over 4 months of imprisonment. Starting with the base offense level of 6 for discharge of non-toxic pollutants,[196] a 4-level enhancement for violation of a permit,[197] and a 2-level downward for accepting responsibility are justified. The final adjusted offense level would be at least 8,

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[195] See Chapter 3, par. 3.3.
[196] U.S.S.G. § 2Q1.3(a).
[197] U.S.S.G. § 2Q1.3(b)(4).

corresponding to a range of over 4 months of imprisonment for a first-conviction offender.

By analogy, the same conclusion can be outlined in ***Gienger Farms*** case, that allegedly discharged approximately 1.3 million gallons of manure-laden wastewater into drainage ditches into Tillamook Bay, in Oregon, without a permit. In response to an EPA administrative complaint, the farm paid a $20,000 penalty and modified its operations to separate clean water from contaminated material, extending the holding capacity of its wastewater storage lagoon from 2 to 57 days. Even in this case, a criminal indictment imposed according to the sentencing guidelines would have conducted without difficulty to an imprisonment time or, at least, years of probation. In fact, following the application of the sentencing guidelines, the final sanction would be more than 4 months of imprisonment. Considering a base offense level of 6 for discharge of non-toxic pollutants, 4-level enhancement for acting without a permit, and a 2-level downward for accepting responsibility, the final adjusted offense level would have been at least over 8, corresponding to over 4 months of imprisonment for a first-conviction offender.

The lack of proportionality in sentencing is demonstrated by comparing the case of Misty Meadow Dairy with Gienger Farms. In Gienger Farms, despite the fact that both the offenses involved a non-toxic pollutant, the defendant received more than double the fine amount that the defendant in Misty Meadow Dairy received. It is clear from the previous cases that use of the guidelines by federal courts has not eliminated the sentencing disparities.

### 4.3 Empirical Evidence

A very recent study[198] conducted by Alexander, Arlen and Cohen, confirms the general, recent legal trend of the continuous increase in criminal penalties that is, the trend toward fines and total penalties for corporations or organizations, convicted of federal crimes, being higher under the sentencing guidelines than they were previously is fully documented. Total penalties in this study includes not only criminal sanctions, but also civil and administrative penalties, private liability, and a variety of nonfine penalties, such as restitution, remedial orders, assessments, and compensation to the government for its expenses in enforcing probation. The authors investigate the effect on courts' sentencing decisions using pre-guidelines and post-guidelines data. Evidence of higher total penalties, even in cases not directly constrained by the Guidelines, suggests that judges may have followed the policy of imposing higher fines and total sanctions, although not to the extent that the guidelines order.

The guidelines were intended to standardize and to increase the penalties received for federal crime. In their study, the authors investigates whether criminal fines and total monetary sanctions are higher for cases sentenced under the guidelines than they were previously, and whether changes in sentences are directly caused by the legal constraint imposed by the guidelines. The analysis focuses on public corporations convicted of crimes in federal courts and finds three basic results. First, criminal fines and total sanctions imposed on public corporations through the federal courts have a tendency to

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[198] See Alexander Cindy R., Arlen Jennifer, Cohen Mark A., "Regulating Corporate criminal Sanctions: Federal Guidelines and the Sentencing of Public Firms", Journal of Law and Economics, April 1999, pp. 393-421.

be higher in cases constrained by the guidelines than they were in the pre-guidelines era. The guidelines seem to have imposed a strong binding constraint on the exercise of judicial discretion, which has caused an increase in criminal sanctions. Second, even in cases not directly constrained by the guidelines, total sanctions are higher: it seems that judges imposed higher total sanctions, even where not required, to do so. This implies that either some different force other than the binding constraint of the guidelines raised total penalties, or judges applied the guidelines even where not explicitly required, cooperating with the purpose of the guidelines to raise total penalties. Third, criminal fines are significantly higher in guidelines constrained than in unconstrained cases. The evidence that criminal fines have increased relative to total sanctions is consistent with the realistic assumption that the guidelines have been more complete in regulating fines than in regulating nonfine sanctions, such as restitution.

The sentencing guidelines for organizations only apply to federal crimes that are committed after November 1991. The fine provisions for organizations do not apply to environmental, wildlife, agricultural or safety violations even though judges are free to adopt them in spirit. The authors constructed a data set consisting of all criminal offenses for which public corporations were sentenced during the 1988-96 period. The data are on both criminal fines and non-fines penalties.[199] The non-fine penalties included non-fine criminal sanctions (such as restitution), civil penalties, administrative penalties, and private civil damages resulting from the offense. The authors focused on public

[199] The data were obtained from a wide range of public sources, like the Wall Street Journal Index, Corporate Crime Reporter, Inter-University Consortium for Policy and Social Research (ICPSR), Lexix/Nexis database and Westlaw, Department of Justice Alert database, SEC 10-K filings, and Antitrust Trade and Regulation Reporter.

corporations to avoid bias that could possibly arise in obtaining information on convictions of private firms, many of which might not be publicly reported. Obtaining information on fine and non-fine sanctions on public organization was also easier[200].

The median guidelines-constrained fine is $3.1 million and the median guidelines-constrained total sanction is $4.4 million. In the multivariate analysis of the data, the authors control for offense and offender characteristics and for legal factors that might influence the sentence. From their analysis results that antitrust and environmental offenses are two significant sources of convictions, consist of 26 percent and 20 percent of all cases, respectively. Environmental crime sentences rose slightly from 18 percent to 22 percent in the post-guidelines era. Criminal fines are significantly higher in guidelines-constrained cases than they were previously. The mean criminal fine imposed on a public firm increased from $1.9 million pre-guidelines to $19.1 million under the guidelines. The median fine increased from $633 thousand to $3.10 million. The percentage of fines that exceed $ 1 million (in 1996 dollars) increased from 37 percent to 59 percent. The percentage of fines that were relatively small - $50,000 or less – decreased from 15 percent to 5 percent. Table 4.1 shows that the total pecuniary sanctions have generally increased. The median total sanction increased from $1.6 million to $ 4.4 million. These empirical results are limited to public corporations. There appears to be no reason to think that judges would act differently in sentencing for private firms.

[200] Public firms are required to report criminal and civil sanctions and private damages in their Securities and Exchange Commission (SEC) filings.

**Table 4.1**

**Pre-guidelines and Guidelines**
**Constrained Monetary Sanctions**

| | n | Mean ($) | Median ($) |
|---|---|---|---|
| **Criminal Fines:** | | | |
| Pre-guidelines | 99 | 1,918,309 | 632,661 |
| Guidelines | 34 | 19,050,717 | 3,095,460 |
| **Total Sanctions:** | | | |
| Pre-guidelines | 101 | 114,985,458 | 1,612,775 |
| Guidelines | 34 | 49,261,188 | 4,427,608 |

All dollars updated to 1996.

*Source:* Alexander, Arlen, Cohen, "Regulating Corporate Criminal Sanctions: Federal Guidelines and the Sentencing of Public Firms," Journal of Law and Economics, April 1999.

## 4.4 Sentencing CWA Violations under the U.S. Sentencing Guidelines: Recent Cases

The following cases illustrate the practical significance of Alexander, Arlen and Cohen's study, especially regarding the aspects that guidelines seem to have influenced sentencing practice by placing a binding constraint upon judges' sentencing decisions and that total penalties are significantly higher during under the guidelines era than previously. In fact, after the first period of application of the sentencing guidelines, the trend of harsher sanctions continued. The imprisonment rate and the average length of sanctions substantially increased, without resulting in better levels of proportionality in sentencing. As many authors noted, the problem was not in the misapplication of the sentencing guidelines by the courts but, generally, in the structure itself of the environmental guidelines. The mix of upward and downward adjustments, departures and application notes enables widely divergent results in sentencing of substantially equivalent violations to occur.

