ENFORCEMENT OF THE CLEAN WATER ACT:
THEORY, POLICY, AND PRACTICE

A Preliminary Investigation

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by

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DISCLAIMER

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Cheryl Wasserman
John Winder

The Office of Water, Enforcement Division
David Lyons

The Office of Water Enforcement and Permits
Ed Bender
Rick Brandeis

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INTRODUCTION

Enforcement of regulations is a critical component of the environmental regulatory process. Noncompliance with environmental regulations can be a significant problem in the absence of vigorous enforcement. Yet economists, and policy analysts in general, have devoted limited effort to addressing the problems posed by noncompliance and the need for enforcement.

The basic goals of the Environmental Protection Agency's programs for enforcing water pollution regulations are to:

- Monitor compliance with the regulations promulgated pursuant to the Clean Water Act (CWA);
- Take action against dischargers that do not comply with regulations and, if necessary, seek penalties for violations; and
- Ensure that violators undertake efforts to achieve compliance.

With thousands of dischargers, limited enforcement resources, and a significant degree of noncompliance on the part of the regulated community, attaining the goals of the Agency's CWA program is exceedingly difficult. As of January, 1987, 65,847 facilities were permitted under the CWA National Pollutant Discharge Elimination System (NPDES). Resources available to the Agency for detecting and addressing noncompliance among these facilities, however, are limited.

This study serves several purposes:

- First, this study provides information on EPA's policy for monitoring and enforcing noncompliance with the NPDES. Understanding this system is a critical first step before any assessment of the advantages and disadvantages of alternative enforcement arrangement can be made.
- Second, this study reviews a number of actual enforcement cases settled in 1985. Although the cases studied are somewhat dated, this review provides insight into how the Agency enforcement process functioned in these specific instances.
- Finally, this study presents an economic model of optimal enforcement policy which encompasses and extends the existing literature of enforcement.

ORGANIZATION OF THE REPORT

The report is organized as follows:

- Chapter 1 establishes the legislative and regulatory context of the study. The chapter briefly describes the structure and requirements of the CWA and the various forms noncompliance can take. Some data on the extent of noncompliance with existing water pollution regulations are also presented.

- Chapter 2 reviews current EPA policy for ensuring compliance with the Clean Water Act and describes: (1) the means by which violations are detected, (2) the criteria used in determining which violators to enforce against, and (3) the enforcement actions taken in response to detected violations. The chapter also describes the Agency's policy for calculating penalties for noncompliance.

- Chapter 3 summarizes the findings of a review of selected cases of noncompliance settled in 1985 that resulted in penalties. The chapter discusses some of the more significant difficulties that the Agency encountered in these cases. Note, however, that these cases were settled under an earlier version of EPA's enforcement policy so, presumably, some of these difficulties may not be as serious now as in the past.

- Chapter 4 begins with a brief survey of the small body of economic literature on the enforcement of pollution regulations and proceeds to develop a model of optimal enforcement that captures the salient features of the various models presented in the economic literature. This chapter includes a review of the implications of the economic model for optimal enforcement policy, including implications for both enforcement strategy (targetting of resources) and penalty policy (penalty calculations).

SUMMARY OF FINDINGS

Current EPA Enforcement of the Clean Water Act

There are numerous programs directed toward monitoring and enforcement of CWA violations. The majority of these programs are handled by the Regional EPA offices and authorized States, which are responsible for a substantial portion of monitoring and enforcement under the CWA. The Regional EPA offices

and States have developed systems for meeting the goals and needs of their territory. These systems are generally designed to be consistent with the overall policy and goals of EPA Headquarters.

Enforcement of water pollution control regulations relies heavily on self-monitoring by individual dischargers. Most dischargers are required to monitor their effluent streams periodically and report the results of their monitoring efforts to the appropriate agency. Self-monitoring efforts are supplemented by Agency inspections, ambient water quality monitoring, and third party reports. Information received through the various monitoring efforts are processed and maintained on a computerized data base for analysis and tracking.

The Agency seeks to target its enforcement resources on those instances of noncompliance that generate the most efficient allocation of enforcement resources. The Agency has developed a series of tracking systems and criteria for selecting cases for enforcement. These systems include the major-minor classification, Quarterly Noncompliance Reports, and Signifiant Noncompliance and Exceptions lists. These systems are specifically designed to focus Agency attention on those dischargers who are more seriously noncompliant and who present more serious threats to human health and the environment.

The Agency has developed a guide for determining how to address different types of violations. In general, enforcement agencies initially apply less stringent and less resource-intensive enforcement actions in response to violations. If noncompliance continues, EPA or the states are directed to pursue more stringent enforcement responses, including formal judicial proceedings, which can involve litigation and could result in injunctions, penalties, and consent decrees.

Current Agency civil penalty policy states that penalties should contain three basic components: (1) a component to recover the benefits the violator received from noncompliance, (2) a gravity component designed to reflect the "seriousness" of the violation, and (3) an adjustment factor. The first component, the benefit component, is often calculated using a computer program (BEN) designed specifically for the purpose of determining how much a violator saved by not installing or properly operating and maintaining required pollution control equipment. This program calculates the differences in the present values of the cash flows that a violator would experience through compliance and noncompliance. The difference between the present value of the cash flows represents the economic benefits gained from noncompliance. The second component, the gravity component, is calculated more subjectively and reflects four factors: (1) the "significance" of the violation, (2) the degree to which the violation presents actual or potential harm to human health or the environment, (3) the number of previous violations by the discharger, and (4) the duration of the noncompliance. Finally, the third component, the adjustment component, is intended to reflect the violator's "history of recalcitrance" (the degree to which the violator has demonstrated good faith efforts in complying with the provisions of the water pollution control regulatory programs), a violator's ability to pay, and litigation considerations.

Case Studies of Enforcement Actions

At the outset of the study, nine enforcement cases were evaluated to gain some insight into the operation of enforcement policy. These case studies are helpful in understanding some of the problems with enforcing CWA regulations encountered in the past. Although recent changes in enforcement guidance may have mitigated many of these difficulties, there were significant difficulties in the past that are worth reviewing. The case studies revealed a number of difficulties including:

1. Determining the Extent of Violations

In many of the cases, the Agency had difficulty determining the extent of the violations committed by a discharger. Determining the appropriate penalties to levy was therefore problematic. The difficulties in determining the extent of violations in the cases studied was the result of two problems. First, effluents were only monitored periodically, but effluent quantity and composition appeared to have fluctuated considerably over time. As a result, accurately determining the extent of violations was often difficult and prohibitively expensive. Second, effluent data were often incomplete: some violators did not always monitor their discharges and submit effluent data as required, making it difficult for the Agency to establish the extent to which violations had occured.

2. Estimating the Benefits of Noncompliance

Although the adoption of the BEN computer program helped to ensure more consistent estimation of the benefits from noncompliance, there were still difficulties in determining the values of the input parameters for the program. Determining the values of some of the input parameters frequently entailed making a number of assumptions which significantly affected the final benefit estimates. The cases suggest that there was a lack of detailed guidelines for determining some of the input parameters. Moreover, in many of the cases, precedent and ability-to-pay considerations seemed to guide the courts in penalty determinations, rather than removal of the benefits from noncompliance.

3. Quantifying Damages to the Environment

The complexity of aquatic ecosystems often made it difficult for the Agency to quantify and monetize the effects of violations on human health and environmental quality. Interactions among pollutants, dispersion of pollutants, and difficulties in establishing accurate baseline conditions often impeded the estimation of damages as part of the gravity component of a penalty.

4. Ability-to-Pay Considerations

In some of the cases studied, determining a violator's ability to pay often relied on subjective criteria. There appeared to be little consistency among such determinations. Assessing ability to pay was particularly difficult for municipal violators.

The cases reviewed for this study were settled under an earlier version of EPA's enforcement policy so, to some extent, one might anticipate that some of the more serious difficulties highlighted by the case studies have been mitigated by the adoption of the more recent enforcement policy. An interesting future study, consequently, would be to assess whether the new enforcement policy has significantly enhanced the enforcement process and increased deterrence.

Economic Perspectives on Enforcement Policy

A review of the economic literature identified a small body of literature relevant to the economics of enforcing environmental regulations. The emphasis of this literature is on analyzing the behavior of firms (dischargers) that do not fully comply with various types of environmental regulations because their commitment to compliance is too weak in the absence of strong profit-related incentives to comply. However, only limited attention is given in the existing literature to the problem of how to optimally enforce existing environmental regulations. Therefore, a new model of optimal enforcement of environmental regulations, in particular, effluent limit regulations, was developed for this analysis.

The model developed has two key variables that are controlled by the relevant enforcement authority:

- the penalty (fines or other penalties) for effluent limit violations; and

- the perceived probability, or perceived frequency with which, firms believe that they will be caught exceeding their effluent limits and penalized for doing so.

These two variables together constitute an enforcement policy. Neither alone is sufficient since both the size of the penalties levied and the perceived probability that they will be levied are both central to determining the degree of compliance likely to be observed on the parts of firms that require financial incentives to comply with environmental regulations. Thus, the penalty for violations times the perceived probability that violations will be caught and penalized is defined to be the expected penalty, that is, the penalty that a firm believes it will pay on average for violations. Some of a firm's violations are likely to go undetected and unpunished, whereas others will be detected and punished. This uncertainty is captured by the expected penalty, because it essentially discounts the penalty for violations by the perceived probability that violations may be detected and punished.

An interesting feature of the model of enforcement developed in this chapter is that an analytical distinction is made between the perceived probability of detection and penalization and the objective probability. The former concept is the one that regulates the behavior of firms since it is the perceived expected fine that helps to determine the degree to which firms will comply with environmental regulations. The objective, or actual probability, on the other hand, is the true probability of being detected and penalized. The perceived and objective probabilities could be different depending on the information available to firms concerning past enforcement actions and future enforcement emphases. Indeed, some enforcement actions are undertaken precisely because it is felt that firms will greatly increase their expectations regarding the probability of being caught and resulting fines for the violations.

The expected penalty is the key parameter influencing a firm's decision on whether to comply with a regulation, assuming that firms will not comply with environmental regulations without strong profit-related incentives to do so. Although the size of the penalty is important, the penalty alone does not determine compliance or noncompliance. This is demonstrated in the extreme case where a very high fine is set, but no resources are devoted to monitoring discharges and detecting violations. In this case, the probability that firms are caught and penalized is virtually zero. If the firms involved also perceive that the probability is nearly zero, then the size of the fine is of little importance because it will almost never be levied. Hence, for firms that do not require financial incentives to comply with regulations, the penalties are unimportant because these firms always comply. However, for the subset of firms that do require such incentives to comply, if the probability of detection is perceived to be virtually zero, then the impact of noncompliance on the firms profits is positive (compliance costs are avoided and no penalties are levied).

Thus, an enforcement authority must not only determine the appropriate penalty for violations, but it must also determine the appropriate frequency with which dischargers should be monitored and penalized for violations in order to properly affect firms' perceptions of the probability of detection. Although attention to date has focused on the appropriate penalties for violations (penalty policy), equal attention should be given to firms' perceptions regarding the frequency with which firms will be monitored and penalized for noncompliance (enforcement strategy). Together these form a coherent enforcement policy.

The analysis shows that the optimal values of the fine and its perceived probability (i.e., the values of the fines and perceived probabilities at which the benefits minus the costs of increased enforcement are maximized) depend on three factors:

- the costs of enforcement (i.e., how expensive it is to catch and fine violators);
- the economic value of the damages resulting from violations to human health and environmental quality;

- the costs to violators of achieving compliance; and

- the degree to which increased enforcement efforts in a given industry or area increase the perceived probability of detection and penalization.

The precise value of the optimal fine, as well as the optimal amount of enforcement activity (which determines the perceived probability of detection and penalization), both depend on these four factors in a fairly complex way. For instance, it is generally true that the optimal fine is not equal to simply the sum of the benefits from noncompliance (i.e., the compliance costs avoided), or the damages due to noncompliance, or the costs of enforcement.

The analysis reveals that setting the penalty equal to the value of the benefits from noncompliance may do little to deter noncompliance if firms do not believe that violations are not always detected and fined. In these cases, it may be in the discharger's interest to exceed effluent limits despite the attendant penalties, given that the firm requires financial incentives to comply with the regulations.

In terms of targetting the enforcement resources of the Agency, the analysis indicates that resources should be focused (1) on violators that impose relatively high damages, (2) on violators against whom it is relatively inexpensive to bring enforcement actions, and (3) in those areas in which relatively small enforcement expenditures yield relatively large increases in the perceived probability of detection and penalization.

The analysis of self-monitoring/reporting requirements demonstrates that if firms are to have an economic incentive to report violations, the penalty for not reporting an effluent limit violation must generally be far larger than the penalty for the effluent limit violation. Otherwise, it is in the discharger's interest to conceal violations, given that the firm decides not to comply with the regulations, which suggests that the penalties for failing to report violations should be set jointly with the penalty for effluent limit violations.

Placing the conclusions of the economic model of optimal enforcement in the context of EPA's enforcement of CWA regulations, several general conclusions can be drawn. These conclusions fall into the following three categories:

- Targetting Enforcement Resources;

- Vigorous Enforcement of Self Monitoring/Reporting Requirements; and

- Refining Penalties for Violations.

1. Improved Targetting of Monitoring Resources

The enforcement process has three major steps: (1) monitoring compliance and detecting violations, (2) taking action against violators -- if necessary, seeking penalties, and (3) following up on violators to ensure that they undertake efforts to deter further violations.

The study indicates that the first step in this process may be the most problematic. In general, the difficulty of monitoring compliance and detecting violations depends on the form of noncompliance. The failure of a facility to regularly submit a discharge monitoring report is not difficult to detect; it simply requires checking the facility's submissions against the relevant schedule (although this does not necessarily indicate whether the facility is in full compliance with its permit). Similarly, determining whether or not a facility has installed specific types of abatement equipment can generally be accomplished through cursory inspections. Detecting effluent limit violations, on the other hand, is not as simple because it requires periodic monitoring and analysis of a facility's discharges. Given the difficulty and expense of continuously monitoring discharges, monitoring is typically achieved by means of "grab", or composite, sampling of discharges, which only provide a "snapshot" of a facility's compliance status and therefore fails to fully reflect a facility's compliance over an extended period of time.

Given the large number of dischargers and constraints on the resources available for monitoring, sampling of discharges by federal and state officials is carried out infrequently. The large share of the burden for monitoring discharges is placed on the dischargers. Dischargers are required to report significant violations and to periodically submit discharge monitoring reports. Because (detected) violations bring the threat of enforcement action, firms may be reluctant to report violations and submit discharge monitoring reports. If they do report violations, there may be an incentive for dischargers to understate the extent of their violations. Therefore, to ensure that firms report violations, or that violations are reported accurately, it is essential for the Agency to routinely monitor and analyze discharges.

Monitoring and analyzing the discharges of individual facilities, however, is costly and tedious because there are thousands of dischargers to be monitored. Because only a limited amount of resources can be devoted to monitoring efforts, the problem becomes one of determining how frequently different dischargers should be monitored by the Agency or state authorities. The focus of monitoring efforts should clearly be on dischargers that are most likely to be noncompliant, and, within this group, on (1) dischargers that are likely to impose relatively large damages due to noncompliance, (2) dischargers against whom enforcement is likely to be inexpensive, and (3) where deterrence may be an overriding consideration. EPA has already begun this process by

developing the major/minor discharger classification and developing criteria for identifying significant violations. These are useful tools for targetting scarce monitoring resources. The economic model suggests that there is scope for more targetting along several other lines, including the following:

(1) Technical Criteria that Correlate With Noncompliance -- It is possible that there are technical aspects of production processes or effluent control that correlate with noncompliance. For example, it could be that firms whose production processes generate different types of effluents at different times may be more likely to be in noncompliance than firms whose processes generate the same level and types of effluent most of the time. If such criteria can be identified, this suggests that the technical characteristics of a discharger's production and treatment process may be one useful criterion for targetting monitoring resources.

(2) Unannounced Inspection Visits -- A recent survey of state enforcement agencies conducted by Resources for the Future (Russell, Harrington, and Vaughan, 1985) indicates that the agencies frequently notified dischargers of upcoming inspection visits; only a small fraction did not do so as a matter of policy. If firms are able to alter the quantity or composition of their waste streams on short notice, the compliance status of a discharger observed during an inspection visit may not present an accurate picture of the discharger's day-to-day compliance status. Dischargers may step up treatment processes during inspection visits and shut down particularly noxious production processes to limit the extent of any violations with permit requirements. On the other hand, OWEP recommends that firms be notified that an inspection visit will occur within the next six months, but should not be told when precisely the visit will occur. Analytically, this is equivalent to unannounced inspection visits, as recommended here.[1]

[1] Although unannounced visits may be the preferred alternative, they may not be advisable in practice. Existing legal safeguards related to privacy make it difficult for enforcement agencies to use evidence gathered during unannounced visits in court. Furthermore, unannounced visits may place enforcement officials in too adversarial a position, possibly damaging the working relationship necessary between enforcement officials and the regulated community, therefore undermining voluntary compliance.

(3) Tying Inspection Frequency to Past Behavior -- Currently, inspection frequencies are primarily determined by the classification of a discharger as major or a minor. The survey of state agencies indicates that major dischargers are inspected roughly four times a year, while minor dischargers are inspected about once a year. It does not appear that the past behavior of dischargers is routinely incorporated as a dominant criterion in determining how frequently dischargers are inspected.

2. More Vigorous Enforcement of Self-Monitoring/Reporting Requirements

Even if monitoring resources are better targetted, the sheer number of dischargers and constraints on state and federal enforcement resources imply that self-monitoring and reporting will continue to be the backbone of the compliance monitoring program. However, if firms are to have a financial incentive to report violations, an appropriate relationship must be maintained between the penalty for not reporting effluent limit violations and the penalty for the effluent limit violation. In general, the penalty for not reporting violations must be several times more severe. For example, criminal penalties and possible imprisonment for falsifying a DMR are far more severe than the monetary penalty for the effluent violation, and it appears that the Agency is increasing its emphasis on seeking criminal penalties for certain infractions. This relationship should be considered when developing guidelines for monitoring/reporting violation penalties.

3. Refining Penalty Policy for Effluent Limit Violations

EPA penalty policy states that penalties should equal benefits to the discharger from noncompliance, and should also include an amount reflecting the gravity of the violation. In practice, however, given the difficulty of valuing the damages resulting from violations (the gravity component), the focus of penalty determinations is on the benefits to the discharger from noncompliance. Penalty assessments is the past typically have not exceeded the benefits to the firm from noncompliance, although current penalties appear to be rising. Nevertheless, even a penalty equal to the benefit of noncompliance is unlikely to provide dischargers with the financial incentive to comply with effluent limit requirements. More precisely, if all effluent limit violations are not detected and penalized with certainty, a penalty equal to the benefits enjoyed by the firm from noncompliance will not deter violations. The penalty must be adjusted for the likelihood that a discharger will be caught and fined for violations.

CHAPTER 1

INTRODUCTION

Enforcement of regulations is a critical component of the environmental regulatory process. Recent experience has demonstrated that noncompliance with environmental regulations can be a significant problem in the absence of vigorous enforcement. Yet economists, and policy analysts in general, have devoted limited effort to addressing the problems posed by noncompliance and the need for enforcement.

The basic goals of water enforcement programs are to:

- Monitor compliance with the regulations promulgated pursuant to the Clean Water Act (CWA);
- Take action against dischargers who do not comply with regulations; and, if necessary, seek penalties for violations; and
- Ensure that violators undertake efforts to achieve compliance.

However, with thousands of dischargers and limited enforcement resources, attaining these goals is difficult. It is therefore essential that the Agency's limited enforcement resources be utilized efficiently.

This study serves several purposes:

- First, this study provides information on EPA's enforcement of its regulations promulgated pursuant to the CWA. Understanding the current policy is a critical first step before any assessment of the advantages and disadvantages of alternative enforcement arrangement can be made.
- Second, this study reviews a number of actual enforcement cases settled in 1985. This review provides some insight into how the Agency enforcement process functioned in these specific instances.
- Finally, this study presents an economic model of optimal enforcement policy which encompasses and extends the existing literature of enforcement.

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- Chapter 1 establishes the legislative and regulatory context of the study. The chapter briefly describes the structure and requirements of the CWA and the various forms noncompliance can take. Some data on the extent of noncompliance with existing water pollution regulations are also presented.

- Chapter 2 reviews current EPA policy for ensuring compliance with the Clean Water Act and describes: (1) the means by which violations are detected, (2) the criteria used in determining which violators to enforce against, and (3) the enforcement actions taken in response to detected violations. The chapter also describes the Agency's policy for calculating penalties for noncompliance.

- Chapter 3 summarizes the findings of a review of selected cases of noncompliance settled in 1985 that resulted in penalties. The chapter discusses some of the more significant difficulties that the Agency encountered in these cases. These cases, however, were settled under an earlier version of EPA's enforcement policy so, presumably, some of these difficulties may not be as serious now as in the past.

- Chapter 4 begins with a brief survey of the small body of economic literature on the enforcement of pollution regulations and proceeds to develop a model of optimal enforcement that captures the salient features of the various models presented in the economic literature. This chapter concludes with a review of the implications of the economic model for optimal enforcement policy, including implications for both enforcement strategy (targetting of resources) and penalty policy (how penalties ought to be structured).

1.2 OVERVIEW OF THE CLEAN WATER ACT

The 1972 and 1977 amendments to the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) establish the fundamental approach for regulating discharges of pollutants into the nation's waterways. This approach relies heavily on:

- a national system for permitting, regulating, and routinely monitoring dischargers;

- an integrated federal-state administrative and enforcement system;
- schedules for attaining national water quality standards;
- prescriptions and schedules for installing pollution control technologies;
- federal financial support for municipal dischargers; and
- strict enforcement of violations.

The primary objective of the Clean Water Act (CWA) is to protect the nation's waterways by curbing discharges of pollutants into the nation's waterways. As such, the CWA is an all-encompasing statute designed to regulate most discharges into the nation's waterways, regardless of the nature of the pollutant or the type of discharger. The Act regulates three basic categories of pollutants, namely (1) "conventional pollutants", including traditional pollutants such as Biological Oxygen Demanded (BOD), suspended solids, fecal coliform, and pH, (2) "toxic pollutants", including an Agency-developed list of 129 toxic chemicals, and (3) "nonconventional pollutants" which essentially includes all those chemicals not specifically classified in the other two categories.

The Act encompasses all point-source dischargers, including facilities discharging:

- conventional pollutants directly into a waterway;
- conventional pollutants indirectly into a waterway;
- hazardous substances or oil into a waterway; and
- dredge or fill material.

Both industrial and municipal dischargers are regulated by the CWA, as are federal facilities and facilities that discharge to municipal wastewater treatment works.

The implementation of CWA regulations relies heavily on an extensive permitting system designed to identify dischargers. and monitor their activities. The National Pollutant Discharge Elimination System (NPDES), created by Section 402 of the 1972 Amendments, requires that facilities discharging into navigable waters apply for a discharge permit. Such permits are granted by EPA or by states authorized by EPA to do so. Failure to obtain a permit prior to discharge of pollutants into a navigable water is unlawful.

As of January, 1987, 65,847 dischargers were permitted under the NPDES system. Of these dischargers, 10,684 were permitted by EPA and 55,163 were

permitted by an authorized state authority.[1] The sizes of these permitted dischargers and the industries to which they belong vary widely. Some dischargers are regarded as "major" dischargers by the Agency in that their discharges may pose a significant threat to human health and the environment. Approximately 11 percent of the permitted dischargers are regarded as "major" dischargers. The Agency has classified the remaining 89 percent as "minor" dischargers because the activities do not pose as significant a threat to human health and environmental quality.[2]

Each NPDES permit contains requirements that seek to fulfill specific objectives of the CWA. The requirements of each permit are facility-specific in that they vary depending on the pollutants discharged by the facility, the types of ecosystems affected, and the production processes in use. The specific requirements of the permits also vary according to the facilities involved, the waterways affected, and the production processes used. Most NPDES permits contain requirements such as:

- Effluent Limits. Section 304 of the CWA limits the amount of certain types of pollutants discharged. The limits are determined according to the type of pollutant, its toxicity characteristics, its potential environmental impacts, and the industrial category to which the discharger belongs. Effluent guidelines are often based on a statistical prediction that a prescribed pollution control technology will achieve a desired effluent quality 95 percent (or some fraction thereof) of the time. Effluent limits are generally expressed in terms of loads (e.g., lbs/hour) or concentrations and are usually expected to be adhered to on a continuous basis. In some cases effluent limits are made more stringent over time and the NPDES permits contain schedules specifying dates by which each set of effluent limits must be satisfied.

- Prescriptions for Appropriate Pollution Control Technologies. The CWA establishes technology-based standards for controlling discharges to waterways. Most dischargers must meet the limitations achievable by application of one of three levels of technology -- Best Practicable Control Technology (BPT), Best Conventional Control Technology (BCT), or Best Available Technology (BAT). In some cases, the Agency and the dischargers are allowed to use their Best Professional Judgement (BPJ) in determining what pollution control technology is most appropriate. New dischargers are required to comply with more stringent requirements, termed New Source Performance

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[1] Personal communication with staff of U.S. EPA Office of Water Enforcement and Permits, Permits Assistance Section, January 29, 1987.

[2] This classification scheme will be described in detail in Chapter 2.

Standards (NSPS), which often involve expensive control technologies. NSPS standards generally depend on the existing water quality and the discharger's industrial type. Finally, in some cases, dischargers are required to adhere to Best Management Practices (BMPs) designed to minimize discharges of toxic and hazardous substances to surface waters. For each of the above standards, the dischargers' NPDES permits outline the appropriate pollution control technologies and establish schedules for their installation.

- Reporting and Monitoring Requirements. Each NPDES permit contains requirements for routine self-monitoring and reporting of effluent quantity and composition, and disclosure of any discharges significantly in excess of permitted levels. Data from monitoring efforts are required to be reported to the Agency, which then determines whether significant violations have occured. The frequency and extent to which dischargers must monitor and report their effluent data varies from discharger to discharger.

Noncompliance with permit requirements is a violation of the CWA and the statute contains provisions for civil penalties of up to $25,000 per day per violation and prison terms of up to one to two years for criminal violations. The statute indicates that enforcement is to be handled by both the states and EPA. In addition, federal and state agencies are authorized to inspect, monitor, and take emergency actions to protect water quality. The CWA also authorizes citizen suits as an additional source of enforcement.

While the NPDES system represents the primary apparatus of the CWA monitoring and enforcement process, there are a variety of other programs that affect pollution control efforts. These programs overlap to some extent with the NPDES program.. In such cases, dischargers holding NPDES permits are subject to the requirements of several programs. Some of these programs, however, regulate dischargers not covered by the NPDES program. Briefly, these additional programs include:

- Pretreatment Standards which regulate discharges to municipal wastewater treatment works. These standards apply to all dischargers regardless of whether they are required to obtain NPDES permits. Requirements under this program typically include national standards, categorical standards based on industry type and pollutant, and schedules for achieving the pretreatment standards. Approximately 14,000 dischargers must comply with some sort of pretreatment standard. In addition, an estimated 6,000 to 7,000 dischargers are not subject to either NPDES requirements or federal pretreatment standards per se,

but may fall under some sort of local pretreatment requirements;[3]

- Water Quality Management Programs at the federal, state, or municipal levels often place restrictions on the activities of dischargers along specific water bodies. Such programs are designed to protect water quality and can often involve stringent restrictions on dischargers;

- Discharges of Oil and Hazardous Substances that may threaten human health and the environment are prohibited under Section 311 of the CWA. Dischargers that may possibly release such substances are subject to additional requirements under the Act; and

- Discharges of Dredge or Fill Material are regulated under a separate permit program. The program is administered by the U.S. Army Corps of Engineers and, in some cases, state agencies.

While each program is significant, the majority of compliance and enforcement activity occurs under the NPDES program. Most dischargers of regulatory significance are required to obtain NPDES permits and, therefore, most enforcement actions generally occur through the NPDES program. Hence, this study focuses primarily on the structure, management, and enforcement of the NPDES program. This focus, however, is not intended to understate the importance of the other programs.

1.3 TYPICAL FORMS OF NONCOMPLIANCE

Because the requirements of dischargers' NPDES permits are so diverse, the types of noncompliance that can arise under the CWA vary substantially, depending on the discharger and the specific requirements of its NPDES permit. In some cases, noncompliance takes very simple forms. For example, many firms experience one time exceedences of effluent limits. In many of these cases, dischargers rectify the noncompliance by simply containing the spill and taking precautions against further releases of the same type. Other forms of noncompliance, however, are more complex. For example, some violations involve excess releases of multiple pollutants that are difficult to measure.

A brief description of the major forms of noncomplance with the NPDES requirements is presented below.

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[3] Personal communication with staff of U.S. EPA Office of Water Enforcement and Permits, February 27, 1986.

- Exceedences of Effluent Limits. The common form of noncompliance occurs when a discharger releases a larger amount or concentration of a specific pollutant than is authorized by its NPDES permit. Such releases can vary from single releases involving relatively innocuous pollutants to prolonged releases of dangerous pollutants that present significant threats to human health and the environment. Equipment deficiencies and treatment plant overloading are common causes. Other causes include plant accidents, plant start-up problems, and changes in industrial processes. In many of these cases, remediation of the violation is relatively straight-forward. Unless the pollution is particularly dangerous or the violator is particularly recalcitrant, these violations are often corrected without litigation or other intensive enforcement preceedings. Obtaining accurate data on the extent of such violations is difficult because discharges are not continuously monitored.

- Failure to Notify Authorities of Significant Discharge Violations. In some cases, dischargers fail to submit monitoring reports. A few dischargers have also been found to have falsified data reported to the monitoring agencies thus disguising potentially dangerous violations. These types of violations are therefore generally regarded as quite severe. As discussed in Chapter 2, the existing compliance monitoring system relies on self-monitoring by individual dischargers. Unreported or falsely-reported violations can therefore go undetected unless the monitoring agency undertakes inspections to detect those cases where dischargers have incorrectly reported effluent data. The frequency of this type of violation is unknown, primarily because it is both difficult and expensive to detect.

- Delays in Constructing Treatment Facilities. Many NPDES permits require dischargers to install prescribed treatment technologies by specified dates. Firms are considered noncompliant if they fail to complete construction of such treatment facilities and have not received a variance or exemption from the administering agency.

- Faulty Operation and Maintenance of Constructed Facilities Once Constructed. Some dischargers fail to properly operate and maintain the pollution control equipment they have installed. This may result from a variety of factors including unforseen technical difficulties, lax operation and maintenance procedures misuse of funds, and financial pressures on the discharger.

- Failure to Comply With Special Agency Requests. Noncompliant firms are occasionally subjected to additional requirements by the Agency. These requirements may include increased monitoring and reporting, special clean-up efforts, or the installation of additional pollution control equipment. On occasion, noncompliant firms violate these additional requirements.

This chapter has discussed the purpose and organization of the report, and has introduced the various regulatory programs under the CWA. The next chapter discusses, in more detail, the Agency's CWA enforcement and monitoring policy. Readers familiar with the current policy may choose to skim the contents of Chapter 2.

CHAPTER 2

EPA CLEAN WATER ACT ENFORCEMENT POLICY

The Agency has designed a detailed and comprehensive regulatory apparatus for ensuring that the numerous requirements of the CWA are met. This chapter describes EPA's current monitoring and enforcement system, focusing in particular on the Agency's current policies and programs related to detecting and correcting instances of noncompliance. This chapter is organized as follows:

- Section 2.0 presents a summary of the Agency's current enforcement, monitoring, and penalty policies;
- Section 2.1 describes the Agency's current program for monitoring compliance with NPDES permit requirements and discusses the Agency's monitoring approaches and tracking systems;
- Section 2.2 discusses the Agency's criteria for determining appropriate enforcement actions in instances of noncompliance. This section discusses the Agency's criteria for distinguishing between major and minor dischargers, criteria for creating Quarterly Noncompliance Reports (QNCRs), and the Significant Noncompliance (SNC) and Exceptions lists.
- Section 2.3 briefly describes the various enforcement actions that EPA may take in response to noncompliance;
- Section 2.4 discusses the Agency's current policy for calculating penalties for noncompliance; and
- Section 2.5 briefly discusses other enforcement actions, and regulatory programs that may affect monitoring and enforcement of NPDES violations.