A comparison of two additional cases in more recent years provides a clear example of the persistent increase in sanctions and of the failure in realizing the two main

objectives of proportionality and uniformity in sentencing that were Congress's primary concern when it created the U.S. sentencing commission.

### 4.4.1 Recent Industrial Case (1): *United States v. Weitzenhoff*

In *United States v. Weitzenhoff*,[201] Michael H. Weitzenhoff and Thomas W. Mariani, managers of a sewage treatment plant in Oahu (Hawaii), were convicted of knowing violations of Clean Water Act by permitting discharge of untreated sludge directly into ocean.[202] Weitzenhoff was the manager and Mariani the assistant manager of the East Honolulu Community Services Sewage Treatment Plant, located not far from Sandy Beach, a popular swimming and surfing beach on Oahu. The plant, which operated under an NPDES permit, is designed to treat 4 million gallons of residential wastewater each day by removing the solids and other harmful pollutants from the sewage so that the resulting effluent can be safely discharged into the ocean. The permit limited the discharge to an average of 976 pounds per day over a 30-day period of Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) and imposed monitoring and sampling requirements on the plant's management.

Weitzenhoff and Mariani were found guilty of instructing two employees at the plant to dispose on a regular basis excess sludge generated by the plant by pumping it from the storage tanks directly into the ocean, rather than have it hauled away to another treatment plant, resulting in some 436,000 pounds of pollutant solids being discharged into the ocean. At sentencing, Weitzenhoff was sentenced to 21 months and Mariani to 33 months

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[201] 35 F.3d 1275 (9th Circuit 1994).

in prison.

As in early cases, a quick calculation under the guidelines illustrates the potential for more rigorous sanction applicable to both defendants. In particular, starting with a base offense level of 6 for direct discharge of non-toxic pollutants,[203] plus an enhancement of 6 levels for ongoing, continuous, or repetitive discharge, release, or emission of a pollutant into the environment,[204] an additional 4-level enhancement for discharge in violation of permit,[205] a 2-level upward adjustment for the aggravating role of being manager or supervisor,[206] the final adjusted offense level for Weitzenhoff would be 18, equivalent to a range of 27-33 months of imprisonment. For Mariani, due to the two-point upward adjustment of his offense level pursuant to U.S.S.G. § 3C1.1 for obstruction of justice based on the court's finding that he perjured himself,[207] the same final offense level of 18 would be raised to 20, with a maximum imprisonment term of 41 months.

### 4.4.2 Recent Industrial Case (2): *United States v. Johnson*

In *United States v. Johnson*, [208] the defendant Glenn Kelly Johnson, general manager and president of Johnson Properties, was convicted for failing to maintain wastewater treatment plants and knowing discharge of pollutants in violation of the Clean Water Act.

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[202] 33 U.S.C. §§ 1311(a) and 1319(c)(2) 33 U.S.C. § 1319(c)(4).
[203] U.S.S.G. §2Q1.3(a).
[204] U.S.S.G. §2Q1.3(b)(1)(A).
[205] U.S.S.G. §2Q1.3(b)(4).
[206] U.S.S.G. §3B1.1(c).
[207] U.S.S.G. §3C1.1. "Obstructing or Impeding the Administration of Justice. If (A) the defendant willfully obstructed or impeded, or attempted to obstruct or impede, the administration of justice during the course of the investigation, prosecution, or sentencing of the instant offense of conviction, and (B) the obstructive conduct related to (i) the defendant's offense of conviction and any relevant conduct; or (ii) a closely related offense, increase the offense level by 2 levels."
[208] U.S. District Court of Eastern Louisiana in New Orleans, June 21 2000.

Johnson admitted that he failed to properly operate treatment plants in southern Louisiana from 1991-1998 in violation of terms and conditions of wastewater discharge permit. Failing to maintain wastewater treatment plants according to the Clean Water Act requirements, can lead to the release of harmful level of Escherichia Coli bacteria and other microscopic organisms that can produce intestinal illness in humans and harm aquatic organism and wildlife. As a result of the violations, hundreds of customers did not receive basic sewage treatment for years, and raw sewage and other untreated waste backed up into customers' homes with large quantities of potentially harmful pollutants entering into local waters, streams and bayous connected to the Louisiana's intercostal waterway. At sentencing, the district court sentenced Johnson to 36 months of imprisonment with 3 years of probation, and a fine of $500,000.

Also in this case a plain application of the environmental part of the sentencing guidelines would result without difficulty in a much longer imprisonment term. In fact, starting with the base offense level of 6 for discharge of non-toxic pollutants,[209] it is easy to reach higher points with series of augments for specific offense characteristics and offender's role: a 6-level upward for continuous discharge,[210] a 4-level enhancement for violation of a permit,[211] a 4-level increase because the offense resulted in disruption of public utilities[212], a 2-level increase for being leader, manager, or supervisor,[213] a 2-level enhancement for obstruction of justice.[214] The final adjusted offense level would be 24,

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[209] U.S.S.G. § 2Q1.3(a).
[210] U.S.S.G. § 2Q1.3(b)(1)(A).
[211] U.S.S.G. § 2Q1.3(b)(4).
[212] U.S.S.G. § 2Q1.2(b)(3).
[213] U.S.S.G. §3B1.1(c).
[214] U.S.S.G. §3C1.1.

corresponding for a first conviction offender to a range of 51-63 months, equal to about a 42-75 percentage increase of the imprisonment term.

In this case, the difference between the sanction imposed in the sentence and the sanction theoretically applicable according to the guidelines is not due to a divergent application of the guidelines by the court, but just to a straight application of a provision of the federal guidelines that contribute to increase the lack of proportionality in the sentencing system. Indeed, the court properly applied the rule for which if a specific statute prescribes different minimum or maximum term of imprisonment, the guideline range is consequently adjusted to fit the statutory provisions.[215]

Since the maximum sentence authorized by the Clean Water Act for knowing violations for first conviction offenders is 3 years[216], the sentence required by the guidelines is 36 months even if the imprisonment range for the specific offense level is 51-63 months.

As evident, this rule poses a further constraint to the main scope of the sentencing guidelines of reducing unwarranted disparity in sentencing and ensuring certainty, proportionality and uniformity of punishment.[217] Thus, in the case of the Clean Water Act, the statutory limit of 3 years in prison for knowing violations prohibits sentencing from exceeding offense levels 19 or 20 for first time offenders. This means that an offender with an adjusted offense level of 24 and a hypothetical sentencing range of 51-63 months is treated in the same manner of a person with a level of 19 or 20 with a

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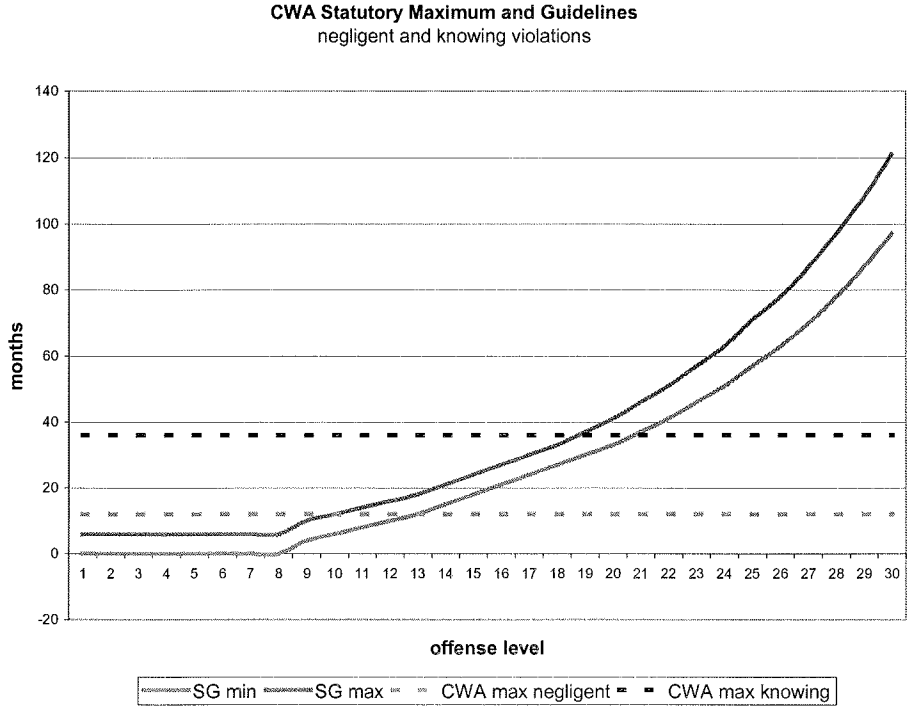
[215] See U.S.S.G. §5G1.1(a): "Where the statutorily authorized maximum sentence is less than the minimum of the applicable guideline range, the statutorily authorized maximum sentence shall be the guideline sentence."

[216] 33 U.S.C. §1319. See Chapter 3, par. 3.6.

sentencing range of 30-37 or 33-41 months (see figure 4.1).

As these recent industrial cases illustrate, the guidelines seem to have imposed a binding constraint on the exercise of judicial discretion with more severe sentences having been recently imposed. Unfortunately, wide discretion and lack of uniformity continue to be a concrete and real concern. The critique of harsher but not full liability being imposed and a lack of uniformity in sentencing characterizing recent years is equally applicable to agricultural violations of the CWA. The following two cases illustrate these points.

**Figure 4.1**




Source: Author's chart

[217] 28 U.S.C. §§991-998.

### 4.4.3 Recent Agricultural Case (1): *United States v. Rockview Farms*

In *United States v. Rockview Farms*, a more recent case, a California corporation, which owns and operates a dairy farm in Nevada with 5,000 cows and a production of milk of 30,000 gallons a day, was sentenced for violating the Clean Water Act.[218]

Rockview illegally discharged 1.7 million gallons of dairy wastewater contaminated with urine and feces in February 1998 when a manager at the dairy, Eric Goedhart, left open for two days a wastewater lagoon valve. The wastewater flowed approximately eight miles across the desert in Nevada and then into the Amargosa River in California. Exposure to fecal coliform and other pathogens in animal wastes can cause intestinal and other infections in humans and can also be harmful to aquatic life.

At sentence, Rockview Farms was fined $250,000 and was ordered to upgrade the dairy to prevent future discharges, and the manager was fined $5,000 with three years of probation. While this sanction is significantly harsher than those discussed in early agricultural cases, full liability under the guidelines did not occur. Full liability would include a base offense level of 6, an enhancement of 6 levels for ongoing discharge, a 4-level upward adjustment for discharge without a CAFO permit, a 2-level enhancement for obstruction of justice for giving false information to EPA investigators about how the spill occurred and who was responsible. The final offense level would be 18, corresponding to a range of 27-33 months of imprisonment.

A much more indulgent calculation would include a base offense level of 6, an enhancement of 4 levels for actual discharge into the environment, a 4-level upward

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[218] U.S. District Court for the Eastern District of California in Fresno on 26 April 1999.

adjustment for discharge without a CAFO permit. The final offense level would be 14, corresponding to a range of 15-21 months of imprisonment. Even considering a diminution of the offense level due to a specific provision of the Guidelines Manual that warrants an indeterminate downward departure in cases involving negligent violation, the final points should be at least 8. The imposition of a verdict of sole probation like in the Rockview manager sentence is notably lenient.

### 4.4.4 Recent Agricultural Case (2): *Heckman Ranches*

In another recent case, the EPA sanctioned a cattle ranch, *Heckman Ranches*, for unlawful discharge of pollutants into navigable waters in violation of the Clean Water Act. The company, which operated a beef cattle farm in central Idaho, disposed of manure-laden directly into Price Creek and White Bird Creek, which are tributaries of Salmon River, without an NPDES permit.

According to EPA Region 10, an NPDES inspection at the facility documented animal wastes and other pollutants being released into the creeks. Samples of the discharges contained significant levels of harmful bacteria and viruses (like fecal coliform and E. Coli) that can cause illnesses such as gastroenteritis, fever, kidney failure, decrease oxygen levels in the receiving water and adversely impact many species of fish. In consideration of such repeated violations,[219] EPA commenced an administrative action under section 309 of the Clean Water Act,[220] and issued a $40,000

[219] EPA affirmed that the discharge constitutes no less than thirteen violation of Section 301 of the Act, 33 U.S.C. § 1311(a).
[220] Docket no. CWA-10-2000-0128.

civil penalty[221] against the CAFO farm and a compliance order[222] to cease immediately all discharges of pollutants and develop a monitoring and reporting system of the facility.

EPA determined the penalty amount in consideration of the significance of the nature, circumstances, extent, and gravity of violations. Moreover, EPA assessed economic benefit and savings resulting from the violation by avoiding or delaying the costs associated with implementing waste management controls that would have ensured compliance with the Clean Water Act. Finally, EPA considered other appropriate factors, like offender's ability to pay, prior history of violations, and degree of culpability, and found that the offender appears able to pay such civil penalty.

These last cases are particularly interesting because they allow for a better understanding of the discretion available to EPA and of prosecutors. In fact, filing an administrative or civil action can lead only to monetary sanctions that look indefensibly lenient compared with the prison sanctions of criminal prosecution. In the Heckman case a criminal indictment would conduct without difficulty to sentence for months of prison or, at least, years of probation. In fact, following the computation of the sentencing guidelines adopted in the Rockview manager example, the final offense level would be at least over 8 points and the final sanction would be over 4 months of imprisonment.

### 4.5 Summary

In response to increasing concern of both the public and lawmakers, one of the

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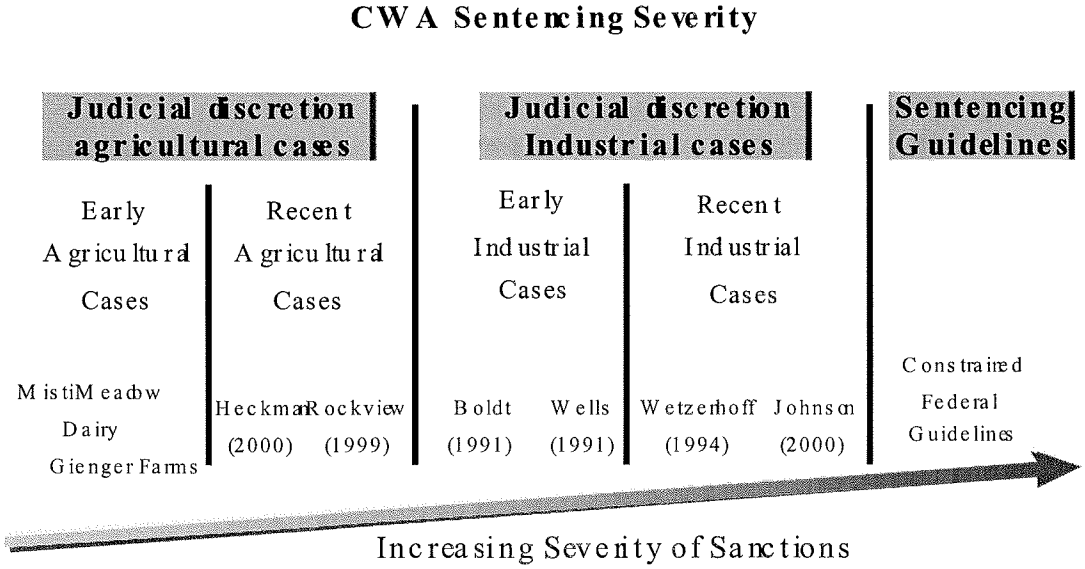
[221] 33 U.S.C. § 1319(g)(2)(B).
[222] Docket no. CWA-10-2000-0127.

purposes of Sentencing Reform Act (SRA)[223] was the introduction of more serious penalties for specific categories of offenses like environmental crimes. Unfortunately, at the same time, the environmental section of the guidelines[224] seemed to fail another, perhaps more important, purpose, the reduction of unwarranted disparity in sentencing.