2.0 SUMMARY

The Agency's current policy for ensuring that the numerous goals of the CWA are attained focuses on five primary goals:

- Deterrence of noncompliance through the detection of violations and threat of enforcement;
- Remediation of noncompliance through the application of penalties and other enforcement actions;

- Punishment of violations, particularly for egregious violations;
- Equitable treatment among violators and nonviolators; and
- Efficient allocation of limited enforcement resources so as to achieve the greatest environmental benefit for the Agency's enforcement budget.

There are numerous programs directed toward monitoring and enforcement of CWA violations. The majority of these programs are handled by the Regional EPA offices and authorized States, which are responsible for a substantial portion of monitoring and enforcement under the CWA. The Regional EPA offices and States have developed systems for meeting the goals and needs of their territory. These systems are generally designed to be consistent with the overall policy and goals of EPA Headquarters. This chapter therefore focuses primarily on the Agency's policies and goals and briefly discusses the programs currently in place.

The first section of the chapter explores the existing mechanisms for monitoring compliance and provides brief descriptions of the regulatory requirements for source self-monitoring and reporting, the Agency's monitoring and inspection programs, and the Agency's computerized system for tracking the compliance of individual dischargers. Water pollution control regulations rely on self-monitoring by individual dischargers. Self-monitoring data are supplemented by Agency inspections, ambient water quality monitoring, and third party reports.

The second section of the chapter presents the criteria used to determine which dischargers are noncompliant, and which violations should be prosecuted. Generally, the Agency seeks to target its resources on those instances of noncompliance that generate the most efficient allocation of enforcement resources. The Agency has developed a series of tracking systems and criteria for selecting cases for enforcement. These systems are specifically designed to focus Agency attention on those dischargers who are more seriously noncompliant and who present more serious threats to human health and the environment and to achieve greater deterrence.

The third section of the chapter briefly reviews Agency responses to detected violations and the relative frequency with which they are used. The Agency has developed a guide for determining how to enforce different types of violations. In general, enforcement agencies initially apply less stringent and less resource-intensive enforcement actions in response to violations. If noncompliance continues, EPA or the states are directed to pursue formal judicial proceedings, which can involve litigation and could result in injunctions, penalties, and consent decrees.

The final section of the chapter discusses EPA's current policy for calculating penalties for noncompliance. Current Agency policy states that penalties should contain three basic components: (1) a component to recover the benefits the violator received from noncompliance, (2) a gravity component

designed to reflect the "seriousness" of the violation, and (3) an adjustment factor. The benefit-of-noncompliance component is calculated using a computer program (BEN) designed specifically for this purpose. The gravity component is calculated more subjectively but is supposed to reflect four factors: (1) the "significance" of the violation, (2) the degree to which the violation presents actual or potential harm to human health or the environment, (3) the number of previous violations by the discharger, and (4) the duration of noncompliance. Finally, the adjustment component allows penalties to vary according to (1) the degree to which the violator has demonstrated good-faith efforts to comply, (2) the violator's ability to pay a penalty, and (3) litigation considerations.

The body of the chapter elaborates on each of the above issues. Readers familiar with current EPA Clean Water Act monitoring and enforcement policy may choose to skim the contents of this chapter.

2.1 EXISTING METHODS FOR DETECTING NONCOMPLIANCE WITH THE NPDES

Current Agency enforcement policy relies heavily on a series of monitoring programs, designed to detect potential noncompliance with NPDES permits and other unauthorized discharges. Monitoring programs are regarded as paramount to the overall enforcement effort insofar as monitoring programs increase the perceived probability of.detection of noncompliance and, hence, increase the probability that noncompliant firms believe that they will be subject to penalties or other enforcement actions. As such, the Agency's monitoring system is designed to serve as a deterrent to noncompliance.

The Agency currently relies on four primary methods for monitoring compliance.

- Source Self-Monitoring;
- Ambient-Monitoring;
- Inspections; and
- Third Party Complaints.

These programs are largely administered at the State and Regional levels, with EPA headquarters providing oversight, guidance, and coordination of the national programs. Each of the programs is discussed briefly below.

2.1.1 Source Self-Monitoring

Source self-monitoring is the primary source of data on discharges from facilities holding NPDES permits. Self-monitoring and reporting is required by NPDES permits which typically contain detailed requirements for monitoring programs and schedules for reporting effluent information. Most self-monitoring programs require individual facilities to sample and analyze discharge flows and constituent composition to determine the rates at which certain pollutants are discharged. Facilities are generally required to monitor either daily, weekly, monthly, quarterly or, for facilities with only

a limited flow of relatively minor constituents, semi-annually. Self-monitoring is typically conducted for several different water quality parameters, depending on the type of industry, the effluents involved, and the quality of the receiving water. Individual dischargers are required periodically to submit effluent data from their self-monitoring efforts to state authorities or, where states are not authorized to administer their own NPDES programs, to appropriate regional EPA offices. This information is then forwarded to Agency headquarters.

NPDES permits require that facilities report effluent data in a standardized form called a Discharge Monitoring Report (DMR). DMRs typically include information on (1) maximum and minimum loads per month, (2) monthly (30 day) averages of effluent samples, (3) other pertinent information, (e.g., spills or changes in production processes), and (4) measures taken to remedy past noncompliance. Permittees are also required to report discharges that create an imminent danger to human health and the environment within 24 hours of the time they are discovered.

The frequency with which dischargers are required to report information depends on the monitoring agency and the characteristics of the discharger. State authorities apparently tend to require more frequent submissions of DMRs than federal agencies. Most major dischargers submit DMRs on either a monthly or quarterly basis.

The Agency has developed a computerized management information system, the Permit Compliance System (PCS), specifically designed for the purpose of tracking data from the DMRs and other relevant effluent information. The database system contains data on approximately sixty-five thousand facilities holding NPDES permits. The information tracked in the system includes permit facility data, compliance schedule data, compliance schedule violation data, enforcement action data, pipe schedule data, parameter limits data, measurement violation data, inspection data, and data on changes to permit conditions and grants.

The PCS system is designed to allow the monitoring agencies to automatically isolate the most serious violators. The system is designed to allow Agency engineers to quickly evaluate all relevant effluent data, past compliance records, and enforcement actions taken against the facility.

Several other data management systems currently in use by the Agency maintain information which is pertinent to compliance monitoring. For example, the water quality data base, STORET, contains information regarding the water quality surrounding different dischargers. Similarly, a data base used to manage the construction grants program contains information on the operations of municipal dischargers. The PCS, however, is the primary tracking system of data on NPDES permit holders.

2.1.2 Ambient Monitoring

Most municipal and state authorities periodically monitor receiving waters to determine trends in overall water quality, and to develop a macroscopic

perspective of the collective compliance of dischargers along a waterway. Ambient monitoring involves measuring multiple parameters at several locations within a waterway and helps administering agencies isolate effluent irregularities not measured by source self-monitoring programs.

Because ambient monitoring measures the water quality for an entire body of water, not a single point-source of effluents, it is often difficult to demonstrate a causal connection between emissions or discharges from a single facility and the degradation in water quality. However, once a waterway is found to exhibit increased pollution, the exact sources of the pollution can occasionally be determined through (1) increased monitoring, (2) increased surveillance of discharger activity in the area, and (3) inductive reasoning based on the parameters affected, magnitude of the impact, and approximate locations of the discharges. Ambient monitoring is therefore used primarily as a complement to the self-monitoring program.

2.1.3 Agency and State Inspections

Monitoring agencies also periodically inspect each permitted discharger to

- validate self-monitoring reports by reviewing discharge records, taking additional on-site samples, or conducting random quality control inspections of the permittee's pollution control and monitoring equipment;
- ensure that the production processes and pollution control equipment specified in the discharger's NPDES permit have been installed and are in operation as required;
- follow-up on NPDES violations; and
- obtain data to support additional enforcement actions.

In determining which facilities to inspect, the Agency is constrained by a variety of factors, the most important of which is a lack of inspection resources. In-depth inspections can require up to a month to complete, hence, the Agency must determine which dischargers should be inspected more completely. The Agency's inspection programs are further constrained by a regulatory guideline that all major sources of effluents should be routinely inspected on an annual basis. The Agency therefore cannot develop a program whereby they inspect only those dischargers they feel warrant an inspection; rather, they must regularly inspect each major discharger. Finally, the Agency's allocation of inspection resources must also conform to constitutional protection measures against unwarranted searches. This requires the Agency to adopt a "Neutral Administrative Inspection Scheme" (NAIS), meaning that the Agency must inspect a proportionate number of facilities within a given area or else, in the absence of sufficient Agency justification, the material obtained during the inspection might be nullified on the grounds that the inspection was discriminatory. (Wasserman, 1984).

The Agency has developed an integrated program of inspection schedules which are designed to maximize the efficiency and facility coverage of the inspection program, while minimizing costs and burdens on the Agency and the regulated community. This program is designed to:

- spread inspection resources systematically to review each permitted facility;
- inspect facilities in only as much detail as necessary to either achieve or confirm compliance; and
- allocate inspection resources to those facilities anticipated to yield the greatest compliance result (either because they are suspected to be in violation, pose an imminent threat to the environment, or to increase deterrence).

Routine inspections are scheduled as part of an overall compliance program. These inspections review each permitted facility with as great a frequency as is feasible, given the programs' limited resources. Unless there are reasons to suspect noncompliance at a facility, routine inspections are generally cursory. More rigorous inspections are generally made in response to data obtained on previous inspections, or third party-, self- or ambient monitoring data suggesting that a discharger is not in compliance with its NPDES permit. The frequency and rigor of these inspections depends on the extent of the perceived noncompliance. The Agency generally diverts only enough resources to determine if there is a violation warranting more intensive inspection and possible enforcement actions.

The Agency has developed a tiered system of inspections ranging from simple evaluation of visible effluents and pollution control equipment to detailed analyses of discharge composition and operation procedures. Each of the tiers of inspections is aimed at confirming that acceptable sampling and flow measurement, as established in the discharger's permits, are conducted with the specified frequency and at the proper locations using the appropriate standardized techniques.

2.1.4 Third Party Reports

Third party reports, most often in the forms of private citizen or employee complaints, are also used to monitor noncompliance with the CWA. Because they help to detect violations that are difficult to detect with the other monitoring approaches, third party reports are often the only avenue through which the Agency is made aware of (1) discharges without proper NPDES permits, and (2) discharges which are not reported on DMRs.

The majority of third party reports originate with citizens reporting polluted waterways, large fish kills, or other evidence suggesting violations of effluent limits. Citizens typically refer these cases to municipal or state authorities who investigate the reported violation and, if necessary, follow-up with increased Agency monitoring efforts, for-cause inspections, or

another appropriate Agency enforcement response. In some instances, third party reports may even result in citizen action. Section 505 of the CWA specifically authorizes such citizen suits and, in recent years, citizen actions have become an increasingly important source of compliance monitoring. (See Section 2.5.2).

The principle purpose of the Agency's monitoring program is to identify those dischargers which are either in violation of their NPDES permits or are releasing unauthorized discharges. Once violations are identified, the Agency has various options for addressing the noncompliance. This process consists of three basic phases: (1) determining which violations to enforce, (2) applying the appropriate enforcement response, and (3) determining how to penalize a firm, if necessary. The next three sections of this chapter deal specifically with these topics.

2.2 CRITERIA USED IN SELECTING CASES FOR ENFORCEMENT

EPA has developed several systems whereby the administering agencies identify violations which warrant agency monitoring and enforcement attention. These systems are designed to:

- isolate those dischargers likely to present the greatest risks to human health or the environment;
- determine which dischargers violated the CWA or their NPDES permit requirements;
- flag and prioritize those violations which are particularly important; and
- assure that, whenever possible, enforcement actions contribute to a credible Agency enforcement presence and thus deter noncompliance on the part of the regulated community.

The Agency relies on four primary systems for determining which violations to actively target. First, the Agency distinguishes between "major" and "minor" dischargers. Second, based on compliance monitoring efforts, administering agencies periodically compile a Quarterly Noncompliance Report (QNCR) which lists the more seriously noncompliant major dischargers within their jurisdictions. Based on the QNCR, the Agency identifies facilities significantly violating their NPDES permits and includes these on a Significant Noncompliance (SNC) list. Violators listed on the SNC are regarded as top priority cases by most administering agencies. Finally, administering agencies compile an "exceptions list" which includes all SNC violators for which formal enforcement action have not been taken. Each of these steps is discussed in greater detail below.

2.2.1 Distinguishing Between Major and Minor Dischargers

EPA has established a distinction between dischargers thought to have large potential environmental impacts (major dischargers) and dischargers suspected to have only small potential environmental impacts (minor dischargers). The majority of Agency resources are directed toward major dischargers, so that fewer resources for monitoring of compliance status and enforcement are devoted to minor dischargers. This division helps the Agency direct resources for (1) the issuance and renewal of permits, (2) compliance monitoring, and (3) enforcement of violations.

The Agency's method for classifying major and minor industrial NPDES permits, the "Eighty Point System", focuses on eight criteria:

(1) industry type;
(2) type of wastewater;
(3) flow rate;
(4) Biological Oxygen Demand or Chemical Oxygen Demand;
(5) Total Suspended Solids;
(6) temperature;
(7) public water supply; and
(8) water quality limiting stream.

The "industry type" criterion reflects the probability of discharges of toxic substances and the relative toxicity of these discharges by the industry category under which the facility is classified. The "type of wastewater" criterion relates discharges by a facility to the wastewaters' potential for pollution. The classification criteria are based on standards and gauges developed by the Agency.

To determine whether an industrial permittee is a major or minor discharger, permit writers evaluate each NPDES industrial discharger and assign points for each of the eight evaluation criteria. If the total number of points for a discharger exceeds eighty, the discharger is classified as a major industrial discharger. Dischargers are periodically re-evaluated to determine if any changes should be made in their classifications.[1]

Some dischargers are classified as major dischargers, even though they may score below eighty points on their NPDES major/minor rating evaluation. Such dischargers are classified as "discretionary majors" and are included as majors under what is known as the "500 Point System". The 500 point system is a procedure by which the Agency can include those dischargers that may not exceed Eighty points on the NPDES Permit Rating Worksheet, yet which might still pose a significant threat to human health or the environment. This

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[1] A more complete discussion of the major-minor classification system is contained in NPDES Permit Classification Criteria, Office of Water Enforcement and Permits.

system is designed specifically to include dischargers whose discharges may not be "major", but may be particularly toxic or may impact an extremely sensitive waterway.

Under the 500 Point System, states identify to the regional EPA offices those dischargers they feel should be discretionary majors. The responsibility for choosing discretionary majors is left to the regional offices. In deciding which permittees to include as discretionary majors, regional EPA offices give highest priority to permittees discharging toxic pollutants. Minor permittees causing conventional water quality degradation are given the next highest priority. The 500 point system is generally more subjective than the eighty point system.

The Agency has limited the number of discretionary majors allowed under the 500 point system to thirty discretionary majors plus ten percent of the total number of non-discretionary dischargers within the region. The Agency's reasons for limiting the number of discretionary majors are twofold. First, the major-minor classification system was established to direct Agency resources toward those dischargers most likely to have substantial, environmental impacts. If the Agency classifies too many dischargers as discretionary, then Agency resources will be diluted across a larger number of facilities and the effectiveness of the permitting, monitoring, and enforcement of the majors may be impaired. Second, the Agency bases budget allocations, in part, on the number of major dischargers within an EPA Region. A limit is needed to ensure that there are no abuses of the system.

A third and final category of major dischargers includes all municipal dischargers which (1) discharge flows of one million gallons or more of wastewater per day or (2) serve communities of ten thousand people or more. All other municipal dischargers are regarded as minor dischargers unless they are included as discretionary majors through the 500 point system.