The empirical evidence illustrates these legal trends, documenting that fines and total penalties for corporations or organizations, convicted of federal crimes, tended to be higher under the sentencing guidelines than they were previously. A first plausible reason of this result seems to be that the guidelines have imposed a strong binding constraint on the exercise of judicial discretion, which has caused, as a direct effect, an increase in criminal fines.

**Figure 4.2**




[223] Sentencing Reform Act of 1984, Pub. L. 98-473, Title II, Ch. II, Oct. 12, 1984, 98 Stat. 1987, codified at 28 U.S.C. §§991-998.

At the same time, the lack of proportionality in sentencing caused a high rate of uncertainty among regulated operators with consequential behavioral incongruities. From the analysis of the early industrial cases such as *Boldt* and *Wells*, it is possible to observe that the enforcement has been increasingly stringent and consistent with the tendency of the continual increase in criminal penalties. This is further illustrated by the analysis of the two more recent industrial cases, such as *Weitzenhoff* and *Johnson*. It is also evident there was continued variability of application of judicial discretion in all cases.

Even though more leniency in sentencing is generally observable in agricultural cases such as *Gienger Farms* and *Misty Meadow Dairy*, compared to the severity in sentencing industrial cases, the more recent cases of *Rockview* and *Heckman* are characterized by a more stringent enforcement. However, the imposition of full liability as delineated in the federal sentencing guidelines is constraint by section 1319 of the Clean Water Act. The statutory limitation of 36 months of imprisonment in the application of the maximum term of imprisonment does not allow full implementation of the federal sentencing guidelines and poses a binding constraint to full application.

Three important observations emerge from this legal analysis of sanctioning under the CWA. First, the implementation of the federal sentencing guidelines has resulting in a movement toward full liability in the use of judicial discretion, where full liability is defined by the sanctions delineated in the guidelines. Second, liability for violations of the CWA is fault based. Negligent violation of best management practices or discharging without a permit must be established to impose sanctions of any kind. Third, and finally,

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[224] U.S.S.G. §2Q1.

sanctions have frequently involved a combination of monetary fines and incarceration as allowed under federal sentencing guidelines protocols. Each of these practices has significant economic efficiency implications.

# Chapter Five

# THE ECONOMIC THEORY OF PUBLIC ENFORCEMENT OF LAW

## 5.1 Introduction

The economic analysis of criminal law began in the last eighteenth and the early nineteenth centuries with the analysis of Beccaria and Bentham,[225] but its renaissance in modern times dates only from 1968, with Gary Becker's article on the economics of crime and punishment.[226] The basic result of that article is that potential violators behave according to both the probability of detection and the severity of the sanction. Thus, deterrence may be extended either by raising the sanction, by increasing the expenditures on enforcement to raise the likelihood that the individual will be captured, or by changing legal rules to increase the probability of detection. In Becker's model, the efficient level of crime is observable when the marginal cost of enforcement is equal to the marginal social benefit of crime reduced per unit of enforcement.[227]

Since then, there has been a conspicuous amount of economic research on criminal law. Among these, a recent study conducted by Polinsky and Shavell (PS) represents the most comprehensive analysis of the public enforcement of law. The authors analyze a variety of plausible scenarios with respect to the choice between fines and imprisonment as a form of socially desirable penalties for criminal conduct.

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[225] See C. Beccaria, "*on Crimes and Punishment;*" J. Bentham, "*An Introduction to the Principles of Morals and Legislation,*" in 1 Works of Jeremy Bentham 1, 86-91 (J. Bowring ed. 1843); J. Bentham, "*Principles of Penal Law,*" in 1 Works of Jeremy Bentham, supra, at 365.

[226] See G. Becker, "*Crime and Punishment: An Economic Approach,*" 76 Journal of Political Economy 169, 1968.

[227] See Mark A. Cohen, "*Monitoring and Enforcement of Environmental Policy,*" Vanderbilt University,

The scope of this chapter is to describe the main results of the PS analysis with respect to the detection and to sanctioning of violators of legal rules. The authors first present the basic elements of the theory, focusing on the probability of imposing sanctions, the magnitude and form of sanctions, and the rule of liability. Next, a variety of extensions of the central theory, including accidental harms, cost of imposing fines, mistake, marginal deterrence, settlement, self-reporting, repeat offenses, and incapacitation are analyzed. The problem of optimal public enforcement of law consists, primarily, in selecting probabilities and magnitudes of sanctions that best deter violations.[228]

## 5.2 The Public Enforcement Problem

Public enforcement of law is a matter of fundamental importance for promoting social welfare. The enforcement process can be subdivided in different sub-processes, such as detection, prosecution and punishment. Obviously, each of these stages has direct implications for the determination of the severity of sanctions, for the choice between fines and imprisonment, for the choice between private and public deterrence, and in general for formulating effective policy toward criminality. An important issue in the literature on law enforcement is, if and how, the magnitude of penalties should be increased from the level that is applied when violations are detected with certainty. Another point of importance in the enforcement literature answers the following critical

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August 1998.

[228] For a complete analysis of a model in which two types of enforcement efforts, specific and general, are distinguished, see S. Shavell, "*Specific versus General Enforcement of Law,*" Journal of Political Economy, vol. 99, no.5, 1991.

questions: How much of society's resources should be spent on enforcement in order to capture violators? If a violator is apprehended, should the rule of liability be strict or fault-based? Should the sanction be a fine, imprisonment, or a combination of the two? Once the sanction is chosen, what is the socially preferable level? How should enforcement policies be adjusted as enforcement cost change?

The main related literature addresses the question of whether individual sanctions should take the form of fines or incarceration. The recent literature concludes that, if possible, fines should be used rather than incarceration, since the social costs associated with incarceration are much higher. These costs include the actual cost of incarceration (such as the costs of prisons and the opportunity cost of the individual's time) and transactions costs associated with the use of incarceration as a sanction.[229] If the government decides to utilize fines or imprisonment to control and deter criminal activities in society, it has to take into account all the costs implied by the enforcement process. Clearly these costs contribute to determine the "optimal magnitude" of the potential sanctions and the optimal level of enforcement effort. Optimal level of enforcement involves the optimal probability of detection of those who commit criminal activities. The Polinsky and Shavell's model considers many other crucial questions in deterrence theory;[230] in particular, how should sanctions be structured so as to discourage a person from committing an illegal action? What are the implications for enforcement theory, if the violator is a corporation or organization? Should sanction be moderated if

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[229] See Segerson K., Tietenberg T., "*The Structure of Penalties in Environmental Enforcement: An Economic Analysis,*" Journal of Environmental Economics and Management 23, pp. 179-200, 1992.

[230] Deterrence refers to the tendency of the threat of punishment to dissuade individuals, in general, from committing harmful acts.

violators self-report themselves? To address these issues, Polinsky and Shavell's formulation of the model accounts for different perspectives, from the individual behavior viewpoint, from a social welfare standpoint and the enforcement authority's problem.

### 5.3 Individual Behavior

When an individual is considering a harmful act, first of all, he will consider what will be the gain that could be earned from doing so. If he does commit it, he will be captured with some probability and then possibly have to pay a fine or go to jail,[231] or both.[232] An individual will commit a crime if the benefit to him from committing the crime equals or exceeds the expected costs. An individual is characterized by the damages that he would cause and by the benefits he would gain.[233] So, in general, he will commit the crime if and only if his expected utility, taking into consideration his potential gain and the likelihood of being caught and sanctioned, exceeds his utility if he does not commit the act.[234] Assumed that individuals who are risk-neutral in fine and imprisonment will have gain or benefit from committing a criminal act, say $g$. Whether an injurer who has been captured will be sanctioned depends on the rule for imposing liability. Under strict liability a sanction can be imposed on the injurer regardless of the

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[231] A jail term is only one example of nonmonetary sanction. The same arguments are valid for other forms of nonmonetary sanctions, such as probation, community service, and in the extreme, death penalty.

[232] See A.M. Polinsky and S. Shavell, "*The Economic Theory of Public Enforcement of Law,*" Journal of Economic Literature, Vol. XXXVIII, March 2000, pp. 45-74.

[233] See Polinsky M. and Shavell S., *Enforcement Costs and the Optimal Magnitude and Probability of Fines*, Journal of Law and Economics, 1992, n. 35, pp. 133-148.

[234] See A.M. Polinsky and S. Shavell, "*The Economic Theory of Public Enforcement of Law,*" Journal of Economic Literature, Vol. XXXVIII, March 2000, pp. 45-74.

level of care that was adopted. Under negligence, liability can be imposed only for failure to exercise "due" care. Strict liability, in fact, presumes that any act that violates the statute is presupposed to have been done willfully and intentionally. As a result, the violator is subject to liability simply on proof that the act was committed by him. Under strict liability, the individual is responsible for payment of the damages in the event of an accident and selects the level of care to minimize the corresponding expected expenditure; i.e., the sum of precaution costs and expected damages.

An alternative standard of liability is the negligence rule, under which a party is liable only if some standard of care is not met. Because individuals will meet the standard of care applicable to them, they will not be found negligent and will not actually incur liability (in the absence of errors). [235]

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[235] To give a numerical example, let's assume that individuals are risk neutral and strictly liable and that an accident will cause harm of $500,000 with a probability of 0.04 if an individual does not take care and with a probability of 0.01 if the individual does take care. Thus, if an individual does not take care, the expected harm is $20,000 (=0.04*500,000), and if he does take care it is $5,000. Assuming that the individual's cost of taking care is $2,000, it is socially desirable for care to be taken since taking care reduces the expected harm by $15,000 (=$20,000-$5,000). Under negligence-based liability, on the other hand, an individual is responsible for the payment of damages only if it can be shown to have taken a level of care less than the negligence standard and if his act is determined to be socially undesirable (see Polinsky M., Shavell S., "Should Employees be Subject to Fines and Imprisonment Given the Existence of Corporate Liability?," International Review of Law and Economics, 13, p. 239, 1993). An act is socially undesirable if the expected social benefits are exceeded by the expected harm. Therefore, when expected social benefits are zero, a potentially harmful act will be socially undesirable. That is why, generally, the terminology "fault-based liability" is used. Usually, fault is not sufficient to justify criminal prosecution, but there are crimes in which fault with intentionality is sufficient for prosecution. There are even crimes in which fault is not necessary for prosecution, so called "strict liability" crimes. Fault is the failure to accomplish an obligation, while mens rea (Latin for guilty mind) is the legal term for criminal intent. To give a better idea, consider the following ranking of potential harmful acts along a continuum (see Figure 5.1).
A person who is careful about a potential harmful activity is improbable that will harm anyone and he will satisfy the legal standard without being at fault. A negligent person imposes greater risks on others and violates the legal standard. Mere negligence, however, is a smaller degree of fault than recklessness. A reckless person is very far from respecting the legal standard ignoring the safety of others. If a person intentionally harms someone, the level of guilty will raise. The intent to harm is a necessary part of criminal intent.

Let

$g$ = gain a party obtain from committing the criminal activity

$p$ = probability of detection

f = *fine*

$t$ = length of the imprisonment term

$\lambda$ = prisoner's disutility associated at unit of the imprisonment term

Under strict liability, a risk-neutral individual will commit the crime if and only if his gain from doing so exceeds the sum of the expected fine and the expected disutility of the imprisonment term:

$$g>p(f+\lambda t)$$

If individuals are risk neutral with respect to fines, the optimal probability is as low as possible and the fine is as high as possible. The interpretation of risk neutrality with respect to imprisonment is that the individuals' disutility rises proportionally with the

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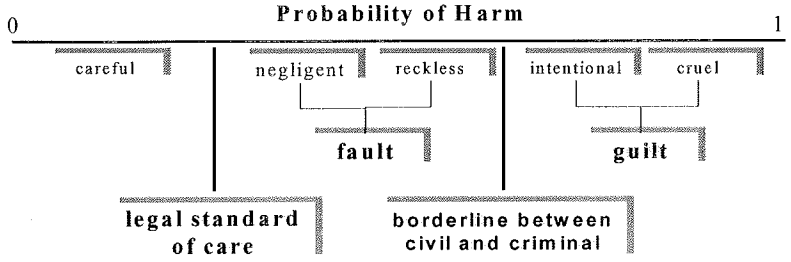
**Figure 5.1**




Source: Cooter R. Ulen T., Law and Economics, 1988

length of the term. Risk aversion in imprisonment results if the disutility rises more than proportionally with the length of the term. Risk preference in imprisonment occurs if the disutility increases less than proportionally with the length of the term.

If the individual is risk averse in fines and imprisonment, his gain would have to be higher than $g>p(f + \lambda t)$, before he would commit the criminal act; and if he is risk preferring in imprisonment, the gain would tend to be lower.

Under fault based liability an individual will be held liable if he committed the crime without taking reasonable precautions to prevent harm:[236] this means that he will be found at fault and made liable if he committed the criminal activity when his gain was relatively low. This critical level of gain is the *fault standard*:

$$\hat{g} = \text{fault standard}$$

So, if an individual commits the crime when his gain is less than $\hat{g}$, he will be at fault and will be found liable; otherwise he will not be liable. Obviously, if the individual's gain equals or exceeds $\hat{g}$, he will engage in the criminal activity because he will not be found at fault. If, instead, the gain is less than $\hat{g}$, the individual will commit the crime if and only if $g>p(f + \lambda t)$ holds.

### 5.4 Social Welfare

Social welfare is assumed equal the sum of individual's expected utilities. An individual's expected utility depends on several factors, in particular, whether he commits a crime, on whether he is sanctioned, on his status (victims of somebody's else

criminal activity), and on his tax payment, which will reflect the cost of law enforcement, less any fine revenue collected.[237]

Social welfare equals the sum of the benefits of crime minus the cost of crime and the cost of enforcement. The level of enforcement should be engaged at the level at which the social marginal cost of enforcement equals the social marginal benefit.[238] So, if individuals are risk neutral, social welfare can be expressed as the gains individuals obtain from committing the criminal activities, less the harms caused, and less the costs of law enforcement. Polinsky and Shavell in their model assume that fines are socially costless to impose because they are considered simple transfers of money,[239] while imprisonment involves social costs because of the expenses associated with the function of prisons and the disutility due to imprisonment.[240] The use of incarceration involves, at least, two costs: direct disutility for the injurer from a jail sentence, which is a monotonically increasing function of the number of years spent in jail, and the social costs of incarceration. Obviously, neither of these costs exists with the application of a fine.

There will be a *critical gain* above which individuals will commit the criminal

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[236]A reasonable precaution is one whose cost is less than the harm that it prevents.

[237]Including all gains in social welfare is conventional in the literature on enforcement. Some writers have questioned whether such gains should be credited in social welfare, especially when the gains derive from criminal acts. If the gains from some type of harmful acts were excluded from social welfare, the principal consequence would be that society would want to achieve greater deterrence. That would tend to make desirable a higher sanction and a higher probability of detection.

[238] See Arlen J., "*The Potentially Perverse Effects of Corporate Criminal Liability,*" Journal of Legal Studies 23; June 1994, pp. 833-867.

[239] The consideration for this assumption is that the disutility to parties who have to make payments may be viewed as balanced by the addition to utility of parties who receive the payments.