2.2.2 Quarterly Noncompliance Reports

Quarterly Noncompliance Reports (QNCRs) are listings of noncompliant major dischargers whose noncompliance exceeds certain Agency-determined thresholds of time, magnitude or frequencies of occurence, or which otherwise present particularly severe environmental problems. The QNCR is prepared periodically and lists, by State or Region, the names, locations, NPDES numbers, parameter violations, and enforcement actions taken against each facility. The QNCR is intended to serve as an administrative tool for focusing Agency resources on those facilities more seriously in violation of their NPDES permits. The report is generated using data contained in the PCS system (See Section 2.1.1).

The QNCRs trigger the enforcement process. Once a facility is listed on a QNCR, the state or regional EPA office is expected to initiate some sort of enforcement action generally within 60 days of inclusion on the QNCR. Also, violators generally do not appear on consecutive QNCRs for the same violation without an enforcement action taken by the appropriate agency. Note, however,

that inclusion (or exclusion) on the QNCR does not alone determine what type of response will be taken for a particular violation, or even if a response will be taken at all; any instance of noncompliance by any point source discharger is subject to enforcement actions, regardless of the discharger's (1) inclusion on a QNCR, (2) major-minor classification, or (3) permit status.

The Agency recently issued a final rule regarding the determination of which violations to include on QNCRs (Federal Register, August 26, 1985). The final rule distinguishes between two types of noncompliance, Category I and Category II noncompliance. Category I noncompliance is based on specific criteria which are readily quantifiable, such as violations of enforcement orders, violations of compliance schedules and milestones, exceedances of effluent limits, and failures to provide adequate and timely compliance reports. Category II noncompliance includes violations of permit conditions which are not so readily quantifiable yet which the Agency believes to be of substantial concern. Category II noncompliance includes all other potentially important violations of permit conditions which were not included in Category I (e.g., violations of permit limits, unauthorized bypasses, unpermitted discharges, failure to adhere to pretreatment requirements, failure to submit adequate reports, and violations of narrative agreements between the company and the Agency).

Among the more common ways in which a violator may be included on the QNCR is through exceedances of permit effluent limits. These violations are detected through self-monitoring reports contained in the PCS. Instances in which exceedances of permit effluent limits must be reported depend upon the frequency and/or magnitude of the violation. The criteria for reporting violations of permit effluent limits are calculated according to "Technical Review Criteria" (TRC), which specify thresholds for pollutants beyond which permit effluent exceedances are regarded as particularly serious. Violations that exceed the threshold values for each pollutant are included on the QNCR.

Violators are also considered for inclusion in the QNCR if they violate schedules or reporting requirements stipulated in their NPDES permit. These requirements are reviewed on a case-by-case basis, with the ultimate decision as to whether they should be included on a QNCR made by the Regional or State Administrator.

A violator is automatically considered for inclusion on the QNCR if it violates an Administrative Order. Violations of Administrative Orders are regarded as serious infractions and the majority of such violations are included on the QNCR.

Finally, a violator might be included on the QNCR at the discretion of the Regional Administrator. Regional Administrators apparently review "any violation of concern", even if the violation does not meet any of the criteria mentioned above. This provision allows the enforcement process to include exceptional or egregious violations which would not otherwise be included in the QNCRs. Cases such as those involving unauthorized discharges without permits are sometimes included on the QNCRs and treated with the same degree of scrutiny as other violations.

All noncompliant dischargers are required to be reported in successive QNCRs until resolution of the violation. Even pending remedial actions must be listed on the QNCR. These reports are generally prepared by the appropriate State agencies then sent to the regional EPA offices and ultimately to EPA headquarters.

2.2.3 The Significant Noncompliance List

The Significant Noncompliance List (SNC) lists those instances of noncompliance that the Agency regards as requiring special attention. Any noncompliant discharger with either Category I or II noncompliance can be included on the SNC, although the SNC is generally limited to Category I noncompliance. As in the QNCR, the Director or Regional Administrator can include violations on the SNC at their discretion.

Once a discharger is listed on the SNC, it is regarded as a high priority case of noncompliance. The regional EPA offices and states are expected to place high priority on enforcing against SNC dischargers and are generally expected to have initiated some sort of formal enforcement response before an SNC noncompliant discharger appears on a second listing (unless the discharger returns to compliance).

Dischargers from the SNC are recorded in the Strategic Planning and Management System (SPMS) publication, a system maintained by the Office of Management Systems and Evaluation, which is used to measure the Agency's progress in attaining program goals. This system serves both as a tracking system as well as a system for standardizing the efforts of different program offices for tracking and pursuing instances of noncompliance. The information gathered under SPMS is incorporated in a quarterly report which is used by the Agency to track the development and success of various programs.

2.2.4 The Exceptions List

The Agency also periodically generates an "exceptions list", which includes all major SNC violators for which the administering agencies have not issued formal enforcement orders (such as administrative orders or judicial referrals). The exceptions list is intended to focus attention on remedying the noncompliance by the facilities listed. Any major permittee listed as being in significant noncompliance for two consecutive quarters is included on the exceptions list along with justification as to why formal enforcement actions were not taken. If the Agency feels it necessary, EPA may take direct enforcement action to resolve noncompliance listed on the Exceptions List.

2.3 EPA RESPONSES TO NONCOMPLIANCE

Once a monitoring agency has isolated the dischargers that are the more serious violators of their NPDES permits, the agency must initiate some sort of enforcement action to remedy existing noncompliance and deter future

noncompliance. The Agency has developed a tiered system of enforcement responses, the Enforcement Management System (EMS), which is designed to remedy and deter noncompliance while efficiently utilizing limited enforcement resources.

2.3.1 Violation Review Action Criteria

The Agency has developed a system, the Violation Review Action Criteria (VRAC), for determining when different types of enforcement actions are appropriate. This system presents guidelines for determining when particular violations are to be regarded as particularly serious. Exhibit 2-1 lists some more common types of noncompliance, and the instances in which these violations require enforcement responses. The Exhibit shows that the VRAC provides some flexibility for some violations (e.g., requirements for daily maximum effluents for storm water) yet stringently enforces other violations (e.g., violations of limits cited in enforcement orders). The VRAC is intended to serve as a guideline only; Agency policy allows for deviations from the VRAC, depending on the characteristics of specific cases.

2.3.2 Agency Enforcement Responses

Once the Agency has determined that an enforcement action is warranted, enforcement responses may be applied that range from inexpensive phone calls and letters of warning, to more stringent and complex proceedings, such as trials for civil or criminal violations. When the Agency first identifies a violator, enforcement responses generally consist of relatively straightforward and inexpensive Agency actions designed primarily to make the violator aware of its noncompliance. If this first enforcement response successfully achieves compliance, the Agency typically forgoes further enforcement (barring any extreme offenses). If the Agency's primary responses are not successful, the Agency generally adopts a second, more stringent response. The Agency continues this process until either the firm returns to compliance or the Agency exhausts all available alternatives (at which point the case is referred to the Department of Justice for civil or criminal proceedings).

As a part of the EMS, the Agency developed a national guidance document on appropriate enforcement responses for specific violations. This "Enforcement Response Guide" outlines most conceivable violations and what the Agency regards as appropriate responses to these violations. Some of the more predominant enforcement responses are presented in Exhibit 2-2. The "Enforcement Response Guide" is intended to serve as a guideline only; Agency policy allows deviations from these responses, depending on the characteristics of specific cases.

Administering agencies generally choose between three levels of enforcement responses to violations: informal enforcement responses, formal enforcement responses, and no enforcement response. The "no response" enforcement option is usually chosen for (1) violations that appear to be purely accidental and innocuous, (2) first-time violators, and (3) violations for which there is only a small probability of future violations.

EXHIBIT 2-1

VIOLATION REVIEW ACTION CRITERIA

TYPES OF EFFLUENT VIOLATIONS:	CRITERIA
Permit Violations	
30 Day Average Violations	
• Toxics	2 violations in 6 months
• Other	3 violations in 6 months or twice the effective limit for any one month
7 Day Average and Daily Maximum	
• Toxics	Twice the effective limit
• Other	Three times the effective limit
• pH	≤4.0 or ≥11.0, or if continuous monitoring criteria is exceeded
• Storm Water	Four times the effective limit
Any Limit	Causes, or has potential to cause, a water quality or a health problem, or the violation is of concern to the Director
Enforcement Order Violations	
Any Limit Cited in the Enforcement Order	Any violation during the quarter
COMPLIANCE SCHEDULE VIOLATIONS:	
Permit Violations	
Start Construction End Construction Attain Final Compliance	90 days past scheduled date
All Additional Milestones	90 days past scheduled date

EXHIBIT 2-1 (Continued)

REPORTING REQUIREMENTS:

Permit Violations

Discharge Monitoring Reports (DMRs)	30 days overdue or incomplete or not understandable
Pretreatment Reports	30 days overdue or incomplete or not understandable
Compliance Schedule Report Final Progress Report	Not understandable
All Additional Reports	30 days overdue or incomplete or not understandable

Enforcement Orders

Discharge Monitoring Reports (DMRs)	30 days overdue or incomplete
Pretreatment Reports	30 days overdue or incomplete
All Additional Reports	30 days overdue or incomplete or not understandable

OTHER REQUIREMENTS:

Permit Violations

Implementation of Pretreatment Program	Failure to implement (issue permits, enact ordinances, inspect IUs)
Other Violations	Failure to enforce IU pretreatment requirements
	Violation of narrative requirements (inaccurate recordkeeping, inadequate treatment plant operation and maintenance)
	BMPs of concern (i.e., requirement to develop SPCC plans and implement BMP)
	Violations of concern to the Director

Source: Office of Water, U.S. Environmental Protection Agency, "Enforcement Management System. National Pollutant Discharge Elimination System," 1985.

EXHIBIT 2-2

EXAMPLES OF APPROPRIATE ENFORCEMENT RESPONSES TO CWA VIOLATIONS

NONCOMPLIANCE	RANGE OF RESPONSE
Sampling, Monitoring and Reporting	
Failure to sample, monitor or report - infrequent violations	Phone call, written letter of violation (LOV). Administrative Order (AO) if no response is received
Failure to sample, monitor or report	LOV
Failure to notify authorities of compliance or non-compliance	Phone call or LOV
Failure to notify of effluent limit violation	AO or judicial action Phone call or LOV
Minor sampling, monitoring or reporting deficiencies	Phone call or LOV. Corrections to be made on next submittal
Minor sampling, monitoring or reporting deficiencies	AO if noncompliance is continued
Major or gross sampling, monitoring or reporting deficiencies	LOV or AO.
Major or gross reporting deficiencies	AO or judicial action
Reporting false information	Judicial action. Request for criminal investigation.
Permit Effluent Limits	
Exceeding Final Limits	LOV, AO (judicial action if environmental harm resulted)
Exceeding Interim or Final Limits	AO or judicial action
Discharge without a permit	AO or judicial action. Request for criminal investigation.

EXHIBIT 2-2 (continued)

NONCOMPLIANCE	RANGE OF RESPONSE
Administrative Order Interim Limits	
Exceeding Interim Limits contained in AO	AO or judicial action
Permit Compliance Schedules (Construction phases or planning)	
Missed Interim Date	LOV, AO or judicial action
Missed Final Date.	Contact permittee and require documentation of good or valid cause Could result in AO or judicial action
Major or gross deficiencies	AO or judicial action. Request for criminal investigation.
Failure to install monitoring equipment	AO to begin monitoring (using outside contracts, if necessary, and install equipment).
AO Compliance Schedules (Construction phases, MCP or CCP)	
Missed Deadline	AO
Missed Deadline	AO or judicial action or request for criminal investigation.
Reporting False Information	Judicial action. Request for criminal investigation.
State/EPA Compliance Inspection	
Minor violation of analytical procedures	LOV
Major violation of analytical procedures	LOV or AO (possible judicial and criminal action).

Source: Office of Water, U.S. Environmental Protection Agency, "Enforcement Management System. National Pollutant Discharge Elimination System," 1985.

"Informal responses" are the most widely used. These responses typically include phone calls and warning letters. Perhaps the most typical informal enforcement response is the Letter of Violation (LOV), which is a warning letter issued either by EPA or an authorized state informing a discharger that it is in violation. LOVs usually also indicate the possibility of escalated enforcement if the discharger fails to remedy its violation in a timely manner. If a discharger fails to respond to an LOV, the Agency may issue a second LOV, or progress to more strict enforcement responses.

The next step in the informal enforcement process often involves a formally-written document, a "Notice of Violation" (NOV), that specifically describes the violation and outlines the actions that should be taken to return the violator to compliance. NOVs generally also give a date before which the violation must end. NOVs are intended to be more serious than LOVs. However, NOVs are still regarded as informal actions and, as such, really only represent another mechanism for inducing a voluntary return to compliance.

The Agency generally tries to exhaust informal enforcement actions before pursuing more formal enforcement measures. However, when informal enforcement responses fail, the Agency initiates more formal proceedings. These formal enforcement actions are generally actions that require specific steps which dischargers must take to reach compliance, timetables by which violators must achieve compliance, independent penalties for non-adherence to the compliance schedules, and in some cases, criminal sanctions for owners and operators if the violator fails to remedy the violation.

The formal enforcement response most used is an administrative order (AO). AOs are formal documents issued by the Agency under CWA Section 309(a)(3) which contain findings of fact determined by administering agencies and which require that the violator remedy its violation. In most cases, AOs include formal orders calling for the immediate cessation of the violation or a formal timetable for achieving compliance. More than one AO can be issued for a single violation. In some cases, an administering agency may issue several AOs before proceeding to more stringent enforcement mechanisms. However, AOs are generally regarded as fairly serious by the regulated community and the administering agencies. Firms with a history of ignoring AOs are targetted as having poor compliance records and are therefore treated with less leniency when faced with further enforcement responses and penalty assessments.

When AOs have failed to achieve compliance, or when a violation is particularly egregious, an administering agency will often recommend a case for judicial referral. Civil judicial referrals can result in:

- injunctions requiring that a violator remedy its noncompliance or face possible closure;
- assessments of monetary penalties of up to $25,000 per day per violation; and

- consent decrees imposing schedules for compliance which, if violated, can result in facility closure or stringent penalties.

If pursued by an authorized state, judicial referrals are typically handled by the state attorneys general office of the particular state. If pursued by EPA, the cases are handled by EPA and the Department of Justice.

Administering agencies generally use judicial referrals only when necessary. The reluctance to commit resources to judicial referrals is shown convincingly by the numbers of cases directed for judicial referrals. In FY 1984, for example, more than 1,600 AOs were issued to violators. By comparison, less than 100 violations were referred for judicial action for the same period. (Management Advisory Group, 1985)

Another formal enforcement mechanism is administrative penalties. These are penalties imposed directly by the administering agencies. They do not require lengthy and resource-intensive trial proceedings required for judicial penalties and are therefore regarded as more efficient from an administrative standpoint. EPA only recently received authority under the new CWA to directly issue administrative penalties, although prior to this, some states were authorized to levy administrative penalties. Some states also have the authority to impose other types of sanctions such as revoking or suspending licenses and permits.

2.4 EPA POLICY FOR CALCULATING PENALTIES FOR NONCOMPLIANCE

The Agency has developed a civil penalty policy for calculating penalties for water-related violations.[2] This policy outlines several different factors which are to be considered when determining appropriate penalty amounts for individual violations. These factors include:

- removing the economic benefits of noncompliance so that violators are penalized at least as much as they saved through noncompliance;

- gravity factors, which reflect the seriousness of the violation; and

- the circumstances surrounding the violation, such as the violator's ability to pay, the culpability of the violator, and good faith efforts of the violator to remedy the violation.

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[2] See: Office of Water, U.S. Environmental Protection Agency, Clean Water Act Penalty Policy for Civil Settlement Negotiations. February 1986.

2.4.1 Removing the Economic Benefits of Noncompliance

The Agency seeks to penalize violators by amounts at least equal to violators' savings from delaying or avoiding the implementation of proper pollution control measures. These savings generally arise in three ways:

- the return a violator earns on invested capital by delaying capital costs of installing pollution control equipment;
- the return earned on invested capital by delaying other one-time expenditures; and
- incremental operation and maintenance costs avoided by not complying as required.

The first two economic benefits arise because the violator can earn returns on investments in other projects using funds that should have been devoted to pollution control. The third source of savings is the sum of a variety of avoided costs, including labor costs, raw materials, and energy costs that would have been required to ensure year-to-year compliance with water quality standards.

The Agency has developed a computer program to calculate the economic benefits of noncompliance. This program (BEN) calculates the net present value of delayed capital investment and the net present value of avoided operating and maintenance expenses, yielding an approximation of how much a firm saved by delaying compliance. BEN uses a four-step process to develop these estimates:

- First, BEN calculates what the violator's after-tax cash flows would have been had the violator complied fully with the necessary requirements. This step measures the direct costs and indirect financial impacts associated with a capital investment in pollution control equipment.
- BEN then discounts these cash flows to account for the time value of money by reducing the value of future cash flows to equivalent present dollars.
- Third, the program calculates and discounts the actual cash flows experienced by the violator; and
- Fourth, BEN calculates the difference between the present values of each of the two cash flows.

The difference between the present values is the estimated economic benefit of noncompliance. The BEN program is discussed more fully in Section 3.2.2.

2.4.2 The Gravity Component

The Agency's penalty policy calls, for the inclusion of a gravity component designed to reflect the seriousness of the violation. This gravity component is included to rank violations in terms of the risks presented to human health and the environment and the importance of the violations in the overall regulatory process. In some instances, the gravity component is quite large and can constitute the majority of a penalty.

The gravity component is an amalgamation of a variety of factors. The first factor is the "significance" of the violation. This is intended to take into account the potential for the violation to impact human health and the environment. The Agency has developed standards by which to gauge the magnitude of violations depending on the type of pollutant (i.e. toxic vs. conventional) and on the percentage exceedance of the effluent limitation.

A second gravity factor requires an estimate of the degree to which the violation presents actual or potential harm to human health or the environment. This is generally calculated on a case-by-case basis. Quantifying and valuing pollution-related damages are discussed in Section 3.2.3.

A third gravity factor takes into account the number of previous violations by the company. The frequency factor is designed to more stringently penalize those facilities with poor compliance and reporting records. If a company has repeated violations, the gravity component of the penalty is increased.

The fourth gravity factor accounts for the duration of noncompliance. This factor is designed to place higher penalties on firms guilty of extended violations. Generally, violations are considered "extended" if they exceed three months in duration. As the duration of the violation increases, so does the penalty.

To determine the total gravity component, each of the four factors is assigned points. These points vary according to the types of pollutants involved and the degree of the violation. The points for each violation range from zero to twenty. Points are summed monthly and are translated to monetary equivalents at a rate of $1,000 per point. For example, if a noncompliant firm was determined to be in violation approximately 15 points per month for two months, the total gravity component would be $30,000.

2.4.3 Adjustment Factors

Current Agency penalty policy also includes a number of "adjustment factors" which allow for Agency discretion in adjusting penalties either upward or downward. One of the primary adjustment factors is a history of recalcitrance factor which takes into account a violator's past compliance record. A penalty might be adjusted upward if the violator (1) has a history of multiple violations, (2) delays the prevention, correction, or mitigation

of violations, (3) has shown bad faith in dealings with administering agencies, or (4) has not responded to enforcement actions. The recalcitrance factor also accounts for the relationship of the violator to the overall regulatory program. If, for example, the violator has placed the credibility of an enforcement program at question, then the violator's penalty might be further adjusted upward. Finally, the adjustment factor is meant to be used as a tool during the negotiation process -- the longer a violator delays settlement, the more it is considered recalcitrant and, hence, the higher its penalty. Penalties can be adjusted upward by 150 percent of the sum of the benefit and gravity components.

A second adjustment involves a violator's ability to pay, although the Agency appears to moving away from this adjustment factor in recent cases. This adjustment is included to provide relief to those violators who cannot afford to pay large penalties. Whenever a violator can convincingly demonstrate an inability to pay both a penalty and to fund the accompanying injunctive relief, the penalty might be adjusted downward. In some instances, the Agency might resort to means other than reductions in penalties. For example, the Agency might develop some sort of time payment arrangements, secure a lien on the violator's property, develop a system of environmental credits, or levy some sort of non-monetary punitive action.

A third adjustment factor involves litigation considerations. There are some instances in which the benefit and gravity components generate penalties which are determined to be unreasonable by a court. In some cases, the penalty figures do not correspond with precedent. In other cases, the courts may determine that the facts of the case may not justify the penalty amount. The Agency evaluates each penalty with regard to litigation considerations and attempts to ascertain the maximum penalty the case could feasibly generate if the case proceeded to trial.

The adjustment factor also allows for the reduction of a penalty by any amount paid to another governmental agency. For example, if a violator has already been penalized by a state or local agency for the same violation, then the penalty figure is adjusted downward by the amount of the penalty paid.

In some instances, civil penalties may also be reduced to reflect a violator's undertaking an environmentally beneficial "mitigation project." Such projects are often stipulated in consent decrees issued to violators. Mitigation projects, however, are regarded by the Agency as more of an exception than a rule and are intended to supplement, rather than replace, civil penalties. Such projects are generally permitted only as a means for reducing civil penalties and are allowed only if specified criteria are met (e.g., the mitigation project will be allowed only if all other regulatory compliance obligations are fulfilled).

2.4.4 Other Factors

In addition to all the above factors, there are also a number of institutional factors which the Agency considers in determining appropriate penalties. First, the Agency determines if a penalty is congruent with the ultimate goals of the enforcement program. Second, the Agency must take into account equity considerations. Because the Agency cannot promptly penalize every violation, the Agency must justify the enforcement responses they take. In particular, penalties should be consistent among similar cases.

2.5 OTHER ENFORCEMENT

In general, The Agency's monitoring and enforcement efforts under The NPDES represent the primary mechanism for addressing noncompliance with the CWA. There are other avenues, however, through which enforcement actions may be taken against violators of the CWA and the NPDES. This section briefly discusses other programs which affect monitoring and enforcement of CWA violations.

2.5.1 Monitoring and Enforcement Through Other Regulatory Programs

Monitoring and enforcement under other regulatory programs can also affect monitoring and enforcement of CWA violations. Many NPDES permit holders are also permitted under other regulatory programs (e.g., the Resource Conservation and Recovery Act, or RCRA) and must comply with the provisions of the.other programs as well as satisfy the requirements of their NPDES permits. In such instances, firms are monitored and inspected for other programs and, although there is no formalized Agency policy for coordinating data obtained through other regulatory programs, information obtained through other programs could be used for detecting CWA violations.

2.5.2 Citizen Suits

Section 505 of the Amendments to the Clean Water Act (33 USCA Section 1365) gives private citizens the authority to file suit against violators of the CWA and/or governmental agencies that have failed to perform the mandatory enforcement duties stipulated in the CWA statute. Section 505 of the CWA also authorizes citizens to sue for the assessment of penalties.

Citizen suits, for the most part, focus on injunctive relief as the primary remedy for violations. Generally, Section 505 authorizes citizens to seek injunctions to prevent future violations, not to punish past violations. Injunctions under the CWA can take a variety of forms. The majority of citizen suits under the CWA result in injunctions requiring compliance schedules designed to gradually achieve compliance. In some cases, court injunctions grant the violator additional time to obtain government permits or variances. In a few instances, citizen suits have resulted in judicial injunctions requiring that violators cease operation entirely.

A 1984 study of citizen enforcement actions under statutes administered by EPA (Environmental Law Institute, 1984), found that there were substantially more citizen actions taken in response to CWA violations than to violations of other environmental statutes. Of 349 citizen actions filed, 214 were filed under the CWA. A greater emphasis is placed upon enforcement of CWA violations primarily because the availability of data regarding CWA violations is much greater than for other statutes; monthly Discharge Monitoring Reports (DMRs), NPDES facility files, and Agency Quarterly Non-Compliance Reports (QNCRs) are accessible to the public and often provide the information necessary to successfully initiate and pursue a citizen action.

CHAPTER 3

CASE STUDIES OF ENFORCEMENT ACTIONS

This chapter summarizes the findings of a review of selected cases of noncompliance that resulted in penalties. The cases were recommended by OECM attorneys for being somewhat representative of the many cases handled by the Agency during 1985. These cases were selected at the outset of this study, early 1986, so they reflect the enforcement policies and institutions in place in 1985. Since that time, a revised CWA enforcement policy has been issued and the Agency has implemented several institutional reforms. Hence, the difficulties the Agency was experiencing in enforcement that are illustrated by these cases may have been mitigated to some degree. Despite their vintage, however, these cases are instructive in the sense that they illustrate the tensions and pitfalls of enforcing environmental regulations.

The chapter is divided into several sections. Section 3.1 presents the findings of the nine case studies. For each of these cases, information is presented on the background of the case, the estimated damages that resulted from the violations in question, the apparent motives of the Agency for taking enforcement action, and an analysis of the final penalty assessment. Section 3.2 then presents a detailed discussion of several of the difficulties encountered in implementing enforcement policy in the past, as revealed by the case studies (although some of these difficulties may still be problems even under the new enforcement policy). The discussion focuses on why the Agency had difficulty determining the extent of the violations committed by a facility. The chapter then explores several factors that made estimating a violator's benefits from noncompliance a difficult task. Several of the difficulties in quantifying and valuing pollution-related damages in aquatic ecosystems are also examined. Finally, the influence of ability-to-pay considerations on final penalty determination are analyzed.

A summary of the major findings of this chapter is provided below.

3.0 SUMMARY

The cases selected for review as part of this study were recommended by OECM attorneys as being representative of the wide variety of cases handled by the Agency during 1985. Although the cases do not reveal all the difficulties faced by the Agency in implementing past enforcement policy, they do reveal several of the more common and persistent problems. Some of these problems may still exist even under the revised enforcement policy. A summary disussion of these problems is presented below.

- Determining the Extent of Violations. In many of the cases studied, the Agency could not determine the full extent of the violations committed by the discharger. Determining the appropriate penalties to levy in such instances was therefore problematic. The difficulties in determining the extent of violations appear to have stemed

from two sources. First, effluents were only monitored periodically. Effluent quantity and composition, however, may have fluctuated considerably over time. As a result accurately determining the extent of violations was often impossible. Second, effluent data were often incomplete: violators did not always monitor their discharges and submit effluent data as required, making it exceedingly difficult for the Agency to establish the extent to which violations had occured.

- Estimating the Benefits of Noncompliance. Although the implementation of the BEN computer program helped to foster more consistent estimates of the benefits from noncompliance, there were still difficulties in determining the values of the input parameters for the program. Determining the values of input parameters frequently entailed making a number of assumptions which could have significantly affected the final benefit estimates. The case studies suggested that there was a lack of detailed guidelines for determining the input parameters. Moreover, many of the benefit estimates generated in the cases studied exceeded what would generally be regarded as an "appropriate" penalty for the violation in question. Also, in many of the cases, precedent and ability-to-pay considerations made it difficult for the courts to assess the full benefit component in a penalty.

- Quantifying Damages to the Environment. The complexity of aquatic ecosystems often made it difficult for the Agency to quantify and place a dollar value on the effects of violations on human health and environmental quality. Interactions among pollutants, dispersion of pollutants, and difficulties in establishing accurate baseline conditions often impeded the estimation of damages as part of the gravity component of a penalty.

- Ability-to-Pay Considerations. Determinations of a violator's ability-to-pay appeared to have often relied on subjective criteria. The case studies suggest that there was little consistency among such determinations. Assessing ability to pay was particularly difficult for municipal violators.

3.1 CASE STUDIES OF EPA ENFORCEMENT OF THE CLEAN WATER ACT

3.1.1 Company A

Background

Company A installed a water main in a medium sized city located on the banks of a small river. A city ordinance required that the main be disinfected and pressure tested before being put into service. On August 3, 1983, employees of Company A filled the pipe with water to capacity (approximately 23,500 gallons) and added chlorine until the solution reached a chlorine concentration of 100 ppm. After completing the necessary tests, the workers released the chlorine solution into a construction ditch that flowed, via storm drains, into a small, navigable waterway.

Local residents reported a fish kill to the State Department of Water and Natural Resources on the morning following the discharge of the solution. The State notified EPA and EPA scientists tested the creekwater to find that it had a chlorine concentration of 0.5 to 0.9 ppm, which is significantly higher than normal. EPA was able to determine conclusively that Company A's discharge was responsible for the increased chlorine concentration.

Damages from Noncompliance

The State determined that the discharge resulted in the death of 5,000 fish. An estimated 2,000 of these fish were brown trout, a relatively rare species popular with sports fishermen. In addition to the fish kill, EPA scientists determined that the creek ecosystem had been significantly damaged, and that it would take one to two years to recover.

Motives for Enforcement

Company A was sued by both the State and the federal government. It appears that EPA decided to take action against Company A in an effort to make their enforcement capabilities visible within the region.

Penalty Assessment

The State initiated legal proceedings against Company A and obtained a penalty of $4,000 -- $3,000 in damages and $1,000 in civil fines. According to the state authorities, the replacement value of the dead fish was estimated to be $2,000. The additional $1,000 in damages was apparently levied because of the damage to the creek ecosystem.

EPA brought suit against Company A upon the conclusion of the case initiated by the State. Since the contaminated waterway is classified as a navigable U.S. water, EPA prosecuted Company A for a violation of Section 301(a) of the Clean Water Act (discharging into federal waters without proper authorization).

EPA carried out a "Penalty Policy Evaluation" consisting of a series of simple financial calculations to determine how much the company should pay in

penalties. Based on this evaluation, EPA arrived at the following penalty determination:

Savings on annual operating and maintenance costs (labor, equipment, and materials)	$ 250
Environmental harm and injury to public health (fish kills and damage to the environment)	2,000
Recovery of extraordinary government expenses (Preparation of litigation reports and misc. costs)	4,000
Penalty for negligence	2,000
Total Penalty	$8,250

This estimate of $8,250 was regarded as a lower bound for final penalty negotiations.

The valuation of the fish kill in this penalty determination is only $1,000 (the remaining $1,000 in the "environmental harm and injury" category was assessed for damage to the ecosystem), which is exactly half the value assessed in the case brought by the state. According to the American Fisheries Society, however, the value of brown trout varies from $0.13 to $1.89, depending on the length of the fish.[1] Assuming an average length of eight to nine inches (which corresponds to a fish value of $0.83), the total value of the brown trout killed is approximately $1,660 (2,000 x $0.83). Note, however, that the figure of $1,660 does not include any damages for the other 3,000 fish killed. Thus, these calculations suggest that the $8,500 estimate is biased downwards.

The penalty finally assessed represented a compromise. EPA initially proposed a penalty of $10,000 (the maximum penalty allowed under the Clean Water Act). Company A countered with an offer to pay a penalty of $400-$500. The penalty finally assessed was $5,000 (on top of the $4,000 already paid to the state). In addition, Company A was required to provide employee training sessions to ensure that there would be no further discharges of the type that occurred.

3.1.2 Company B

Background

Company B operates a specialty organic chemical manufacturing plant on the East Coast. The plant manufactures a variety of chemicals and its operations change periodically depending on the chemical manufactured and the process used, As a result, the types, amounts, and concentrations of pollutant discharges from the plant vary considerably from day to day, making both pollution control and monitoring quite difficult.

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[1] American Fisheries Society, "Monetary Values of Freshwater Fish", Special Publication #13 ISSN 0097-0638, Bethesda, Maryland, 1982.

The plant produces and treats an average of 100,000 gallons of process wastewater per day. Company B maintains two wastewater collection systems -- one for cooling heated water and the other for storing process wastewater that needs to be treated prior to discharge. Most process wastewater is treated by means of a biological/carbon adsorption system. Following treatment, the discharges are released into a river tributary.

EPA issued Company B an NPDES permit in 1975. In accordance with the requirements of the permit, Company B submitted monthly Discharge Monitoring Reports (DMRs). Several of these indicated substantial violations of discharge limitations. Follow-up EPA inspections and bioassays confirmed a significant pattern of noncompliance.

Company B was taken to court, in separate cases, by both EPA and an environmental interest group. EPA charged Company B with violating effluent limitations for: biological oxygen demand (BOD), total suspended solids (TSS), nitrogen ammonia, total dissolved solids (TDS), color, and total residual chlorine. Company B had also violated standards for chromium, zinc, aluminum, general chlorinated hydrocarbons, flow rate, and total organic carbons, but no direct action was taken regarding these violations.