[240] By contrast, the disutility experienced by parties punished by nonmonetary sanctions is not balanced in any automatic way by additions to the utility of other parties (see S. Shavell, "*Criminal Law and the Optimal Use of Nonmonetary Sanctions as a Deterrent,*" Columbia Law Review, October 1985).

activity and below which they will be deterred. The critical gain is determined by the probability of detection, the level of sanctions, and the standard for imposing liability.

Let

$z(g)$ = density of gains among individuals

$Z(g)$ = cumulative distribution of z(.)

$\tilde{g}$ = critical gain

$h$ = harm caused by individual if he commits the criminal activity

$\alpha$ = cost to the public per unit of the imprisonment term

$e$ = enforcement expenditures by the government and

$p(e)$ = probability of detection given $e(p' > 0, p'' < 0)$

The population is normalized to equal unity and the harm is assumed to be monetary. Under strict liability, if individuals are risk neutral, social welfare can be expressed as:

$$\int_{\tilde{g}}^{\infty} gz(g)dg - [1 - Z(\tilde{g})](h + pt(\lambda + \alpha)) - e$$

where $\tilde{g} = p(e)(f + \lambda t)$

The aggregate gain obtained by those who commit the criminal activity is represented by $gz(g)dg$. The aggregate harm caused by such individuals, plus the disutility suffered by those who are captured and put in jail, plus the cost to the public of keeping them in jail is $[1-Z(\tilde{g})](h+pt(\lambda+\alpha))$. The last term, $e$, is the enforcement costs sustained by the government.

The optimal sanction will be affected by the probability of detection and by the benefits an individual would derive from a harmful act, since the expected sanction must

be high enough to offset the benefits. The optimal probability of detection will reflect a balancing of two factors: the greater is the probability, the more individuals who can possibly be deterred, but the larger are the expenses of policing behavior.[241]

Under the negligence rule, if an individual's gain equal or exceeds $\hat{g}$, he will engage in the criminal activity because he will not be found at fault, while if his gain is less than $\hat{g}$, he will engage in the activity if and only if $g>p(f+\lambda t)$ is respected.

It is clear at this point, that the enforcement authority's problem is to maximize social welfare by choosing enforcement expenditures, *e*, or the probability of detection *p*, the level of fine, *f*, the length of imprisonment term, *t*, and the standard for imposing liability.[242] If the authority chooses the negligence rule, it also must choose the fault standard, $\hat{g}$. Thus, social welfare under negligence when individuals are risk neutral is:

$$\int_{\tilde{g}}^{\infty} gz(g)dg - \left[1 - Z(\tilde{g})\right]h - \left[Z(\hat{g}) - Z(\tilde{g})\right]pt(\lambda + \alpha) - e$$

where $\tilde{g} = \min[\hat{g}, p(e)(f + \lambda t)]$.[243]

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[241] See S. Shavell, "*The Optimal Use of Nonmonetary Sanctions as a Deterrent,*" The American Economic Review, September 1987.

[242] For some examples of the analysis of public enforcement that use basically this framework, see Polinsky and Shavell, "*The optimal Use of Fines and Imprisonment,*" Journal of Public Economics, 24, pp.89-99, 1984.

[243]Therefore, an implicit objective is, since crime imposes costs on society and since deterring crime uses resources, to reach an optimal amount of crime or an optimal amount of deterrence. As it is possible to see in the Figure 5.2 (see next page), the horizontal axis measures reductions in the amount of criminal activity, ranging from no reduction up to a complete absence of crime at the amount of 100%. Dollar amounts are measured along the vertical axis. The $MSC_D$ represents the marginal social costs of achieving a given level of crime reduction and slopes upward to indicate that it become increasingly costly to achieve reductions in the level of crime. The MSB curve measures the marginal social benefit of achieving various levels of crime reductions or deterrence and slopes downward because the marginal benefits of more reductions in the amount of crime declines. So, the socially optimal amount of deterrence occurs at the point where the marginal cost of reducing crime is equal to the marginal social benefit. If we suppose that the costs of resources devoted to deter crime fall down, the marginal social benefits of deterrence remaining the same, $MSC_D$ would fall to $MSC_{D1}$ and the optimal level of deterrence would increase to D**.

## 5.5 Optimal Enforcement with a Fixed Probability of Detection

To apprehend individuals who commit harmful acts, society has to maintain an enforcement apparatus, with associated expenses that rise with the level of the probability of detection. Deterrence is a function of the probability of detection and the severity of punishment, which combine to determine the "price" of crime.[244] Reducing the price of crime would reduce the likelihood that potential offenders will be deterred.

Polinsky and Shavell have analyzed how the enforcement costs affect the optimal magnitude of fines and the optimal degree of enforcement for society. Since law enforcement has significant costs for society, it may be advantageous to spend less on detecting violations with high probability. However, this savings on enforcement expenditures would come at the cost of violators escaping detection. Accordingly, it may be efficient to use enforcement strategies that have significant probability of escaping punishment but with high levels of penalty. Even so, a direct problem with this

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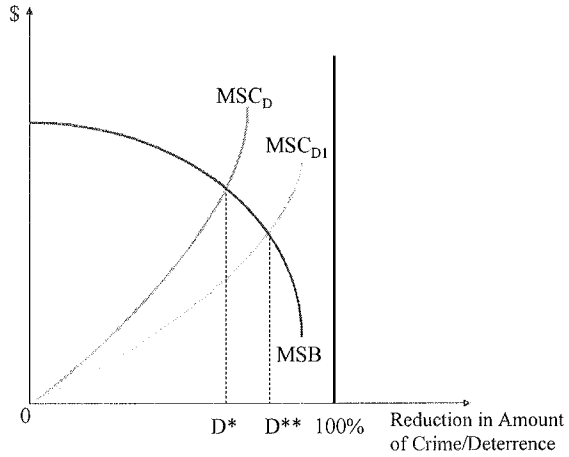
**Figure 5.2**




Source: Cooter R. Ulen T., Law and Economics, 1988

[244] See Kahan D.M., "*Social Influence, Social Meaning, And Deterrence,*" Virginia Law Review, March

combination of low probability and high sanction is that high sanctions may be inapplicable in many settings.[245]

Even though Polinsky and Shavell have assumed that a violator is a single actor, this type of analysis can be applied in most respects to firms and other private organizations in the challenge to enforce their internal rules using their own enforcement resources. The most significant difference is that private organizations generally cannot utilize nonmonetary sanctions, such as imprisonment.[246] A higher level of enforcement results in a higher probability of sanctions and thus increases deterrence.[247]

Polinsky and Shavell consider optimal enforcement under two different scenarios. First it is assumed that enforcement expenditures are fixed, say at $e$, and hence that the probability of detection is fixed at $p(e)$. The second scenario assumes that expenditures on enforcement $e$, and consequently the probability of detection $p(e)$, can vary.

For this analysis, fixed enforcement costs will be assumed. The implications of variable probabilities of detection are presented in Appendix A along with several interesting extensions of the model. Shavell in a previous analysis[248] has already distinguished between two types of enforcement costs, fixed and variable costs. Fixed enforcement costs are those that are independent of the number of injurers, while variable enforcement costs are those that are dependent on the number of injurers, such as the cost

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1997, n. 83, pp. 349-395.

[245] See Shavell S., "*Economic Analysis of Law,*" Discussion Paper no. 283, June 2000, Harvard Law School

[246] See A.M. Polinsky and S. Shavell, "*The Economic Theory of Public Enforcement of Law,*" Journal of Economic Literature, Vol. XXXVIII, March 2000, pp. 45-74.

[247] See L. Kaplow, S. Shavell, "*Accuracy in the Determination of Liability,*" Journal of Law and Economics, April 1994, pp. 1-13.

[248] See S. Shavell, "*Specific versus General Enforcement of Law,*" Journal of Political Economics, 99, pp. 1088-108, 1991.

of accusing and punishing polluters. In this model, it is assumed that enforcement costs are fixed and involve the cost of preserving the probability of detection at a certain level and the variable enforcement costs of fining individuals.