Although there was little doubt that Company B had been in noncompliance, the duration and extent of its violations were extremely difficult to determine. Company B argued that its violations were sporadic and infrequent. The environmental interest group, however, claimed that the company had been continually in violation of at least one standard for a period of 58 months. The regional EPA office estimated, in turn, that Company B was guilty of more than 291 violations between 1980 and 1983. Subsequent inspection of Company B's effluent records revealed that there were significant gaps in effluent data, making it even more difficult to determine the extent of the company's violations.

Damages from Noncompliance

The inability of the various parties to agree on the duration and extent of the violations makes it to difficult to assess the damages from noncompliance. Available information suggests that the damages may have been substantial. Company B's discharges flow into a classified FW-2 trout maintenance river. The increased toxicity of the river water resulting from the plant's discharges are likely to have contributed to fish kills, damage to the ecosystem, and contamination of water. However, the precise magnitude of the damages is uncertain.

Motives for Enforcement

It appears that the enforcement action was part of EPA's ongoing effort to promote better operation and management practices. Company B apparently had much of the necessary pollution control equipment in place to prevent violations but was not operating it properly. There is also a possibility that EPA was spurred into action by the activities of the environmental group.

Penalty Assessment

There were a number of penalty recommendations in this case. The environmental group sought the statutory maximum penalty of $10,000 per day for each Section 301 violation (illegal discharge of effluents into navigable waters) and $50,000 per day for each Section 309 violation (illegal discharge of toxic materials into navigable waters). On the other hand, EPA headquarters felt that a penalty of $4,000 per day was appropriate for the Section 301 violations. (Our sources do not mention how headquarters wanted to treat Section 309 violations.) Finally, the EPA Region 2 office recommended a settlement penalty of $25,000 to $40,000 for past violations and a consent decree stipulating higher penalties for further noncompliance.

The penalty finally assessed appeared to be based in part on the following estimate of the benefit to Company B of delaying installation of a carbon filtration unit as stipulated in its NPDES permit. Note, however, that the delayed installation of a carbon filtration unit is only one of the violations committed by Company B. The benefit calculations are therefore based on only a portion of the violations and therefore represent only a fraction of the actual economic benefit::

Savings from delayed capital outlay	$33,000
Operation and maintenance costs avoided	$27,000
Total economic benefit of noncompliance	$60,000

These estimates are based on the assumption that the delay lasted 16 months. In actuality, the delay was probably much longer but, because effluent data was unavailable to support the contention that the period of violation was actually much longer. Therefore, the violation period was assumed to be 16 months.

The first figure was derived by multiplying together the initial cost of the treatment unit ($500,000), the delay measured in years (1 1/3), and five percent. The five percent figure is an approximation (based on BEN runs) used to calculate annual capital-related penalties.

In addition to the $60,000 in economic benefits, Company B was assessed a penalty of $40,000 for recalcitrance. The total penalty assessed was therefore $100,000. Company B was also required to sign a consent decree that imposed extensive monitoring and reporting requirements, including monthly bioassays that could cost the company up to $3,000 each. Note that the penalty did not recoup environmental damages or administrative costs.

Given the extent of the violations and Company B's history of noncompliance, the $100,000 penalty assessment appears to be somewhat low. The leniency of the court may have been due, in part, to Company B's commitment -- albeit half-hearted at times -- to comply with the requirements of its NPDES permit. The company had installed additional pollution control

equipment (though there was some question as to whether or not the equipment was adequate), and tests and bioassays performed by EPA in 1983 revealed little or no toxicity and only limited and relatively harmless violations.

3.1.3 Company C

Background

The general NPDES permits issued under Section 402 of the CWA that authorize discharges from offshore oil and gas facilities require permitees to notify the Regional Administrator of any facility relocations no less than fourteen days prior to the relocation.

In this case, Company C relocated one of its drillships off the West Coast on or about July 1, 1983, without notifying the Regional Administrator. The relocation did not come to EPA's attention until the company submitted a request dated September 6, 1983, to become the primary permitee for the drillship. The request contained information on the drillship's latest location.

Estimates of the duration of noncompliance vary considerably. The initial estimate was 93 days -- the elapsed time between the date the ship was relocated and the date it stopped discharging wastes at its new location (September 30, 1983). The final estimate was 53 days. It is not clear how this estimate was derived. It could be the number of days between the relocation date of the vessel and the date of the company's request, minus any days during which the ship was not discharging wastes.

Damages from Noncompliance

The failure to notify the Regional Administrator on time does not appear to have resulted in any environmental damage since no additional discharge limitations would have been imposed on the drillship had EPA been informed on time.

Motives for Enforcement

EPA's primary motive for undertaking the enforcement action was to deter lax reporting practices. According to EPA, the enforcement action appears to have been successful becaus Company C and other drillship operators are now reporting their activities promptly.

Penalty Assessment

The benefit to Company C of not informing the Regional Administrator on time was perceived to be negligible. As such, the penalty assessed consisted solely of a gravity component. The litigation report recommended a minimum penalty of $1,000 for each day in noncompliance. (The applicable statutory maximum penalty is $10,000 per day.) Given the final estimate of 53 days in noncompliance, this translates to a minimum penalty of $53,000. After negotiations between EPA and Company C, the company eventually paid a penalty

of $60,000. Although it is difficult to determine what the appropriate penalty should have been, it appears that EPA would have imposed a higher penalty had there not been a number of factors favoring mitigation of the penalty. Among the factors cited were that:

- Information was voluntarily supplied;
- Appropriate discharge limitations did not vary with location; and
- There were no other known violations by Company C.

The settlement was considered unusual within EPA, but was justified on the grounds that a much smaller penalty would have been assessed had the case been decided in trial.

3.1.4 Municipality D

Background

Under Section 302 of the CWA, publicly owned treatment works (POTW's) are required to obtain NPDES permits. The permits typically contain effluent standards for biological oxygen demand (BOD) and total suspended solids (TSS), as well as a variety of other parameters. The permits also impose self-monitoring and reporting requirements.

The POTW in question is owned and operated by Municipality D. It consists of six facilities (four sewage treatment plants and two oxidation ponds). The municipality applied for and received an NPDES permit which was valid from September 28, 1974 to September 27, 1979. Between 1974 to 1979, the POTW failed to comply with the terms of the permit on at least 73 occasions by exceeding effluent standards and failing to test for, or report, at least one effluent parameter. Most notably, discharges from the facility repeatedly exceeded the 5-day BOD and TSS limitations. In addition, there were numerous bypasses of raw sewage which the POTW failed to report. Furthermore, EPA discovered in 1976 that the POTW had yet to purchase the equipment necessary to monitor fecal coliform -- one of the provisions included in the NPDES permit.

The POTW's NPDES permit expired on September 27, 1979. Municipality D failed to apply for a new permit until February 3, 1983. Hence, between 1979 and 1983, the POTW violated CWA Section 301(a), which prohibits the discharge of effluents without proper authorization.

EPA first threatened court action against Municipality D in 1979, but the case did not go to court until the early 1980s. Debate initially focused on whether the discharges from the facility entered navigable waters and, therefore, whether or not there was a violation of the Clean Water Act. EPA

convinced the courts that the POTW's discharges flowed into a canal that could be used for interstate commerce and, possibly, for recreational canoeing, thereby establishing that the POTW had been in noncompliance.

Damages from Noncompliance

As noted above, the POTW exceeded its discharge limitations on numerous occasions between 1979 and 1983. In addition, there were two extended periods of time during which large volumes of raw sewage were discharged untreated. One of these bypasses resulted in a significant fish kill. Furthermore, the canal receiving the POTW's discharges was connected to a water body containing shell-fish that were routinely harvested for human consumption. The contamination of the shellfish could have resulted in the spread of viral hepatitis.

A determination of the actual damages from noncompliance is difficult. The POTW was never inspected on a regular basis. Even when it was under close scrutiny by EPA, inspections were only performed on a monthly basis. Moreover, the record-keeping practices of the facility were inadequate and provided little information about the POTW's compliance status. The complexity of the surrounding ecosystem further complicated matters. Thus, although EPA was aware that spills and violations had occurred, they were unable to accurately determine the actual duration and extent of the violations.

Motives for Enforcement

Several of the facilities at the POTW were deteriorating rapidly, creating the potential for larger violations and more frequent bypasses. Since the POTW had a history of poor management practices, EPA was concerned that the deterioration would continue unchecked if enforcement action was not taken.

Penalty Assessment

EPA initially requested the maximum $10,000 per day penalty provided for in the Clean Water Act. After considerable debate, several reports, and analyses of "ability to pay" issues, the court arrived at a final penalty assessment of $40,000. In addition to the penalty, the court ordered the adoption of a consent decree requiring that Municipality D:

- Improve operation and maintenance procedures;
- Hire additional plant operators;
- Hire qualified lab technicians;
- Provide increased training for personnel;
- Retain an operation and maintenance consultant;

- Repair or replace several pumps; and
- Operate within complete compliance of the CWA and associated permits or else pay increased penalties as set forth in the consent decree.

The final monetary penalty appears to fall far short of the economic benefit to the POTW derived from noncompliance. As shown in Appendix A, the labor costs avoided as a result of the noncompliance alone amounted to approximately $100,000 per year. Adding in the other benefit components suggests that the penalty should have been more than $400,000, which does not even take into account gravity factors or administrative costs.

It is likely that the penalty assessed was in large part a function of the municipality's perceived ability to pay. Furthermore, given the nature of the consent decree, it is clear that the primary objective was to ensure adequate pollution control in the future rather than to punish past violations.

3.1.5 Company E

Background

Company E operates a plant that manufactures a variety of industrial chemicals. Since acquiring an NPDES permit in 1976, the plant had frequently violated its pH limits by either bypassing treatment or allowing spills. The company had also exceeded its flouride and mercury limits on several occasions. EPA learned of these violations from the DMR's and Noncompliance Reports that were routinely filed by Company E.

Company E was issued several warnings by EPA between 1976 and 1981. However, these did not have much effect. By 1981, Company E's violations had increased in both number and severity; between January 1981 and February 1982, the company violated effluent limitations on 41 occasions. As a result, EPA issued a consent administrative order intended to force Company E to stop its violations. The order required that Company E:

- Develop a more aggressive maintenance program;
- Line its effluent canal with concrete;
- Increase detention time of polluted water in treatment lagoons;
- Develop a system by which to make preliminary pH adjustments upstream; and
- Comply with all provisions of their NPDES permit.

The consent order stipulated that all the aforementioned requirements be fulfilled by November 15, 1985.

Since the consent administrative order went into effect, Company E has violated its pH limits on 27 occasions. One of these violations resulted from a spill of 155,770 lbs. of 85 percent sulfuric acid, and another from a spill of 42,000 lbs. of 36 percent hydrochloric acid. In addition, there have been two chlorine limit violations and one mercury limit violation.

Damages from Noncompliance

The damages from noncompliance depend on the time period being considered. The worst damage likely occurred prior to February, 1982. The case against Company E, however, is concerned only with offenses that occurred after the consent order had been issued. For the period after the consent order became effective, the EPA sought the maximum penalties allowed by the Clean Water Act for major spills. Hence, we can infer that the damages were relatively large.

Motives for Enforcement

EPA's primary motive for pursuing enforcement in this case was to promote better management and better operation and maintenance practices. Although Company E had installed the necessary pollution control equipment, it had not been operated or maintained properly.

Penalty Assessment

EPA brought suit against Company E for violating Sections 301 and 309 of the Clean Water Act. EPA initially recommended an injunction and a civil penalty of $1,000 for each effluent limit violation. Later in the case, however, EPA proposed a total penalty of:

Two spills at $10,000 each	$20,000
27 violations at from $1,000 to $1,500 each	39,000
Total Penalty	$59,000

The $59,000 was regarded as a maximum penalty. EPA expressed a willingness to accept a penalty as low as $46,000. The final penalty assessed was $50,000.

3.1.6 Company F

Background

Section 307 of the Clean Water Act required EPA to promulgate technology-based effluent standards for industries that discharge wastewater to publicly owned treatment works (POTWs). The intent of the statute is to (1) prevent toxic pollutants from passing through POTWs and (2) ensure that industrial discharges do not interfere with normal POTW operations. In accordance with Section 309 of CWA, EPA promulgated pretreatment standards for

electroplating and metal finishing operations (40 CFR Parts 403, 413). These regulations required compliance with the pretreatment standards by June 30, 1984.

Three out of the twenty Company F assembly plants that fell under the relevant pretreatment regulations did not meet the Agency's stipulated deadline, and exceeded the promulgated standards for a number of metals (including lead, nickel, zinc and cadmium) by up to 15,000 percent. As required by a consent decree, these three Company F plants were scheduled to comply with the standards by July 15, 1985. The duration of the violation is therefore approximately one year. Data on the magnitude of the violations were obtained from Company F's own baseline monitoring reports and on-site sampling conducted by EPA in accordance with Section 308 of the CWA.

EPA believes that by not constructing treatment facilities, Company F intentionally failed to take any action to meet the deadline for almost a year after it became clear that the standards would apply to the three plants. Moreover, Company F maintained that it would be prohibitively expensive to achieve interim compliance via process changes; EPA concurred for lack of information to the contrary. (But in a similar case involving a major competitor of Company F's, interim compliance was deemed economically feasible.)

Damages from Noncompliance

The magnitude of the damages resulting from Company F's failure to meet the pretreatment deadlines is uncertain. There are essentially two types of damages that are relevant: (1) if the POTW's are unable to consistently remove the "excess" pollutants from their waste streams, the pollutants would pose a threat to the environment and to human health (both lead and zinc are toxic pollutants as defined in Section 307(A) of the CWA); and (2) even if the metals are removed, their presence in the sludge generated by the POTW's would limit the marketability of the sludge.

It does not appear that the first type of damage was especially significant. The POTW's did not exceed their effluent limitations for the metals in question. Hence, the company's noncompliance did not pose a threat to human health and the environment. As for the second type of damage, there is insufficient information to determine whether the marketability of the POTW's sludge was reduced.

Motives for Enforcement

EPA appeared to have several motives for pursuing vigorous enforcement in this case (the three instances of noncompliance were combined into a single nationally coordinated case). First, the state's pretreatment program had been remanded to EPA, and the states did not have the authority to enforce the standards. Second, EPA had previously taken similar action against Company F's principal competitor, and it appears that the Agency felt it was necessary to be consistent. Finally, the case was intended to provide a clear signal to firms that pretreatment regulations would be enforced. EPA attorneys estimate that the cost of bringing the enforcement action was roughly $1.5 million.

Penalty Assessment

The final penalty of $1.5 million ostensibly consisted of a benefit component and a gravity component. The latter amounted to $250,000 and was based on the following factors:

- Company F's decision not to inform EPA until EPA specifically requested information on its compliance status;
- Company F's cooperative attitude once discussions with EPA began; and
- The POTW's to which the three plants were discharging were in compliance with their NPDES permits.

EPA developed several estimates of the total benefit to Company F from noncompliance using the BEN computer program. The "reasonable" estimates developed range from $1 million to $2.5 million (1985 dollars). The differences among the estimates are a result of differing assumptions regarding:

- Capital investment delayed ($9.1 million);
- Operation and maintenance costs avoided ($1.1 million in first year);
- Discount rate -- cost of capital to Company F (18 percent);
- Marginal tax rate (50 percent); and
- Useful life of the project (15 years).

The values in parentheses are those used in deriving the benefit component ($1.25 million) of the $1.5 million penalty finally assessed. Some of the "unreasonable" estimates generated were based on the assumption that there were no operation and maintenance costs, or that there was no initial capital investment.

It is worth noting that Company F's actual costs of bringing the three plants into compliance were estimated to be $19.3 million for the first year, far higher than the $10.2 million estimate (savings from delayed capital investment plus operation and maintenance costs avoided) used in computing the benefit component of the penalty.

The penalty does not appear to have been based on precedent because this seems to have been the first case of its type. In the earlier action against Company F's competitor, which was mentioned above, a penalty was not assessed because that company was able to achieve interim compliance via changes in production process.

In a consent decree signed in early 1985, Company F agreed to pay the $1.5 million penalty and bring the plants into compliance by July 15, 1985. The consent decree also required extensive self-monitoring and reporting, and a penalty of $25,000 per day for failing to meet the agreed upon deadline. The consent decree was considered to be a major victory for EPA.

3.1.7 Mr. G

Background

In the late 1970's, EPA launched a campaign to enforce the stringent pollution standards it had set for a national park. The campaign consisted of: (1) workshops designed to educate placer miners about pollution control regulations and methods by which to avoid violations of the Clean Water Act; (2) regular inspections of mining activities; and (3) strict enforcement of Clean Water Act regulations and NPDES requirements.

Among the activities subject to the pollution standards were several placer mining operations located on creeks within the boundaries of the park. Mr. G, a small scale businessman, owned and operated a few of these mines. In the Spring of 1982, EPA inspected Mr. G's operations (all placer mines in the area were inspected routinely), and found violations of TSS (total suspended solids) limitations. EPA notified Mr. G that his operations were in violation of Clean Water Act Section 301(a) (discharges without a permit). Though Mr. G could have been penalized at this point, EPA informed him that they would consider his operations in compliance if he: (1) obtained a NPDES permit; (2) reduced TSS levels; and (3) reclaimed the land he had been strip mining. On September 17, 1983 EPA revisited the mine sites to find that Mr. G still had not acquired a permit, had excessively high TSS levels, and had not made any efforts to reclaim the land.

Damages from Noncompliance

The extent of the damages resulting from Mr. G's failure to comply with EPA's effluent limitations is uncertain. Generally, violations of TSS limitations by placer mine operations are regarded as being relatively innocuous since most aquatic ecosystems can withstand moderate increases in TSS levels for a short period of time. In this case, however, it appears that the violations of the TSS limitation were taken very seriously, given EPA's apparent commitment to maintaining a high level of environmental quality in park.

In addition to the TSS violations, Mr. G was charged for misusing land. Although this is not a direct violation of the Clean Water Act, the strip mining practices employed caused significant disruption of the natural landscape and increased erosion which, in turn, contributed to the TSS violations.

Motives for Enforcement

EPA appeared to have two main motives for pursuing vigorous enforcement in this case. First, the regional EPA office had invested a substantial amount of time, money, and effort in its enforcement campaign and was therefore particularly eager to prevent and deter violations. (The costs to EPA of an average placer mine case are estimated to be on the order of $20,000 to $50,000.) Second, Mr. G had failed to satisy EPA's preliminary requests that Mr. G achieve compliance. Although he constructed a settling pond at one of the sites in an attempt to limit TSS discharges, it was ineffective.

Penalty Assessment

Mr. G was penalized for discharging without an NPDES permit and for consistently exceeding EPA discharge limitations. The regional EPA office recommended a penalty of $3,500 to $8,500, but was skeptical about the feasibility of imposing a penalty much over $5,000. Mr. G, in turn, argued for a penalty of $500.

The penalty assessed by the court was $5,000. This was viewed as the lowest penalty that could be equitably assessed that was still reasonably credible. The EPA regional office divided the penalty into the following components:

Economic Benefit of Non-Compliance: Cost of Building 2 Settlement Ponds (a new settlement pond for each season)	$4,000
Negligence	$1,000
Total Penalty	$5,000

The $4,000 economic benefit figure only reflects labor, equipment, and materials costs. It does not take into account costs resulting from Mr. G's failure to satisfy monitoring, record keeping, and reporting requirements. Furthermore, the penalty does not appear to take into account damages associated with the strip mining and increased turbidity.

In addition to the penalty, Mr. G was required to sign a consent decree that called for the reclamation of land at each of his mine sites. The reclamation was scheduled to be completed by the end of 1984. However, shortly after the consent decree was signed, Mr. G went out of business before reclaiming his land or paying the balance of his penalty. The regional EPA office has therefore been unable to require payment of the balance of the penalty and reclamation of his land.

The penalty determinations in the placer mine cases appear to be primarily based on ability to pay considerations. Penalties assessed for cases that are very similar to the one described above range from $0 to $20,000. In part, the courts' leniency toward placer miners is a reflection of the prevailing

opinion that the EPA standards for the park are unreasonably stringent. Moreover, there have been several cases in which placer miners applied for NDPES permits but had their applications rejected by EPA. Consequently, EPA has encountered considerable difficulty pressing for high penalties for Section 301(a) violations.

3.1.8 Company H

Background

Company H owns and operates a coal mining operation consisting of an underground coal mine and a preparation plant. The company was authorized by their NPDES permit to discharge specified types and amounts of pollutants into a small tributary of a major river. The NPDES permit (valid from October 14, 1978 to October 14, 1983), stipulated that Company H could discharge wastes through no more than 11 outfalls -- five surface runoffs, two sanitary wastewater runoffs, one runoff from the preparation plant, and three from mine water drainage. The NPDES permit also required that Company H: (1) monitor effluents from every discharge point during each month; (2) periodically report its compliance status; and (3) notify state and federal authorities within five days of discovering discharges in excess of effluent limitations.

Company H consistently failed to provide monitoring reports for each discharge point from September 1979 to December 1980. Company H also failed to notify the State and Regional authorities of noncompliance with its effluent limitations from February 1980 to February 1981. The regional EPA office sent letters in February 1981 advising the company of its violations of the NPDES monitoring and notification requirements but the company failed to take remedial action. In response, the regional office issued an administrative order requiring that Company H submit properly completed discharge monitoring reports and comply with its effluent limitations. By letter dated June 1981, Company H agreed to report its effluents properly and identified operation and maintenance practices that it would use to comply with the permit requirements and Administrative Order. However, the violations continued despite Company H's assurances. In September 1981, the regional office informed Company H of its continuing violations and warned the company of the possibility of civil suit.

In November 1981, an inspection by the state department of natural resources disclosed that Company H: (1) was sampling improperly; (2) was not using qualified operators at its sewage treatment plants; (3) was not complying with effluent limitations; (4) had not implemented the corrective actions identified in its letter; and (5) was discharging from an unpermitted outfall. Moreover, the concentration of iron from the unpermitted source exceeded both the Agency's and the State's effluent guidelines, and violated the State's water quality standards for the receiving waters.

After an exchange of correspondence in early 1982, Company H rectified many of its deficiencies. However, subsequent monitoring inspections performed in 1983 and early 1984 indicated that the company was still not meeting effluent limits at several of it outfalls. Specifically, Company H's

sanitary discharges were continually in violation of TSS, BOD and fecal coliform standards. Similarly, the company's mine drainage intermittently violated TSS, BOD, manganese and pH standards. And, whereas the NPDES permit authorized eleven outfalls; Company H discharged from twelve major outfalls. Federal and State authorities responded to the company's recalcitrance by filing a case in 1984.

Damages From Noncompliance

None of Company H's discharges were particularly toxic, mutagenic, or carcinogenic. Hence, the violations did not appear to pose any substantial threat to human health. There is a possibility, however, that the pollutants threatened the aquatic life of the surrounding ecosystem. The regional EPA office made some attempt to quantify the extent of environmental damages, but these were largely unsuccessful. Nevertheless, the regional EPA office considered the damages to be significant but not substantial.

Motives for Enforcement

Although many of Company H's violations were relatively minor in nature, EPA was motivated to take action because the company's violations had persisted since September 1979, despite continued efforts of regional officials to induce compliance.

Penalty Assessment

Company H was charged with violating Section 309 of the Clean Water Act -- discharging without an NPDES permit. The Company was also charged for violating an Administrative Order, and failing to comply with the provisions of its NPDES permits.

Company H was assessed a civil penalty of $40,000 and agreed to a consent decree establishing: (1) permit modifications with newer and more stringent effluent limitations and monitoring requirements; (2) a compliance schedule with increased penalties for noncompliance; (3) additional monitoring and reporting requirements; and (4) guidelines for more effective operation and maintenance procedures.

EPA arrived at the civil penalty figure using the BEN computer program. The program was run numerous times using capital cost estimates ranging from $70,000 to $100,000 (based on EPA technical staff estimates of the costs of sedimentation treatment) and estimates of annual operation and maintenance costs ranging from $13,000 to $19,000. The regional office used BEN to derive a benefit component of $20,000. EPA headquarters, however, used BEN to calculate a benefit component range of $30,000 to $60,000. The regional office compromised between the two figures and recommended a final penalty of $40,000. Since the extent of the environmental damages was relatively limited, the regional office concluded that the $40,000 penalty accounted for both a gravity factor as well as the benefit component.

3.1.9 Company I

Background

Company I owns a production plant which produces organic chemicals using a process of destructive distillation (thermal pyrolysis) of coal and coal tar. This production process generates relatively large quantities of phenols, a highly toxic pollutant which, when in high concentrations, can threaten community water supplies and aquatic life.

Company I is located on the banks of a major river and is directly adjacent to a coke production plant owned and operated by a large steel company. The steel company generates a variety of wastes which are regularly treated and discharged into the river. The production processes used at the steel company, however, do not typically generate large amounts of phenols.

In 1981, a city located below Company I conducted a routine study of the raw river water supply and found that there was a cyclic occurrence of unusually high phenol concentrations in the river. The city notified EPA and the state department of natural resources who jointly intitiated an extensive sampling investigation of various river intakes, the river's tributaries and industrial discharges. In January 1982, EPA and the State collected a 24-hour composite discharge sample from the steel company which indicated that 6,985 pounds of phenol were released during the sampling period. The steel company claimed that the discharges were the fault of Company I's operations, a claim which Company I denied.

A subsequent, in-depth examination of the groundwater characteristics of the area and tracings of each company's effluents established conclusively that the company's facility was indeed responsible for the high phenol concentrations. Apparently, phenol contaminated water had consistently seeped from Company I's property onto the steel company's property for the past 30 years. Although Company I's NPDES permit (issued in 1975) required the development and installation of a wastewater treatment plant, the permit did not address the seepage to the steel company's property. Moreover, EPA was not aware of the seepage from Company I's plant when the steel company applied for a NPDES permit and consequently made the steel company responsible for the treatment of all phenol discharges from its premises. While the steel company complied with the provisions of their NPDES permit for several years by treating the seepage from Company I's operations, the phenol concentrations in the water seeping from the Company I facility had increased to untreatable levels by the 1980s. After repeated efforts to rectify the problem with both EPA and Company I, the steel company began to discharge the untreated wastewater into the river. Company I was concurrently releasing several millions gallons per day of wastewater containing high concentrations of phenol directly into the river (in addition to the seepages).

Damages from Noncompliance

Phenol is listed as a hazardous substance under Section 307(a) and Section 311(b)(2) of the Clean Water Act. A bio-toxicity profile revealed that phenol is highly toxic to the river ecosystem. Consequently, the phenol water

quality standard for the river is 5 ppb. The 1981 daily phenol concentration in the river, however, was 16 ppb. When the concentration reaches 20 ppb, the local waste treatment plant is unable to function properly and the 45,000 residents of the city downriver from Company I are therefore threatened with exposure to contaminated water. In addition to its toxicity, high phenol concentrations in a water supply present severe taste and odor problems.

The total phenol waste load allocation for all existing NPDES permitted facilities upstream of the facilities at question is 1,358 pounds per day. This includes all sources in three states. The releases from the steel company alone exceed the total of all other phenol sources on the river. Apparently, Company I released approximately 3,000 gallons per day of highly toxic phenol contaminated water onto the steel company's coal yard and, eventually, into the river. An additional 1,400 gallons per day seep directly from Company I into the river. In some cases, the phenol concentrations in this contaminated seepage has been as high as 310 ppm. Moreover, phenol is not the sole pollutant involved in this case; EPA also expressed concern about the concentrations of other pollutants such as ammonia, cyanide, and benzene.

Motives for Enforcement

EPA was prompted to take action against Company I because of the severity of the problem and the threats of contamination of the city downriver. In addition, Company I's uncooperative attitude over the past few years left EPA with little choice but to initiate legal proceedings. Moreover, the media displayed considerable interest in the story and public concern was substantial.

Penalty Assessment

Company I was assessed a total civil penalty of $25,000 for violating Section 309 of the Clean Water Act -- discharges without a permit. The company was required to pay $17,000 to the U.S. government and $8,000 to the state. In addition, Company I signed a Consent Decree which required: (1) a compliance schedule with milestone dates; (2) penalties for failure to meet milestone dates (although the penalties appear to be relatively small); and (3) effluent limits for discharges of untreated water from the steel company's property.

Company I considered the $25,000 penalty unduely severe and felt that a penalty of $3,000 would have been more appropriate. Available evidence, however, suggests that the $25,000 penalty was actually quite lenient. An engineer from the local waste treatment facility estimated that the city downriver from Company I spends an extra $12,000 to $16,000 per year to cover additional operating expenses to remove the exceptionally high levels of phenols released from Company I. Moreover, a 1971 government report estimated that the total costs of a complete pollution abatement program (including treatment of "normal" discharges) would cost between $2 and $3 million dollars with an annual operating cost of $200,000 to $300,000. Hence, it appears that (1) the costs of treating the waste water is indeed substantial and (2) there

appears to be a relatively large benefit component. The $25,000 penalty therefore does not appear to fully account for both benefit and gravity components.

3.1.10 Summary of the Case Studies

Exhibit 3-1 presents a summary matrix of the principal findings of the case studies. As the matrix shows, the various cases were similar in some respects but differed substantially in others. For example, the dominant form of noncompliance was generally either effluent limit violations or unauthorized discharges. Similarly, many of the violations were discovered through the reporting (or non-reporting) of effluent data in DMRs. (In some cases, however, violations were discovered through other means.) Finally, many of the violators were issued consent decrees requiring increased monitoring and reporting, and stiffer penalty schedules.

On the other hand, the nine cases differ considerably in terms of the types of pollutants and water bodies involved, duration of the violations, estimates of the benefits of noncompliance, penalty assessments, agency enforcement costs, and the Agency's motives for enforcement.

3.2 MAJOR DIFFICULTIES ENCOUNTERED IN IMPLEMENTING PAST ENFORCEMENT POLICY

Each case study presents a unique set of circumstances which sheds light on the multiple difficulties the Agency encountered in implementing past enforcement policies. While it is not possible to touch on all of the difficulties, there are several recurring difficulties that deserve close attention, especially since there may still be difficulties even under the newest enforcement policy guidance, These difficulties are discussed below.

3.2.1 Determining the Extent of Violations

Perhaps the greatest difficulty faced by the Agency when assessing penalties was determining the extent of a discharger's violations. In some case studies, the extent of violations was easily determined. Single discharges, as in the case of Company A, are quite straightforward to quantify in terms of the duration and magnitude of the discharge. Other violations, however, are not as easily quantified. In the case of Company B, for example, there were several effluent streams, multiple parameters, and recurring violations over an extended period of time. The case was further complicated because effluent records were unavailable or incomplete, and the violator was not fully co-operative. Similarly, for the case involving Company I, the Agency had difficulty proving that the violator was guilty of illegal discharges.