### 5.5.1 Strict Liability

Polinsky and Shavell consider the problem of choosing sanctions so as to maximize social welfare in the two different scenarios, that is when expenditures on enforcement are fixed and when they are allowed to vary. In this first scenario, they examine the different approaches of strict liability. First fines are considered, then imprisonment, and finally a combination of both.

#### 5.5.1.1 Fines Only

When expenditures on enforcement are fixed, and individuals are risk neutral, social welfare is given by

$$\int_{\tilde{g}}^{\infty} gz(g)dg - [1 - Z(\tilde{g})](h + pt(\lambda + \alpha)) - e$$

with $t$, the imprisonment term, equal to zero and $e = \bar{e}$. Therefore, the critical gain, $\tilde{g}$, equals $pf$, that represents the first-best behavior, since individuals commit the criminal act if and only if the gain exceeds the expected fine. Taking the first derivative of social welfare with respect to the fine $f$, setting the result equal to zero, and solving for $f$ gives the optimal fine:

$$f^* = h/p$$

Thus, the expected fine equals the harm, $pf^* = h$. More expressly, individuals will commit the criminal activity if and only if their gain will exceed the harm.

When individuals are risk averse, the optimal fine tends to be lower than in the risk-neutral case, primarily because risk-averse individuals are more easily deterred than risk-neutral individuals, but also because it reduces the impact of risks. The presence of risk aversion is relevant in this study, first of all because individuals will tend to exercise more care than risk neutral individuals, making it less likely to have sanctions. And secondly, if individuals are risk averse, a negligence rule (as we will observe later) is preferable to strict liability in terms of risk allocation, since under the negligence rule no risk is imposed on individuals when they meet the standard of care (in the absence of legal error).

#### 5.5.1.2 Imprisonment Only

Many of the harmful acts that are punished under criminal law have the characteristic that civil suits and fines would prove inadequate as a deterrent. Thus, imprisonment is frequently necessary to deter and to incapacitate individuals from committing harmful activity.

When the expenditures on enforcement are considered fixed, and individuals are risk neutral, social welfare is given by:

$$\int_{\tilde{g}}^{\infty} gz(g)dg - [1 - Z(\tilde{g})](h + pt(\lambda + \alpha)) - e$$

with $f$, this time, equal to zero and $e = \bar{e}$, so that $\tilde{g} = p\lambda t$, which means that individuals

will commit the criminal act, if and only if their gain will exceed the expected disutility deriving from the imprisonment sanction. An easy formula to calculate the optimal term for imprisonment does not exist, but it is possible to state that it might be zero because imprisonment is socially costly to impose. If the optimal term is positive, it could be such that the critical gain, $\tilde{g}$ is > or < than $h$, the harm, that means that there is underdeterrence or overdeterrence,[249] respectively. For society, it is desirable to sustain some underdeterrence in order to save enforcement costs, in which case expected sanctions will be less than harm. Suppose that the imprisonment term is set so that $\tilde{g} = h$. If it is lowered or increased, there is no effect on the social welfare first order condition in terms of the net effect of gain and harm, because individuals have gains equal to the harms. But lowering $t$, can cause a reduction in the aggregate disutility of imprisonment as well as the public cost of the prison system, because individuals are imprisoned for a shorter time. On the other hand, increasing $t$, might bring a reduction of the aggregate disutility and public cost of imprisonment because fewer individuals will commit the harmful act and be sanctioned. Either effect could increase social welfare, implying that the optimal imprisonment term could be such that $\tilde{g}$ is less or greater than $h$.

If individuals are risk averse in imprisonment, the same degree of deterrence can be achieved with a lower sanction compared to the risk-neutral case. This makes an imprisonment sanction more desirable since the cost for society to achieve deterrence is less. On the contrary, if individuals are risk preferring in imprisonment, an imprisonment

[249] See Polinsky and Shavell, for the argument that underdeterrence or overdeterrence may result when the imprisonment term is optimally chosen, "*The Optimal Use of Fines and Imprisonment,*" Journal of Public Economics, 24, pp.89-99, 1984.

sanction is less advantageous than in the risk neutral case.

#### 5.5.1.3 Fines and Imprisonment

When the expenditures on enforcement are considered fixed, and when fines and imprisonment can be employed together, social welfare is given by:

$$\int_{\tilde{g}}^{\infty} gz(g)dg - [1 - Z(\tilde{g})](h + pt(\lambda + \alpha)) - e$$

and the principal argument is that fines should be imposed at the maximum reachable level, before imposing imprisonment.[250] It is not optimal to impose an imprisonment sanction unless the fine is at its maximum level. The logic for this result is that fines are socially costless to impose, while imprisonment is socially costly, so deterrence should be achieved through the cheaper form of sanction first.

In fact, let $f_m$ = maximum possible fine.

The fine can be constrained by different elements, such as the limited wealth of individuals. It is easy to observe that if $f$ is less than $fm$ and $t$ is positive, social welfare can be increased by raising the fine. Specifically, raise $f$ and lower $t$ so as to keep $f + \lambda t$ constant. Since $\tilde{g} = p(f + \lambda t)$ is not affected, $\int_{\tilde{g}}^{\infty} gz(g)dg$ remains the same. The second term, $\int_{\tilde{g}}^{\infty} [1 - Z(\tilde{g})](h + pt(\lambda + \alpha)) - e$, declines, however, because $t$ fallen. Thus, social welfare rises.

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[250] See Polinsky and Shavell, "*The Optimal Use of Fines and Imprisonment,*" Journal of Public Economics, 1984.

This type of logic can be used to show that imprisonment should not be used unless fines are maximal regardless of individual's risk preferences with respect to wealth or to imprisonment. If the optimal fine is employed at its maximum, it may or may not be desirable to impose an imprisonment sanction.

So, an imprisonment term should be employed only after a fine[251] has already been imposed. Suppose, for example, that an individual (with assets of $100,000) is fined $5,000 and is sentenced to four years in prison. The disutility of this combined sanction could be held constant by increasing the fine (from $5,000 to $100,000) and reducing the imprisonment term to three years. Of course, if a greater fine would involve greater disutility than the original sanction of $5,000 and the four years of sentence, then a fine of less than the maximum level and no prison sentence could be substituted for the original sentence.[252] To evaluate if an imprisonment term should be imposed, the benefit resulting from the additional deterrence should be greater than the additional cost for imposing imprisonment.

### 5.5.2 Fault-Based Liability

#### 5.5.2.1 Fines Only

When the expenditures on enforcement are fixed, social welfare is equal to

$$\int_{\tilde{g}}^{\infty} gz(g)dg - \left[1 - Z(\tilde{g})\right]h - \left[Z(\hat{g}) - Z(\tilde{g})\right]pt(\lambda + \alpha) - e$$

[251] In the Becker's assumption it has to be equal to the individual's wealth.
[252] See S. Shavell, "*Criminal Law and the Optimal Use of Non Monetary Sanctions as a Deterrent,*" Columbia Law Review, 85, 1985, Fn.17.

where $\tilde{g} = \min[\hat{g}, p(e)(f + \lambda t)]$

with $t=0$ and $e = \bar{e}$, so that $\tilde{g} = min[\hat{g}, pf]$.

It is easy to observe that for an optimal policy the fault standard has to be equal to the harm and the fine at a level that reaches compliance with the standard, so that $\hat{g}^* = h$ and $f^* \geq h/p$. Therefore, $\tilde{g} = h$, that means that individuals will commit the harmful act if and only if their gain exceeds the harm, which is first-best behavior.