The problem of determining the extent of violations is twofold. On one hand, the problem rests with the existing methods for effluent data collection and reporting. Effluent monitoring is typically only conducted periodically and is often difficult to verify. Consequently, the Agency often has only sketchy information from which to develop conclusions about a discharger's violations. Secondly, many violators fail to consistently report accurate

EXHIBIT 3-1
SUMMARY MATRIX OF CASE STUDY FINDINGS

Case	Primary Violation(s)	Primary Pollutants Involved	Water Bodies Involved	Violation Duration	Benefits of Noncompliance	Environmental Damages from Noncompliance
Company A	Unauthorized discharge of a waste solution	Chlorine	Small, slightly polluted creek which runs through town	2 days	Approximately $250 in expenses	5,000 dead fish and damage to ecosystem
Company B	Effluents in excess of NPDES limits	BOD, TSS, nitrogen, ammonia, TDS, color, total residual chlorine	Tributary of a large river	Sporadic for several years	$60,000 (Only reflects benefits for not installing a portion of required equipment)	Indeterminate
Company C	Failure to notify EPA of relocation of operation	None	Offshore marine environment	53 days	No noteworthy benefits	No environmental damages
Municipality D	(1) Unauthorized discharges (2) Failure to maintain NPDES permit (3) Discharges in excess of NPDES limits (4) Failure to regularly submit DMR's	BOD, TSS and other hazardous and nonhazardous effluents	Small canal connected to a river which supports fish and other aquatic life	Consistent violation of several standards for several years	Upwards of $400,000	Indeterminate
Company E	(1) Unauthorized discharges (2) Discharges in excess of NPDES limits (3) Failure to comply with consent degree	pH, flouride and mercury	Relatively large river which supports a variety of aquatic life	27 one day violations after 2/82 plus numerous violations which occurred prior to 1982	Indeterminate	Substantial
Company F	(1) Failure to meet pretreatment standards (2) Unauthorized discharge in excess of promulgated standards	Lead, nickel, zinc, cadmium	Effluents sent primarily to POTW's	Approximately one year	$1.25 million	Indeterminate
Mr. G	(1) Unauthorized discharges (2) Failure to comply with EPA standards (3) Failure to reclaim land	TSS	Small creek within a protected national park	Consistent violations for 2 years	Approximately $4,000	Relatively minor
Company H	(1) Unauthorized discharges (2) Failure to comply with NPDES permit (3) Violations of an Administrative Order	TSS, BOD, fecal coliform, manganese, and pH	A tributary of a relatively large waterway	Sporadic violations for approximately 5 years	$20,000 to $60,000 (depending on BEN calculation used)	Significant but not substantial
Company I	(1) Unauthorized discharges in excess of permitted standards	Phenol	A major river	Violations have consistently increased in severity since the 1950s	Indeterminate	More than $12,000 to $16,000 per year after 1978

EXHIBIT 3-1 (Continued)

Case	Proposed Penalty Assessment	Final Penalty Assessment	Additional Costs/Penalties Imposed	Was BEN Used?	Approximate Agency Enforcement Costs	How Violation was Discovered	Primary Motives for Enforcement
Company A	$10,000	$5,000	Additional $4,000 in penalties to the state	No	$4,000	Citizen report	Need to display enforcement capabilities in region
Company B	$100,000	$100,000	Consent Decree requiring increased monitoring and reporting practices and stiffer penalties	No	Suspected to be very large	DMRs	Promote better management practices. Also spurred by environmental interest group
Company C	$60,000	$60,000	None	No	Minor	Relocation discovered when company filed for new NPDES permit	Deter lax reporting practices
Municipality D		$40,000	Consent Decree requiring rehabilitation of facilities, increased monitoring and reporting requirements, and stiffer penalties	No	Substantial	DMRs and subsequent EPA inspections	Prevent continued deterioration of facilities, bypasses and poor management of the POTW
Company E	$59,000	$50,000	Consent Decree establishing construction schedule, more severe penalties, and increased monitoring and reporting requirements	No	Substantial	DMRs	Promote better management, operation, and maintenance practices
Company F	$1,500,000	$1,500,000	Consent Decree (1) setting deadlines for compliance; (2) establishing a schedule of increased penalties; and (3) requiring extensive self monitoring and reporting	Yes	Approximately $1.5 million	DMRs and EPA inquiries and on-site sampling	Signal that pretreatment standards were to be rigorously enforced
Mr. G.	$5,000	$5,000	Consent Decree requiring reclamation of adverse environmental impacts	No	Estimated to be from $20,000 to $50,000	Routine Agency inspections	Maintain high degree of environmental quality within the national park
Company H	$40,000	$40,000	Consent Decree establishing: (1) more stringent effluent limits and monitoring requirements; (2) compliance schedule with increased penalties; (3) more effective O&M	Yes	Indeterminate	Failed to submit DMR's and subsequent EPA on-site inspections	Respond to company's recalcitrance
Company I	$25,000: ($17,000 to U.S. $8,000 to state)	$25,000: (17,000 to U.S.. $8,000 to state)	Consent Decree requiring: (1) increased penalties; (2) more stringent effluent limits	No	Indeterminate	Routine city survey of raw river water supply	Reduce threat to downriver community. Also, media concern and public attention grew considerably

discharge data, leaving the Agency and the courts with little useful information. Because many of the violations involve complex pollution control systems and biologically diverse ecosystems, it is often difficult and time consuming to determine the extent of a discharger's violations indirectly by evaluating changes in receiving water quality.

Effluent Data Are Often Insufficient to Accurately Determine the Extent of Violations.

Most facilities monitor their discharges infrequently. Monitoring is often carried out by means of either grab samples, which involve laboratory analysis of single samples taken randomly from an effluent stream, or composite samples, which are essentially just several grab samples collected over an extended period of time. Hence, much of the effluent data available to the Agency represent only "snapshots" of a discharger's effluent streams. While these snapshots are sufficient to determine whether a discharger is in compliance with effluent limits at a specific point in time, they do not provide sufficient information to develop conclusions regarding the extent of noncompliance over an extended time period. Many violations occur sporadically or fluctuate in magnitude over time. The grab samples and composite sampling techniques, however, are not designed to account for such fluctuation in effluent quantity and composition. It is therefore often difficult to determine if the grab samples represent an accurate picture of an effluent stream over time.

Effluent Data are Often Incomplete

In some of the cases, violators were in violation of both effluent limits and reporting requirements. In the case of Company B, for example, the Agency was certain that violations of effluent limits occured, yet the violator's failure to submit effluent data made it difficult for the Agency to determine the timing and magnitude of the violations. As the case shows, the failure by a violator to report effluent data can, in some ways, aid a violator in the penalty determination process: by limiting the information available, some violations were overlooked. This can create perverse monitoring and reporting incentives for dischargers.

In principle, the failure of a violator to consistently report effluent data is taken into account in calculating the gravity component of a penalty. Violators who have not consistently complied with reporting requirements are to be more severely penalized than those who have. In some cases, such as that involving Company C, the gravity factor appeared to reflect at least some consideration of a discharger's failure to report pertinent information. However, in other cases, such as the case of Company H, the Agency did not appear to penalize the violator for poor reporting practices.

The inability of the Agency to determine the extent of a violator's noncompliance led to confusion and, in some cases, subsequent reductions in the estimated duration of noncompliance. This, in turn, could affect the calculation of the economic benefit of noncompliance component. In the case

of Company B, for example, effluent reporting practices were poor. Consequently, the Agency found it difficult to determine exactly what effluent standards were violated and how serious the violations were. Although the Agency was relatively certain that several different types of violations had occured, the Agency had to focus more on those violations for which effluent data were available. The case against Company B therefore focused on only a subset of the violations. Economic benefit calculations were also only conducted for a subset of violations. As a result, the economic benefit estimates were biased downwards.

As mentioned above, the gravity component of a penalty is intended to penalize, in part, violators for poor reporting practices. However, in the case of Company B, the gravity component appears to have been offset by the reductions in the benefit component resulting primarily from poor reporting practices. If the poor reporting practices do in fact lead to lower economic benefit estimates, as the case studies suggest, then the gravity component should not only punish the violator for poor reporting of effluent data but should also correct for the reduced benefit component (and higher administrative costs). The case studies do not suggest that this was done. Hence, a violator's penalty may have been reduced as a result of poor reporting of effluent data.

3.2.2 Estimating the Benefits of Noncompliance

Estimating the benefits of noncompliance also may be a difficult step in the penalty determination process. For the majority of the cases studied, the problem of estimating benefits stems from the fact that the most recent version of the BEN computer program was not yet implemented and was therefore not used. Hence, the techniques used to calculate benefits were inconsistent. The BEN program was used for a few of the cases. Even for these cases, however, problems were encountered in estimating the benefits of noncompliance.

Estimates of benefits to violators of noncompliance derived using the BEN computer program appear to have been hindered by two factors. First, there were few formal guidelines for estimating input parameters for the BEN program for capital and operation and maintenance costs, which led to inconsistencies in how inputs to the program were selected. Second, the benefit estimates generated by the BEN computer program often did not fall into an "acceptable" range of penalties.

Difficulty of Determining Input Parameters for the BEN Program

The BEN program requires thirteen data inputs. Seven of these must be determined by Agency economists and engineers. The remaining six are optional; standard values are automatically used for these inputs if no data are entered. The inputs to the BEN program are:

Required Inputs:

(1) Case Name
(2) Capital Investment
(3) One-Time Expenditure
(4) Annual Operating and Maintenance Expenses
(5) Date Violation Began
(6) Date Violation Ended
(7) Date Violator will Pay Penalty

Optional Inputs:

(8) Useful Life of Pollution Control Equipment
(9) Investment Tax Credit
(10) Marginal Tax Rate
(11) Inflation Rate
(12) Discount Rate
(13) Low Interest Financing

Many of these data inputs are difficult to estimate. As noted, for example, estimating the dates of noncompliance is often difficult because only limited data is available on violators' levels of discharges and types of noncompliance. The problem is compounded when trying to calculate the benefits of sporadic violations. If one long violation period is entered, the program will incorrectly calculate economic benefits for days during which the discharger was actually in compliance. As a result, the economic benefit component will be overstated. However, shortening the violation period to correct for days that were incorrectly included as violation days will interfere with other features of the program such as the discounting functions. Performing several calculations for each violation period than correcting for double-counting of initial capital costs and one-time expenditures partially overcomes this problem, but is still not entirely accurate.

There is also no accurate method for determining the date when a violator will pay the penalty. Penalty settlements and court litigation can take anywhere from months to years. Moreover, many violators may not pay the full penalty when required. Mr. G, for example, has yet to pay the balance of his $5,000 penalty. Consequently, the penalty payment date is often estimated as being too early, causing the benefit estimate to be understated.

The "useful life of pollution control equipment" parameter is also difficult to estimate because of lack of historical data. While there are recommended life times for different types of pollution control equipment, many of these estimates have not been fully substantiated; more advanced pollution control technologies have only recently been placed into service and have not yet required replacement. Second, because the useful life of such equipment is largely dependent upon usage rates and operation and maintenance efforts, useful life will vary from facility to facility. Third, many facilities are using pollution control equipment that is old and rundown and only effective for a portion of the time. In such cases, it is difficult to

determine exactly when new equipment is needed, how much must be replaced, and whether or not the existing equipment could just use a rehaul. Finally, many facilities may be required to install superior technologies well before the useful life of the equipment has passed. It is therefore likely that many estimates of the useful life of pollution control equipment are biased upwards. Therefore, the economic benefit calculations will generate underestimates.

Estimates of initial capital investments and one-time expenditures are generally subject to negotiation in the course of determining a settlement or penalty for a violator. Penalty negotiations often involve debate regarding what pollution control technologies are most appropriate and their associated costs. Estimates of capital investments and one-time expenditures may therefore vary depending on the findings of the Agency in the course of the penalty determination negotiations. Moreover, there are several ways in which engineers might err in the absence of appropriate estimation guidelines. For example, some dischargers may find more innovative, cost effective methods for controlling their emissions such as altering their production processes (thereby avoiding the expenses of installing expensive pollution control equipment). In such cases, the engineers' estimates may not accurately reflect a discharger's actual expenditures for pollution control equipment, although it is possible that this would be discovered in the penalty negotiation process.

Similar problems arise when estimating annual operating and maintenance expenses. The information required to accurately determine operation and maintenance costs is extensive and includes information regarding the operational demands on the pollution control equipment, how frequently it is used, usage capacities and so forth. Much of the pollution control technology currently in place, however, is relatively new and there is little data on the frequency with which these technologies require servicing. Once again, if operation and maintenance costs are overstated, the BEN program will overestimate the benefit component, although again it is possible that this would be discovered in the penalty negotiation process.

Clearly, all of the inputs to the BEN program must be reasonably accurate for the final benefit estimate to be accurate. The extent to which an inaccurate data input affects the ultimate accuracy of the final benefit estimate depends on the input in question and the overall data being analyzed.

Difficulty of Obtaining Acceptable Ranges of Penalties

Another recurring problem uncovered by the case studies is that economic benefits estimates are likely to imply penalties larger than what is generally regarded as "acceptable". Only until recently have penalty assessments fully incorporated benefits from noncompliance. As a result, the regulated community, the Agency, and the courts became accustomed to a lower range of penalties, based primarily on gravity components. Deviations from these accepted ranges were often met with harsh criticism and were often negotiated back to within an acceptable range, but this appears to be changing gradually.

Full incorporation of the benefit estimates generated by BEN can increase penalty amounts substantially. While the higher penalties may be justified from an economic perspective, the regulated community, Agency officials, and courts are having difficulty adapting to the higher penalty ranges.

The high benefit estimates are also a problem in the context of municipal violators. Many municipalities have been guilty of noncompliance for a much longer period than many industrial dischargers. Most industrial dischargers were required to comply with permit conditions in the late 1970s and early 1980s, while municipalities were generally allowed more time to reach compliance. The 1977 CWA Amendments, for example, granted compliance extensions to municipalities, allowing them several more years to come into compliance with applicable standards. Many municipalities have therefore been operating in violation of their NPDES permits for long periods of time. Consequently, benefit estimates for municipal cases are often quite high.

The increases in Agency penalty recommendations resulting from the inclusion in full of benefit estimates were so drastic that many regional economists and attorneys treated the BEN estimates as upper bounds from which penalties were to be negotiated downward.

3.2.3 Quantifying Damages to the Environment

The potential damages to the environment and human health from noncompliance can significantly influence the penalty determination process. In the case involving Company I, for example, the company's violation was regarded as particularly severe because the introduction of phenol to a river represented a significant threat to a city located downriver. A high penalty was regarded as necessary in this case to provide sufficient incentive for Company I to discontinue the release of phenol.

Monetizing damages resulting from discharges to an aquatic ecosystem is a complex, intricate, and error-prone process. It requires first assessing the physical and biological effects of the excess pollutant discharges on the receiving water body, then relating these effects to the services provided by the water body, such as recreation and a supply of drinking water, and finally placing a monetary value on the reduction in services due to the excess pollution. Each of these three steps requires a great deal of information and analytical expertise.

3.2.4 Ability-to-Pay Considerations

As discussed in Chapter 2, the Agency will occasionally consider reducing penalties in cases where the violator would be financially crippled by the imposition of the penalty. Agency penalty policy stated that if a violator can convincingly demonstrate an inability to pay a given penalty, then the Agency may reduce the recommended penalty to an amount which the defendant can pay and still remain in operation. The only exceptions to this policy are (1) for violations that are particularly egregious or (2) where reductions in penalties will keep a discharger in business that should not, from the Agency's standpoint, be allowed to continue operation.

Ability-to-pay criteria differed for industrial and municipal violators. In the case of industrial violators, the case studies suggest that the Agency did take into account ability-to-pay considerations. In the context of the case studies conducted, this is probably best shown by a comparison of the cases involving Mr. G and Company C. Mr. G had committed what were regarded to be relatively severe violations. His business, however, was small. After several attempts to achieve compliance, the Agency fined Mr. G $5,000. Company C, on the other hand, committed only a minor reporting violation. There was no environmental damage and the company appeared to have fully co-operated with the Agency in rectifying the problem. However, the Agency fined Company C $60,000 -- twelve times the fine levied against Mr. G.

Although ability-to-pay considerations were taken into account in penalty determinations, the case studies suggest that there was not a consistent method for determining an industrial violator's ability to pay. A method was currently being developed by the Agency but, at the time of the case studies, had not yet been implemented. In addition, EPA penalty policy limits the extent to which ability-to-pay considerations should influence a penalty. According to the policy, all penalties should take into account benefit and gravity components, then should be reduced somewhat depending on a violator's ability to pay. As the case studies demonstrate, however, the benefit and gravity components can be so large that adjustments for ability-to-pay considerations can represent the predominant factor influencing the final penalty amount. In some cases, there were large benefit and gravity components which were essentially overlooked because a violator could not pay them.

Ability-to-pay considerations were even more problematic in the case of municipal violators. The primary difficulty stemed from the fact it was difficult to determine the extent to which municipalities can allocate funds for penalty payments. In some instances, municipalities might be justifiably poor; construction grants may have been discontinued or exhausted and the municipality may not be in a position to issue additional bonds or allocate funds for penalties. Penalizing municipalities in these cases may be counterproductive.

In other instances, however, municipalities may only appear poor on paper. Some municipalities may have ample resources but be unwilling to allocate these resources to wastewater treatment. As such, they may attempt to disguise their funds to suggest that they do not have enough resources. In such cases, it is difficult for the Agency to determine how ability-to-pay should be assessed.