So, negligence and strict liability regimes have the same outcomes in presence of risk neutrality. In fact, the optimal fine is $f^*=h/p$ and is the same fine that is optimal under strict liability regime. The usual considerations about risk aversion and risk preference are maintained. In presence of risk aversion, individuals are more easily deterred than if they are risk neutral, so the fine does not has to be as high to encourage compliance with the fault standard. If there is compliance, no one is in reality sanctioned, because, without mistakes, no one is found at fault. Thus in the presence of risk aversion, the negligence rule may be preferable to strict liability rule. Negligence regimes can reach deterrence without imposing risk on risk adverse individuals.[253] Several different elements play an important role in deciding appropriately between negligence and strict liability rule. Negligence regime could be more difficult to control. In fact, under strict liability, the authority needs only to establish harm, while under strict liability, it must also be able to estimate optimal behavior and to determine actual behavior. Then, strict liability encourages violators to take more accurate decision regarding the level of

[253] The assessment that negligence does not impose risk on violators, whereas strict liability does, is made in Shavell, "*On Liability and Insurance,*" Bell Journal Economics, 13, pp. 120-132, 1982.

participation in the criminal activity. Ultimately, negligence rules will have as a result, fewer enforcement actions compared to strict liability rule and thus save enforcement costs.

#### 5.5.2.2 Imprisonment Only

When expenditures on enforcement are considered fixed, social welfare is equal to

$$\int_{\tilde{g}}^{\infty} gz(g)dg - [1 - Z(\tilde{g})]h - [Z(\hat{g}) - Z(\tilde{g})]pt(\lambda + \alpha) - e$$

where $\tilde{g} = \min[\hat{g}, p(e)(f + \lambda t)]$

with $f = 0$, $e = \bar{e}$ *and* $\tilde{g} = \min[\hat{g}, p\lambda t]$.

As we have seen above, the optimal policy is to set the fault standard equal to harm and the imprisonment term at a level that reach compliance with the standard: $\hat{g}^* = h$ and $t^* \geq h / p\lambda$. So, individuals will commit the injurious activity if and only if their gain exceeds the harm ($\tilde{g} = h$), which is the first best behavior and the imprisonment sanction is not imposed because violators are in compliance with the fault standard (since $\tilde{g} = \hat{g}$)

If individuals are risk averse in imprisonment, the term can be shorter, and if individuals are risk preferring in imprisonment it has to be longer.

Under a negligence rule, the threat of imprisonment can be used to induce individuals to take more care without actually having to imprison anyone. Under strict liability rule, however, the imprisonment sanction would be imposed.

#### 5.5.2.3 Fines and Imprisonment

When the expenditures on enforcement are considered fixed, and fine and imprisonment are used together and chosen in order to induce individuals to comply with the fault standard, the optimal fault standard is the same as stated above. The combination of fines and imprisonment is irrelevant because sanctions are not in fact imposed. It is not necessary, in fact, for society to employ maximal fines before imposing imprisonment.

## 5.6 Additional Considerations

Public enforcement is often characterized by low probabilities of detection, since the cost of raising the probability can be prohibitive. Corresponding to the low probabilities of detection, sanctions may be relatively high, often exceeding harm. Moreover, the magnitudes of sanctions tend to increase with the seriousness of harms.

Even if actual public enforcement seems to be consistent in many respects with the theory of optimal enforcement, actual enforcement seems to diverge in various ways from what is theoretically desirable. Two discrepancies are of general importance. First, enforcement costs could be saved without sacrificing deterrence by reducing enforcement effort and concurrently raising fines. This is possible in many enforcement realities because fines are very low relative to the assets of violators. It also appears that levels of deterrence are often too low. Given the opportunities that exist for increasing penalties, as well as enforcement effort, society probably should raise levels of deterrence in many areas of enforcement.

Shavell, in a previous work,[254] emphasized that the consistency between theory and reality is very approximate. It is not difficult to give examples of conflict between the actual use of monetary and nonmonetary sanctions and their theoretically optimal use as deterrents. In fact there are many occasions where a person with substantial assets is sentenced to prison but pays no fine or only a modest one. If so, a saving in social resources could be achieved by reducing prison sentences and making greater use of fine. An example of plausibly insufficient use of imprisonment may also be given. Where firms might cause harms much greater than their worth or where the harms would be difficult to investigate, tort liability may not create an adequate level of deterrence. These examples represent the possibilities for the courts and the legislature to achieve social gains through an altered use of fines and imprisonment.

## 5.7 Conclusions

The principal outcomes of the model considered are:

- when the probability of detection is considered fixed, the optimal fine is the harm divided by the probability of detection, $f^* = h/p$; that is, the expected fine equals the harm;
- optimal enforcement tends to have some degree of underdeterrence relative to first-best behavior, because permitting some underdeterrence saves enforcement resources;
- fines should be employed at the maximal level before imposing imprisonment term;
- the negligence rule has an advantage over strict liability when sanctions are costly to

[254] See S. Shavell, "*Criminal Law and the Optimal Use of Nonmonetary Sanctions as a Deterrent,*"

impose. In fact, under negligence regime, individuals are induced (without errors) to observe fault standard, and thus usually do not bear sanctions. Under strict liability, violators are always sanctioned;

– strict liability has an the advantage over negligence in that it is easier to apply. Another advantage is that violators' activity-level decisions generally will be optimal, since violators will pay for the harm that they cause. Under negligence rule, their level of activity will be excessive since they will not pay for the harm that they cause.

**Table 5.1**

**Fixed Probability of Detection and Risk Neutral Individuals**

| | ***Strict Liability*** | ***Negligence*** |
|---|---|---|
| ***Fines*** | $f^* = h/p$<br>$Pf^* = h$ | $\tilde{g} = min[\hat{g}, pf]$<br>$f^* >= h/p$ |
| ***Imprisonment*** | $t^*$ = might be zero because it is socially costly | $\tilde{g} = min[\hat{g}, p\lambda t]$<br>$t^* >= h/p\lambda$ |
| ***Both*** | Fines should be imposed at the maximum reachable level, before imposing imprisonment | the actual combination of fine and imprisonment is irrelevant because sanctions are not actually imposed |

Columbia Law Review, October 1985.

## 5.8 Summary

The economic analysis of public enforcement of law concerns the use of enforcement resources (such as police, tax auditors, prosecutors) to detect and to sanction violators of legal rules. Enforcement scheme can have effect on the amount of pollution that firms cause, on the frequency of theft, robbery, and other crimes.

Polinsky and Shavell analyze public enforcement under the theory of optimal enforcement. The individual behavior, in general, is characterized by the fact that the individual will commit the criminal act if and only if his expected utility from doing so, taking into consideration his benefits and the probability of being captured and sanctioned, exceeds his utility if he does not commit the criminal act. Whether an injurer will be sanctioned depends on the rule for imposing strict liability or fault-based liability.

Social welfare is supposed to equal the sum of individuals' expected utilities. The enforcement authority's problem is to maximize social welfare by choosing enforcement expenditures, or equivalently the probability of detection, the level of fine, the length of imprisonment term, and the rule for imposing liability. If the authority chooses fault-based liability, it also must choose the fault standard. Analyzing the optimal fine, under strict liability, individuals will commit the criminal activity if and only if their benefits exceed the harm, which is first-best behavior. The optimal imprisonment term might be zero because imprisonment is socially costly to impose. When fines and imprisonment can be used together, the fundamental point is that fines should be employed at the maximum level before imposing an imprisonment term. The logic for this conclusion is that fines are socially costless to impose, while imprisonment is socially costly, so

deterrence should be obtained through the cheaper form of sanction first.

Under fault-based liability, the optimal fine is the same fine that is optimal under strict liability, if individuals are risk neutral. An imprisonment term is never imposed because injurers are in compliance with the fault standard (the optimal policy is to set the fault standard equal to the harm and the imprisonment term at a level that reaches compliance with the standard). If a fine and an imprisonment term are used together and chosen so that individuals are persuaded to comply with the fault standard, the combination of the fine and the imprisonment term is irrelevant because sanctions are not actually imposed.